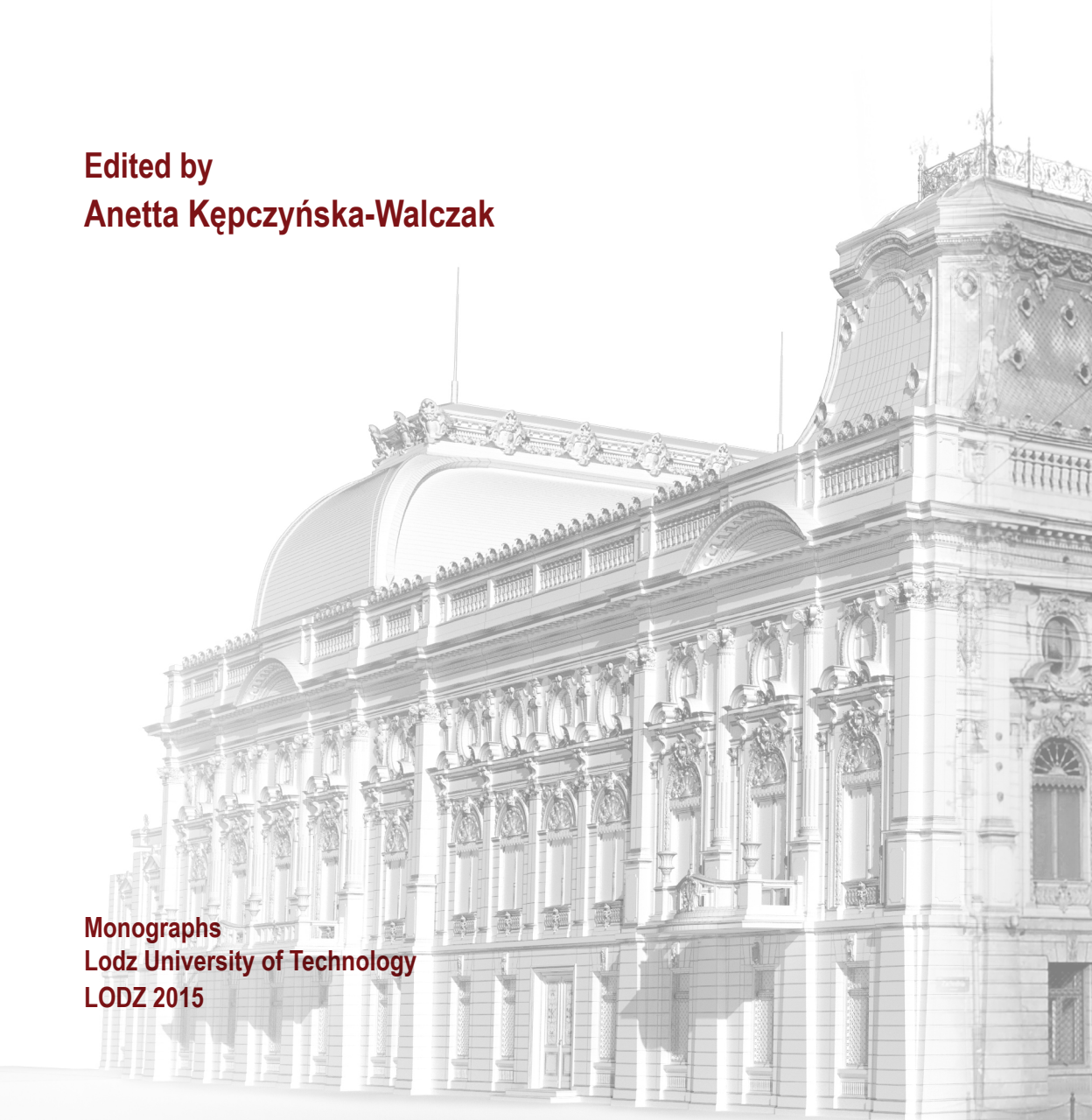
Envisioning Architecture

Image, Perception and Communication of Heritage

Lodz University of Technology 2015

ENVISIONING ARCHITECTURE: IMAGE, PERCEPTION AND COMMUNICATION OF HERITAGE

Edited by
Anetta Kępczyńska-Walczak



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PREFACE

Introduction

This monograph is a result of the 12th European Architectural Envisioning Association Conference **Envisioning Architecture: Image, Perception and Communication of Heritage** hosted by the Faculty of Civil Engineering, Architecture and Environmental Engineering at Lodz University of Technology, Poland, from the 23rd to 26th of September 2015."

Following the mission of the European Architectural Envisioning Association, the conference was meant to be a platform for communication and exchange of experience, experimentation, research and collaboration in the field of envisioning built heritage, with the special focus on industrial heritage referring to "2015 a European Industrial and Technical Heritage Year".

Taking into consideration that contemporary culture is largely based on the visual perception, heritage envisioning is in particular considered as a process of representing knowledge about space, time, behaviour, light, and other elements that constitute cultural environments. Therefore, it was expected that conference contributions would explore the following subjects:

- Visualisation of the heritage-related knowledge;
- Support for the analysis and design processes in the course of the heritage renewal;
- Methods of communicating the heritage issues to the society;
- Enhancing and stimulating heritage education;
- Envisioning all aspects of heritage perception.

The EAEA12 theme

The concept of heritage has been evolving from the static preservation to the pro-active, from singular buildings into urban complexes, and from the objects showing the "beauty of the past" to those encapsulating the importance of multifaceted cultural values. In consequence, the scope of heritage and the range of necessary interventions have broaden dramatically.

The meaning of heritage and its perception in a democratic society is increasingly overlapping with spatial and economic problems. For example, the majority of current investments in Europe deal with existing built structures and areas, most of which being subject for heritage protection. Such a situation exposes heritage to a number of new threats and calls for new solutions, reflecting the responsibility of present generations for the future of heritage, and the need for sustainability and resilience in urban renewal processes.

Considering the broad and multifaceted problematics, the EAEA12 Conference sessions and research papers were organised in three tracks, namely:

1. THE IMAGE OF (INDUSTRIAL) HERITAGE. In the light of the campaign for announcing 2015 the European Industrial and Technical Heritage Year and taking into consideration that the host city was one of the most important industrial centres of the 19th-century industrialisation in Europe, this track aimed at exploring the role of industrial buildings and structures for the image of urban areas. Another related issue was the change or preservation of industrial buildings image in the re-use process. The papers discussing positive and negative connotations related to industrial heritage were also welcome.
2. PERCEPTION OF THE PAST. This track challenged to cover problems related to the changing meaning of heritage, including contextual, holistic and phenomenological approaches plus a historic urban landscape protection. The envisioning of sensorial aspects; visible and invisible elements of a built environment; genius loci; social context; heritage interpretation as well as other associated topics were discussed in the papers proposed for this theme.
3. COMMUNICATION OF HERITAGE. This track was dedicated to different approaches to envisioning reflecting the specifics and requirements of research, design and education in the heritage domain. It welcomed to discuss issues such as visual impact analysis of new investments in heritage areas; heritage management; imaging as a tool and method in heritage studies for comparative analyses, proportion studies, development phases, state of preservation, etc. The question how to communicate the heritage issues to a society - including professionals and lay persons – became the motto of this part.

The monograph

The layout of the book has been designed following the requirements for the multi-authored monograph. The monograph is composed of three parts reflecting three main tracks of the EAEA12 Conference. Accepted papers have been adapted to chapters.

Keynote speakers papers have been arranged as the openings of each part of the book. Hence, Professor Bartosz Walczak lecture dedicated to THE IMAGE OF (INDUSTRIAL) HERITAGE opens Part 1, Professor Daniel Siret lecture on PERCEPTION OF THE PAST is a key paper in Part 2, while Professor Tom Maver focus on COMMUNICATION OF HERITAGE perfectly introduces to Part 3.

The papers published in this monograph were carefully selected through the process of two-stage reviews. With the great help of the EAEA12 International Scientific Review Committee, each submission was double-blind reviewed by three members independently. Then, submitted papers went through the second stage of the assessing process, and finally, the book was reviewed by two independent reviewers.

Acknowledgements

First of all, I would like to thank Professor Stanisław Bielecki, Rector of Lodz University of Technology, and Professor Piotr Paneth, Vice-Rector for Science, for a positive response and patronage under the 70 Years of TUL Jubilee.

I further want to give my thanks to Professor Dariusz Gawin, Dean of the Faculty of Civil Engineering, Architecture and Environmental Engineering at Lodz University of Technology, and Professor Marek Lefik, Vice Dean for Science who supported the idea of EAEA12 Conference enthusiastically.

This conference could not have happened without the invitation by Professor Jack Breen, TU Delft, Barbara Piga and Eugenio Morello, Politecnico di Milano, to host the event in Lodz. Thank you for giving us such an opportunity to promote Lodz University of Technology.

A special acknowledgement goes to Martijn Stellingwerff, TU Delft, Barbara Piga and Eugenio Morello, Politecnico di Milano – the previous conference organisers - for their valuable advice and support.

As the editor of the book and EAEA12 Chair I want to thank all the authors who submitted and presented at the conference, and all session chairs who lead the presentations.

I am grateful to the members of the EAEA12 International Scientific Review Committee for their input which helped to guarantee a very high quality of the selected contributions.

Here is the list of EAEA12 International Scientific Review Committee:
Assoc. Prof. Aleksander Asanowicz, Bialystok University of Technology, Poland
Prof. Ir. Jack Breen, Delft University of Technology, Netherlands
Assoc. Prof. Anetta Kępczyńska-Walczak, Lodz University of Technology, Poland
Prof. Thomas M. Lesko, Wentworth Institute of Technology, USA
Prof. Bob Martens, Vienna University of Technology, Austria
Prof. Tom Maver, Glasgow School of Art, United Kingdom
Dr. Eugenio Morello, Politecnico di Milano, Italy
Prof. Dr. Ryuzo Ohno, Tokyo Institute of Technology, Japan
Dr. Barbara E.A. Piga, Politecnico di Milano, Italy
Dr. Heleni Porfyriou, CNR-ICVBC-Roma, Italy
Assoc. Prof. Murat Şahin, Özyeğin University, Turkey
Assoc. Prof. Daniel Siret, CNRS, CERMA, France
Dr. Ir. Martijn Stellingwerff, Delft University of Technology, Netherlands
Prof. Dr. M. Saleh Uddin, Southern Polytechnic State University, USA
Prof. Bartosz Walczak, Lodz University of Technology, Poland

It was an honour to have as confirmed keynote speakers at the conference Professor Tom Maver (Research Professor, Mackintosh School of Architecture and Emeritus Professor, University of Strathclyde, Glasgow, UK), Professor Daniel Siret (Head of Ambiances, Architectures, Urbanités Lab) and Professor Bartosz Walczak

(President of Polish TICCIH – The International Committee on Conservation of Industrial Heritage). I want to thank them for sharing their knowledge and experience making the EAEA12 Conference an exciting and inspiring scientific event.

The Design Communication Association (DCA) supported our organisation by diffusing the call for papers to the American audience and helping with the scientific review of abstracts and papers. Special thanks goes to Professor Saleh Uddin and Professor Thomas Lesko.

As the chair, I had support from the EAEA12 Organising Committee, especially Professor Bartosz Walczak and Sebastian Białkowski. I further want to give my thanks to Liliana Podkocka, the Faculty Accountant, for helping with financial issues, and Anna Boczkowska, Head of TUL Promotion Office. I am grateful to Dr Przemysław Sękalski, Director of the Information Technology Centre, Lodz University of Technology, for co-operation in organising the place for the venue.

I would like to express special gratitude to Małgorzata Horowska, Head of Lodz University of Technology Publishing House, and Agata Niewiadomska for helping us with final editing of the monograph.

Last but not least, I would like to thank all students – volunteers who assisted us at the finishing stage of organising the EAEA12 and during the event.

Keynote Speakers

Tom Maver is Research Professor in the Mackintosh School of Architecture at the Glasgow School of Art and Emeritus Professor of the University of Strathclyde. While at Strathclyde he established the Architecture and Building Aids Computer Unit, Strathclyde (ABACUS) and was its Director from 1970 to 2003. ABACUS pioneered the application of computers to architectural design and gained the top rank of 5* in the 1996 UK Research Assessment Exercise. Professor Maver is an Honorary Fellow of the Royal Incorporation of Architects in Scotland and of the Design Research Society and has life-time/distinguished service awards from a number of international associations. He founded the International association CAADFutures and the European association eCAADE.

Daniel Siret holds a PhD in architecture and is a researcher for the French Ministry of Culture and Communication, at the School of Architecture of Nantes. He is also Head of Ambiances, Architectures, Urbanités Lab (UMR CNRS-MCC-ECN). His work deals with the ways in which sensory dimensions are taken into account in the built environment, especially with regard to the architectural and urban expression of solar radiation. He was a visiting scholar at the Fondation Le Corbusier (2005), the Canadian Centre for Architecture (2012) and New York University (2013).

Bartosz Walczak is Professor at the Institute of Architecture and Urban Planning of the Lodz University of Technology. Former Lodz Municipal Heritage Conservator and Deputy Conservator for the Province of Lodz. Author and co-author of several projects of post-industrial re-use and urban regeneration. Author

of more than 50 papers and books published in Poland and abroad, including the book on company towns in European textile industry awarded by Europa Nostra in 2013. President of Polish TICCIH (The International Committee on Conservation of Industrial Heritage) and member of the Lodz Scientific Society. Major research interests: Lodz industrial heritage, industrial heritage and identity, workers housing in textile industry, re-use of industrial buildings, industrial heritage conservation methods.

About EAEA

The EAEA was founded in 1993 in Tampere, Finland, and has reconvened every two years since then. What had originally started as a platform for European academic institutes making active use of optical endoscopy instrumentation, gradually but steadily evolved into a wider range of design visualisation and simulation interests.

The founding meeting, hosted by the department of Architecture of Tampere University of Technology in Finland, was the first international meeting of experts in the field of architectural endoscopy, coming from fifteen universities.

The association was intended to become "a platform for communication and exchange of experiences, experimentation, research and collaboration in the field of endoscopy and environmental simulation." Initially, the focus of the European Architectural Endoscopy Association lay exclusively upon the visual simulation of the effects of environmental interventions using optical instruments: 'capturing' photographic or analogue (video) images using physical scale models, generally using a viewing pipe.

Essentially, the first meeting was a gathering of academic professionals in this field, with the delegates representing institutes with some form of 'endoscopic' apparatus. During the conference the participants took part in a workshop session, using the facilities of the Tampere laboratory.

From the first session onward the exclusive focus on optical endoscopy began to shift, first gradually, then more and more steadily towards other environmental visualization opportunities, notably using digital media.

This clearly proved to be the case during the presentations of the second EAEA conference in 1995, hosted by the department of Spatial Simulation at the Vienna University of Technology. In particular, the interdisciplinary conference workshop – 'the (in)visible city' – stimulated the integration and comparison of analogue and emerging digital technologies.

For this workshop initiative participating institutes were sent a study model via the post and asked to prepare environmental simulations using their institute's facilities. The varied results were presented and evaluated during the conference.

Similarly, an important element of the third meeting, held at the Architecture faculty at Delft University of Technology in 1997, was formed by a creative study initiative: the 'Imaging Imagination' workshop. Essentially, conceived as

a professional confrontation between 'Optical' and 'Digital' Endoscopy. In this case study, the participants were free to choose between a physical modelling package and a digital file, incorporating texture mapped 'facades'. Some fifteen visualisation proposals were prepared, brought to the conference and viewed and discussed during a special Imaging Imagination conference session.

Apart from the quality and content of visualization, the aspect of the Modelling as such also became a recurring theme. This was particularly the case during the fourth conference, at the Architecture faculty of the Dresden Technical University of 1999, whereby participants took part in an impromptu hands-on modelling exercise using an interior-scale model.

During the subsequent conferences (the 5th conference at the Institute of Urban Design and Planning at the University of Essen, the 6thconference at the faculty of Architecture at the Slovak University of Technology in Bratislava, the 7thconference at the faculty of Architecture at the University of Applied Sciences Dortmund and the 8thconference at the Moscow Institute of Architecture) the shift from 'straightforward' optical endoscopy towards new techniques and topical issues became more and more evident. Noteworthy developments included the increasingly adaptable, distinctive and indeed elegant modes of digital representation, but also the use of digital photography and film, the opportunities of combined media and graphics, but also the introduction of disciplines such as Experimental Aesthetics and Virtual Archaeology.

This led to recurring discussions concerning the association's name. To what extent should endoscopy be considered a fitting 'identity' for the increasingly diverse enterprises of architectural imaging and environmental visualization addressed at the meetings?

Generally, the sentiment tended to be to uphold the established 'label' and to keep the EAEA fraternity relatively exclusive and small-scale in comparison to other, more computer-oriented academic and professional platforms.

During the 2009 Cottbus conference, the thematic differentiation of architectural visualisation approaches and interests once again became manifest during the varied presentations, leading to renewed discussions concerning the EAEA's meaning and role.

What might be an appropriate name that would do justice to the reputation and tradition of (optical and digital) Endoscopy, whilst at the same time giving expression to the steadily unfolding of fields of interest?

Rather than Endoscopy, Envisioning was eventually agreed upon, as it was felt that this fittingly evokes the shared ambitions for a dynamic architectural visualisation practice and the continued exchange of ideas concerning the imaginative conception of future environments.

The EAEA – the European Architectural Envisioning Association.

It was hoped that this small, but significant, name change would broaden the appeal of the association on an international level, amongst academics involved with architectural visualisation in the broadest sense, researchers and teachers,

whilst at the same time stimulating the deepening of the intellectual discourse. The following conferences in Delft 2011 and Milan 2013 proved a great success of this shift.

Previous conferences

11 EAEA Conference | 2013 | Milan | Politecnico di Milano
10 EAEA Conference | 2011 | Delft | Delft University of Technology
09 EAEA Conference | 2009 | Cottbus | Brandenburg University of Technology
08 EAEA Conference | 2007 | Moscow | Moscow Institute of Architecture (MARCHI)
07 EAEA Conference | 2005 | Dortmund | University of Applied Sciences
06 EAEA Conference | 2003 | Bratislava | Slovak University of Technology
05 EAEA Conference | 2001 | Essen | University of Essen
04 EAEA Conference | 1999 | Dresden | Dresden University of Technology
03 EAEA Conference | 1997 | Delft | Delft University of Technology
02 EAEA Conference | 1995 | Vienna | Vienna University of Technology
01 EAEA Conference | 1993 | Tampere | Tampere University of Technology

A collection of previous EAEA conference papers is available on CUMINCAD – a Cumulative Index of Computer Aided Architectural Design (http://cumincad.scix.net/cgi-bin/works/Home).

Anetta Kępczyńska-Walczak

EAEA12 Conference Chair and Book Editor
Associate Professor
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2015

PART 1

IMAGE OF INDUSTRIAL HERITAGE

THE IMAGE OF INDUSTRIAL HERITAGE: THE CASE OF ŁÓDŹ

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Introduction – perception, image and heritage

For the purpose of this paper it is necessary to remind and discuss definitions of the most important words: perception, image and heritage.

Perception /pəˈsɛpʃən/ is an act of perceiving, which means either "to become aware of (something) through the senses, esp. the sight; recognize or observe" or "to come to comprehend; grasp"[1].

Image /ˈɪmɪdʒ/ is a word with several meanings. Not all of them are relevant to the subject matter of this research. As a noun it may be understood as:

- a representation or likeness of a person or thing, esp. in sculpture;
- a mental representation or picture; idea produced by the imagination;
- (psychol.) the mental experience of something that is not immediately present to the senses, often involving memory;
- a mental picture or association of ideas evoked in a literary work, esp. in poetry.

The same word used as a verb means:

- to picture in the mind; imagine;
- to make or reflect an image of;
- to portray or describe.

Finally heritage /ˈhɛrɪtɪdʒ/ is a noun describing:

- something inherited at birth, such as personal characteristics, status, and possessions;
- anything that has been transmitted from the past or handed down by tradition;
- the evidence of the past, such as historical sites, buildings, and the unspoilt natural environment, considered collectively as the inheritance of present-day society.

[1] All definitions based on the Collins English Dictionary – Complete & Unabridged 2012 Digital Edition © William Collins Sons & Co. Ltd. 1979, 1986 © HarperCollins Publishers 1998, 2000, 2003, 2005, 2006, 2007, 2009, 2012.

In the respect of the above it should be stressed that perception depends on personal abilities, education and senses. Experts may perceive something else than laymen. This may be well illustrated with the famous Plato's allegory of the cave[2]. While the importance of senses may be explained by visually impaired people and their perception of surrounding environment.

This is of crucial importance, since an image – understood as mental experience or picture – is based on a perception. In other words – everything what we perceive and learn contributes to images we hold in our minds. The result may depend on a number of other circumstances – even on the length of time spent for perceiving. Visitors have usually different image of a place from that of permanent residents. This issue may be exemplified with description of Istanbul by Orhan Pamuk (NB probably the only architect given the Nobel Prize in literature)[3]. The whole book is an attempt to grasp a complex image of a multicultural metropolis, including records done over the centuries by visitors to the city:

> *Istanbul* as shared melancholy, Istanbul as double, Istanbul as black-and-white images of crumbling buildings and phantom minarets, Istanbul as a city of maze-like streets seen from high windows and balconies, Istanbul as an invention of foreigners, Istanbul as a place of first loves and last rites: In the end, all these attempts at definition become Istanbul as self-portrait, Istanbul as Pamuk himself[4].

If we agree that image is based on memory, we should accept its subjective nature built by emotions and experience. The latter provides link to contemporary concept of heritage[5]. The above-mentioned definition indicates that only this evidence of the past which is considered collectively as the inheritance of present-day society, may be regarded as heritage. This imply the importance of general public who is not only responsible for appropriate protection of historic objects, buildings and sites but also decides which of them to protect.

Negative and positive connotations related to industrial heritage

The social acceptance of heritage becomes problematic when industrial objects and buildings are to be considered. Cultural values of evidence of the past are justified with respect to historic, scientific and artistic qualities. Most of general

[2] Plato. *Republic*, Book VII, 514a - 517a, David Bloom (ed.) *The Republic of Plato*, New York: Basic Books, 1991, pp. 193-196.

[3] Orhan Pamuk. *Istanbul: Memories and the City* (*İstanbul: Hatıralar ve Şehir*), written in 2003 and translated into English by Maureen Freely in 2005.

[4] Alberto Manguel. „My City of Ruins", *Washington Post*, 26.06.2005.

[5] Anetta Kępczyńska-Walczak. *Zarządzanie dziedzictwem kulturowym w społeczeństwie opartym na wiedzy*, Łódź: Politechnika Łódzka, 2014, p. 31-36; cf. Georgy Ashworth, „Can you move from the object to the experience?", *Kongres Konserwatorów Polskich*, Warszawa 2005.

public judges, however, buildings and sites by their appearance, which was and continues to be almost everything. Therefore, the heritage is often anchored to aesthetic values rather than to any other consideration of function or history. As a result pleasant locations and visually appealing buildings are more appreciated than dully post-industrial areas associated with hard work and polluted environment. What is more, the concept of heritage is related with "otherness", which may be given symbolic or material connotations and emotionally felt by people. Unfortunately, in post-industrial regions, factories are far from being part of another reality.

Such connotations have a long tradition reaching back to the early 19th century, when the first negative results of Industrial Revolution emerged. At first because aesthetical criteria were influenced by the "arcadian daydream of an urban dweller"[6], only buildings of so-called "visual delight" became the subject of interest. This preference for the imagined beauty of the past as opposed to the disadvantages of the contemporary built environment can be illustrated by Pugin's well-known book *Contrasts*, published in 1836. It consists principally of paired illustrations intended to draw distinctions between "old" and "new"; e.g. the imagined beauty of a "Catholic Town of 1440" is contrasted with the contemporary built environment of "The Same Town in 1840" to the latter's great disadvantage. In other words the need for the preservation of medieval past was set opposed to the industrial present. Thus, when the foundations for the modern heritage protection and conservation were being laid, the manufacturing buildings were regarded as something inferior.

What is more, such an image of industrial cities was strengthened by their descriptions in literature. For example a novel *No Mean City* by Alexander McArthur and H. Kingsley Long, which provided an account of life in the Gorbals, a slum district of Glasgow, for many years was regarded as the definitive account of life in the city as a whole, and its title became a byword. Such a situation was typical for most of industrial centres in Europe. Former textile manufacturing cities in Britain were associated with "dark satanic mills" – a phrase derived from William Blake poetry[7].

Łódź – a major textile production centre in Poland – was also described by a number renown novelists, including *Ziemia Obiecana* (*Promised Land*) by Władysław Reymont (one of Polish Nobel Prize awardees), *Bracia Aszkenazy* (*The Brothers Ashkenazi*) by Israel Joshua Singer (brother of Isaac Bashevis Singer), or *Złe Miasto* (*Bad City*) by a journalist Zygmunt Bartkiewicz. It is necessary to underline that the authors of all these accounts were not permanent residents of the city, and – what is more – all the above-mentioned descriptions represent a blend

[6] Lester Borley. „Why is industrial heritage so important to Europa Nostra?", *Europa Nostra Magazine*, No. 12, 1996, pp. 2-3.

[7] The hymn „Jerusalem" from the preface to *Milton: A Poem in Two Books*, 1804-1810.

of fascination and disapproval. This is not a surprise – it has been already noted by Walter Benjamin that:

> If we were to divide all the existing descriptions of cities into two groups according to the birthplace of the authors, we would certainly find that those written by natives of the cities concerned are greatly in the minority. The superficial pretext-the exotic and the picturesque – appeals only to the outsider. To depict a city as a native would calls for other, deeper motives – the motives of the person who journeys into the past, rather than to foreign parts. The account of a city given by a native will always have something in common with memoirs;, it is no accident that the writer has spent his childhood there[8].

In other words - visitors to the city – although know it superficially are stimulated by the experience to describe it. In case of Łódź, apparently authors felt oppressed by the every-day hustle and bustle of a dull industrial city. The negative impact of these descriptions is of twofold importance – it affects the external image of city but also diminish its value in the eyes of its inhabitants. The latter is even worse, since an identity is based not only on the individual but also collective memories[9].

Luis Loures rightly points that only few towns or cities escaped factory closing in recent decades. As a result post-industrial landscape and associated spatial and economical problems are a commonplace in Western civilisation. Their "complete physical and functional decadency, contributed to enlarge the negative public perception about these spaces"[10]. With a decline of industrial activities, the affected cities attempt to find economic alternatives and new models of social identification to sustain the cohesion of local communities. John R. Short describes this situation in following words:

> To be seen as industrial is to be associated with the old, the polluted, the out of date. A persistent strand of urban (re)presentations has been the reconstruction of the image of the industrial city[11].

This is why all post-industrial regions faced the problem of negative image (The case of the German Ruhr district serves as a well-known example of this process), but only some managed to brake with it.

Although vacant industrial sites often fascinate and charm some people (typically – artists and designers), being considered as "ruins" containing, as Tim

[8] Walter Benjamin. „The Return of the Flâneur" in Walter Benjamin, *Selected Writings* II 1927-1934. Cambridge: Harvard University, 1999, pp. 262-267.

[9] Leszek Kołakowski. *Mini wykłady o maxi sprawach*. Cracow: Znak. 2006, pp. 246-252.

[10] Luis Loures, „Industrial Heritage: the past in the future of the city", *WSEAS Transactions on Environment and Development*, No. 8, Vol. 4, 2008, pp. 687-696.

[11] John R. Short. „Urban Imagineers: Boosterism and the Representation of Cities", in: Andrew E.G. Jonas; David Wilson (eds.), *The Urban Growth Machine. Critical Perspectives, Two Decades Later*, New York: State University of New York Press, 1999, pp. 37-54.

Edensor notices, the "promise of the unexpected". What is more, the aesthetics of industrial dereliction epitomize a sort of "modern gothic", part of a wider sentiment, which emerges out of a "post-industrial nostalgia"[12]. The situation is similar to the beginnings of contemporary heritage protection, which in 19th century was purely an elitist case. The principal aim is thus to bring industrial heritage physically and emotionally close to wider sectors of the population and to use it with success in processes of economic regeneration. For example Glasgow has made a great effort to build a new narration using other – positively perceived – elements of local tradition, especially art and design based on the achievements of Charles Rennie McIntosh. Such an approach is often described as „urban branding", which has to do with shaping the „urban imaginary" understood as a:

> … coherent, historically based ensemble of representations drawn from the architecture and street plans of the city, the art produced by its residents, and the images of and discourse on the city as seen, heard, or read in movies, on television, in magazines, and other forms of mass media[13].

In an era of ever increasing globalization, accompanied by a growing competition between cities and urban regions, „identity" becomes a key notion. To attract companies, residents, tourists and events, cities are challenged to develop an appealing urban identity or „image"[14]. According to recently adopted in Genk (Belgium) *European Strategy for Promotion of Industrial Heritage*, there is a vast potential to use industrial heritage for promoting a positive regional image and as unique selling point, e.g. it can be related to pioneering spirit, traditions and innovation capability. This may be exemplified by the first promising projects done on European level – including European Capitals of Culture focused on industrial heritage (e.g. Glasgow 1990, Lille 2004, Liverpool 2008 and Essen 2010) and the European Route of Industrial Heritage platform[15].

[12] Tim Edensor. *Industrial Ruins: Spaces. Aesthetics and Materiality*, Oxford, New York: Berg, 2005; cf. Gabriela Campagnol, „Post-Industrial Sites as Canvas", *Architecture and Urbanism,* No. 521, 2014, pp.70-75.

[13] Miriam Greenberg. „Branding Cities. A social history of the Urban Lifestyle Magazine", *Urban Affairs Review*, Vol. 36, No. 2, 2002, pp. 228-263.

[14] Nancy Meijsmans. „Developing an urban identity from the spatial context's permanence". *Life in the Urban Landscape – International Conference for Integrating Urban Knowledge & Practice, Gothenburg, Sweden, May 29-June 3, 2005*. Stockholm: Formas, 2005.

[15] *European Strategy for Promotion of Industrial Heritage: Suggestions for the Further Development and Implementation of the Resolution 01924 (2013) „Industrial Heritage in Europe", adopted by the Standing Committee of the Council of Europe Acting on Behalf of the Assembly, on 8 March 2013*. Freiberg: TU Bergakademie, 2014.

Łódź – dramatic growth, change and collapse

The case of Łódź is different from a number of other industrial centres in Europe – mainly due to its unusual (one may say: awkward) history. The pace of industrial growth made the city singular not only in Poland. There was no real textile industry in Łódź during the 1820s, when in Britain it had been developing since the 1770s, and was very well established by the date. When Manchester was the biggest cotton industry basin of the whole Europe, Łódź was a small agricultural town, lost in the forest, inhabited by less than 800 people. Some fifty years later, however, during the 1870s, one could find mills comparable with those in Lancashire and Yorkshire, housing the same machinery. Eventually Łódź became a leading textile centre and the largest textile town in the central part of the continent[16].

No other textile region in Poland (taking into account all former partitions and territories gained after World War II) matched the importance and pace of growth of Łódź's industry. Without doubt the city was truly created for the industry and by the industry. There were 264 textile enterprises with 525,000 spindles and 11,000 looms in operation in 1884 – the city earned the nickname of "Polish Manchester". There is, however, no analogy of the development Łódź **AS A CITY** with other great textile industry centres like Manchester, Lyon, Lille, Milan, Chemnitz. Every European city of a similar size had already been an important centre of the trade, coal mine or port at the advent of the Industrial Revolution. Their growth started usually in medieval times and continued until 17th century, while the development of Łódź started **AFTER** introduction of the industry. During the years 1800-1910 the population of Łódź increased six hundred times (sic!), while the populations of other European cities increased up to twenty times![17]

As a result the urban structure reflected "lessez faire" governmental policy toward its development. In fact, it was not a real city – it consisted chiefly of industrial premises and workers housing. There were a few public-use building, and their position was insignificant in the townscape dominated by huge factories and chimneys dotting the sky. Social structure was similar – factory masters, workers and tradesmen. The was no middle class (or town dwellers) being depositary of local tradition in other European cities. A small group of intellectualists was not strong enough to develop local cultural life. In a consequence, there were few written records expressing emotional links with the city:

> Niech sobie Ganges, Sorrento, Krym | Pod niebo inni wynoszą, | A ja Łódź wolę! Jej brud i dym | Szczęściem mi są i rozkoszą!
> Let the others Ganges, Sorrento, Crimea | rise to the sky | I prefer Łódź!
> Its dirt and smoke | are my happiness and delight![18]

[16] Anetta Kępczyńska-Walczak, Bartosz M. Walczak. „From the Manufacturing Settlement to the Industrial City", *Historical Lab 4 - Urban Quality & The Perception of Landscape,* Como-Cernobbio 2007.
[17] Bartosz M. Walczak. „The Importance of Industrial Heritage for Cultural Landscape of Lodz and its Local Identity", in: E. Wittbrodt, W. Affelt (eds.) *International Conference Heritage of Technology – Gdańsk Outlook 4 Proceedings*, Gdańsk 2005.
[18] Julian Tuwim. „Łódź" (translated by Bartosz M. Walczak).

Local community was, however, strongly bonded with the city. They were proud of their achievements – self-made city of self-made men. The local identity was strengthened with peculiar social structure: German and Jewish entrepreneurs, Polish workers and Russian administration. This multinational character made Łódź different from other cities in Poland.

The situation changed dramatically after the World War II. German and Jewish members of the community disappeared (as did Russians after the World War I). The thin thread of local identity spun by previous generations was broken by the influx of new people without any sentiment towards local history as well as the Communists narration against the city image as a result of capitalism. The situation was, however, gradually shifting from the early 1970s, but the outbreak of post-communist transformation in 1989 marked the real change. With the collapse of textile industry the city had to be invented anew. The following words – although used in other context – fit perfectly to the situation in Łódź at the early 1990s:

> The hopes and fears of men and women ran through the fluctuating economic and cultural systems of industry, deindustrialisation and its aftermath where destabilisation and chaos allowed new social relationships and meanings to be formed[19].

The role of industrial buildings and structures for the new image of Łódź

The issue of the image of the city can be analyzed in different ways, depending on whether it is studied by a psychologist, a semantics, an architect, an urban planner or a geographer. There is, however, one common denominator of such considerations – metaphorical understanding of this concept. The symbolic construction the city's image, as it was mentioned above, has two dimensions. One – internal – refers to the image of the city developed and reproduced by its residents. Another – external – is perceived by the people from the outside. While the first one is usually well defined and complete, the second is usually simplistic, based on stereotypes. The result of these approximations and cultural reductions is the production of a geography of *place-myths*[20].

In this respect a heritage has a dual role to play: it is the central focus of the visitors activities whilst at the same time being a fundamental element in the construction of local community identity. The same heritage stimulates, however, different images both for its depositaries and for tourists. Moreover, the fact that post-industrial premises occupy some 20 percent of the inner city area in Łódź indicates the importance of this legacy for the city's image, its identity, and its regeneration.

[19] Tim Edensor. „Waste Matter: The Debris of Industrial Ruins and the Disordering of the Material World", *Journal of Material Culture*, No. 10, 2005, pp. 311-332.

[20] Alberto Vanolo. „The External Images of Helsinki and Turin", *Working Paper Research and Training Network Urban Europe*, No. 8, 2004.

A very important feature of industrial objects is the irretrievable loss of function. Therefore, adaptation should be considered as a basic form of their protection. However, abandoned industrial premises were a commonplace in Łódź during the first decade of transition. Investors were interested in post-industrial properties, due to their attractive locations, not the qualities of objects standing there. As a result a number of demolitions occurred. This resulted largely from a lack of imagination what you can do with an old industrial building. This was instigated by a common belief that it is cheaper to demolish and build anew. Sadly, the objects erected at the site of demolished factories only in exceptional cases matched the quality of historical buildings. There were created neither new architectural values or attractive urban spaces. Fortunately a number of spontaneous adaptations secured old factories for more appropriate re-use in the future. Nevertheless, the overall image of the city was shaped by the post-industrial decline.

The first symptoms of change in attitude towards the local industrial heritage could be seen at the turn of the 21th century. Despite the inferior quality of undertaken interventions, these projects confirmed that the Lodz textile factories could be interesting alternatives for newly constructed buildings. The local office of *Gazeta Wyborcza* in a former ribbon factory to this day may be regarded as one of the most successful examples of an industrial building conversion and an image enhancement alike. It was, however, higher education that appeared to prime re-use method. The Lodz University of Technology was a pioneer in converting old factories for this purpose. This soon have become a fashion among other local universities and colleges, both public and private, to conduct educational activities in former textile mills. This was of great importance. A positive emotional link with old industrial buildings was established among young people. This process coincided with a concept of associating Łódź with its multi-cultural past. A number of festivals and concerts were organised in factories once owned by German and Jewish entrepreneurs[21].

But the real breakthrough was opening of a new commercial centre in one of the largest industrial complexes. Former I.K. Poznański factory was acquired by a French developing company as a whole – almost 30 hectares close to the city centre. Next to the old mills a new shopping mall was built. On the one hand, it created a great threat to local retailers, on the other hand it has allowed residents become familiar with the post-industrial heritage during everyday activities. The result exceeded all expectations. Not only dwellers of Łódź beloved "Manufaktura", a number of visitors came to the city to do shopping in an unusual environment – to experience something new. Owners of other post-industrial premises followed the example. Some of them even decided to rebuild previously knocked-down mills (although in a primitive, superficial manner). Now re-using post-industrial buildings is a commonplace in Łódź. Old textile factories provide accommodation

[21] Anetta Kępczyńska-Walczak, Bartosz M. Walczak. „Lodz: Changing Unwanted Heritage into Creative Force", in: *Journeys of Expression II conference proceedings*, Sheffield: University of Sheffield, 2003.

for new uses of any kind: culture, tourism, housing, etc. Neglect has been replaced with acceptance. The architectural quality of interventions is constantly improving and the city has become renown for post-industrial conversion. And, what is even more important, local community consider this obvious method of dealing with local heritage.

A concept of image developed by Kevin Lynch and Christian Norberg-Schultz refers, however, also to the symbolism of its tangible and intangible components that shape the lives of the inhabitants of the city[22]. A record of such acceptance are paintings by Lawrence Lowry, showing in a very subjective manner the atmosphere of industrial districts in northern England. The emotional links with industrial heritage in Łódź have been recently proved by the campaign to preserve traditional name of the main railway station, which being entirely rebuilt was proposed to be renamed from Fabryczna (Factory) into Central Station. Another example might be a call for memorabilia and testimonies of every-day life and work at former vodka factory which met with considerable response from local society[23].

Conclusion

According to Halina Skibniewska every city has its own image, its unique expression. This applies even to those cities where a lot has been done to spoil their image and downgrade their identity[24].

The problem of Łódź – like many other post-industrial cities – is how to handle the heritage and to create a new positive image, which is of crucial importance in constant competition for new investments. Local governments over last 25 years tried to promote Łódź either as a city associated with Art Nouveau and Avant-garde art of the 1920s or as an ideal place for creative business. The external image remains, however, inferior as compared with other Polish cities. The pejorative connotations remain in contrast with a strong local identity and growing acceptance from the local community.

A status of "Monument of History" recently given by the President of Poland to the "multi-cultural landscape of industrial city in Łódź" is of twofold significance. First, the cultural value of local heritage has been recognised, secondly the positive results of regeneration have been emphasised. This also confirms the importance of re-use of former textile mills, since this helps to build emotional links with industrial heritage. What is more, each generation places a different interpretation on the past and derives new inspiration from it – "ex-industrial toxic legacy is being

[22] Kevin Lynch. *The Image of the City*, Cambridge: MIT Press, 1960; Chistian Norberg-Schultz, *Genius Loci: Towards a Phenomenology of Architecture*, New York: Rizzoli International. 1980.
[23] http://www.monopolis.lodz.pl/ (accessed: 10.06.2015).
[24] Halina Skibniewska. „Tożsamość miasta", *I Kongres Architektury Polskiej*, Gdańsk 1998.

transformed into the post-industrial business-leisure-culture patchwork, ready to host the new global elite"[25]. In other words – frustrations of older generation have been replaced with enthusiasm of new urbanities. It seems of crucial importance, since if residents like their own city, accept local heritage, fill the historical space with new ideals and narrations, then the city will be attractive for them and visitors alike.

[25] Aleksandra Stupar. „The Role of Urban Symbols in the Global Competition", *41st ISoCaRP Congress* 2005.

THE 'OLD BREWERY' IN POZNAN – ADAPTATION OR CREATION?

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Introduction

The city is an organism[1] – a diversified, unique and variable system, which is rapidly developing and constantly changing[2]. Modern city too often is built in a way which ignores ties to its history[3]. Once industrial buildings were creating focal points of the city life and society's culture, but it was forgotten and that contributed to dereliction of industrial areas.

Since 80's industrial landscapes have faced a wide range of changes. Cities started to develop in directions other than industrial. New urbanization processes in several cases contributed to the disappearance of numerous industrial values, commonly known as industrial heritage. Modern city needs to develop inside to stop urban sprawl. It became necessary to re-use abandoned industrial landscapes.

This article is a only part of the research about the nowadays are – re-use Polish industrial heritage. The example of 'Old Brewery' became a basis for analyze of the values of the historic building before and after adaptation[4].

[1] Professor Rykwert advices that the city is a living organism, co-formed by locals, tourists and those only seeking possibilities of earnings. Plastic structure of urban space is scenography for their daily activities.
[2] "The modern city is a city of contradictions, however; it houses many ethnes, many culture, and classes, many religions. The modern city is too fragmentary,[...] it must therefore have many faces, not one. […]Cities change constantly [...]. That is the one certain thing we can learn from the cities of the past. The speed of change has been on the increase over the last century and a half, and it is accelerating even more as globalization affects the whole urban fabric", in: Rykwert, Joseph, Pokusa miejsca. Przeszłość i przyszłość miast. Międzynarodowe Centrum Kultury, Cracow 2013.
[3] The New Charter of Athens directs the development of today's city, shows the way in which they should follow, also shows the most significant problems faced by nowadays and in the future European metropolises: "The future is built at every moment of the present through our actions. The past provides invaluable lessons for the future. In many respects, the city of tomorrow is already with us. […]In our view, it is the lack of connectivity, not only in physical terms, but also in relation to time, which affects social structures and cultural differences. This does not just mean continuity of character in the built environment, but also continuity in identity [...]", in: The New Charter of Athens. Alinea, Firenze 2003.
[4] Adaptation (from the Latin – adaptare – adapt) is a transformation, transform to other function. "Adapting monuments to the modern function is usually performed as a part of comprehensive conservation and restoration activities. […]Adaptation in a modern conservation theory respects the artistic value of object beside the functional and spatial system and its genuine substance, due to the stick and minimum, only necessary new additions. Instead, the new elements blend

It was also the attempt to found the limit of possible changes of the objects in its revitalization.

History of the Hugger's Brewery

The first brewery, which belonged to the Hugger's family[5], was founded by Ambrius on Wrońska Street in Poznan. It prospered well[6], the factory was expanding. The Hugger's Brewery was established on the plot located at the intersection of Półwiejska Street and Kościuszki Alley (before the 1876[7]).

A breakthrough in a brewery process had been occurred in the last quarter of the nineteenth century. New technology – the steam engine, electricity improved production – which time called as industrialization[8].

The first object created in new parcel was a large icehouse[9], consisting of two levels of basement[10]. In the same year two three-storey houses situated at the front were built, and a one-storey building located perpendicular to the street in the garden. Stables with chimney (files indicate that perhaps it was the chimney ventilation of the icehouse)[11] and the testimony created the square (Fig. 1). Expansion of the brewery continued until about 1890[12]. Further investments were brewhouse, malt tower with an external staircase and drying with a distinctive chimney, nearby the courtyard - the engine room and boiler steam engine, which supported all the devices in the brewery.

In 1895, the Hugger brother's brewery was transformed into a company[13]. Around those years some more buildings were built on the courtyard – workshop and office building. Until the First War Word the brewery prospered well. During the Second World War the brewery was taken over by Nazis and was not destroyed

harmoniously in the architecture, while being readable as a contemporary form – do not create the deception", in: Tajchman, J. Adaptacja zabytków architektury w świetle współczesnej teorii ochrony dóbr kultury, in: Konserwacja, wzmacnianie i modernizacja budowlanych obiektów historycznych i współczesnych. Kielce 2001, p. 8.

[5] About history of this family we cannot find too much information, only information which we know is that the family came from German, from the town Rottweil am Necker.

[6] Factory at Wrońska Street "since the mid-sixties was the larges brewing industry in Wielkopolska". in: Szulc, Witold, Rozwój przemysłu w pierwszej połowie XIX wieku, in: Dzieje Poznania. V. II, Part 1, p. 140.

[7] The first mention of the brewery comes from 1876.

[8] Industrialization period in Poland is dated to the turn of the nineteenth and twentieth centuries. Big scale production was developed throughout the period of partitions and continued during (till the end of) the Second World War, in: Jezierski, Andrzej, Zawadzki, Stanisław M, Dwa wieki przemysłu w Polsce. Zarys dziejów. Wiedza Powszechna, Warsaw 1966.

[9] Historians believed that that building was served as a meeting building earlier formed brewery nearby St. Wojciech Street.

[10] State Archive in Poznan, Fire Insurance Company records, signature 852, k 54-57.

[11] ibidem signature 852, k 59-66.

[12] ibidem signature 852, k 71-89.

[13] Company named Bierbrauerei Aktieu - Gesellschaft vormals Gerbruder, and its director was Ernst Friedenreich. in: Adress Und Geschafts-Handbuch der Stadt Posen. Poznan 1896, p. 5.

during the battle of Poznan. After 1945, the factory was modernizated: outbuildings and social building were added, shapes of the windows were changed. In June 1980, the brewery was closed due to the harmful effects on the environment. Until 1997 it changed the profile of production many times, and several times changed owners.

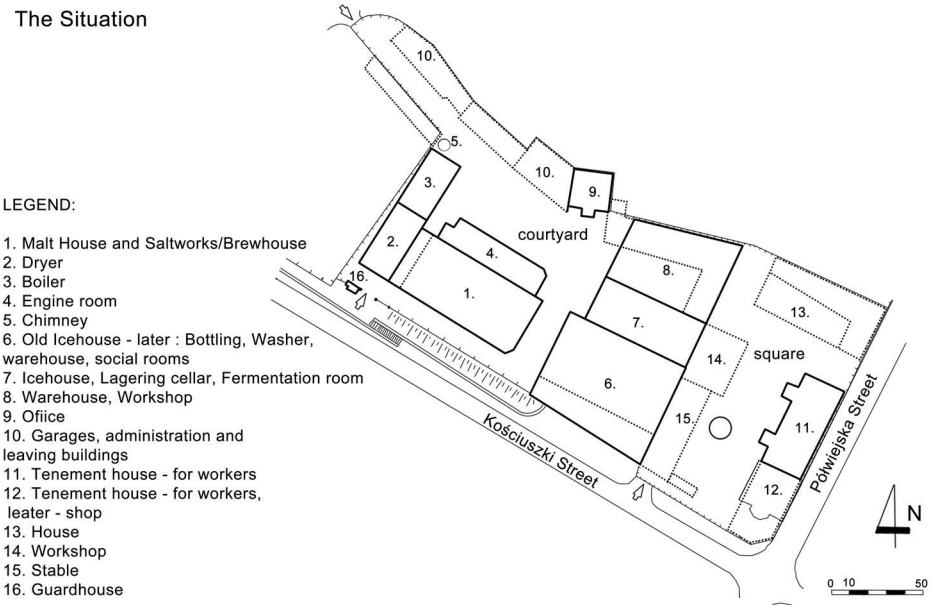


Fig. 1. Situation plan of the Hugger's Brewery in 1984
Source: the establishment of a Master Wojciech Sobkowski and Andrzej Pryszczewski, from the collection of the City Conservation in Poznań.

Analysis of values before adaptation

As criteria for assessing the value of monument I assumed the historic, scientific and artistic values[14] in accordance with the Act of 23 July 2003 about the conservation and protection of monuments. Owing to the fact that those values

[14] Compliance with the law must be showing at least one of the following values of the objects to be recognized as a historical monument and protect. His problem is still in the lack of a system of evaluation objects. It is worth noting that not all the objects that carry the values listed in the Act are monuments and will be preserved for future generations. These values are the basis for the assessment of the object and its recognition as a monument worth protection. The Act does not answer the question, what are the values: historical, scientific and artistic. Also the older Act (1962) contains references to the same values, but also is left with no further characterization. From the first Polish Decree the Act were creates on the basis of international legal acts, so that the Western European pre-war legislation and literature might be written the explanation about what are those values. One of the steps that should be made is to develop a one, cohesive method of valuation, in: Witwicki, Michał T., Kryterium oceny wartości zabytkowej obiektów architektury zabytkowej jako podstawa wpisu do rejestru zabytków, in: Ochrona Zabytków, No. 1/2006, pp. 77-98.

are not enough for analysis, as a criterion I also took authenticity and integrity (UNESCO criteria[15]). I have analyzed the assumption of the Hugger's Brewery before and after adaptation.

Historical values

The Hugger's Brewery was an example of post-industrial assumption built in the characteristic style for the industrial buildings from the turn of the centuries, one of the few survived in the overall (not touched) shape. Therefore, has a great importance in civilization and technological progress on the local and regional level. More over this assumption did not have many layers of history (was not rebuilt, over a year was not changed and it was easy to recognize the older and newer elements), is a readable document. It was an example of the development of the brewing industry[16]. These objects were also witnesses to historical events – defend the city in 1945.

Scientific values

Important values were the original construction and the knowledge of building technology of the given period. In most buildings their authentic ceiling retained – type Klein, brick, staple, I-shaped beams, supporter by columns with steel or wooden ceiling, bare wood I-beams on the beams and columns of steel, in the reinforced struts. Authentic barrel brick vault, was preserved, in the basement of bottling building. Preserved, nineteen's century boiler in cauldron building was an important value, providing for the development of the industry – at the same time acting as a technical monument.

For many years the factory was only adapted to newer technologies. The original function of assumption was sustained and the process of production was continued. Considering the partial nature of industrial architecture, exposition of machinery and technical equipment, which made long-standing historical function, is crucial to prevent tradition of the place from obliteration. That emphasise particular importance of didactic function[17] of described objects.

[15] According to UNESCO's basic requirements that must comply with each cultural asset, is authenticity and integrity, it is therefore also considered these values of the places worth appreciations for the monument, as the Polish valuation compared to other countries is not very complex and not defined.

[16] This is one of the first breweries in Poznan. In the nineteenth and early twentieth century, beer has become a popular beverage. "More ancient times, about forty years, ordinary domestic liquor in the city and the countryside's was familiar beer product. ", in: Motty, Marceli, Przechadzki po mieście, v. II, Poznan 1999, p. 8.

[17] "Through the use of didactic functions understand the historical buildings of any knowledge of their scientific, historical and artistic values (for example primary role, structure, functioning, historical events associated with the object of building historical background, significance in the process of the development of civilization etc.)", in: Kozarski, Piotr, Molski, Piotr, Zagospodarowanie i konserwacja zabytkowych budowli. Poradnik. Fortyfikacja, v. XIV, Towarzystwo Przyjaciół Fortyfikacji, Warsaw 2001, pp. 34-35.

Artistic values

The criterion of artistic value in the case of industrial heritage in general is having a minor importance, although it may be important in the case of historic buildings such as engineering such as bridge, water towers. Architecture of Hugger's brewery was cleverly integrated into the buildings fortress[18], which proves the high skills of designers. Buildings derive from the avant – garde architecture from the turn of the eighteenth and eighteenth centuries, but also can be seen references to the nineteenth century military architecture.

Brewery buildings are typical examples of brick architecture, characteristic for industrial landscape of the nineteen century, in German this style is called Roundbogenstill. The distinguishing features of this style are semicircular closing windows, striped-paneled walls and arcaded friezes[19].

Authenticity[20]

Parse before the conversion uncovered the undoubted value of authentic materials and constructions elements. It indicates that the preserved elements, structure and finishing of buildings were original. Partially preserved metal window frames, transoms, wooden floors (in the malt house and brewhouse, bottling, drying) and wooden stairs (tenement house).

Preserved rusticated belts, cornices and the tie cordons surrounding the window openings on the building facade of buildings were also significant. The factory premises in an office building survived decorative front elevation closed tympanum. On other buildings survived characteristic elements of this style, decorative elements that divide body – pilaster strips and cornices framework.

Authenticity might also be a form[21] of assumption (arrangement of buildings). Analyzing maps from 1917 and the plan of the 1984, we can assess that the assumption has little changes, the plan formed by buildings is similar to that from 1986 (luck of warehouses and workshops).

[18] Hugger brewery buildings had monumental character compounded by the location on natural slope. The assumption of the main buildings was created nearby the street along the shaft. Escarpment, the elevation made in a brick, retaining wall forming, penetrated only by stairs. Between the brewery and the fort was built a smaller building – a military court also in a Roudbogenstil style, creating the contrast to the unshowy ornamental architecture of the factory. Reduced elevation plans of the industrial buildings were very skillfully composed in to the military surrounding, in: Poznań od A do Z. Leksykon krajoznawczy, Łęcki, Włodzimierz, Maluśkiewicz, Piotr (eds.), Poznań 1998, p. 272.

[19] Ostrowska-Kębłowska, Zofia, Architektura i budownictwo w Poznaniu latach 1790-1880. PWN, Warsaw – Poznan 1982.

[20] First mention about the authenticity of the values in was in the preamble of the Charter of Venice International in 1964. After thirty years this topic has been taken on the second time into consideration in the Nara Document. Today "the authenticity" is values in guidelines for the Implementation of the World Heritage Convention.

[21] "An analysis of the issue of authenticity should not be limited to the original form and structure, but also take into account further modification and expansions which occurred in the course of time and which have artistic and historic values as such", in: Outstanding Universal value and monitoring of word heritage properties. Warsaw: ICOMOS. 2011.

Integrity[22]

The urban landscape and architecture of the buildings was closely linked to the existing surrounding and objects of the Poznan's fortification system (Fig. 2). Reduced elevation plans of the industrial buildings were very skilfully composed in to the military neighbourhood (look: artistic values).

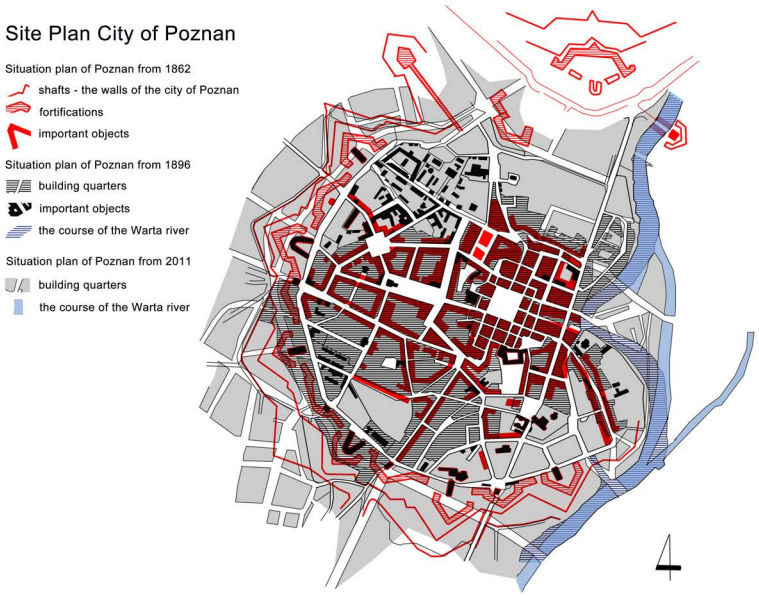


Fig. 2. Comparison of the historical fortification system and a present one
Source: copywriter Joanna Gruszczyńska based on a historical maps.

The form of the assumption was composed (until 1984[23]) from two group of buildings: from the north - malt and brewing vessel boiler room, drying room and engine building with a chimney; from the south – west buildings: bottlers, washing – old icehouse and the newer icehouse, lagering cellar and fermentation room and warehouses and workshops. By analyzing maps of 1917 and the plan of the 1984, we note that the establishment did not change much, the old buildings arrangement is similar to the 1986 (only new buildings of warehouses and worships).

[22] "Integrity is a measure of the wholeness and intactness of the natural and/or cultural heritage and its contributes.", in: Guidelines for the Implementation of the World Heritage Convention 2nd February 2005. Paris, UNESCO. 2005.
[23] According to the maps shared from the City Conservator of monuments in Poznan collection.

Summary

Table 1. Parallel the values of the assumption based on the analysis

Name values	Values in the Hugger Brewery
Historical values	an example of post-industrial assumption from the turn of the century, survived in the overall shape, witness to historical events –the lighting of Poznan in 1945
Scientific values	original construction and the knowledge about building technology, authentic, barrel brick vault, original boiler, continuity of function
Artistic values	integrated into the buildings fortress, typical examples of brick architecture in a style called Roundbogenstill
Authenticity	authentic material and construction, form of assumption
Integrity	closely linked with the existing surroundings and objects of the fortification system in Poznan, composition

Source: copywriter Joanna Gruszczyńska.

Is it an adaptation or creation?

The brewery Hugger was entered into the register of monuments in 1984 and detaily described in the 'White Card'. At the time, public awareness of the values of industrial objects was low, even in the conservators and historians environment. Charter does not specifically describe the precious value and worth of protection, have not been well defined conservation guidelines for future transformation.

In 1998, was given the opinion by professor Jan Skuratowicz (art historian), on the basis of which can be clear stated that the brewery Hugger was one the only one of the conglomeration of the post – industrial buildings in Poznan in the 90's of the twentieth century. According to this statement, the group of buildings should be preserved and newer additions might be removed to make the message of the complex clearer. Changes in the interiors were allowed to adjust the object to the new technical condition. Contemporary architectural additions should not compete with the historical part but rather emphasize its advantages. Unfortunately, many of these points are not included in the recommendations of the Municipal Conservator of the monuments as a condition of adaptation of the building.

In the same year, the hope for 're-use' of the place returned. Property at Półwiejska Street was bought by the Fortis Company. After acquiring adjacent land from the Military Agency and the private one, the company began the work on the project, proudly called – Arts and Business Centre Old Brewery 50 50. In 2003, the first part of centre was opened (Fig. 3).

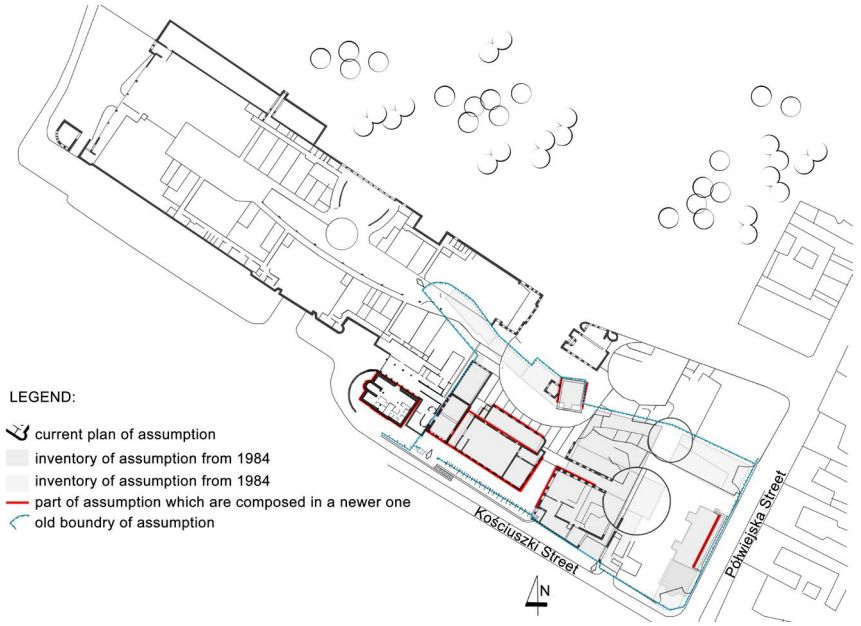


Fig. 3. Comparison of the historical building and a present assumption
Source: copywriter Joanna Gruszczyńska.

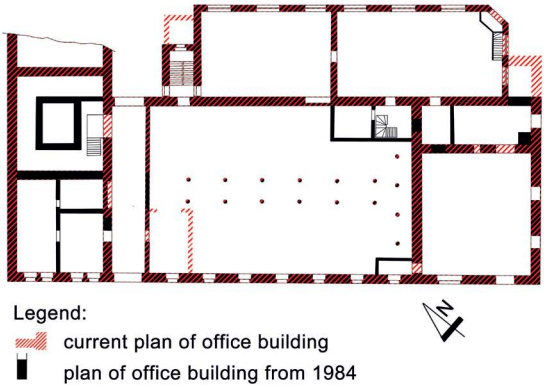
The 'Old Brewery' is a combination of modern architecture with industrial buildings (or rather with what it was left of them). Details of the new facility are unfortunately imitations (Fig. 4) and imaginations of designers of architecture from the late nineteenth and early twentieth century.

Fig. 4. Contemporary detail
Source: copywriter Joanna Gruszczyńska.

All the space was created as it is a difficult even for practices eye to distinguish authentic parts of building from modern one- pretending to be the historical ones The use of similar, or even the same materials (such as brick, steel, concrete, glass) and similar masonry technique resulted in the blurring of the original historical substance. It increases the risk of mislead the recipient (Fig. 5).

Fig. 5. The old brewery in Poznan
Source: copywriter Joanna Gruszczyńska.

The largest historical building – malt – has been restored. This part of new concept best suits to the original shape and details. The facade has been slightly changed (Fig. 6). Probably, it was adapted to the new function and their needs, but the changes are not clearly marked, so if you do not know the object before an adaption cannot be recognized which part is the old one and which restored – changes. The Military Court was adapted to the new function – hotel Blow Up Hall, which is also part of the old dryer.



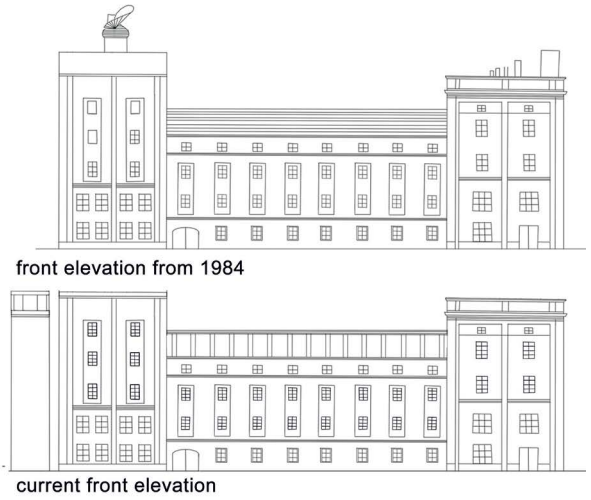


Fig. 6. Comparison of inventory the melt house shared by the City Council and the current plans ' Old Brewery'
Source: copywriter Joanna Gruszczyńska.

Another object, which was a part of Hugger's Brewery assumption, was a bottling building, which was the oldest part – primary malt house. In the project of adaptation only small fragments of historical old building were preserved (Fig. 7), for example - the cellars of the building bottling and wash, which today is a boutique, restaurant and bookshops.

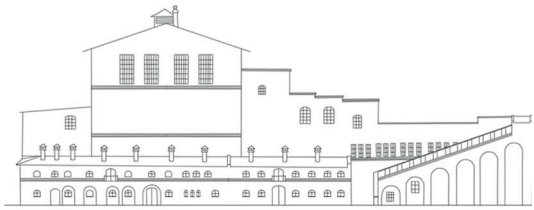
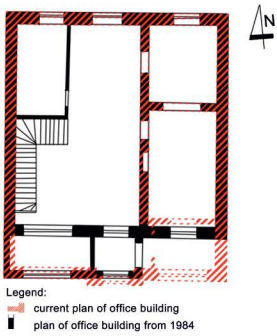


Fig. 7. Comparison of inventory bottling and washer buildings shared by the City Council and the current plans ' old brewery'
Source: copywriter Joanna Gruszczyńska.

The front elevation of the tenement (the housing for workers) from the Półwiejska Street was integrated into the body of the Old Brewery. Now we can enjoy it behind the double glass facade.

The object, which was in the courtyard – office changed its shape (Fig. 8). Mainly suffered the front elevation of the farmyard – current 'Courtyard of Art' has become symmetric and lost its character by fetching the clock Tower – being the vertical communication – staircase, which does not correspond to the real nature of the place.



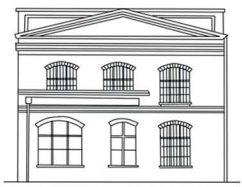


Fig. 8. Comparison of inventory the office building shared by the City Council and the current plans 'old brewery'
Source: copywriter Joanna Gruszczyńska.

On the 'Yard Art.' was laid on the front part of the boiler importer from Berlin to Poznan In 1921, during the Hugger Brewery were adapting to the newer technology. However, this information is not shown – available to the visitors.

Summary

This analysis allowed me to assess and justify whether this object can still be named a historic building, industrial heritage or it is only creation – artificial space. Critical analysis and evaluation of the transformation of the example above allowed to the identify errors (Table 2) in the process of adapting historic buildings.

Table 2. Comparison the values before and after adaptation

Name values	Before adaptation	After adaptation
Historical values	+	partly
Scientific values	+	partly
Artistic values	+	-
Authenticity	+	-
Integrity	+	-

Source: copywriter Joanna Gruszczyńska.

After adaptation the assumption lost most of its values. The New object is an untrue creation of the space (only historicizing)[24]. It has lost its authentic industrial landscape. Unfortunately it is intentional action, designed to attract more customers.

Conclusion and discussion

It is beyond question that requirement of twenty first century is to protect the monuments of architecture and its unique beauty in the adaptation process, through 're-use' of values, emphasizing the qualities for new, modern function, but with the maximum respect for the original feature and preserving historic substance.

But how far can we go in the adaptation? Is the change in the value of property, seizure of visible mold is suitable to adaptation process of the object to life in the city? Where is the boundary between adaptation and creation? Where is the line between truth and authenticity? Of course, it is not possible to protest all the objects, which need to be protected, and should be found the golden mean. But where is the compromise?

[24] "The form of historical continuity of the area, place calls to mind a lasting reliability and integrity. These associations will be prized values for those activities that depend on convincing potential customers about the possession of these qualities", in: Ashworth, Georgy.J., Planowanie dziedzictwa, in: Broński, Krzysztof, Purchla Jacek, Zuziak, Zbigniew. K. (eds.), *Miasto historyczne: Potencjał dziedzictwa*, Międzynarodowe Centrum Kultury, Krakow 1997, p. 36.

In the land use of the historical buildings the boundary between the authentic and artificial are blurred. Special forms of mystification are spaces where authenticity is staged[25]. A value that is used by investors is uniqueness, resulting in the history of the place and identity, constrained by historical values and forms. 'Re - use' of the areas that have unique values and identity, should be done with grate knowledge of the object and with the respect for the values not only the material one but also intangible.

Should it not be a common practice? If yes, why so often such objects are destroyed? Does it suggest a lack of competence of people responsible or maybe we, as humanity, do not respect our past?

I leave these questions for consideration. It is important to remember that the cultural landscapes are the integral part of our society, which reveal our relationship with the land over time.

> Millions of people today are looking for authenticity, millions of people want to have things for yourself and experience the unique, millions look around for values – whatever be the matter – which is impossible to build some foundations of identity , even if at the makeshift, temporary, fleeting improvised for the purpose[26].

[25] MacCannell, Dean. *Turysta – nowa teoria klasy podróżniczej*. MUZA, Warsaw 2005, pp. 143-166.
[26] Burszta, Wojciech J., Kuligowski, Waldemar. *Sequel. dalsze przygody kultury w globalnym świecie*. MUZA, Warsaw 2005, p. 95.

INDUSTRIAL HERITAGE REVITALISATION AS A WORDPLAY

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Introduction

According to the introductory article of the Venice Charter of 1964 the concept of a historic monument embraces:

> (…) not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilization, a significant development or a historic event. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time[1].

On the other hand, a Polish language dictionary defines the monument as an "old and valuable object or a building of a high historical and scientific value"; the common meaning of the term is however "what is old-fashioned"[2]. The same dictionary explains heritage as "the assets taken over as a bequest" but also "culture, science and art left by previous generations"[3]. According to another definition heritage is "something that we took over from the past and what influences our present life, for example tradition"[4]. From the above-listed definitions it can be deduced that the essence of the monument is the link to the past and specific values, and in the case of heritage the most important issue is its acquisition from previous generations. So, it is possible to indicate that the professionals decide whether an object has some characteristics that predispose it to be recognized as a monument, while it is people/society who decide whether adopt it as their heritage. Such an interpretation of the difference between two fundamental concepts for the conservation domain was underpinned by Professor Andrzej Tomaszewski, who distinguished a cultural property which is "apolitical and non-ideological; it covers all goods produced by the human talent, having an objective historical and artistic

[1] *International Charter for the Conservation and Restoration of Monuments and Sites* adopted during Second International Congress of Architects and Technicians of Historic Monuments, Venice, 1964.
[2] Drabik L., Sobol E. (eds.). *Słownik języka polskiego*, Vol. 2, Warsaw: PWN, 2007, p. 528.
[3] ibidem, Vol. 1, p. 146.
[4] Bańko M. (ed.). *Inny słownik języka polskiego*, Warsaw: PWN, 2000, p. 351.

value" and cultural heritage, which is "not everything in the artistic and cultural inheritance left by past generations, but only those objects which contemporary society is willing to accept as their own". The latter thesis was supported with a suggestive examples of buildings in the North West of Poland, originating in German culture and Lemko Orthodox churches in the South East of the country. These buildings are of unquestionable objective historical and artistic values to be considered as monuments, but people who settled in these regions after World War II, for decades had not been identifying with them, which in consequence led to their degradation and – in some cases – destruction[5].

The debate about monuments and their role in the society is rooted in the shift which has occurred since the 1970s. It was then, when on the wave of general changes taking place in the Western culture, the inseparable connection between the monuments and local communities was being emphasized. Their protection was linked to the identity based on tradition, understood as a vehicle of social values, which existed in the consciousness as long as they had current importance for a society.

Some of the ideas represented by contemporary scholars go even further. According to them, the heritage is not an object itself, but it is a message directed to the audience. The same object may be a vehicle for various messages. What is more, people can perceive them at different levels matching their own knowledge and a cultural background. As a consequence, a heritage status may change along with the views of citizens. Thus, the essence of heritage is a process of communication. According to this concept, a personal experience is more important than a historical object itself. In other words, the authenticity of the monuments depends on their state of preservation, while heritage authenticity relies on the users sensations. In this perspective, the term "heritage" embraces everything chosen by the contemporaries from the past, created by themselves for present use or transmission to posterity. Therefore, heritage related activities should be focused not on consolidating the past, but on the implementation of various objectives such as economic, political and social issues that are associated with the present, not the past. In the light of the above, heritage is classified as a process rather than a form or type of resource, and should not be treated in physical terms only since this would narrow its importance and potential[6].

These, often somewhat provocatively formulated views, cannot be interpreted as a simple replacement of one method with another. There should be no competition or contradiction between the concept of the historic monument and heritage. The aim ought to be to combine concepts and attitudes instead of "antagonizing" them as it was forced by some of the above-cited authors. In fact, these ideas should

[5] Tomaszewski A. „Dziedzictwo i zarządzanie", in: Gutowska K. (ed.), *Problemy zarządzania dziedzictwem kulturowym,* Warsaw: Res Publica Multiethnica, 2000, pp. 7-11.

[6] Graham B., Ashworth G.J., Tunbridge J.E. *A geography of heritage: power and economy*, London: Arnold, 2000; Ashworth G.J., „Can you move from the object to the experience", *Kongres Konserwatorów Polskich*, Warszawa 2005; Ashworth G.J. „Sfragmentaryzowane dziedzictwo: sfragmentaryzowany instrument sfragmentaryzowanej polityki", in: Murzyn M., Purchla J. (eds.), *Dziedzictwo kulturowe w XXI wieku. Szanse i wyzwania,* Kraków: Międzynarodowe Centrum Kultury, 2007, pp. 29-42.

be seen as complementary. While preservation focuses on the transfer of knowledge about the past through the least transformed objects, a heritage management focuses on meeting the needs of a society in terms of quality and perception of historically shaped cultural environment. On the one hand, maintenance loses its *raison d'être* if it does not meet with a social interest. On the other hand, it is difficult to imagine a heritage management in the absence of well-preserved historic buildings. Authenticity of a well preserved Italian town offers its visitors an authentic experience. It is, therefore, possible to obtain a synergistic effect when protection (focused on the past and object) and management (focused on future and experience) will become components of a new coherent and comprehensive approach to cultural heritage.

In this perspective, it is worth to recall the statement of Zbigniew Kobyliński that cultural heritage "is entrusted wealth, which has to be skilfully managed for the public benefit" [7], while according to Jacek Purchla "heritage is not just the sum of preserved historic buildings in a given area. It is the symbolic layer, related to the interpretation of heritage as sacrum, but also a market product" [8].

Moreover, the notion that cultural heritage belongs to people, implies the need to ensure their access to heritage. The consequence of such an approach is the necessity to ensure the socially useful function of monuments and their economic use, which indicates growing importance of modernization and adaptation. As a result, heritage is a product of modern times, formed by contemporary needs and useful in modern societies. It is an outcome of social interpretations of the past and the present, and – as was previously highlighted – is the basis for the projection into the future. Our heritage will also be a testament to our relation to it.

Broadening the scope: Industrial Heritage

The evolution of the heritage protection concept continued in the past 50 years in parallel with the evolution of views on the protection subject itself. In the 19th century conservators focused on individual objects, trying to stop the process of change resulting from the passage of time, the impact of natural phenomena, as well as modernization processes. During this period, the scope of protection was narrow, focusing on works of art and rare objects from the distant past, beautiful in the ordinary sense of the word or closely related to important historical events. Therefore, the idea of considering the 19th century industrial buildings as parts of the heritage seems to be relatively new.

The above-mentioned debate about monuments and their role in the society brought also discussion on protecting other types of buildings from more recent past. Britain was the first European country where industrial archaeology grew rapidly. This took place in the 1960s with the formation of local societies organised

[7] Kobyliński Z. „Filozoficzne i socjologiczne aspekty ochrony i zarządzania dziedzictwem kulturowym", in: Gutowska K. (ed.), *Problemy…,* pp. 12-19.
[8] Purchla J. *Dziedzictwo a transformacja*, Kraków: Międzynarodowe Centrum Kultury, 2005, p. 22.

by interested and enthusiastic individuals. What is more, the UK and the USA were the first countries, where professional studies of processes characteristic at areas of declining industries had been initiated. In the 1970s also other European countries were becoming more conscious of its industrial heritage. In the 1980s there was a wave of enthusiasm for industrial archaeology in Europe. Industrial buildings have been the subject of outstanding regeneration schemes throughout Europe since then.

However, even today the remains of our industrial past are not everyone's idea of heritage. According to Brett, "heritage is part of a process of self-definition through historicised self-presentation"[9]. This probably also explains, at least partially, the general indifference towards the industrial past. What is more, the artistic quality ceased to be the only reason for conservation, yet there is still a tendency to favour aesthetic justification. The emotional and cultural values that normally help to create a consensus in favour of conservation can sometimes work in the opposite direction. Thus, while cathedrals, great country houses, or even elegant tenement houses are well-appreciated parts of heritage, factories may still be seen as symbols of the exploitation of both workers and environment. What is more, many still feel that they are best done away with and converted into green-field sites. The demolition of such structures is still often seen as the simplest way of making a break with the "bad old days"[10].

In the light of the above, it appears that the key to success is the local community attitude towards all aspects of heritage – how much it is appreciated and how it is used throughout the local development process. The experience of many European cities indicates that restoration is possible only when the local community is at certain level of cultural awareness, rising above basic consumer needs.

Considering the evolution of the perception of the legacy of the past and its importance for the present generations, there must also be emphasized that the assumption saying that only these objects are being protected nowadays which are important for a contemporary society, brings a number of serious threats. In this context, one must recall the situation from the 1960s and 1970s, when the 19th-century buildings were widely regarded as worthless. They were neither listed and designated for protection by decision-makers, or considered by a society as their heritage. This condition created potential opportunities for new investments, which actually occurred on a large scale. The effects – usually negating traditional spatial solutions – can be observed in many European cities, for example Glasgow and Łódź[11]. At present, these interventions shall be deemed a mistake and irreversible loss of historical substance. Simplification and unification of urban spaces and architectural forms may be compared with a mass culture, which is addressed to

[9] Brett, D. *The Construction of Heritage*, Cork: Cork University Press, 1996, p. 3.

[10] Walczak, B.M. *British experience in the conversion and rehabilitation of textile mills and the lessons for comparable work in* Łódź*, Poland*, unpublished PhD Thesis, Glasgow: University of Strathclyde, 2002.

[11] cf: Kępczyńska-Walczak A. „Dziedzictwo jako czynnik kulturotwórczy miasta", in: Przesmycka E., Trocka-Leszczyńska E. (eds.), *Miasto w kulturze*, Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej, 2012, pp. 65-74.

a mass audience and is characterized by a high degree of standardization. Moreover, it is believed that mass culture is characterized by a low value, lack of originality, anti-intellectualism, strong commercialization, and the mindset to satisfy the simplest needs. As a result, pandering to low tastes of the general public leads to a reduction in the quality of culture, and to the hegemony of mediocrity[12].

However, in the contrary to heritage, a culture can be reborn. Historical objects – as the non-renewable goods – are under threat since they might easily be irretrievably lost as a result of transformations, corresponding to trivialized demand for heritage or as a result of a total lack of acceptance. To conclude, a heritage management must take into account the above issues and cultural policy of the public sector should aim at a situation where monuments become a source of satisfaction and harmony but not a conflict.

The post-industrial regeneration in Łódź

Łódź, already mentioned above, is a good example illustrating the shift which has occurred in heritage protection. The city developed in the 19th century as an important textile production centre. Like many other places of industrial origin, Łódź has had a bold image. The problem raised, when local community was replaced with new inhabitants during the post-war times. As a result most residents had no established links with the city. Until the 1970s old industrial buildings were regarded merely as useful structures. Since then, some of them have been protected and still continued to serve production purposes. With the collapse of communist system, a deep economical crisis badly affected Łódź. The textile production came to an end rapidly. The need for protecting industrial heritage became urgent but not obvious. Most of people who had lost their jobs and had no roots it the city, considered this legacy as a burden – not as an asset.

The Western European cases as well as the first attempts in Łódź reveal that old industrial buildings are not simply interesting survivals of past times but, on the contrary, with no loss can serve as usable, functional and modern buildings. It is a great shift in the heritage perception observed, because if the building is 'used' instead of merely 'looked at', one gets a deeper appreciation of old architecture by being 'in' it, in intimate, daily contact. On the one hand, the inner city area of Łódź is characterised by poor quality housing. On the other hand, former industrial premises occupy some 20 per cent of the Łódź city centre. Due to the urban, central location many mills in Łódź can offer a good accommodation for culture, entertainment, gastronomy, leisure, shopping, education, personal direct services, indirect customer services (e.g. head offices), housing. The above mentioned new uses may play a role of attractive options in solving local community problems.

There are, however, two faces of post-industrial regeneration in Łódź. First, old factories, which once laid foundations for the city growth, and later symbolised its decline are being brought to life. These buildings, yesterday useless

[12] Golka M. *Socjologia kultury*, Warsaw: Wydawnictwo Naukowe Scholar, 2007, pp. 144-175.

Fig. 1. The residential complex within the former Scheibler mill at Księży Młyn in Łódź.
Source: B.M. Walczak, 2014.

and derelict, today play an important role in a revival of Łódź. The process is, however, extremely chaotic. There is little public control and the initiative remains with the private developers. Regeneration is, therefore, driven by their particular interests, not necessarily in line with public needs. This may be exemplified by fast growing upmarket housing, mostly addressed to foreign clients – not to a local community (Fig. 1). Heritage, in this respect, is just an attractive scenery used for purely commercial purposes. Mills are often reduced to the shells with entirely new structures inside. The conservation is reduced to a necessary minimum allowing marketing and branding of the project[13].

In case of the Gampe and Albrecht factory complex this reduction has been applied even further. The preservation was limited to playing with an idea of industrial heritage and its image.

The case of "Sukcesja" in Łódź

The company was established in 1878 by two master weavers Juliusz Albrecht and Józef Gampe. At the beginning, a factory developed at Piotrkowska Street. The layout of a plot – its narrowness and considerable depth, typical for this part of the city was, however, one of the most important obstacles limiting the company development. Therefore, a new cotton mill was built on a site situated

[13] Walczak, B.M. „Évaluation des plus grands sites textiles de Łódź dans le contexte des récents plans de rénovation", in: Dorel-Ferré, G. (ed.), *Patrimoines textiles de par le monde*, Reims: CRDP de Champagne-Ardenne, 2013.

at the city outskirts at the junction of Pańska (Żeromskiego) and Nowo-Radwańska (Rembielińskiego) streets (Fig. 2). The factory started operating in 1894. The building was three storeys high with two towers serving as staircases with water tanks on the top. There were nearly 20.000 spindles and over 500 power looms installed. The mill was equipped with six steam engines with a total capacity of 1115HP. The company was flourishing and the building was being enlarged in a short period of time – in 1898 and 1911.

When the founders ceased in 1907 and 1912, their successors transformed the business into a joint-stock company. The well-established position of the factory was reflected by four warehouses in Petersburg, Moscow, Odessa and Rostow. The factory survived difficult time of the World War I and a subsequent economical depression. The business was in a good condition, though the loss of access to the Russian market slowed down its development.

After the World War II, in the new political circumstances, the company was under a compulsory state control and subsequently nationalised. It was joint with other textile factories as the Cotton Industry Combine No. 6. which was given a name after Stanisław Kunicki – a Polish workers activist and revolutionary of the late 19th century.

In the post-communist times the company was privatised. Industrial buildings served as wholesale warehouses and were used for other temporary purposes. Finally, the mill was demolished in September 2008. Soon afterwards the owners announced their plans to build a new shopping mall.

The economical and social contexts were, however, changing quickly. The "Manufaktura" – a commercial and leisure centre, appeared to be more than a successful regeneration project – one of the largest of this kind in Europe.
What is more, it caused the change in attitude towards the local industrial heritage among the inhabitants of Łódź.

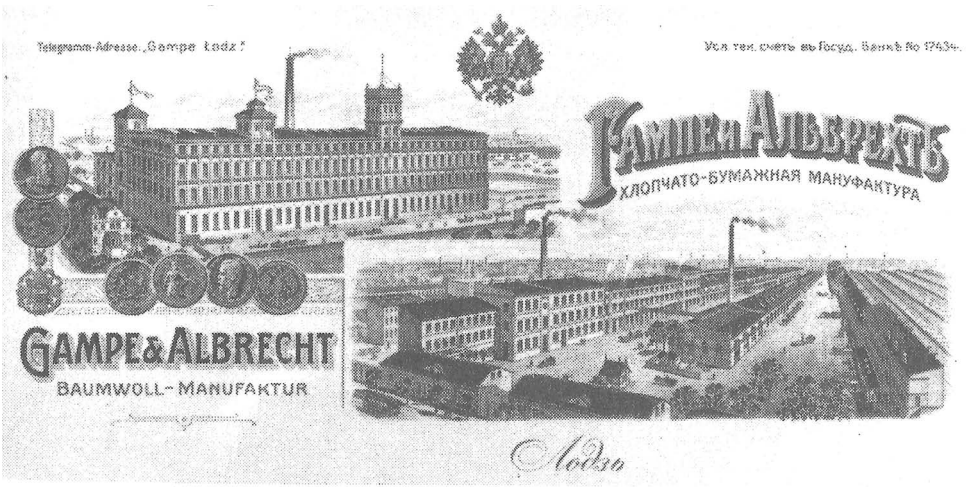

Fig. 2. The Gampe and Albrecht mill in its heyday.
Source: The company letterhead from the turn of 19th and 20th century.

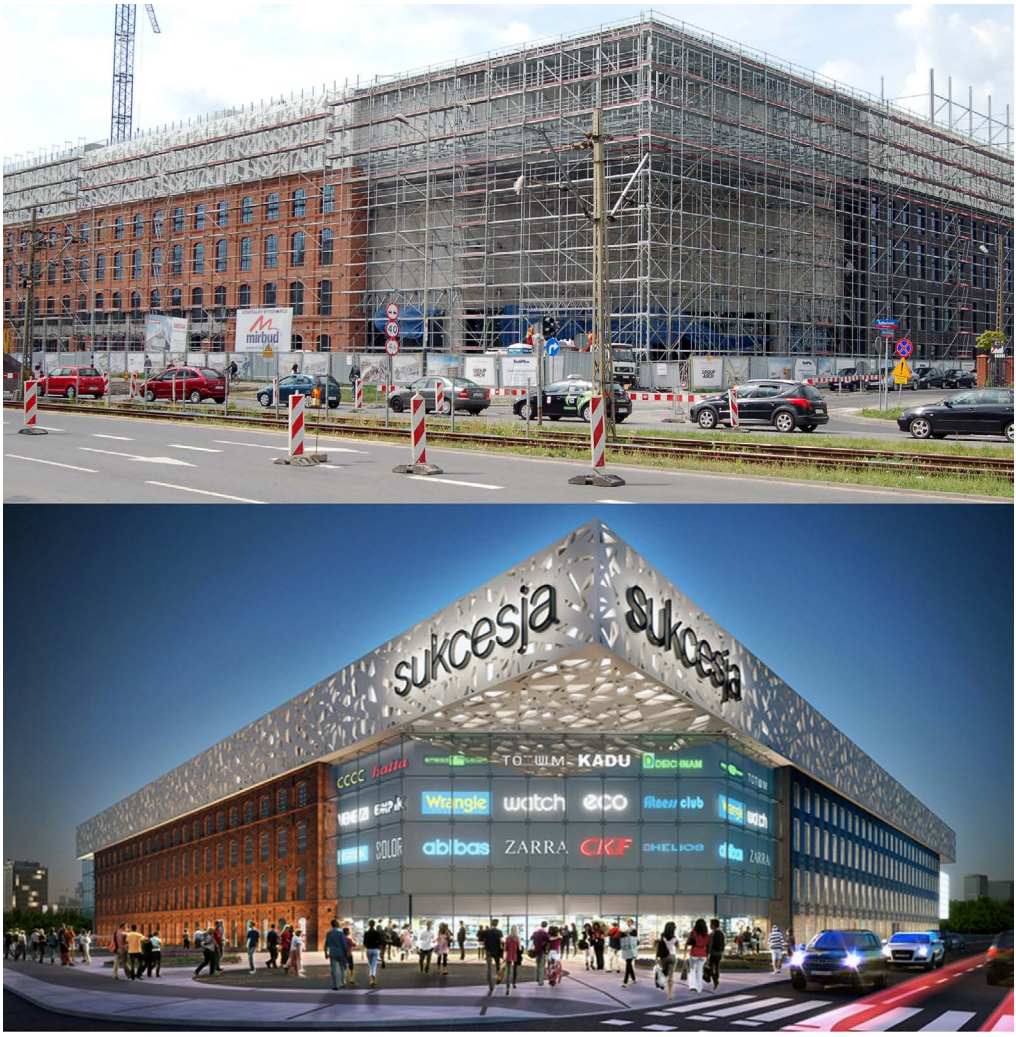

Fig. 3. The "Sukcesja" complex under construction and its expected appearance after completion.
Source: A. Kępczyńska-Walczak, 2015; "Sukcesja" press materials available at: http://www.sukcesja.eu/

It is not a surprise then, that the concept was followed by other developers. A number of other industrial premises was proposed to be converted in a similar manner. The re-use of textile mills has quickly become a Nation-wide recognisable specialty of Łódź. It does not mean, however, that there are only good examples to be proud of.

In the case of former Gampe and Albrecht mill the lack of actual building appeared not to be a problematic to call the new project a "post-industrial renewal". The heritage conservation rhetoric was used for purely commercial purposes. The planned shopping centre was branded as "Sukcesja" (Inheritance). In a conjunction with the new name a calculating PR has helped to create a new, alternative image of the place. The new investment on a cleared site has been envisaged as transmitting local tradition[14].

[14] http://www.sukcesja.eu/index.php/stara-fabryka.html (accessed 10.09.2010).

The outcomes of the "Sukcesja" may become confusing (Fig. 3) both in architectural and conceptual terms.

A massive block of a new commercial and entertainment centre occupies the whole plot, unlike the old factory building location. Facades are composed of stylistically different architectural motives making the overall impression of the eclectic mishmash. The most striking parts are fake industrial front elevation, a huge and dull side wall and a pseudo-parametric decoration. All in all, the building is a weird compilation of trendy motives and styles.

The problem, however, is much more severe. Since the project received the European union funding the general public may derive a false lesson that this is the proper way of revitalising and protecting the image of post-industrial city. What is more, not only passers-by but also citizens who are not familiar with the history of the place may interpret the front façade pretending the 19th century brick industrial style as true remains of the old factory. Due to other examples – good and spectacular examples of revitalisation in Łódź, where the term "revitalisation" was not abused, some may be even convinced of the similarity of "Sukcesja" case and may perceive the building as historically valuable since they have been already used to see post-industrial regeneration projects in Łódź in this way.

Conclusions

A narration based on the place and city past, with the absence of a historical building, becomes only a marketing using the fact that inhabitants of Łódź appreciated local industrial heritage. To strengthen the effect, a dominant part of the front facade has been given architectural forms typical for industrial buildings of the late 19th century (Fig. 4). They were, however, treated only as an ornament in public space – not as a reconstruction, since the original structure was situated elsewhere and had other dimensions.

One of the consequences of the rapid economic transformation in Poland is a dramatic social change. Generally, well-educated people lost their opinion-forming authority, and even more, cannot

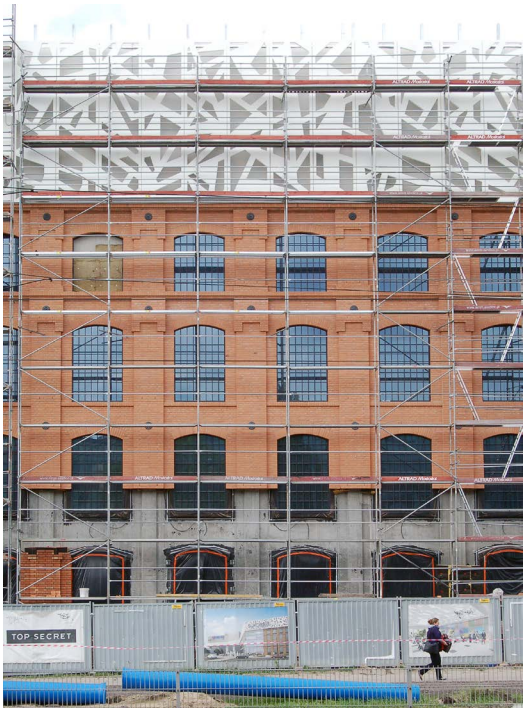

Fig. 4. Artificial brick façade being applied to the concrete structure of the shopping mall.
Source: A. Kępczyńska-Walczak, 2015.

afford a participative role in culture while many of the *nouveaux riches* have a very primitive and basic system of needs oriented towards material consumption of goods. These facts, together, dramatically changed the structure of the potential demand and expenditures for culture and arts[15].

Some degree of cultural consciousness at both national and local level is, however, crucial in the process of heritage protection and urban regeneration. The case of "Sukcesja" indicates that commercialisation of heritage may be hazardous. In fact, it is an ample example of fabricated, fake post-industrial image – addressed to the naïve taste of the general public and basing on the authenticity of sensations offered by other preserved factories. As such, it becomes a caricature of the new approach to the issue of cultural heritage. Moreover, it is particularly dangerous –since it badly affects the idea of contemporary heritage conservation.

Fortunately, a few statements have been published in the Internet indicating that not all residents of Łódź are satisfied with the "epidermal" preservation of industrial past proposed by the "Sukcesja" owners:

> This is the facade as a reminder to wipe the tears after the 19th-century factory […] demolished without batting an eye? Is this what has been given the 8 million EU grant for "revitalization"? It would make a cat laugh[16].

The project, described widely in this paper, has revealed unintentionally the risks of unavoidable commercialisation of built heritage. It also proves that demolition of local industrial heritage may be transformed into cynical business strategy. A positive image of the investment has been created with superficial reference to the memory of an authentic textile factory, and in a broader sense – to the post-industrial image of the city. In the light of the above, the Author concludes with the question about the limits of heritage transformations and their justification by misleading wordplays typical for contemporary PR.

[15] Walczak, B.M. „The Importance of Industrial Heritage for Cultural Landscape of Lodz and its Local Identity", in: Wittbrodt E., Affelt W. (eds.), *International Conference Heritage of Technology – Gdańsk Outlook 4 Proceedings*, Gdańsk: Politechnika Gdańska 2005, pp. 311-318.

[16] http://m.lodz.gazeta.pl/lodz/5,106512,18383900.html?i=8 (accessed 20.07.2015).

ADAPTIVE INTERVENTIONS: LESSONS LEARNED FROM THE PARLOR CITY

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Introduction

This paper will explore the historic, sustainable, physical and economic aspects of the architectural adaptation of an important heritage district of a once vibrant, light manufacturing, Victorian era urban environment. As cities and environments change with physical, global and societal aging, creative interventions can be an exciting evolution and contemporary metamorphosis of our working and living environments. By researching and defining existing buildings, neighborhoods and/or social spatial systems, then designing/adapting them for contemporary usage, not only can the physical and cultural historical heritage of a once important urban city center be resurrected, but the visual elements that were once commonplace can be communicated to future generations.

The small urban center of Binghamton, New York was, in its late Victorian heyday, an important destination for eastern European immigrants landing at Ellis Island in New York City, in search of a new life and prosperity. What they found was a city located at water and rail transportation crossroads that provided abundant opportunity in the shoe manufacturing and cigar industries, second largest in the United States at the time, behind New York City itself[1]. The "valley of opportunity" as this area became known, was home to the manufacturing of over two hundred different products by the turn of the twentieth century. By 1890 over fifty cigar factories manufacturing over 100 million cigars per year and employing thousands of Eastern European immigrant workers[2]. During the twentieth century, the manufacture of shoes became the primary industry later followed by the founding of IBM which remains there today (Fig. 1).

The focus of this paper is on the center of the original manufacturing area, at the crossroads of rail and water transportation, so fundamental to the area's development. This area of two city blocks containing over fifty buildings, once housed much of the city's cigar industry (Fig. 2).

[1] *A Brief History Binghamton, NY, The Parlor City.*, Binghamton Public Library, Binghamton 1984.
[2] ibidem.

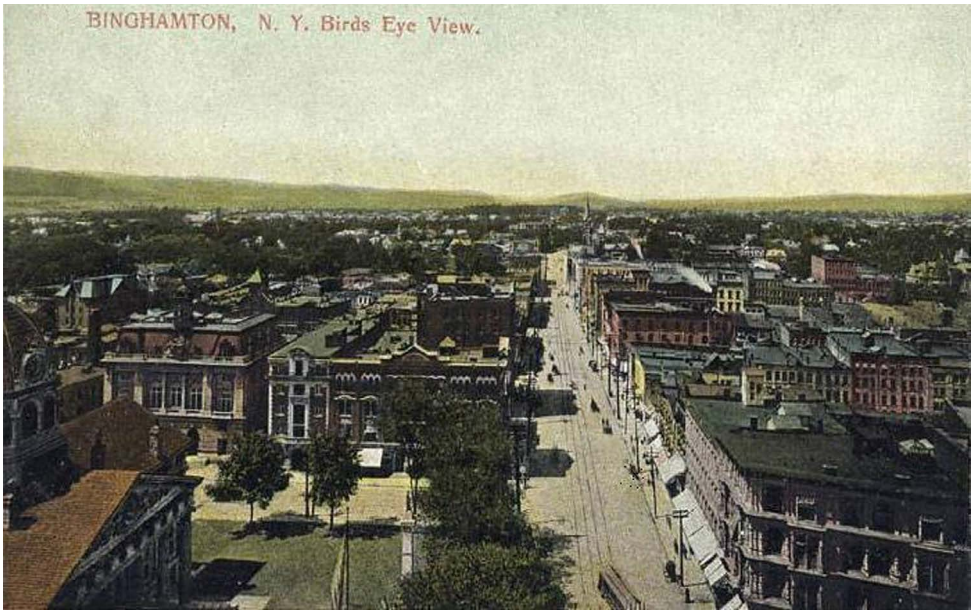

Fig. 1. Aerial View Early 1900's
Source: early 1900's postcard.

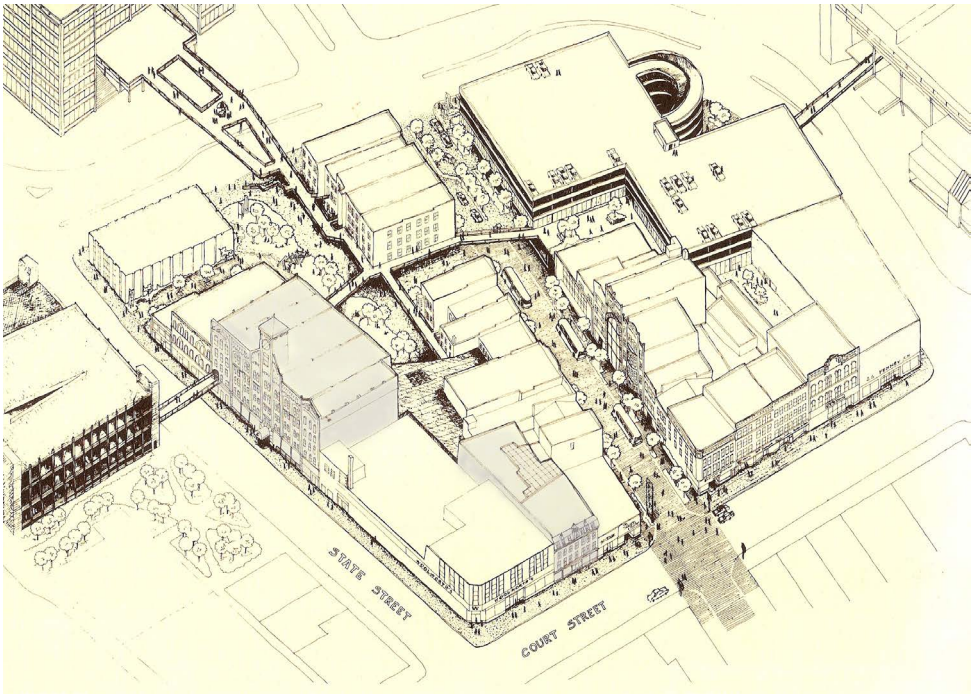

Fig. 2. Historic/Heritage District
Source: author.

Fig. 3. Stephens Square, Former Cigar Manufacturing
Source: author.

Fig. 4. Victorian Marketplace
Source: author.

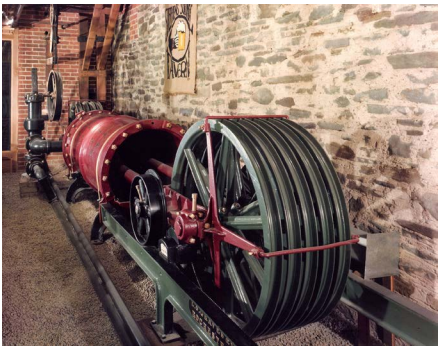

Fig. 5. Water Powered Elevator Machinery
Source: author.

As the cigar industry declined, the buildings were adapted during the early to mid twentieth century to house light manufacturing, commercial and residential occupants. Later in the twentieth century, the area declined even further as cities populations in the US began to move toward suburban locales, leaving "donut holes" of inactivity in the city centers. While "urban renewal" in the US removed much of the cultural heritage contained by the buildings and neighborhoods it destroyed, this area under study remained mostly intact, physically. During the late twentieth century, as part of an historic redevelopment team, this author, one of a small group of architects, began an analysis of this two block area, the goals of which were to understand the history and heritage of the area, document the existing conditions and propose adaptive interventions that would revitalize the area and redefine and communicate the rich heritage that was lost. As an architect member of this team, I was fully involved with all aspects of the historical revitalization study, analysis, proposals and subsequent realizations that ensued. The adaptive interventions proposed were defined in several categorical areas:

1. Re-establishment of the historically significant physical area through physical rehabilitation and adaptation using US standards for rehabilitation of historically significant buildings.
2. Introduce physical interventions whose goals were to increase population and use of the area in new and exciting ways.
3. Propose incentives for private property owners to redevelop individual properties to historically correct standards.
4. Improve communication of the history and cultural heritage of the area.
5. Propose funding avenues and cost estimations for the success of the project.

The adaptive interventions were centered around a five-story former cigar factory building that has as it's front foundation, the original wall forming the transportation water canal that served the area (Fig. 3). Additionally, as a second focal point of adaptation, the last remaining Victorian era wooden commercial building was restored to historically correct standards and returned to much of its original usage (Fig. 4). Some of the manufacturing heritage elements, such as a water powered elevator, cab and machinery, were cosmetically restored and displayed for future generations to understand and enjoy (Fig. 5, 6). The creation of new spaces formed a nucleus of excitement that joined several buildings into an internal courtyard (Fig. 7).

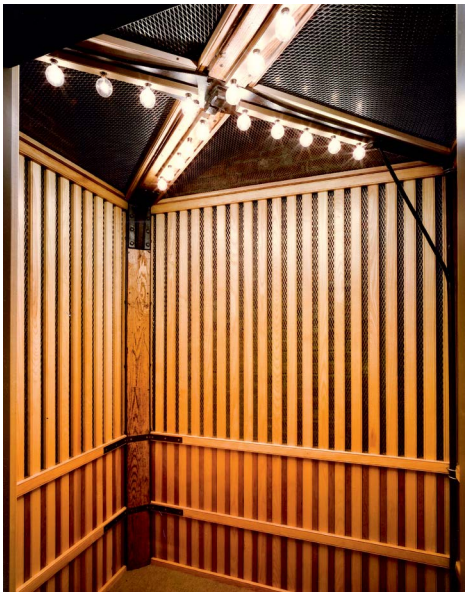

Fig. 6. Water-Powered Elevator Cab.
Source: author.

Fig. 7. Victorian Marketplace Courtyard
Source: author.

Project Description

The Parlor City Center project, as it was known, proposed the economic revitalization of a two-block area in downtown Binghamton, NY primarily through the rehabilitation and historic preservation of a variety of structures. Basically a commercial area in the central business district, it contains predominately 19th century architecture. Much of the area has been excluded from previous "urban renewal" plans and has suffered deterioration through neglect. The need for historic, economic and cultural rehabilitation was recognized and municipal participation in the project was initiated with the following goals:

- to restore, preserve and communicate the cultural and architectural heritage of the Parlor City,
- to eliminate deterioration and blighted living conditions,
- to promote improved business and employment opportunities,
- to stabilize and expand the tax base,
- to promote private investment in property and
- to renew the productivity of under-utilized land and building resources.

It was also the intent of the project to provide for the redevelopment of unoccupied urban renewal land in the project area, and to extend and complete the overall plans for the revitalization of the downtown area. Under this plan, the irreplaceable and highly visible historic character of the project area's many Victorian buildings will be preserved against further decline and unsightly modifications by a facade restoration effort that is design coordinated and implemented by the City. Preservation of the

building exteriors in their restored condition would be a feature of the project, enabling the City to designate the two blocks as an historic district through a local statute and to seek its listing on the National Register of Historic Places.

For the involved property owner, the Parlor City Center program made available an opportunity to renew the effective useful life of his/her property and to improve the marketability and hence the income potential, of the rental spaces, by shifting from a marginal quality environment to a prime retail, office and residential mixed-use environment of historical significance. To integrate the individual rehabilitation and restoration efforts of property owners with one another and with the redevelopment surrounding the project area (both completed and in progress), a plaza and second level pedestrian walkway system was designed to be constructed by the City. The existing configuration of buildings, open space and the project area environs represented a unique design opportunity for the successful establishment of an integrated marketplace in the heart of the downtown area. Implementing these public improvements required that land, or an interest in land, in some cases be conveyed to the City by involved property owners, through acquisition or easement. The rehabilitation program was designed as a partnership effort, with the investment of the City of Binghamton and the investment of involved property owners (and those financing the investment of property owners) occurring in a programmed manner.

Property Area Inspection

As a beginning to the project, each building in the project area was surveyed to determine its condition relative to the Binghamton Housing Property Maintenance and Rehabilitation Code and the New York State Building Construction Code. In addition, each building was surveyed in accordance with selection criteria to determine its suitability for rehabilitation, restoration or demolition, and the scope of the work required to bring buildings into compliance with codes and standards. The inspection was made on the basis of violations which were visually evident, without testing or redesign. Structural conditions were assessed on the basis of sagging, deflection, deformation, buckling, rotting, deterioration and similar visible signs of structural failure. Individual building inspection reports were furnished to property owners, indicating improvements required and estimates of costs involved.

In addition, a field survey was conducted to determine existing land uses and to study the present parking situation. Attention was given particularly to the present use and appropriate reuse of Urban Renewal Agency owned land within the project area. Possible connections to appropriate neighboring land uses were identified and the relationships of the project area to neighborhood blocks was noted. In addition, the project area was surveyed to determine the land and/or interest in land required to be conveyed to the City to construct a public pedestrian walkway system on two levels and provide landscaped areas within the project area along with required easements and other essential requirements.

Existing Conditions

The existing land use of each parcel was recorded during the inspection. Mixed-use properties combining retail and apartment functions in downtown, row-type structures occupy almost half of the project area. Although the entire parcel area is classified according to the predominant use, improvements did not always occupy the entire site and some space was used for other purposes such as parking. The two blocks of the project area occupy 4.75 acres, excluding the dividing street. Approximately 2.93 acres or 62% of the area was occupied by buildings.

Historic Significance

There are 25 buildings of historic merit within the area, most of them forming contiguous facade clusters. All were built from locally manufactured "Binghamton brick" and are three or four stories high except for Stephens Square, the dominant landmark and former cigar factory, which is 5 stories high. Originally, the upper floors were occupied by people who worked in the shops and factories on the street level. Plans under preparation called for facade restoration, renovation of the upper floors for mixed income apartments, and renovation of the lower level, street level and second story for shops and stores. The space defined by the rear facades of the buildings in the eastern-most block would become a fully landscaped public courtyard. Architects of the late 19th century buildings are unknown, although two buildings on the east side of Washington Street have been attributed to Henry Hobson Richardson.

The architecture, particularly the brick detailing, embodies the heritage and pride of place expressed by Binghamton's merchant princes in the days when the City was known as "The Parlor City", a grand Victorian Era city with manufacturing in the cigar and shoe industries. The visual interest of the area stems from the unity of materials (brick with sandstone or limestone trim) and the variety of detailing of fenestration, cornice lines and other decorative brickwork. Several of the buildings are outstanding of their type: Stephens Square, the only remaining cigar manufacturing building and important from a cultural and architectural heritage standpoint, is a synthesis of industrial expressionism and Victorian gingerbread. Two other buildings, the Brunner building and the Phoenix Building are exuberant Romanesque Revival rendered in brick. Additionally, the newly named "Marketplace" building is the only remaining wooden structured Victorian era commercial building. The two block mostly brick ensemble is a complex sculptural statement of the spirit of industrial and commercial heritage of the 1880s and 1890s.

Selection Criteria

The following selection criteria were used to determine whether a building was suitable for rehabilitation, restoration or demolition, which was not required. These standards have been incorporated into the inspection process and buildings were classified accordingly.

1. Rehabilitation

A building shall be suitable for rehabilitation if it can be economically repaired or improved to bring it up from a less than acceptable condition to a locally acceptable standard condition (compliance with Binghamton's Housing, Property Maintenance and Rehabilitation Code and the New York State Building Construction Code) and renew it to a long-term sound condition. Buildings have deficiencies as result of inadequate maintenance, outdated systems and changes in applicable codes. Conditions are characterized by minor defects beyond the scope regular maintenance.

2. Restoration

A facade shall be suitable for restoration if it possesses integrity of location, design, setting, materials, workmanship, feeling and association, and:

a. is associated with events making a significant contribution to Binghamton's history and heritage (particularly the "Parlor City" era),
b. embodies distinctive characteristics of type, period or method of construction,
c. represents the work of a master or possesses high artistic value.

3. Demolition

A building shall be designated for demolition if it is so damaged, decayed, dilapidated or unsafe that it creates a serious hazard to the health and safety of occupants, the public, or surrounding buildings. The structure may have holes, open cracks, rotted or missing material over a considerable area of the foundation, walls, floor, or roof as the result of inadequate original construction. It may be seriously damaged as the result of storm, fire or flood. It may be structurally unsound, having substantial sagging of the roof or substantial portions of the structure out of plumb. Conditions are characterized by critical defects no longer economically repairable.

Rehabilitation Standards and Guidelines

The standards recommended herein have been adapted from the U.S. Secretary of Interior's "Standards for Rehabilitation". All rehabilitation work must also comply with any and all applicable building construction codes and applicable local zoning.

"The Standards for Rehabilitation" (codified in 36 CFR 67 for use in the (US) Federal Historic Preservation Tax Incentives program) address the most prevalent treatment. "Rehabilitation" is defined as "the process of returning a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values".

The intent of the Standards is to assist the long-term preservation of a property's significance through the preservation of historic materials and features. The Standards pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and interior of the buildings. They also encompass related landscape features and the building's site and environment, as well as attached, adjacent, or related new construction. To be certified for Federal tax purposes, a rehabilitation project must be determined by the Secretary to be consistent with the historic character of the structure(s), and where applicable, the district in which it is located. The Standards (Department of Interior regulations, 36 CFR 67) pertain to historic buildings of all materials, construction types, sizes, and occupancy and encompass the exterior and the interior, related landscape features and the building's site and environment as well as attached, adjacent, or related new construction. The Standards are to be applied to specific rehabilitation projects in a reasonable manner, taking into consideration economic and technical feasibility"[3].

Here is a listing of these Standards for reference purposes, additional information can be found on the Secretary of the Interior's Technical Preservation website, referenced herein.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

[3] http://www.nps.gov/tps/standards/rehabilitation/rehab/stand.htm (accessed 19.02.2015).

9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Additionally, the Secretary of the Interior's Guidelines for Rehabilitating Historic Structures were referenced to reflect the architectural heritage of the buildings, as well as their part in the neighboring streetscape.

"Together with the Standards for Rehabilitation, the "Guidelines" provide a model process for owners, developers, and Federal agency managers to follow. The Guidelines are intended to assist in applying the Standards to projects generally; consequently, they are not meant to give case-specific advice or address exceptions or rare instances. For example, they cannot tell owners or developers which features of their own historic building are important in defining the historic character and must be preserved – although examples are provided in each section – or which features could be altered, if necessary, for the new use. This kind of careful case-by-case decision-making is best accomplished by seeking assistance from qualified historic preservation professionals in the planning stage of the project. Such professionals include architects, architectural historians, historians, archeologists, and others who are skilled in the preservation, rehabilitation, and restoration of the historic properties. The Guidelines pertain to historic buildings of all sizes, materials, occupancy, and construction types; and apply to interior and exterior work as well as new exterior additions"[4].

Incentives and Control of Restoration

The purpose of building restoration controls iwas to enhance the visual environment and to preserve the historical character and heritage of the district. At the same time, the objective was to make the buildings architecturally sound and physically attractive. To that end, it was necessary to provide viable and enticing incentives to property owners to encourage and make feasible their participation in the restoration of significant buildings, which, realistically, amount to control mechanisms. These include but are not necessarily limited to:

1. Architectural and technical assistance – property owners needed technical and architectural assistance with all aspects of historical rehabilitation. To ensure code compliance and rehabilitation consistent with the historic character of the property, architectural design services were provided in addition to the inspection reports, work write-ups and cost estimation. Recommended services included furnishing design rehabilitation services, technical and code related guidance,

[4] http://www.nps.gov/tps/standards/rehabilitation/rehab/guide.htm (accessed19.02.2015).

assisting with preparation of historic preservation formwork for grants, referring owners to appropriate funding agencies and advising on program requirements during rehabilitation.

2. Loans and grants – the rehabilitation of buildings could be financed through public funding, private funding or a combination of the two. The availability of affordable rehabilitation financing was essential to the success of the project(s).

3. Tax incentives – it was possible for property tax laws to provide exemptions from taxation for rehabilitated historic buildings in the form of tax credits or abatements. In some locations capital expenditures incurred in a certified rehabilitation of historic structures may be amortized over a longer period in lieu of income tax depreciation deductions otherwise allowable.

Public improvements to coincide with individual efforts – publicly financed capital projects which provide or improve public facilities were typically used to induce private investment in property. Of all the incentives, public improvement appears most acceptable to the community in general but should not be used alone. The effectiveness of public improvements is reduced without mechanisms which assist an owner to borrow and complete the work. The impact of public improvements would fade over time without mandatory standards and controls to protect the investment in the project area.

The Facade Easement as a Control Mechanism

The irreplaceable and highly visible historic character of the many Victorian buildings in the project area will be preserved against further decline and unsightly modifications by a facade restoration effort that was design coordinated and implemented by the municipality. To provide for the long term protection of the public interest, involved property owners were asked to convey to the City a "facade easement", which is, in essence, the rights to control the appearance of a buildings facade, by law, thus permitting the City to execute facade improvements and obligating themselves and their successors to preservation of the building exterior in the restored condition. This mechanism would enable the City to designate the restored area as an historic district by law and to thereby seek listing on the National Register of Historic Places.

An easement is preferable to a restrictive covenant for mostly legal reasons. Although much of American law is based on the premise that an individual has sovereignty over his own property, one principle or historic preservation is that, in some sense, such property is public – part of our historic heritage and shared environment. Because both legal and popular opinion are constantly changing over what infringements of personal (in this case property) rights can with validity be made in the name of the public good, historic land use legislation tends to be a very controversial subject. The use of easements overcomes some of this controversy because the easement is actually purchased, therefore the property owner may be considered to have entered willingly into a contract abridging his rights and to have been duly compensated for that loss.

A facade easement is limited in scope to the exterior appearance of any building or other improvement on the property. The exterior includes all architectural construction features visible from a public way (front, rear or side) including without limitation to structural materials, facing materials, windows, doors, trim, sills, steps, railings, cornices, moldings, fences, and other decorative features, whether part of the principal structure or of any accessory buildings.

Property Easements

In addition, an interest in property would be required to bring landscaped areas adjacent to the buildings. Perhaps the easiest, least-cost method of achieving such a result would be for owners to provide right-of-way easements for landscaped areas and pedestrian walkways in exchange for the provision of these public improvements by the City. In exchange for public improvements, property owners were asked to convey to the City a partial property easement, in the form of a covenant running with the land, permitting the City to landscape areas at the rear of buildings for public use and to construct a pedestrian walkways which may serve other commercial spaces. The exchange of land interests would compensate increased property values resulting from public improvements. In addition, owners were able to donate easements to take advantage of tax provisions for charitable contributions.

Conclusions

Due to a number of economic factors, this city center area has again fallen into a state of disrepair and use. Perhaps cyclical with center city areas, however, much of the rehabilitation work that was done, remains intact, preserving the cultural, historical and architectural heritage of the area.

The procedures, tactics and lessons learned from this long process and the significant results are applicable to other cities and intervention sites, including documentation processes, historical standards, analysis procedures, adaptation procedures, building code compliance and economic incentives.

THE ADAPTIVE REUSE OF THE ARCO DO CEGO ANCIENT CAR-BARN STRUCTURE IN LISBON

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Introduction

The industrial revolution of the eighteenth and nineteenth centuries changed society in a permanent way. It changed not only the productive structure of the economy, but also the way people communicated, travelled, lived and worked. The built environment, in particular, was affected in many ways, namely by the mass production of new materials, readily available and at a lower cost. Brick masonry walls and steel framed structures were extensively used becoming a trademark of the industrial building, all across Europe. Architects and engineers seized the opportunity that new construction techniques provided to build wider and taller structures, and the common commercial and productive typologies, such as warehouses and factories, developed significantly in order to meet new standards and new production methods, powered by new forms of energy.

From the material point of view, the industrial heritage was disruptive towards the past. Brick, tiles, iron and glass soon replaced timber structures with lime and stone masonry walls. Additionally, most industrial buildings were solid and built to last. It is not surprising that so many examples still survive today in reasonably good condition. However, its future is not so much a question of physical preservation but to ensure a viable use in contemporary society.

Some authors[1] refer to the oil crisis of 1973 as the origin of a new attention to old buildings and its reconversion potential. Industrial buildings in particular were praised for their technical and spatial characteristics which made it especially useful for reconversion: they are usually large buildings with interior open spaces and high ceilings, built with thick solid walls but with independent metal framed structures. If outdated equipment and production methods made them redundant for today's society needs, their potential for new uses was acknowledged as very promising.

This paper presents the example of the reconversion of an important tram station from the origins of electricity in Portugal that was still in use until the late 1990's but became redundant since then. Its significant urban presence and

[1] Sherban Cantacuzino. *Re/Architecture. Old buildings/New uses*, Thames and Hudson, London 1989.

the importance of preserving the memory of the old trams that were still in use some years ago in Lisbon, led to an innovative solution, combining public value and heritage protection.

Historical background

The current architectural structure of the Arco do Cego, surviving that which was in its time the Lisbon Tram Station in that area of the city, corresponds to a typical building of the post-industrial revolution period. It is common to many other examples of the so-called *Iron Architecture*, such as the numerous train stations emerging at the third quarter of the nineteenth century.

From a typological perspective, the Arco do Cego Tram Station (located in the North of the City) is identical to another tram station built in Santo Amaro (at the Calvário neighbourhood, South of the city, along the river Tagus) and still in use today. Originally built in 1874 to accommodate horse-driven cars, it was later transformed following the development of the new electric line of transportation, started in 1901. The insufficiency of the Santo Amaro station to cope with the transportation needs of a rapid growing city, led to the creation of a new station on 1882, located in the far northern limits of the city, an area called Arco do Cego. Built to accommodate the so called American cars, including the horse's mews, it was later the object of significant transformation to house the new electric cars.

The electrification of the Lisbon transport system became therefore the main reason for the construction of a new building, the Car-Barn (a large steel structure) promoted by the Carris Company, following the designs of Mechanical Engineer Lawrence Granville Hawkins, who would later become the responsible for Workshops and Car-Barns of the company in 1925.

Its construction starts in 1905 with three main longitudinal bays (naves), in a steel frame structure composed of metallic trusses supported by double braced columns, delimited by external brick masonry walls with large vertical windows and double-edged roofs with ceramic 'Marselha' tiles.

Later, in 1913, two bays were added to the East of the existing structure, and in 1914 a new three storeys building is added to the West (the electric sub-station), in a brick masonry load bearing structure with white painted window frames and a bay-window, much to the English style. In 1936, the general site is the object of partial demolition in the North area, due to the alteration of its limits, partially sold to the government to build the new Treasury Building (Casa da Moeda). It remained in this condition and actively used by Carris, for nearly sixty years.

Fig. 1. The Arco do Cego car-barn structure in its original layout (1940)
Source: Eduardo Portugal, Lisbon's Council Archive.

The Arco do Cego tram station

Current condition

The surviving structure of the old Tram station corresponds to a part of the early twentieth century original building, once in 1997 the electric station was deactivated and it began being used by a private bus operator. It is not clear the degree of transformation it went through over the years it worked as a bus terminal, however, it seems to have been in 2004, with further adaption works for its use as a car park, that some major alterations were introduced, namely, the demolition of the two long West bays.

Today, the building preserves the three original bays built in 1905, eventually with some minor alterations difficult to identify, apart from the only surviving external brick masonry wall (South, facing the Arco do Cego public garden), as all others were demolished.

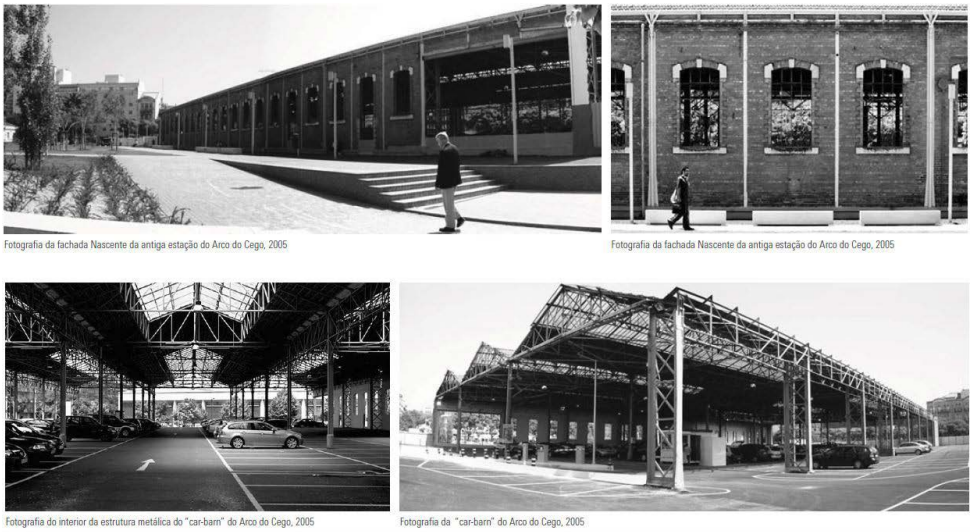

Fig. 2. The Arco do Cego car-barn structure in its present condition (2014)
Source: Tecnico Learning Center project team (IST).

Legal protection

The existing building and its site are not currently listed, but they come under partial legal protection due to its inclusion within the special protection zone (an automatic area surrounding any listed building according to Portuguese heritage laws) attributed to the nearby Casa da Moeda, listed as Monument of Public Interest in 2012. In addition, being scheduled by the Heritage Inventory of the Lisbon City Council[2], it is subject to a secondary protection system, which demands for specific building consent from the council services.

Historic, social and urban value

From the city's perspective, the Arco do Cego Tram Station is representative of the urban expansion of Lisbon towards the North, at the end of the nineteenth century, namely the so called New Avenues (Avenidas Novas), which saw in the development of the public transport system (namely the electric car), an important ally and facilitator. In fact, the site was reconfigured in 1903 (to the South) and in 1904 (to the North) due to the opening of two important avenues (Avenidas Duque d'Ávila e João Crisóstomo).

Therefore, the existing building is not only an important example of industrial architecture (typical metallic structure used in wide span naves) but also an iconic element of the demographic and urban expansion of the early twentieth century and a symbol of technological progress, namely the development of the initial electric infrastructures of the city (public lighting and transport system).

[2] The building is listed in the Municipal Map of the Built and Natural Heritage, under the designation of (Ancient) Carris Central Station – CMP 23.69.

Additionally, it is worth mentioning that the Arco do Cego Tram Station (built in 1882 and altered in 1905) was originally located in the urban limit of the city, which was then an industrial area where the important Lusitânia Ceramic Factory was located. Built in 1890, next to the Bull-fight Arena of Campo Pequeno (another interesting industrial building of Neo-Moorish style, built in 1892 in a metallic frame structure and brick masonry walls), this factory produced construction materials such as roof tiles, bricks and wall tiles, precisely the materials that can be seen today in the surviving structure of Arco do Cego, presumably produced at the Lusitânia factory.

Fig. 3. The Lusitânia Ceramic Factory in a period print (1924)
Source: Diário de Lisboa newspaper.

The existing building presents a remarkable material authenticity, despite several interventions made in recent decades, following the end of its use as a tram station in the early 1990's and subsequent use as bus station and car park (its current use).

Fig. 4. Detail of the steel framed structure
Source: Authors.

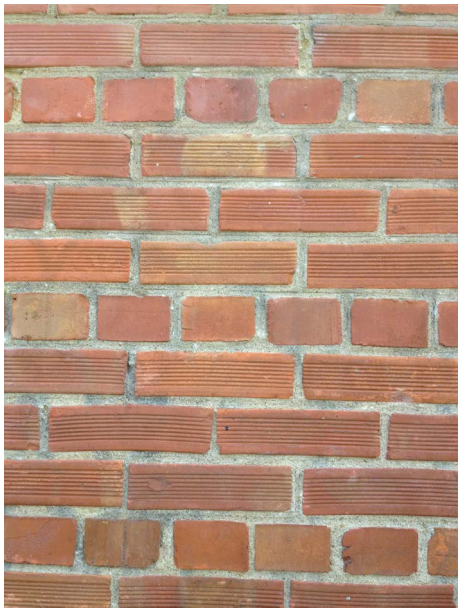

Fig. 5. Detail of the brick masonry walls
Source: Authors.

Its original metallic structure survives still today with little or no alteration to its spatial and geometric configuration, apart from small partial demolition to the West and the natural signs of material decay following negligence over time. The same can be said regarding the original brick masonry, built in the English bond technique.

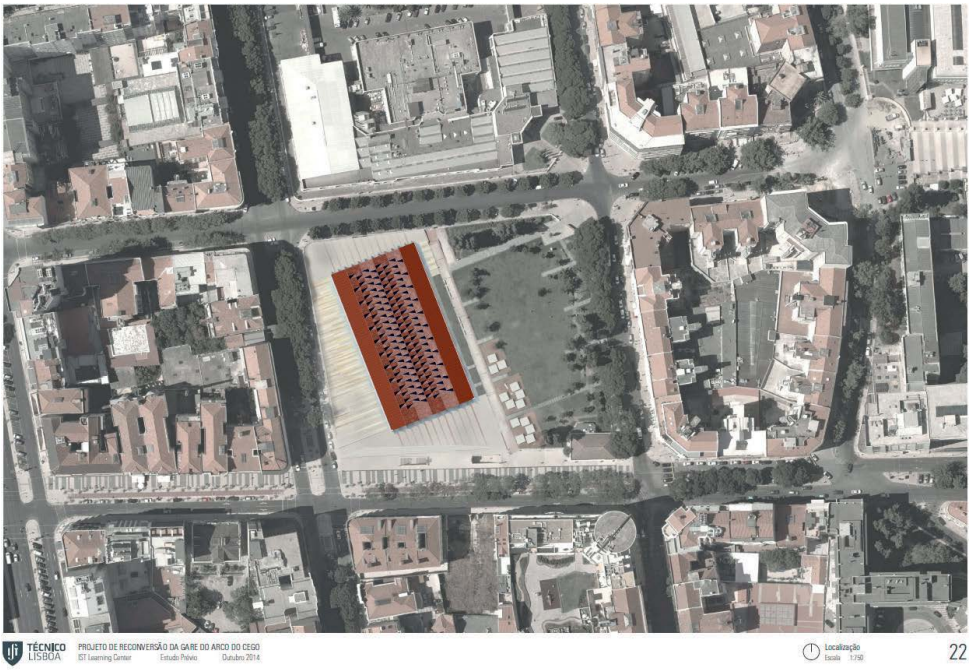

Fig. 6. Aerial view of the Arco de Cego building and surrounding urban area with the IST campus in the top right corner
Source: Tecnico Learning Center project team (IST).

Adaptive reuse

Given its heritage value and the proximity of the traditional Engineering University Campus of Lisboa, the Instituto Superior Técnico (IST, founded in 1911), its future use began to be evaluated in early 2010, in order to bring it back to public use, in a way that would reflect its historic importance, its architectural value and the memory (not so long ago) of the ancient electric tram station. In 2011, the Lisbon City Council agreed to give the building and its site for university use, namely to be transformed into a student's facility, as a study, leisure, recreational and cultural space of the IST, open 24 ha day. This new university building, located just one block away from the traditional IST compound, was called IST Learning Center and extends the notion of campus outside its walls and into the city's urban fabric.

It is worth mentioning that the site is located between the IST campus and one of the most important subway lines of the Lisbon underground, along a pedestrian and cycling path that became an important area of urban life in recent years, with

restaurants and cafés and a public garden just next to the Arco do Cego building. The reconversion of this large under-valued structure into a new and modern building, open to public use and available to students of any Lisbon University colleges is a major contribution to the requalification of this part of the city, in terms of cultural life, qualified public spaces and a renewed sense of place.

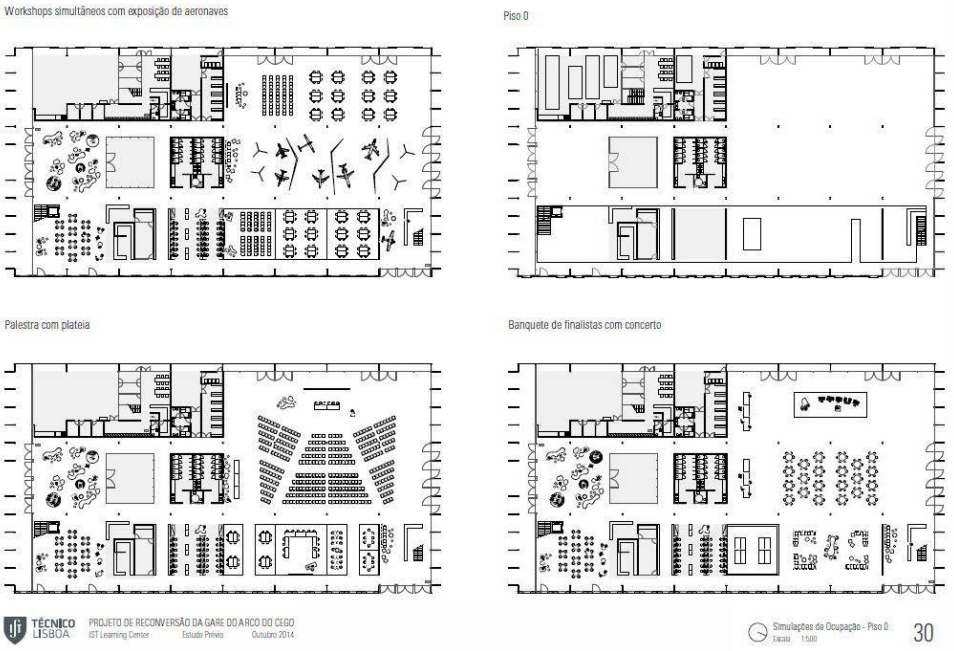

Fig. 7. Different spatial solutions for a multi-functional building
Source: Tecnico Learning Center project team (IST).

Fig. 8. External view of the Arco do Cego new IST Learning Center (computer image)
Source: Tecnico Learning Center project team (IST).

The architectural solution, however, was quite a challenge in order to meet the conditions defined by the Lisbon City Council, particularly the construction of a subterraneous car-park (underneath the structure) and the inclusion of a permanent Fire Brigade headquarter within the general building space. The university's plan was to create a multifunctional cultural and educational infrastructure that would accommodate different uses simultaneously. These uses include a leisure/study area open to students 24 h a day, a small administrative office, a cafeteria, a printing area, a commercial space, toilets, storage areas, catering facilities and a large open space available for all types of academic, social or cultural events (exhibitions, fairs, concerts, conferences, etc.). The potential conflict between some of these uses and the co-existence with a Fire Brigade, called for elaborate solutions in terms of space management, technical infrastructures, privacy, security and accesses, while maintain the building's architectural and heritage features.

Innovative methodology

In recent years, other examples of the heritage conversion for different uses have been quite successful, turning what used to be old and abandoned historic buildings into modern urban icons of the city. The recent Time Out Lisbon Market is a good example (2014). Originally built in the same period, although in the French style (*Beaux-Arts*) and better architectural quality, the old and decayed market known as Praça da Ribeira, went through significant adaptation by one of the country's leading architectural practices (Manuel Mateus arquitectos) to became Lisbon's most fashionable place to have lunch or dinner at one of its many restaurants and bars. However, it was designed to serve for commercial use only and some of the technical solutions (the acoustics, for example) were not very efficient.

Such cases showed the public's attraction for large interventions in important landmarks destined to public use and its positive urban effects in the surrounding neighbourhoods (new real estate development, improved public parks and spaces, better social environment, local pride, increased security). But it also made clear that such reconversions are as much about heritage renewal as they are about the proper spatial analysis and solutions (adequate programme) and the sensible introduction of new technical infrastructures, such as heating, ventilation, solar energy or sound insulation. These aspects became the main focus of the architectural solution for the Arco do Cego intervention: total respect for the original historic structure, matured spatial definition of different functions and the careful introduction of new technical systems and materials.

The architectural design was developed in-house, an innovative solution consisting of a team of the Department of Architecture of the IST itself[3]. Such practice was very much influenced by the Brazilian example of the University of São Paulo, where projects were developed specifically to provide for students and professors to work together in a real-world simulation of a professional architectural practice, while tending to the internal needs of the university.

[3] The Arco do Cego architecture team was led by Prof. António Barreiros Ferreira and included Ana Rita Gonçalves, Daniel Rego, Katherine Both and Maria João Tato. The authors of the present article were also part of the design team.

Prior to the start of the architectural design stage, the Arco do Cego building was the object of academic exercises within the Master degree in Architecture. Architecture students were asked to work on the functional analysis of the building and its programme, and some final dissertations addressed themes like the nature of the new library spaces or the social impact of the nearby garden, in view of its foreseeable adaptation. Considering its future use by the student population, it is very meaningful that it were the students themselves who contributed to the programme's definition, reflecting the habits, wishes and expectations of a new generation.

Architectural solution

In order to meet with the complex programme, the design solution created independent volumes inside the wide open-space (with two levels, in a mezzanine format), respecting the original framed structure. This allowed for different areas with specific functions. The west side facing the public garden is occupied by the student's area, including the commercial and social spaces, benefiting from a direct access from the street. The east side is partially occupied by the fire brigade, with specific emergency exits to the public road. In the middle of the complex, there are toilets, the main entrance to the south and the large area destined to events to the north. The interior metallic structure will be painted white, just as the interior walls, providing for a modern and contemporary image and creating a light atmosphere for leisure activities.

Fig. 9. Internal view of the Arco do Cego new IST Learning Center (computer image)
Source: Tecnico Learning Center project team (IST).

The facades will be preserved but the roof surface will be carved in an elaborate solution, with different angles along the naves to provide for both sun light, a cooling effect and solar panels according to the insulation of the place.

Through careful restoration of the original fabric and the introduction of contemporary design (in particular, the spatial dynamic solutions and the necessary introduction of technical infrastructures) it will became an iconic part of the new extended university campus, with a modern look.

Conclusion

In 2015 Europe is commemorating the Industrial and Technical Heritage Year. But persevering industrial heritage is both a problem and an opportunity. Large redundant buildings demanding significant investments and with limited possibility for change (given its heritage status) are a challenge for public authorities and private real-estate promoters. In many countries, there are examples – those buildings regarded as the most representatives of such heritage universe – that are still waiting for a viable use today (i.e. Battersea Power Station in London). In other cases, interesting solutions were found in the form of contemporary interventions that lend new life to old structures (i.e. Tate Modern in London). But to those less representative buildings, a new future depends on a new use, therefore reconversion is essential. The Arco do Cego old tram station is a good example of a very significant building for its represents the early days of the Lisbon transport system, when the electric car benefited from the introduction of electricity and promoted the expansion of the city. Nevertheless its original function is no longer viable.

The proximity of the Instituto Superior Técnico (University of Lisbon) was the starting point of a maturing process to devise a new and appropriate use to the building. The university itself decided to take the matter in its own hands and provided for an alternative approach, with in-house knowledge, combining students and professors in the technical team that designed the new building. The transformation of a large warehouse typology into a learning centre, open 24hours a day, next to a fire brigade headquarter is quite unique and very demanding from an architectural point of view. The solution considered questions such as space management, security, planned accesses and the autonomy of different functions. But the final result will provide for the renewal of the surrounding neighbourhood, the improvement of university facilities and a better urban environment.

PORT HERITAGE: URBAN MEMORY OF HARBOR CITIES (CASE STUDY OF SHANGHAI)

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Introduction

Modern Ports, which scatter along the Huangpu River in Shanghai, are normally ignored during the process of urban renewal. However, the remained port can be considered, to some degree, as signs of Shanghai's urbanization and its cultural landscape, when transforming from the natural landscape of bund to the cultural landscape of modern cities. Owing to their geographic location, infrastructure function and historical information, these ports have being built up an inter-relation between city and waterways and connected them together, and should be viewed as a unique language of urban heritages recalling collective memory.

As Jeffery Stinson defined, port industrial landscape is one of special urban language in waterfront cities, which should be registered on the list of urban heritages[1]. Commonly, the ports, together with industrial heritage (site) and waterways heritage, refer to the cultural relics of post-industrialization age. Nizhny Tagil Charter for the Industrial Heritage[2] takes industrial heritages as object of protection clearly and definitely. In the Chapter it mentions that the industrial heritages include industry cultural ruins with historic, technical, social, architectural or scientific value, such as building, plant, workshop, warehouse, port, machine, device, implement, mineral field, remaining of refining place, storehouse, place for manufacturing and transforming, place for transportation and infrastructures, place for religion and educational activities, place for social activities that are relevant to industry. The Document shows that port heritage is a part of industrial heritages. However, a few local and abroad scholars have discussed the value of industrial heritages with the view of history. In particular, only 16 essays with subject term "Port Heritage" can be found in the area of Architecture in the Web of Science. Some of these researches focus on vague districts of historical "port", others focus on old lighthouse "heritages". Few research views "port heritage" as an unity and defines it clearly. In practices, the concept of port heritage also has been misunderstood

[1] Jeffery Stinson. "The Port Industrial District". *Canadian Architect*, No.10. 1992, p. 30.

[2] The formal document in the field of the protection of international industrial heritages, *Nizhny Tagil Charter for the Industrial Heritage*, is approved by TICCIH in 2003.

commonly. In some cases, the typical historical site has only been protected while these objects have been destroyed; some typical equipment and objects have been converted into new icon of local culture, but these intangible information, value and those context has lost. This kind phenomenon is increasingly serious during the rapid process of waterfronts renewal in developing countries. Therefore, this paper regards "port heritage" as a key words and explores the values of port heritage for reserving, recalling and developing the urban memory in order to make identity of the place with the method of Object-Place-Event.

In China, the 1st session of conference on industrial heritage protection of China was held in Wuxi 2006, and in the same year industrial heritages and little port heritages are listed as the object of investigation in the 3rd Nationwide General Survey of Cultural Heritages. With this regard, the Shanghai Committee of Cultural Relic Management conducted general survey on the industrial heritages in the city[3], and promulgated the Directory of Industrial Heritages in Shanghai[4], including 26 historical and cultural sites under government protection that are relevant to port heritages[5]. However, it is regretful that only one of the port heritages is listed in the Registered Cultural Heritages[6]. The other port heritages are not included in any protection list. The port heritages along Huangpu River should be studied as a cluster as their cluster value is more important than any single port. Unfortunately, they are still not included on the relics list in the city, and with the redevelopment of Huangpu River's waterfront during the 12th five-year plan, those ports relics face the survival crisis.

Through literary review on historical ports from the 1st Opium War to 1949, this paper mainly focuses on the elements and value of modern ports along the Huangpu River from Baoshan, Yangpu, Hongkou, Huangpu, Xuhui to Minhang[7]. These ports are viewed as urban heritages in this paper to arouse people's attention to this kind of heritage during the process of urban transformation.

Testimony of urban development in a century

Because of the unique location, modern port made a great contribution to the development of the city, and city also provided chances for them to develop. Therefore, modern ports can be viewed as the testimony of urban modernization.

[3] Author investigated and studied the industrial port sites around Yangshupu in the 1990s; and organized students to carry out classified survey on the current situation of ports alongside Huangpu River during 2008 to 2010.

[4] Bianjun Chen et al. *Shanghai Industrial Heritage Records*. Shanghai: Shanghai Jiao Tong University Publishing House. 2009.

[5] 25 out of the 26 sites were presented before 1949, scattering along Huangpu River.

[6] It is the 2nd shipyard in the former site of Jiangnan Machinery Manufacture Bureau.

[7] Lu Shaoming. *From Decaying to Rebirth: Study on the Redevelopment of Urban Port Industrial Districts*[D]. Shanghai: Tongji University.1997; see: 17th PRP Project Team. Investigation and Cultural Cognition of Port Heritage.

Since Song and Yuan Dynasty, Shanghai has always played a key role in water transportation of grain and freight because of its geographical location. Before 1840's, the ports in shanghai were mainly located around Shiliupu and Dongjiadu, outside Shanghai county town. Ports distributed intensely at the waterfront and extended for 2 or 3 kilometers along the Huangpu River; meanwhile, these port districts promoted the development of the surrounding districts and their communities, such as Huayi Street (street of beautiful dress), Doushijie (street of soybean market), "Yan Matou" (port of salt), "Zhuhang Matou" (port of bamboo firm) and "Youche Matou" (port of oil tanker). These ports were not wider than a few meters while the widest port, Dongmen Matou (port of the east city gate), were about thirty meters. The ports were mainly built by stones. Heavy loaded ships were not able to approach in shoal, but anchor at a near place instead. The porters walked on the gang board with length of several zhangs to get abroad to unload. Though the port infrastructures were simple and crude, they held hundreds of ships mooring, including barges, cargo ships, fishing boats and grain vessels. In that time, Shanghai had an annual turn volume of 1.2 to 1.5 million tons and was honored as "Dong NanZhuang Xian" (Flourishing County in Southeastern China) (Fig. 1)[8].

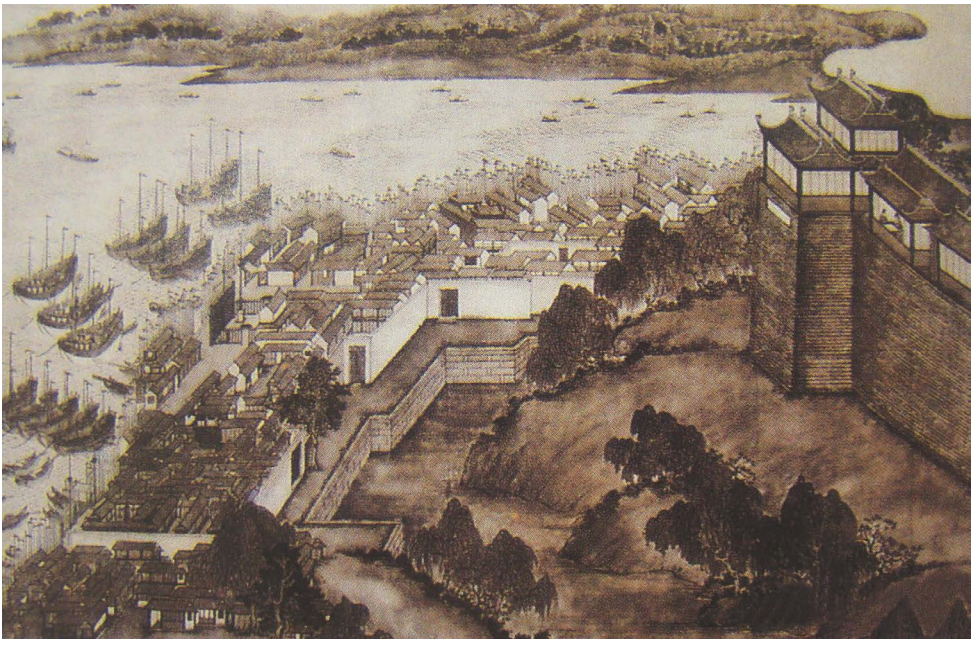

Fig. 1. Port Scenes Outside of Danfenglou Tower, old Town of Shanghai
Source: from Shanghai Archives.

[8] Xiaoqi Ma et al. *History of Shanghai Port: Ancient and Modern Part* [M]. Beijing: People's Transportation Publishing House 1990, p. 247.

Since the opening of Shanghai Harbor, Shanghai has gotten the further development as a port city. The external trade developed rapidly, and foreign merchants found out Shanghai's geological advantage soon. However, Shanghai's infrastructures, including pies, warehouses and trestle bridges, were far less competent to the requirement of berthing large-scale ships. In the preliminary stage after the beginning of harbor, large-scale ships were connected to the bund mostly by barges. Therefore, British built 2 barge berths on the Bund in 1845. They were the first berths that were built by foreigners. In the same year, the Ground Rules was launched, which allowed British emigrants to construct pave roads, build ports and organize labor union of roads and ports in the leased territory. In 1846, Roads and Jetties Committee was founded. Since then, China's sovereign in managing ports was lost[9]. Foreign merchants began to build berths and warehouses on the Bund. Till the end of 1840s, there were more than 10 western berths on the Bund; the waterfront areas against the side of British, French and American leased territory became the busiest area for operation and anchoring.

In the 1850s, as water trade developed, western firms' buildings and warehouses were mostly built on the Bund. Till the 1860s, with the evolution of ships and the stable position of foreign merchants, many of the merchants settled headquarters in Shanghai Harbor. A great amount of ship companies were founded. As a result, the port infrastructures were constructed on a large scale. Many ports, which were built by foreigners, as well as the shipyards and warehouses belonged to the ports, appeared on the waterfront of Huangpu River. The construction procedure lasted from the 1860s to the 20th Century; it is appropriate to describe it as the first climax in the construction history of Shanghai Harbor. The first group of steamship ports was crowed on the Bund in British and French leased territory, i.e. on the east bank of Huangpu River. The city, then, expanded to the east and north areas along the river[10].

When it came to the 1870s, there was no more space for new ports in Puxi (west bank of Huangpu River). On the other hand, due to the long shoreline and its lower stage of development, Pudong became the place where foreign merchants started to build ports. In 1896, the Suez Canal was opened for navigation. Consequently, foreign ship companies started severe competition in shipping. The deep water shorelines were divided up to build new berths and warehouses. Gonghexiang Port (公和祥码头), Lanyancong Port(蓝烟囱码头), Mitsubishi Company Port and Taixing Port(泰兴码头) were all early ports built by foreign firms[11].

In the end of the 19th century, with the further development of shipping trade and the entry of Japanese firms, Shanghai began a small scale of climax in building

[9] Shanghai Archives, *The Record of Foreign Settlement in Shanghai*. Shanghai: Shanghai Academy of Social Sciences Publishing House, 2001.

[10] Zhang Yan (Chief Editor), *Completed Dictionary of Shanghai Port* [M]. Shanghai: Shanghai Academic of Science and Technology Publishing House, 1991; Also see, Rhodes Murphy. Shanghai – the key to modern China [M]. Shanghai People's Publishing House, 1953, p. 2.

[11] Xiaoqi Ma et al., *History of Shanghai Port: Ancient and Modern Part* [M]. Beijing: People's Transportation Publishing House 1990, p. 247.

berths. In this period, some advanced constructional materials (such as modernized warehouse and armored concrete) were first introduced into Shanghai. Foreign firms always built their berths along Huangpu River, contributing to the congested distribution of ports and warehouses in downtown. The most congested area was the place between Yangpu and Nanshi[12]. Temporal China government began the first rebuilding of public port in Nanshi; in the meanwhile, the ownership of the ports changed on a large scale. Under this way, the development of berths accelerated the modernization of Shanghai.

In 1905, Huangpu River began to be dredged on a large scale. The construction of ports had expanded to Wusongkou. The development of berths promoted Shanghai's transformation to a large trade harbor. As the population and needs for water transportation grew, an increasing amount of freight and passengers transferred in Shanghai, thus the transportation demand was increasing accordingly. The 1st ferry crossing Huangpu River opened up by the Pacify Bureau of Pudong Pond Engineering in 1910[13], which began the 2nd climax in the development of berths in Shanghai.

Shanghai became a real international trade harbor with the development of ports till 1920s. In 1936, Shanghai ranked the 6th to 7th in terms of the quantity of port trade[14]; Before World War II, Shanghai experienced a period of steady development, during which many Chinese merchants had got involved in the construction and issues of ownership of ports. The facts were that, in that period, ownership of ports changed rapidly.

The beginning of World War II opened a volatile history of ports in Shanghai. Since 1937's Japanese militaristic power invasion, almost every port was took over or destroyed, and the whole Shanghai Harbor was locked in fact. After the war, many ports were taken over and got repaired by Committee of Shanghai Port Administrative Affairs, Department of Transportation[15]. Nevertheless, Shanghai indeed shifted from a pivotal port of domestic trade to an important international port.

Shanghai was built as a port, the port and the city flourished as a whole; the development of port and the modernization of city relied on and promoted each other. Ports are one of the footstones of Shanghai's development, as well as an epitome of Shanghai's modernization. Ports witnessed may historical stories in Chinese modern history, the formation and development of city, as ports themselves recorded representative and historical information of the city, which deserved to be reserved effectively.

[12] Rhodes Murphy. *Shanghai - the key to modern China* [M]. Shanghai: Shanghai People's Publishing House, 1953, p. 2.

[13] Wei Zhang. A Bright Urban Symphony: Shanghai Modern Transportation, Composed by Shanghai Library, *Old Shanghai Customs Volume* 2 [M], Shanghai Fine Art Publisher, 1998, p. 2.

[14] Yuezhi Xiong. *General History of Shanghai* (10 Volumes) [M]. Shanghai: Shanghai Academy of Social Sciences Publishing House, 1999, pp. 15-25.

[15] Shanghai National Government. *Harbor Plan of Great Shanghai*. Shanghai Archives:1936.

Elements of Port Heritage to recall urban memory

Generally speaking, original object, related events and remained places are the carriers of urban memory. The objects and places exist as material form and the events exist as intangible form, all of them contain relevant information about the city. They are full of historic, technical, social and cultural stories and have great value.

Firstly, historical place of port heritage can be classified into mooring area, operation area, service area, including shipyard cistern, berth, freight yard, dry wharf, trading market, martial remaining and so on. This kind of place normally embeds massive feeling and ordinary memory. For instance, the Shipyard Theatre in the western area of Expo 2010 Shanghai China remains the space structure of former Shanghai Dockyard, and recalls successfully urban memory in the history (Fig. 2).

Fig. 2. Shipyard Theatre in 2010
Source: photo by author (2010).

Secondly, relevant object and material include buildings, dockyard, vehicles, cargo vessel, crane facilities, freight and transfer, measurement tools, carriage, pound scale and so on, often have rich place memory. For example, XuhuiBinjiang Park keeps historical evidence like gantry crane and station house, which act as tangible carrier for history.

Thirdly, relevant events documented representative historical, technical and cultural event, typical life, and stories of sailor, immigrant, manager. For instance, the inspiring story about modern Chinese students who went over the ocean pursuing further study abroad happened in Shiliupu Port. These events, relevant objects and places really have become permanently marks in the collective memory.

Relics

Buildings affiliated to ports include warehouse, ticket office, waiting room, dormitory, custom, freezer, dockyard, dredging, club, rooms for production, living and management and immovable historical objects. Most of ferry ports were one-floor sloping-roof buildings with Chinese style, such as Wusong Port, Dinghailu Port, Chunjiang Port and Dongchang Port and so on. There were also 2-floor western modern buildings such as Beijinglu Port, whose ground floor was entrance and exit, ticket office, waiting room, commissioned office for bus ticket and upper floor was operating office, first-class-ticket room, waiting room and aquatic restaurant. Warehouses affiliated to ports were mostly 2-6 floors buildings with the armored concrete structure (partly mixed with brick). Besides, inside lighting, airiness and traffic facilities were all taken into consideration during the design process, like Hezhong Warehouse, Minsheng Warehouse (1930) and Sassoon's Opium Warehouse (1900) on WaiMalu (Outer Road), warehouse of former Japanese merchant's Huangpu Port (1900) on Qinhuangdao Lu, warehouse of former British merchant's Madden Port (1930) and so on. The architectural styles differed but were mainly western and modern ones. Relevant office buildings were seldom survived except for the office building of Bureau of Dredging Huangpu River in Zhanghuabang work field, which was 2-floor building with sloping-roof built in the 1930s[16]. One of landmarks on Bund is preserved, which was designed by Marti and built in 1907. The building is rich in details. On the top of it there is dogvane and iron pillar hanging signal on the top to offer weather information to ships in early Shanghai. This signal tower exhibited technology and experience in engineering in the modernization of Shanghai. These immovable objects reflect the heritages' capability of preserving and collecting memory by their structure, material, construction technique, architectural image, decoration, color, texture and styles.

Movable relics at ports include vehicles, cargo vessels, cruises, seagoing vessels, warships, ferryboats, machines, towing, craning facilities, tools infrastructures, beacons, fairway buoy, hydrological gauges, utensils and so on. In Shanghai, according to incomplete statistics, there were 156 merchant ships and 22 war-ships till 1947. Most of them have been lost. For example, the No. 17 and No. 18 ferryboat could not be found anymore. They were built in 1936 with unique shape and function, had streamlined roof, sailing room on the top floor for better sight line, more space for passengers and more convenient operation[17].

[16] Shanghai Library. *Record of Customs in Old Shanghai (1)*[M]. Shanghai Cultural Publisher, 1998.
[17] Shanghai Library. *Record of Customs in Old Shanghai (2)*[M]. Shanghai Cultural Publisher, 1998.

Fortunately, a couple of cranes have not been destroyed, and more materials have been preserved, i.e. files, drawings, graphics, signboards, trademarks, bills, notes, manuscripts, contracts, rubbings of pictures, books, audiovisual products and videos[18]. These materials described concrete information about the ports' physical attribute, evolution history and supported events, which not only recall the urban memory, but also show historical, aesthetic, technique, social and cultural value.

Historic Place

The word "shoal" or "bund" represents the origin collective memory of ports in Shanghai. In nature, shoal is a spatial geographical concept, involving the capability of berthing different types of ships, loading and unloading freight, possibility of stacking cargo, problem of tides and water level, harmony between man-made place and natural place and so on[19]. The essence of "Shoal" projected the logic to the free social and commercial activities. Due to the development of the trade and transportation, the space, volume, capital, loading facilities of the bund has been renewed again and again. So, till 1947, 70% of the bank of Huangpu River has been exploited along Huangpu River from Wusongkou to Zhangjiatang[20].

Today, some names of places have been preserved; some stacking fields, operation areas, berths, bank revetments have survived; some dockyards, cisterns, dry wharf, dock streets have survived. However, almost all original geographical and humanity scenes have been rebuilt. Fortunately, that spatial texture of Zhanghuabang work field of Bureau of Dredging Huangpu River (current 3945 Yixian Road, Baoshan District) which was built in 1931 and Huangpu Port which was built in 1911 and the street texture of the old port on East Fuxing Road are preserved in good condition. The Streets of Old Port locate at the south of Dongmen (East Gate), including all kinds of port streets between East Fuxing Road and WaiMalu, such as Yan Matou (port of salt), ZhuhangMatou (port of bamboo firm) and so on. This area was the only famous port streets area in modern Shanghai. In those days, this area was not only the transferring market for fruits, vegetables, fishes, ducks meats and other agricultural products, but also one of the distributing centers for bamboo or wooden products, clothes, salt, grains and all kinds of groceries, being filled with the tide of international daily life.

Let's take Shanghai Fish Port as an example, it contained vivid scenes of urban life in Shanghai. Built in 1934, it provided both marine products for more than 200 food markets in Shanghai and modern shanghai residents held special feeling about it. In early 1930s, Shanghai had become the biggest transferring center for aquatic products in China, It also witnessed the busy scene: During fishing season, it was extremely busy with masts gathering, flags fluttering, hooters ringing and seagulls flying in the area; More than 4,000 fishmongers entered the Fish Market

[18] Shaoyi Sun. *Imaginative City: Literature, Movie and Visual Shanghai* [M]. Shanghai: Fudan University Press, 2009.
[19] Zhongtian Yi. *Reading Cities* [M]. Shanghai: Shanghai Literature & Arts Publishing House, 2000.
[20] Shanghai Archives. *WHARF GODOWNS. Information about Ports and Warehouses in Shanghai &Pudong* [R]. Publishing House and Date of Issue unknown.

and about 30 or 40 fishing boats anchored at the port perday averagely; Numerous Huangyuche[21] with heavy weight moved around in fish market and shuttled in the street[22] (Fig. 3).

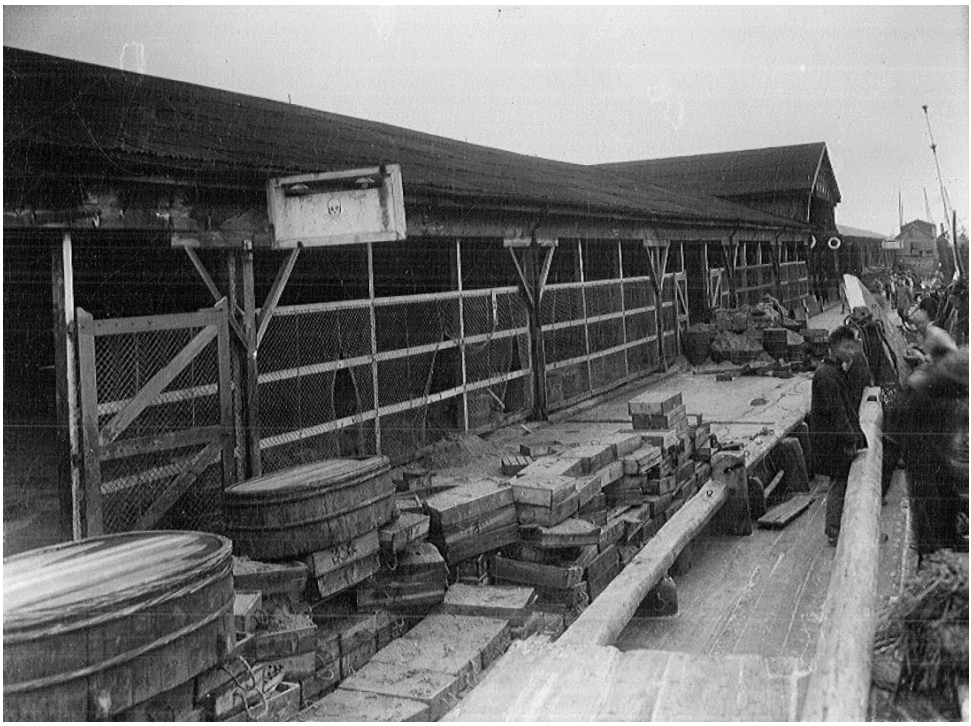

Fig. 3. Fish Market, port and its daily activities of Ports of Shanghai 1949
Source: from Shanghai Archives.

Therefore, the typical and representative collective memory or experience constituted an indispensable part of Shanghai's urban life and memory. It is no doubt to say that the memory of Shanghai exists not only in the feasting and revelry on bund, but also in the corners in alleys. Shanghai is not only the paradise for adventurers, but also a dwelling place for every Shanghai residents. If the Bund recorded the events of important persons, the "small" places represented by ports recorded the stories of lower class residents. Both of them described a tridimensional and real Shanghai. Furthermore, the stories of vendors and citizens meant place identity to ordinary residents.

[21] Yellow croaker tricycle, a typical transportation and trade tool.
[22] Yangpu District Cultural Bureau. *History of Yangpu Years* [M]. Shanghai: Shanghai Scientific and Technological Literature Publishing House, 2006.

Relevant Stories

Besides the physical character of historical objects, ports in modern Shanghai also held relevant historic and cultural stories, events and intangible information.

Ports in modern Shanghai were the typical social space where workers, capitalists, governor, private enterprises and foreign merchants worked together, as well as the political space where the conflicts between privatization and commonality, the rich and poor, the west and east happened at any time. There were also many important military events and workers' revolution happened in the area during the modern period of Shanghai. For instance, in April 1915, the porters in Yangjiadu, Nissin, Mitsubishi, Laobaidu stroke for putting Japanese products under a boycott; in March 1927, picket of Shanghai porters attacked and occupied the 3rd Police Station and Tiantong'an Station, which triggered for the 3rd Shanghai workers' armed uprising.

Modern Ports were not only the important carrier for domestic and international trading, main spatial place for social life, but also significant gateway for cultural communication and information dissemination. In the late 19th century, many missionaries and cultural envoys came to Shanghai by ship to conduct cultural diffusing and communicating. For example, Japanese had sneaked into Shanghai to inspect by cruises from the 1860s to the Sino-Japanese war of 1846-1845. Due to the different polities between leased territory and Chinese territory, the environment for cultural communication in Shanghai was relatively diverse, active and open. In the 20th century, many students went abroad to search for the national vision through Shanghai Harbor, such as Zhou Enlai, Xu Zhimo and Lin Fengmian. At that time, the entire Shanghai was the whole China's port which connected to the world, i.e., United States, Germany, Britain, France and Soviet Union. Meanwhile, many world-famous cultural elites came to Shanghai by cruise to communicate. For example, Einstein arrived at Huishan Port and started to stop in Shanghai to spread his thoughts, and the series of stories about Jews' were immigrated to Shanghai by cruise[23].

In this way, Huangpu Port, Huishan Port and Shiliupu port were responsible for this mission. These facts illustrated the significance role of Shanghai acted in modern international cultural communication. So, Shanghai was called the Window of Communication for Chinese and Western Culture, connecting China with the world[24].

Besides, some intangible folk art recorded activities happened in ordinary life as well as in official memory, such as the songs of port workers implied the spirit of teams and their feelings of life.

[23] Zu'an Zheng. *Formation of Modern Shanghai City* [M]. Shanghai: Xuelin Publishing House, 1984.
[24] Rhoads Murphey. *Shanghai: Key to modern China*. Cambridge-Mass-Harvard University Press, 1953.

Epilogue

These elements described above represent urban history and recall urban memory as well. As British historian pointed out that cultural heritages reflect and record history, which are not equal to history itself[25]. The historical events or daily life events that happened at the port sites give reality, narrative and enchantment to urban files and cultural products. At the same time, the urban memory is constantly intercepted, recorded, rehearsed and played back in literature and art works by writers, artists and architects.

There is no doubt that the port heritages, as Shanghai's memory in modern times, represent the city's specific character, historical information and social identification. Given by the urban objects, places and events[26], the cultural value of Shanghai port heritage is far outweigh its material one. The port heritages have historic significance to modern Shanghai and play an irreplaceable part in urban identity. The modern ports in Shanghai play a key role in modern China. The paper provides an opportunity to reading this unique heritage.

However, a few questions should be studied further, such as how to evaluate and classify the value of the relevant object, place and events related to ports, how to represent historical information or immaterial relics in the present context of the waterfront, how to link these fragmented, historic place and objects together, and how to protect the authenticity of port heritage to merge these memory into the new need of the citizen.

Nevertheless, port heritage with unique material relics and immaterial information makes a great contribution to recalling the massive memory and making identity of the port city, which should be preserved definitely.

Acknowledgments

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[25] Nanchao Lu. *Beyond neon light: everyday Shanghai in the early twentieth century*[M]. London, University of California Press, 2004. It shows diverse images and picture of Shanghai 1914-1949.

[26] Shaoming Lu. „Object, Place and Event: method of preservation of Historic Port Preservation" [J]. *Planner*, No. 9. 2010, pp. 109-114.

IDENTITY AND IMAGE OF PRODUCTIVE SPACES IN THE PROCESS OF REUSE

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Introduction

The transformation of the *modern ruins*[1] of industry – *machine-buildings* belonging to a relatively recent past, now devoid of their original sense and use – allows to establish a reflection on the role of design meant as the intrusion of a *new life*, able to renew the image and meaning of these architectures.

In the reuse projects for these wide productive machines – respondents for practical purposes at the time of construction and development, but now no longer working – the delicate balance between the preservation of the identity and the *updating* of the *image*, according to the changing contemporary needs, may be declined through the concept of *originality*. An original re-reading of the pre-existences is thus capable of turning itself into *novelty*, meant as a the production of a new spatial interpretation.

Starting from these premises, a reasoning focused on two projects – both partly realized – is presented, to be meant as a research media to clarify the *theoretical* position assumed: the Washery at the Argentiera (Silverware) in Sassari, intended to accommodate the Mining Museum, and the Mill-Garden at the Zolfara (Sulfur Mine) in Tufo, designed to host the Wine Museum.

These productive buildings – related to the mining assets – have had a parallel life, in a time span ranging from the late Nineteenth century to the Sixties: thus for many years the industrial activities have been completely interrupted and the structures totally abandoned.

The *first life* of these architectures – with all their events and transformations – has been unequivocally concluded since a long time, and their *ruins* have become an integral part of the landscape.

The task of the project was therefore to insufflate a *second life* into these artifacts: a type of intervention which is not easy to define in synthetic terms, that finds its origins in the pre-existing buildings, while not acting merely as a restoration

[1] About *modern ruins* see the three exhibitions held in 2013: Rem Koolhaas, *Off-Modern: Ruins of the Future,* The Fifth Moscow Biennale of Contemporary Art; Peter Eisenman, Reinhold Martin, Joan Ockman and Bernard Tschumi, *Ruins of Modernity: The Failure of Revolutionary Architecture in the 20th Century*, New York University Kimmel Center; *Project Space: Ruins in Reverse*, Tate Modern London.

or introduction of new functions. The design experimentation may thus be identified with a new and original condition, arising from an open approach. This aim towards multiple possibilities of interpretation can be described towards the considerations by Giorgio Grassi, as he claims that "[…] the artifact fallen into ruin, reduced to fragment etc., shows a sort of recovered incompleteness in this ultimate stage, as a new availability"[2].

Therefore, in order to explain concisely these aspects, it is helpful to quote also an interesting reasoning by Giuseppe Galasso, about the logics with which the researcher selects the causes of an historical event, by working:

> […] through the criterion of creativity, originality, innovation of every present respect to any past. Any action fits into the past and it is temporally its continuation; but it is also a break from the past […], a break in the chain of what happens. And it is right this rift that differentiates the present from the past, the unknown that one gets to from the known, the choice which is not only the selection of the alternatives at stake, but, simultaneously, the modification of those alternatives in the very act of selection […]. The act of selection transcends the alternatives themselves[3].

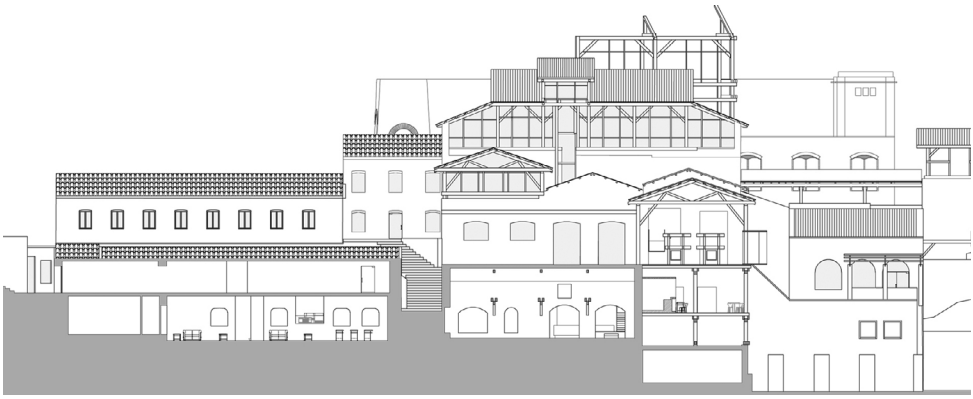

Fig. 1. Elevation of the Washery at Argentiera, Sassari (Italy)

Source: original drawings and design by the authors. Design team: Pasquale Miano (group leader), Eugenio Certosino, Sandro Roggio, Luigi Gavini, Gianvito Passaghe, Domenico Rapuano.

[2] "[…] il manufatto caduto in rovina, ridotto a frammento, ecc. fa vedere proprio in questo suo ultimo stadio una sorta di recuperata incompiutezza, come una nuova disponibilità". Grassi, Giorgio, Un parere sul restauro, in: Crespi, Giovanna & Pierini, Simona (eds.),*Giorgio Grassi: I progetti, le opere e gli scritti*. Milan: Electa, 1996, p. 406.

[3] "[…] col criterio della creatività, originalità, innovazione di ogni presente rispetto ad ogni passato. Ogni azione si inserisce nel passato e ne è temporalmente la continuazione; ma è anche una rottura del passato […], una frattura nella catena di ciò che accade. Ed è questa frattura che differenzia il presente dal passato, l'ignoto a cui si approda dal noto, la scelta che non è solo la selezione delle alternative in gioco, ma è, insieme, modificazione di quelle alternative nell'atto stesso della selezione […]. Nell'atto di scegliere le alternative vengono trascese". Galasso, Giuseppe, Filosofia e storiografia, in: Rossi, Paolo (ed.), *La Filosofia*, vol. II. UTET, Turin 1995, p. 431.

The different identities and images of productive spaces

The Washery is composed of spaces arranged at various altitudes, according to a very close chaining: a proper intertwined sequence of concatenated spaces, among which the independent bodies of the workshops can be distinguished, with their more regular and ordinary setting.

On the other hand, in the case of the Mill-Garden, it can be noted the prevalence of the *lengthways* extension. Even this architecture is made up of levels, but it is much more stable and built in a less provisional way. The result is a wide complete architecture, somewhat rhetorical in the façade towards the railway, articulated into three blocks aggregates along the longitudinal axis, and then followed by further elements which become increasingly less structured, until they merge with the morphology of the place.

The historical and architectural study of the Washery and the Mill-Garden also shows the potentiality of tracking a *subtended* project, corresponding to the most profitable and heroic phase of these activities, perhaps resulting easier to be read in the current condition of silence and neglect.

Today, the two complexes accommodate peculiarly characterized spaces, representing much more than just fragments of their previous lives: the design work finds its most interesting part in this deciphering of the spatial dynamics.

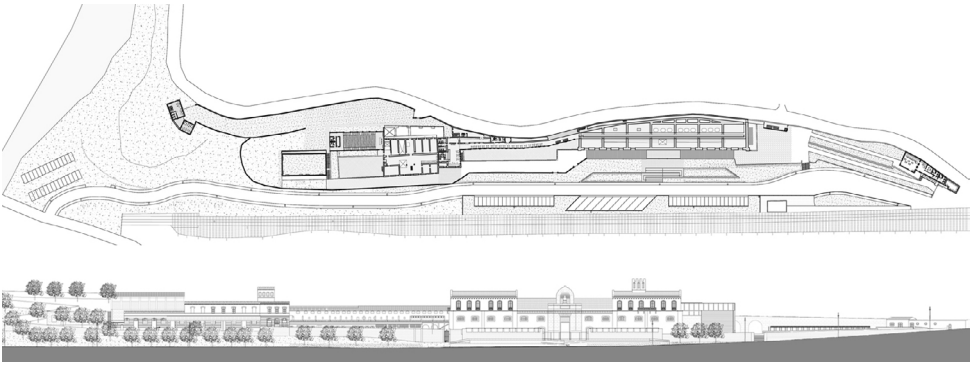

Fig. 2. Plan and elevation of the Mill-Garden at Zolfara, Tufo (Italy)
Source: original drawings and design by the authors. Design team: Pasquale Miano (group leader), Eugenio Certosino, Domenico Rapuano, Francesco Polverino, Achille Renzullo.

For both buildings, starting from the methodological principle that the survey and the description of the status of the sites constitute essential stages of the project, work has been done to identify some significant *outlines* of the spatial organization of the productive and mining structures. These outlines are capable of *telling* the story of the articulated productive machines, originally intended as unities which are hardly splittable into elements. Particularly, this modality characterizes the design of the plans of the seven *significant* levels of the Washery and the numerous cross-sections of the Mill-Garden, which constituted highly relevant cognitive equipment for setting the project.

The main question is then: how to bring back life into these productive machines, originally arisen and developed through time in response to practical purposes, but now devoid of their original meaning and use? And yet, how to achieve an image which is able at the same time to preserve the specificity of the existing architectures and to give them the mark of a novelty?

In both cases, the novelty consists right in the peculiar configuration of these spaces: dynamic, *contemporary*, not programmatically searched, but able to set up a proper update in some respects, developed from the seek for technical solutions, as they often take the form of significant preconditions for the idea of *new* in architecture. In other words, in these buildings there is a coincidence between the concept of originality – inherent in the simple elements that make up the architectures – with the idea of innovation, that originates from their particular articulation, thereby resulting in unexpected and evocative spaces.

Thus, the *new* image of both structures has been configured as a *framework*, as a new architecture in some respects meant as a device for encouraging the reading of the former one, while conceived also for the specific purpose of involving the existing spaces into a new spatial organization.

Frameworks for renewed machines

Rather than conceiving the past on the one side and the present on the other one, the design follows a specific condition of continuity and interweaving, since – as argued by Francesco Venezia – "there is no authentic novelty without reference to the chain of efforts that have preceded us"[4].

This way, the old building turns out to be *re-written* – involved into a logic of *overlapping* – aiming at defining a *multiple palimpsest*.

In this perspective, the pre-existing architecture is read as a text on which new sentences – new systems – can be superimposed: the introduction of a new constitutive logic, different than the existing one, thus proves to be inevitable.

Far from being decontextualized, the elements belonging to the original mechanism are re-interpreted into the new architectural machine, which surely establishes a form of continuity with the existing one. However, a consistency meant in general terms is not achievable, rather it is possible to highlight some pieces of the original mechanism, capable of taking a new ability of functioning. The main design objective – not easy to achieve – has thus been focused on the internal consistency of the result. In this sense, the existing parts qualify as the structural elements of the new composition – without taking a definitive configuration – which keeps being open to new interpretations and new interventions.

[4] "Non vi è autentica novità senza il riferimento a quella catena di sforzi che ci hanno preceduto". Venezia, Francesco. *Nature 01/04. Doppio per riflesso = Doubling by reflection.* D'Onofrio, Alessandro & Felci, Laura (eds.), Rome: Maxxi. 2011, p. 22.

Fig. 3. Cross-section of the Washery at Argentiera, Sassari (Italy)
Source: original drawings and design by the authors.

In the design solutions developed for the two machine-buildings, the superimposed framework – kept to a minimum – assumes the characteristics of a *sequence*, of a path that calls back into play the components of the former machine, properly reassembled.

In both cases, the main aim is to induce a new spatial interpretation, or in other ways to make it possible a double – or multiple – portrayal of the space, starting from the precise idea that today a project should have the ability to *actualize* an old building, so to effectively respond to our questions.

The project for the Washery has been defined by starting from some specific considerations about the machine-building. Primarily, the site at Argentiera is a potential *museum of itself*, meant as a document of the very peculiar productive process which originally used to start from the mines – arranged at the highest altitudes – and to go down to the sea, in accordance with a mechanism that can be reconstructed in precise terms, although subjected to constant changes and updates through time.

At the same time, along the structure in the opposite direction (but this possibility emerges from the very first vision of the buildings in their current configuration), the result is a sort of *adventure of knowledge*, in which nothing is taken for granted, and the prevailing characterizations are the wonder and the surprise, namely those features which are increasingly required by contemporary architecture. The choice of crossing the architectural machine in the reverse direction is an option that allows – when entering the artifact – to activate a particular cognitive mechanism, that does not follow the ordinary procedure through whicha museum's path is usually realized. This, just to say that the building shows in itself an exceptional modernity, and this aspect has been strongly considered in the design process.

On the other hand, the fundamental choice carried out in Tufo concerns the positioning of the wine museum in the wide and unified space characterized by cross pillars and large arches, arranged at the lowest level of the Mill-Garden.

It comes to an extremely interesting and majestic space, which can ensure a great flexibility in the organization of the exhibition and museum activities, constituting itself an evocative place to cross and visit.

Also in the case of the Mill-Garden, the design work has been focused on the definition of a path that follows an opposite development compared to that of the materials. Thus, entering the large vaulted area and crossing the entire building, it is possible to reach the outdoor space, where the materials of the sulfur mine used to be deposited. It comes to parallel paths arranged at different levels in elevation, which take place at the ground floor in the broad main spaces, but also higher up in side tunnels drawn amidst the building and the street, or even still higher, in a continuous exchange between the inside and the outside, also using the roofs of the lower volumes.

The configuration logic of these internal paths is the mounting of a sort of *framework*, connecting all the new elements. It comes to an even temporary *support*, which at the same time crosses and interprets the existing spaces. Therefore the framework has been meant as a sequence of connecting elements, which configures and integrates the structure of the original linkage setting. It is a set of absolutely necessary elements – ramps, stairs and elevators – that is to say the connection system, reunified and made functional in its overall image.

The two design have assumed a very precise approach, appropriately synthesized by Franco Purini, in a text about the meaning of the Italian word for *installation*, namely *allestimento*:

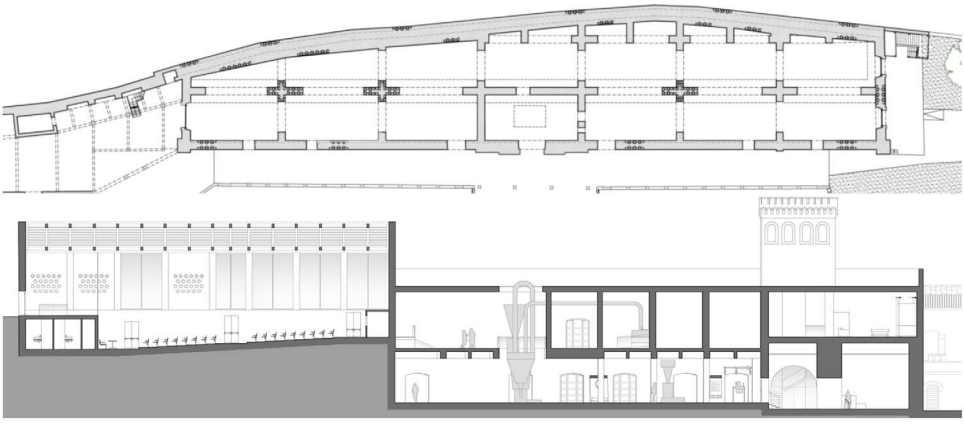

Fig. 4. Plan and section of the Mill-Garden at Zolfara, Tufo (Italy)
Source: original drawings and design by the authors.

In museums, the *[allestimento]* loses one of its main features, a character that is written within its own etymology – *[allestimento]* contains the idea of *[lesto]*, quick, fast as Mercury – to become a stable arrangement, a conformation of elements, walls, lights, paths – not more ephemeral, but called to an existence which can be as lengthy as the life of the famous installations by Carlo Scarpa, BBPR, Franco Albini, is now. Yet, it is precisely in the fact that is usually a system upon fast consumption that the installation seems to correspond exemplarily to the futurist proposal of an architecture which should be no longer projected on the long term, but rather cast to search the flash, the brevity, an architecture made of fulminating and extreme trajectories[5].

Fig. 5. Plan and cross-section of the Washery at Argentiera, Sassari (Italy)
Source: original drawings and design by the authors.

[5] "Nei musei l'allestimento perde uno dei suoi caratteri principali, un carattere che è scritto nel suo etimo – allestire contiene l'idea di lesto, svelto, rapido come Mercurio – per divenire una sistemazione stabile, una conformazione di elementi, pareti, luci, percorsi – non più effimera, ma chiamata ad un'esistenza che può essere lunga, come lunga è ormai la vita delle celebri sistemazioni di Carlo Scarpa, dei BBPR, di Franco Albini. Tuttavia è proprio nell'essere normalmente un sistema a consumo veloce che l'allestimento sembra corrispondere esemplarmente alla proposta futurista di un'architettura non più proiettata sulla lunga durata, ma proiettata alla ricerca dell'istantaneo, della brevità, un'architettura fatta di traiettorie fulminanti ed estreme". Purini, Franco, Allestire, *Lotus International*, No. 115. 2002, p. 61.

Some design issues

Many are the issues that should be explained and discussed at this point, but perhaps it may be helpful to take into consideration at least one of them for each of the two projects, exemplificative and of greater interest in relation to the specific theme hereby.

In this light, a detailed reasoning can be established, in the first place, about some issues related to the *tamponade* of the Washery.

In the history of the Washery, the phase in which the structure was buffered with wood paneling was followed by the abandonment, when the wooden skeletons were only partially infilled.

Starting from these two preexisting conditions, the design has introduced an additional possibility based on working with large glass windows as a shielding system, aimed at allowing to reconstruct the *full* part of the panel, offering at the same time the possibility of achieving a closed and protected structure.

Each one of these three hypotheses determines a different interpretation of the whole architecture of the Washery. The preservation of the machine in state of ruin definitely requires the entire wooden structure to be open, but this choice would fail to meet the functional needs of a museum. Furthermore, in that option it would also be very hard to guarantee the conservation of the interiors, threatened by the presence of pigeons and the proximity of the sea. Consequently, the other two solutions take the form of more concrete answers, but the propensity for the use of glass or wood is supported by good reasons. Though, it is very important not to interpret this juxtaposition in a rigidly alternative way, meant in terms of a unitary and fixed conclusion.

Both solutions, whether completely carried out and fully realized in an exclusive manner (total wood or total glass), would constitute a betrayal of the open interpretation of the building, which represents a key point. This consequence evidently appears by reasoning on the option of choosing the glass solution: in that case, the character of the machine-building would be completely altered, although a very significant image might be achieved from the viewpoint of functionality and of the possibility of defining evocative views over the Argentiera landscape. Considerable doubts would also arise from the alternative of adopting the solution of the wooden infill: apart from giving a rigid configuration to the artifact, this choice would deprive the visitors to the museum of the striking views of the Washery along the Argentiera coastline.

Through a slow work – pursued almost piece by piece – progressively the design has been achieving a more articulated solution: partly open (without any infill), mostly wooden, and with some glass portions. This choice is not meant to be a mediation, but the attempt to provide a coherent response, an answer capable of guaranteeing to strike a balance, by taking into account the multiple factors involved. In this research, the Washery has not been conceived as a static element, so that there is not a past that interacts with the present, but rather a past that runs together with the present time, aiming to recompose a *fracture*. The slowness

of the Sardinian construction site – which has already been lasting for several years – has helped to think long and hard about this issue and maybe further changes might be introduced afterwards.

On the other hand, in the case of the Mill-Garden, it is interesting to reason on the replacement of a wooden stairway – hardly restorable – with a new element containing the staircase and the elevator. Placed on the narrow front of the artifact, this new architectural body occupies a very important position, at the main entrance of the machine-building. The key role of this location is due to the rational connection it establishes with the designed distribution network, namely the articulated system of walkways and hallways, partly pre-existing and partly new. This solution have been challenged during the approval of the project by the competent Superintendency, yet still providing some room for reflection. During the phases of construction, the existing wooden ladder has been incorporated into a broader element, enclosed, made up of wood and glass, and protected by a wooden brise-soleil.

Certainly the staircase holds the role an addition: it acts as a continuation of the efficient system of the internal passageways of the Mill-Garden – arranged sideways between the large vaulted room and the street – and at the same time as the entrance element, recognizable from the outside.

This way, the added component – characterized by a diverse nature – grafts itself onto the machine of the Mill-Garden, simultaneously emphasizing one of the fundamental peculiarities of the pre-existent structure and looking for an innovative synthesis, which results from a new functioning.

Conclusions. Open solutions

The last aspect concerns – once again – the need for an open solution. In both projects, some interiors have been left in their current status as uncovered spaces, even though once they were configured as covered rooms. Some internal spaces, properly freed, have become crucial outdoor spaces in the new compositional balances of the two artifacts. The inner spaces that turn into external spaces play a major role, synthesizing the concept of an interrupted narrative: they may become different things, such as indoor gardens, establishing dialogue in a diverse manner with the other parts of the pre-existing machine.

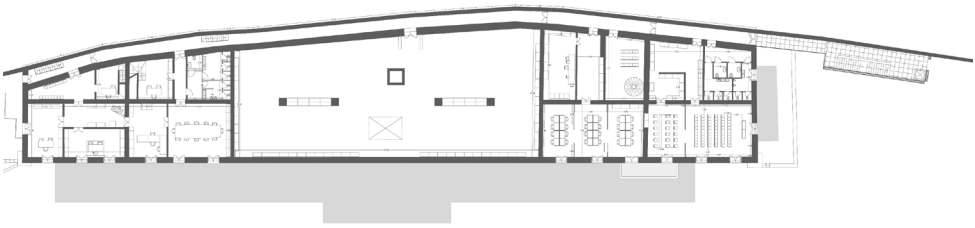

Fig. 6. Plan of the Mill-Garden at Zolfara, Tufo (Italy)
Source: original drawings and design by the authors.

Above all, these spaces become places of *waiting*, places in which the condition of ruin – which has been experienced by the machine-buildings for such a long time – suddenly returns to be the protagonist.

In point of fact, both buildings have been interpreted as public machines only partially determined and finished. Thus, specific management procedures need to be defined for the two artifacts, able to continue and develop the design, according to multiple directions and starting from a condition of flexibility. In this light, the machine-buildings may be able of regaining a state of transience and impermanence, which is embedded in the inborn founding features of the buildings themselves.

Ultimately, design flexibility, temporariness and openness foster an interpretation of the buildings as relational machines, capable of determining a project of correlation and conjunction with other parts of the territory and of the landscape – from the mines to the villages – by grafting a new life even into them.

THE IMAGE OF PRODUCTIVE LANDSCAPES: A METHOD FOR THE PERCEPTUAL ANALYSIS OF INDUSTRIAL HERITAGE

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Introduction

The context: rethinking the industrial heritage with new forms of production

Rethinking European industrial heritage for envisioning new forms of production to be compatible with the sustainable vision for the city of the future is an urgent challenge of today's policies. In order to do this, tools for analyzing, designing and evaluating the requalification of the existing stock considering a landscape design approach, is needed.

In particular, we refer to the case study of Europe, affected by a more than two decades long process of re-localization of industries outside the continent and the consequent loss of work and the rapid disappearing of the working class. Following this process, the emergence of new landscapes of dereliction of former active workspaces offers new interpretations of the heritage of these places. Arising questions that several scholars and policy makers are tackling do not only refer to the definition of a new identity and land use of brownfields, but also to the opportunities of reuse that given physical objects, like big boxes or wide industrial sites, like quarries, can offer. Therefore, observing industrial places, and interpreting subtle dynamics of transformation becomes a scientific operation.

The mental construction of the image of places, what Lynch (1960)[1] calls 'imageability', derives from the direct and indirect man-environment relationship. For instance, the physical and sensory experience of places, which includes a multiplicity of aspects, contributes to the personal construction of the mental image of places. The visual access to places, the distance or immersivity that relates us to them, the ways and speed of approaching them, the climate conditions

[1] Lynch, Kevin. The Image of the City. MIT Press, Cambridge, Massachusetts. 1960.

of the atmosphere, all these facts together inevitably affect the formation of mental images based on the senses and in particular on the sight.

Objective

If the urgent societal need is to rethink the European industrial heritage for envisioning new forms of production to be compatible with the sustainable vision for the city of the future, we firstly need to provide the tools to interpret the industrial heritage. Specifically, we have to understand and interpret the physical presence and the significance of the industrial heritage. Only after, we will be legitimated to investigate and launch new ideas for the reuse of the existing building stock. In order to tackle the topic of the image of productive landscapes, the methodology we propose is based on the use of perceptual visual analysis, which enables to support design and evaluation of the transformations and to communicate the vision to the larger audience of citizens and decision makers.

Methodology

Simulating the present and future of heritage as a design, evaluation and communication device

Envisioning future productive landscapes requires the anticipation and simulation of urban transformations in comparison to the current conditions of places. Hence, the use of urban simulation will support the re-use of productive landscapes considering different purposes, namely: design, evaluation and communication. During the design phase, the use of different techniques for analyzing the environmental and visual aspects of the image of the industrial heritage will inform the actions to promote on site. Comparing the current condition to alternative future scenarios will help in the choice of design solutions. Moreover, the use of visual simulation is a crucial device for communicating and informing a wider public, in particular for promoting a paradigmatic shift in the social acceptance of the new identity of industrial places. In short, we argue that citizen awareness and engagement in the co-creation of a shared vision is an unavoidable step for industrial transformation.

Techniques applied for the visual perceptual analysis

The experimental part of the paper will focus on visual analysis techniques for mapping current conditions of the image of productive landscapes. In particular, 2-D digital maps, 3-D digital urban modeling, spherical panoramic pictures, cylindrical videos, Google Maps and Street View, and a post-processing work on photography and models (image processing analysis, augmented panoramic pictures to be accessed online and onsite) were tested on an industrial area located in the urban fringe of Milan characterized by the diffused presence of productive landscapes.

We argue that the visual perceptual analysis is crucial for getting a complete understanding of the visual assessment of places (Piga & Morello, 2013)[2]. In fact, cartographic maps represented as top-views cannot give back at different points in space the information on the qualitative analysis of the perceived materials. In line with this statement, we proposed the analyses as follows.

Firstly, we quantify the perceived urban materials at specific points in space. For instance, we quantify the physical materials that are visible on the 360 degrees sphere; we use pictures taken on the road. On these images that get close to a subjective view[3] we can measure the relevance of materials of interests, like for example: areas to be preserved, areas to be transformed and background (the sky)[4] categories of urban materials[5] (roads and pedestrian pavements, greenery, sky, horizontal and vertical faces of buildings, urban furniture and parked cars, mobile elements like vehicles and people). Fig. 1 is an example for this features extraction analysis.

[2] Piga, Barbara E.A., Morello, Eugenio. "Perceptual simulation for urban design: its use for developing and sharing urban design guidelines", in: Morello Eugenio, Piga Barbara E.A. (eds.), Envisioning Architecture: Design, Evaluation, Communication. Milan (Italy): 11th conference of the European Architectural Envisioning Association (EAEA). 2013, pp. 259-266.

[3] Pictures are used as a simplification of the human perceptual image of reality and, of course, are not one-to-one reliable. On the topic of image reliability numerous scholars gave their contribution (among others: Sheppard, Stephen R.J. Visual Simulation: A User Guide for Architects, Engineers, and Planners. New York: Van Nostrand Reinhold. 1989; Bosselmann, Peter. Representation of Places: Reality and Realism in City Design. Berkeley, Los Angeles, London: University of California Press. 1998; Lange, Eckart. "Issues and Questions for Research in Communicating with the Public through Visualizations", in: Buhmann, Erich; Paar, Philip; Bishop, Ian David; Lange, Eckart, Trends in Real-Time Landscape Visualization and Participation. Anhalt (Germany): 6th International Conference on Information Technologies in Landscape Architecture. 2005, pp. 1-11.).

[4] Piga & Morello. op. cit.

[5] As applied in: Radaelli, Roberta, Salerno Gessica, Villani Valeria, Piga B.E.A., Morello E. "Designing child-friendly urban environments: a proposal for a method of investigation based on visual simulation", in: Breen, J., Stellingwerff, M. Envisioning Architecture. Delft (Netherlands): 10th Conference of the European Architectural Envisioning Association. 2011, pp. 181-188.

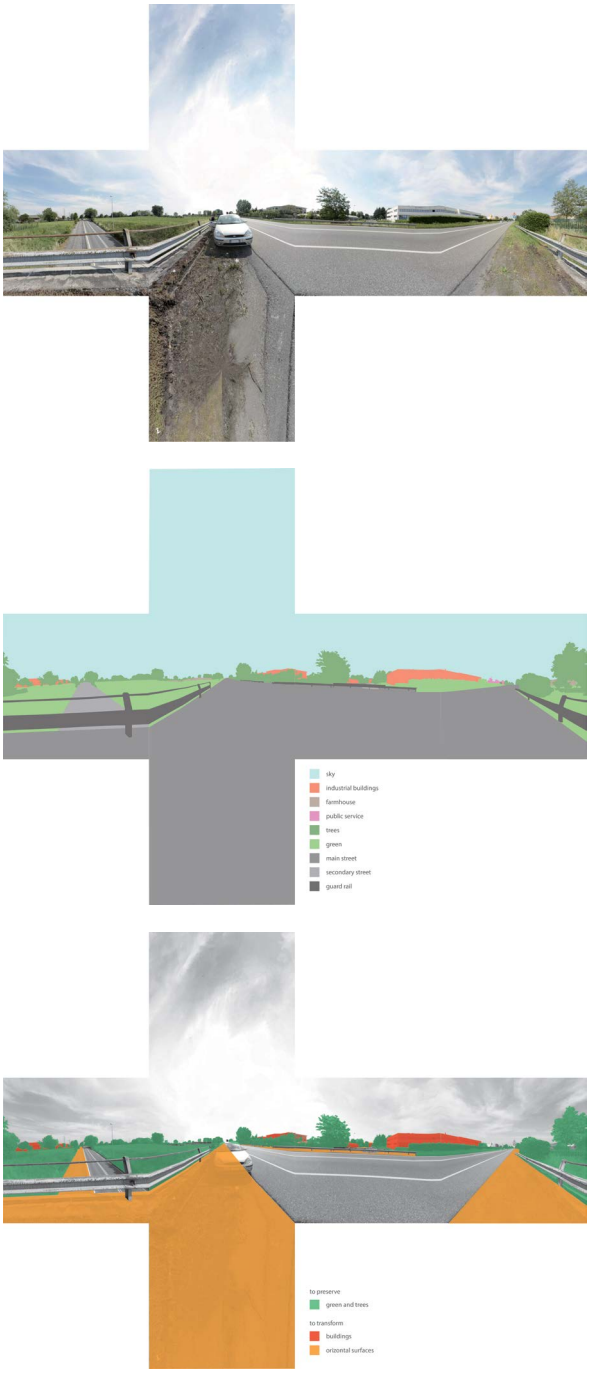

Fig. 1 (a) a panoramic spherical picture projected on a cube, (b) the image processing and quantification of the captured urban materials according to the proposed urban categories, (c) another categorization based on the areas to preserve (green) and the areas to transform (red)
Source: by the authors.

Application on an industrial area located on an urban fringe

The case-study area is a productive area in the urban fringe of the metropolitan city of Milan. If perceived from the motorway, the buildings contribute in creating the typical anonymous landscape of productive boxes.

In particular, the productive area faces the Strada Statale 11 Padana Superiore, a motorway that bypasses the urbanized area of Gorgonzola (refer to the map in Fig. 2). The productive buildings on site were not designed with a particular attention to the perception from the motorway, even if this aspect could represent a potential advertisement for the business. The lack of aesthetic quality originates from different reasons, mainly: (i) no need for advertisement on the road; (ii) the façade on the road was initially designed as a back, in many cases before the construction of the road; (iii) no need to invest on aesthetic quality by the business owners; (iv) no guidelines by the municipality.

In summary, this transect represents the typical situation of a low-quality productive district, hence it is a relevant sample to analyze in order to propose short and long-term re-design solutions.

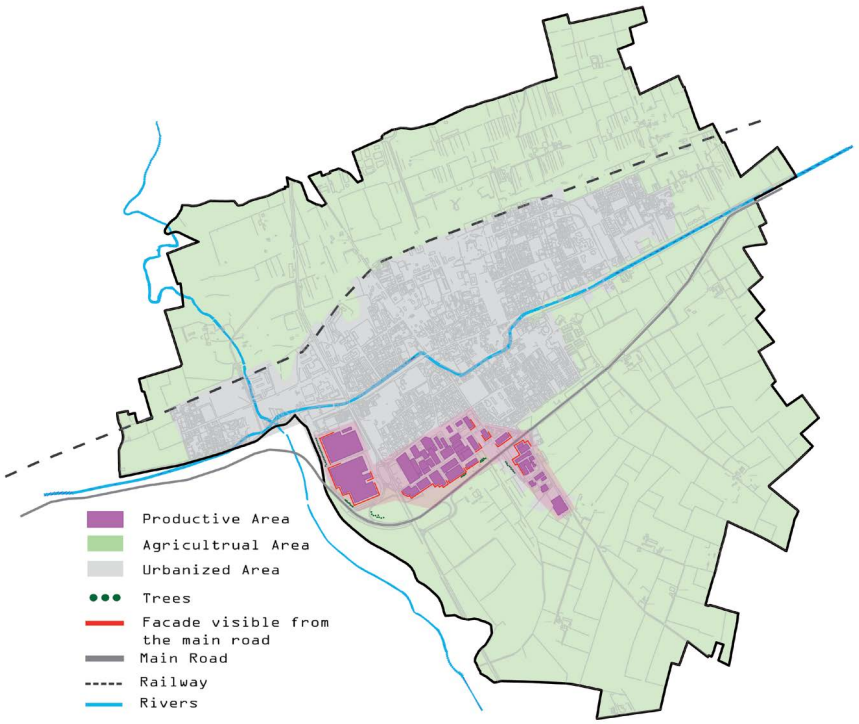

Fig. 2. Above: The key-plan of the case-study area with the productive areas highlighted in purple, the facades of industrial buildings visible from the road in red, and the trees that partially cover the facades in dotted green

Source: by the authors.

Visual analyses conducted

We conducted a series of visual analyses on digital supports.

Firstly, a quantitative analysis of the perceived facades of productive buildings was conducted using the sky view factor (SVF) analysis. Considering the SVF of the unobstructed sky vault as 100% visibility, the resulting visibility of the productive buildings was calculated as the obstructed portion of the sky. The visibility of the productive frontages can be computed point by point from the road or as an aggregated average data for the entire road section to obtain the general relevance of the buildings to the viewer (Fig. 3). This information gives back the 'visibility field' of the perceived industry and identifies the road sections that are mostly affected by this phenomenon. This map can be used to select specific points of view to focus on during the analysis and the design phases.

Of course, the quantification of visibility alone is not enough to give back the environmental quality of the perceived landscape. Hence, we proceeded with qualitative analyses on pictures. First of all, we reconstructed the frontages of the productive buildings that are visible from the road. In Fig. 4 the visible frontages are highlighted in red.

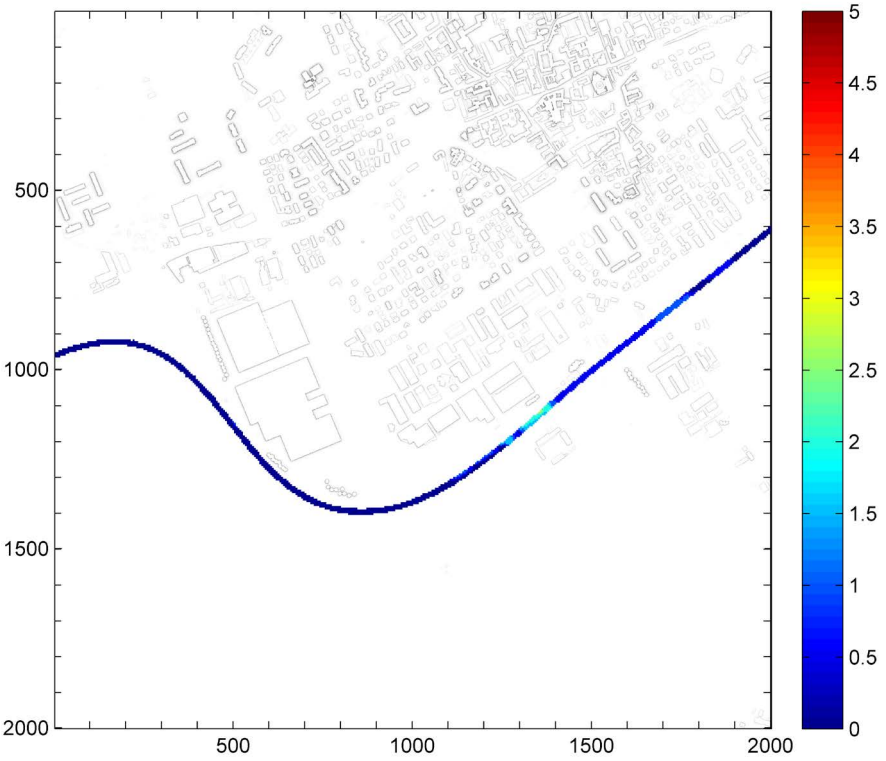

Fig. 3. The visibility map of the productive buildings perceived from the road only (the unit is the percentage of the sky vault)

Source: by the authors.

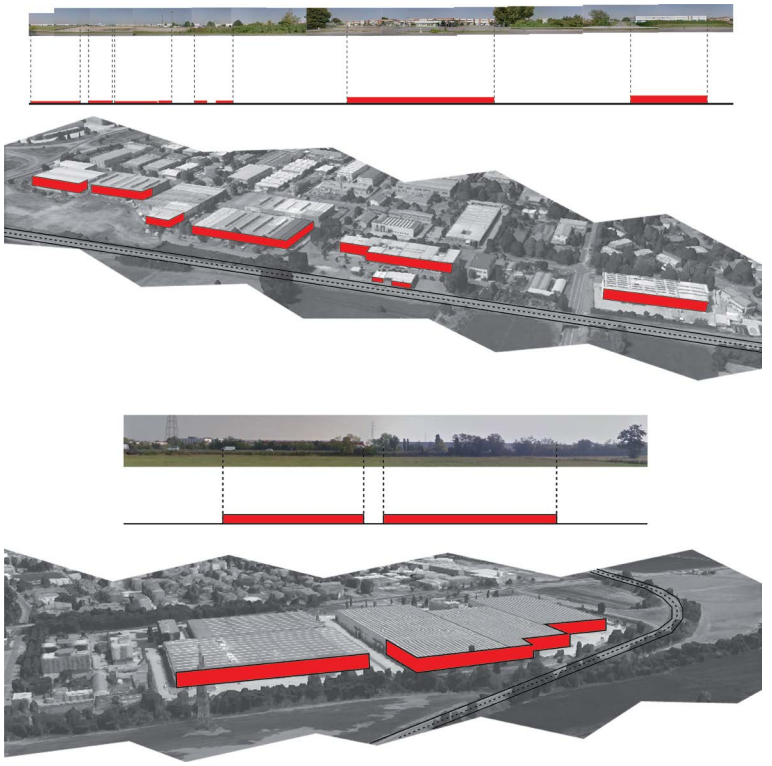

Fig. 4. Above: The key-plan of the case-study area with the productive areas highlighted in purple and the facades visible from the road in red

Source: by the authors.

Afterwards, immersive spherical photography was used to map urban materials and qualitative information on the areas to preserve and to transform. So far, this analysis was conducted on punctual areas only (Fig. 1, Fig. 5) and does not enable general considerations on a more distributed area yet. For a continuous view from the road a 360° videos was recorded. Panoramic photos and videos can be visualized in an interactive way, by panning the image; this interaction enables the user to get an intuitive understanding of the environment because this way of fruition recalls the natural interaction of looking around. Spherical panoramic images can also be unwrapped (see Fig. 1) for specific usages. The contextual work on interactive panoramas and the exploded one helps the architect to obtain a greater understanding related to a continuous shifting from the perceptual view (interactive panoramas) and the conceptual one (exploded panoramas and technical maps). We argue that the combination of different types of representation is really relevant for supporting design thinking.

Fig. 5. The pano-tour map with the spherical panoramic images taken during the survey and used for the perceptual analysis

Source: by the authors.

Considerations

In this paper we proposed a visual perception analysis to be used as a methodology for the evaluation, communication and design of places. In particular, the work was applied for the urgent challenge of re-thinking industrial areas which characterize the visual landscape of numerous urban fringes.

The tentative application of the methodology on a production landscape with low aesthetic value offered the opportunity to derive some considerations as follows:

1. The proposed methodology is easy to implement and can be applied at different levels of complexity.
2. Of course, the recording of cylindrical videos and the manual post processing of images is very time consuming if applied on numerous points of view.

3. In general, the subjective visual analysis offers complementary information to the top view one. This is the peculiarity of this work.
4. An extended analysis distributed in space represents the most useful application because it reveals the areas that are perceptually interested by sight effects (e.g. panoramic viewpoints, visually poor viewpoints).

Future work

Future work will focus on the improvement of the proposed methodology. In particular we will propose the automation of post processing steps, in order to reduce manual work on images. This will enable to save time on the computation and make this type of analysis economically feasible. Moreover, we would like to improve the content and provide a truly comprehensive tool that takes into account quantitative and qualitative analysis together. Quantification of visual aspects alone is not enough if not accompanied by a qualitative interpretation of visuals.

Finally, after the analysis phase, we will devote our attention to the design phase. This will involve the use of urban simulation techniques for depicting future environments that will undergo the visual analysis presented here.

Acknowledgments

We are indebted to our colleagues, Laura Cibien and Valerio Signorelli for their collaboration, internship students, in particular Davide Zappa, Carmine Tancredi, Marco Miniello, Yan Ji, Sadegh Alavisadr for the patient work on the digital image processing on the pictures. We have to thank Prof. Andrea Arcidiacono and Prof. Alberta Cazzani for the funding of the research program named ‘New tools to analyze and manage the linear cultural landscape. Preservation and planning policies’ which made this work possible.

RETHINKING UTOPIA: THE INDUSTRIAL LANDSCAPE AS A GENERATOR OF URBAN CHANGE

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Introduction

The topic of research

Methods of transforming inactive industrial spaces within urban areas is a novel theme in Croatia, and is a result of shutting down factories in the last couple of decades. Thus the focus of the perception of the industrial city shifts from economic and productive themes, to the topic of the perception of industrial heritage within and as a part the city structure.

The spatial and historical context

Founded in the 4th century B.C. by the Illyric peoples, on the western outskirts of the Pannonian basin, the space of Sisak spans 25 centuries of settlement, thus being a unique place where dozen archaeological layers from the pre-roman and roman antiquity up to modern areas of industrial archaeology are found. Since the mid 1800's Sisak had seen constant growth of its industry ranging from transit, wood and masonry, food, textile, glass, chemical industries, yet the two of the largest industrial branches rose in the period between the two World Wars: oil and metal industries were to become the staple of Sisak's economic and urban growth. According to the first five year plan after the Second World War, Sisak was to become one of the leading industrial cities of the country, and in the course of only two decades it did. The industrial areas in the northern and southern parts of the city, along with its infrastructure, became the core identity of Sisak.[1]

[1] Braičić, Zdenko. Razvoj metalurgije i njezin utjecaj na urbanu preobrazbu i stambenu izgradnju Siska. *Geoadria*, No. 2. 2005, pp. 211-228.

The factors of the formation of the present urban landscape of Sisak

Trying to annulate the negative effects of a growing and industrialised society, the factories invested in raising the standards of housing and public spaces. This resulted in Sisak becoming a city of numerous parks, sporting and public facilities which were created not only for the workers, but were open to the whole community. Sisak Ironworks (Željezara Sisak), employing at its peak 13 742 workers, was the leading force of both economy and urbanisation. The late fifties saw the founding of Caprag, a modernist workers settlement with 1,500 housing units for the workers of the ironworks planned alongside all the sports and public facilities needed for its almost independent functioning.[2] Located five kilometres from the city centre, on its southern outskirts, both the ironworks and the workers settlement grew within an oak forest incorporating it as a key element of its design. The industrial halls and multiple housing units use the forest as a natural environmental barrier which protects the inhabitants of the settlement from the negative aspects of industry.

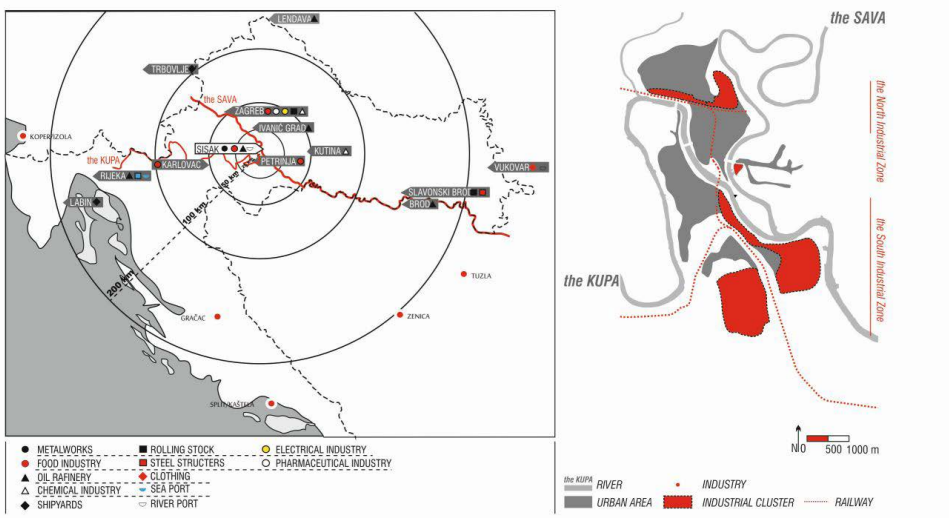

Fig. 1. the location of Sisak in the context of other industrial cities of the region, and the displacement of the industrial areas within Sisak

Source: Sorić,Sven. Bojanić Obad Šćitaroci, Bojana. The transformation of the Sisak Ironworks' industrial landscape. Faculty of Architecture, University of Zagreb. Masters' diploma thesis. 2014/2015.

Apart from its natural environment, another fact about this space is to be found crucial – the settlement, together with all its public facilities, was built completely from the extra profits of the Sisak Ironworks. Instead of increasing the wages of its employees, the ironworks invested the profits in development, thus securing quality housing for its workers for a minimal or no fee at all. The settlement was envisioned not only as a home for workers, but as a polygon for creating

[2] Čepo, Zlatko. *Željezara Sisak 1938-1968*. Institut za historiju radničkog pokreta, Sisak 1968.

a new community. The people were not only workers in the factory, they were also the key creators and consumers of public, sport and cultural events as well as their health being the subject of scientific research. Lunch breaks were also the time for leisure and sport activities, as the workers were encouraged to spend their free time in a healthy outdoor environment. This could be called the workers utopia.

The nineties of the twentieth century brought sudden change in the political and economic systems; the inflation of the previous decade, the transition from planned economy to capitalism, and an ongoing war were the reasons for the whole scale decay of the industry in Sisak. Some thirty years after its hayday the city is facing vast areas of its former industry being transformed into 'spaces internal to the city yet external to its everyday use' – the space of 'terrain vague' as dubbed by Ignasio de Sola-Morales[3].

Background

Identifying an industrial landscape and an industrial city

The research of the industrial identity of Sisak offered some insights on specific relations between industrial infrastructure, architecture, the landscape and the city as a whole. These insights based on the research done on the example of Sisak are formed as follows:[4]

1. the industrial landscape – is formed by (a) industrial infrastructure and its bearing structures, (b) technical landscape interventions that make the proper functioning and safety of the infrastructure possible, (c) landscape **created by** exploitation of excavations or depositing materials used in industry, and (d) landscape elements used or formed as to annul the negative effects of industry on the environment
2. the industrial city – is a form of urban tissue which by its morphogenesis unites (a) the historical urban tissue or cultural landscape in which (b) elements of industrial architecture and (c) elements of industrial infrastructure create a technological conditioned landscape, and which trough social and economic processes affect the growth of the urban tissue by planning (d) workers' housing units or developments and (e) public facilities.

Classification of the elements of the industrial landscape and the industrial city

As defined above the elements of industrial infrastructure and industrial architecture form not only and identity of a space, but affect the physical formation of landscape and urban patterns. The identification and mapping of these elements in the urban landscape of Sisak shows us the relatively high level of the integration of industrial elements in the city fabric. Consequently methods of urban tissue reparation ought to be found, when such a highly integrated element of the whole becomes dysfunctional.

[3] http://indexofpotential.net/terrain-vague-—-ignasi-de-sola-morales/ (accessed 15.09.2014).
[4] Sorić,Sven, Bojanić Obad Šćitaroci, Bojana. *The transformation of the Sisak Ironworks' industrial landscape*. Faculty of Architecture, University of Zagreb. Masters' diploma thesis. 2014/2015.

1. These elements of industrial infrastructure form the industrial landscape of Sisak, and are classified and mapped as:[5]
   1.1. railways
   1.2. cranes
   1.3. docks and harbour equipment
   1.4. waterway signalisation
   1.5. signalisation within industrial areas
   1.6. oil silos
   1.7. pipelines
   1.8. exploitation fields
2. These elements of the industrial architecture of Sisak are classified and mapped as:[6]
   2.1. long span industrial halls
   2.2. short span industrial halls
   2.3. chimneys and vertical structures
   2.4. warehouses and hangars
   2.5. grain silos
   2.6. administrative buildings
   2.7. workers' housing and settlements
   2.8. public facilities financed by the industry

Sisak as an industrial city

Identifying the types of industrial infrastructure and architecture within multiple layers the urban fabric consists of, informs us of how the areas of industrial activity are integrated into the city. The ways the infrastructure corresponds with and penetrates the urban landscape, as well as the industry which affects the growth of the urban tissue, speak of Sisak as a model of an industrial city.

The industrial activity was first implemented on the northern outskirts of the historical eighteenth to nineteenth century city core. Consequently growing, as an effect of the introduction of the railway system in the mid eighteen hundreds, the industry spread across the city's cultural landscape. Either by interlinking the industrial areas, or linking them with the city space, an urban landscape of interaction was formed. Not only did this infrastructure form an industrial landscape of its own, but it also opened the possibility to activate the space "in between", the voids which stood in between the areas overtaken by industry, and the space of the historical, slowly evolving urban tissue. The social and economical effects of industrial growth, along with the pre existing infrastructure, allowed the city to fill in the voids by planning workers' settlements, public facilities and quality urban landscape elements which were to annul the negative effects of the industry. Trough such a process a wholesome identity of a city was formed.

[5] ibidem.
[6] ibidem.

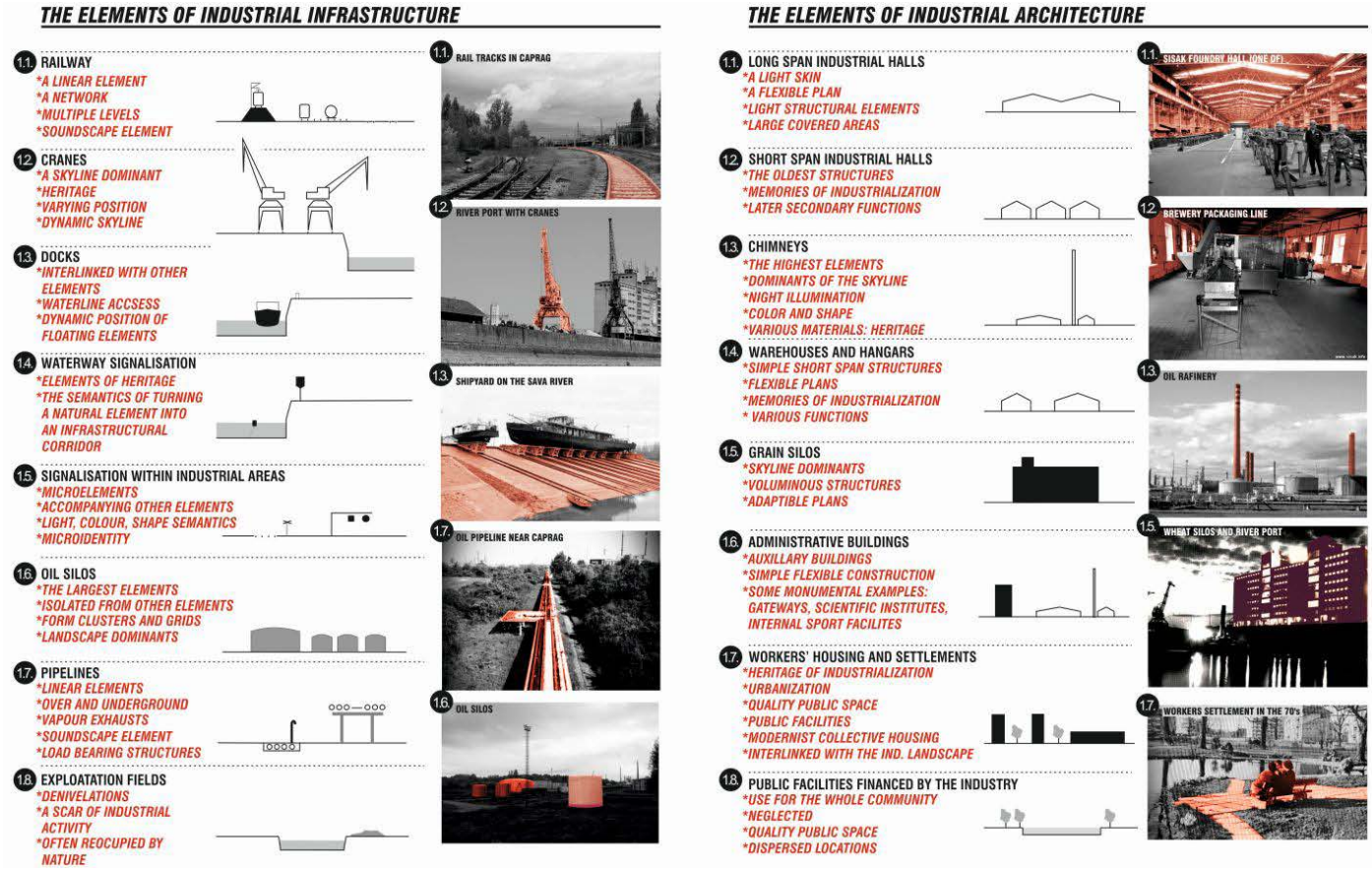

Fig. 2. the elements of industrial infrastructure and architecture mapped in Sisak

Source: Sorić,Sven. Bojanić Obad Šćitaroci, Bojana. The transformation of the Sisak Ironworks' industrial landscape. Faculty of Architecture, University of Zagreb. Masters' diploma thesis. 2014/2015.

The industrial landscape: Sisak Ironworks as a case study

The space of Sisak Ironworks

The complex of the former Sisak Ironworks covers an area of 230 hectares, creating a landscape in which

natural elements and heavy industry are set to coexist, yet in different contexts over time. From its formation in 1938. the ironworks was set on the very egde of an oak forest, Velika Lasinja. As an ever expanding enterprise, the ironworks started to infiltrate the space of forest, clearing it out very rationally, only placing the production halls and infrastructural corridors without overexploitation of the space between them. The result of such a treatment of space is a unique identity of highly modernist era industrial structures superimposed upon a native natural landscape.

In order to understand the demands the infrastructure and architecture of Sisak Ironworks had to meet, one must acknowledge that the ironworks was, in its post second world war period, conceived as an integral plant. This means that the whole process of production, all of the different stages, from the treatment of raw material to the finishing of the final product, was run in various facilities of the ironworks. The whole production cycle was focused on one type of strategic product – seamless pipes of various diameters.

Such a span of technological activities was a result of an intense twenty year modernisation and growth that lasted until the nineteen sixties, and of a series of less intense modernisations up until the end of the nineteen eighties. The impact of the modernisation and the technological expanding of the ironworks resulted in building halls for different production stages, whose dimensions culminated in four long span halls and hall clusters which cover areas from 2 hectares to 6.8 hectares. Accompanying them, numerous smaller halls, warehouses and workshops were constructed in the area. As of 1964 Sisak Ironworks formed its own construction bureau for steel structures. [7]

Following such a large scale of industrial production and architecture, a vast network of infrastructural corridors was installed. One of the preconditions for such an intense industrial activity was its energetic autonomy, thus the ironworks constructed its power plant by the beginning of the sixties, which was later connected to the heating system of the Caprag settlement. A system of above – and underground pipelines and control vents form an autonomous network of energy supplies.

Various production phases located in different halls, due to technological requirements and standards, called for a fast and efficient network of transportation. Located adjacent to the railway line connecting Sisak to Zagreb on the north, and Bosnia and Herzegovina on the south, most of the transport of raw material and final product was done by railway. Consequently most of the inner communication of the ironworks was also executed by rail, resulting in an existing and still

[7] Čepo, Zlatko. *Željezara Sisak 1938-1968*. Institut za historiju radničkog pokreta, Sisak 1968.

functional infrastructure network of 45 km of rail lines.[8] In order to facilitate such a production where constant shipping of heavy material between production halls is necessary, internal and external crane systems were constructed. The largest crane spanning the width of 30 m on a line 450 m long operated on providing iron ore for three blast furnaces.

The transformation of the industrial infrastructure

The goal of transforming the industrial infrastructure is to emphasise two of its specific qualities, the first being possibility of using infrastructural corridors as a new mean of communication, id est moving trough space. The second quality is the fact that the infrastructure per se forms it's surroundings in a specific technological manner named the industrial landscape, as mentioned earlier. Thus the transformed infrastructure can be viewed as the formative element of two layers: a layer of new communication, and a layer of landscape. The transformed combination of these two layers results in their different usage, rendering them a new type of space – the postindustrial landscape.

The transformation of infrastructural corridors into a new communication network encompasses the linear types of ground and overground based corridors. The sole ground component found in the area of the ironworks is the railway network which not only covers the vast area of the ironworks, but connects it with other industrial areas and the rest of the urban tissue. The first step of transformation is identifying a broader network of other linear corridors trough the urban landscape (i.e. embankments, surface pipelines), valorising the probability of their transformation, and defining a unifying mean of their usage. One of the possible means of transformation of such infrastructure is a network of bicycle lanes which would connect the ironworks with the other "terrain vague" areas as well as with the city itself.

The other component of industrial infrastructure to be transformed is a group of structures that consists of overground pipelines and cranes. The initial problem with transforming these structures is their safety and accessibility. In order to undertake a rational transformation, a series of vertical communications has to be introduced. Such a system of newly introduced communication elements has the potential to link different levels of transformed infrastructure. The system of transformed overground infrastructure thus has the possibility to become a new "highline" which connects the transformed ground infrastructure system with the elements of the industrial landscape, such as landfills or water filled exploitation fields, and vertical elements of industrial architecture such as chimneys, silos and the upper layers of industrial halls.

This new interaction between the infrastructure and space, named the postindustrial landscape, has as a result a shift in the perception of the industrial heritage.

[8] ibidem.

The transformation of industrial architecture elements

The most present element of industrial architecture in the space of the ironworks is the industrial hall. Regardless of their dimensions which include structures from short to long span halls, the structural and spatial elements they consist of are of similar nature. The physical elements of the halls can be deduced to vertical structural elements, horizontal structural elements (such as beams or trusses), the envelope of the structure and the infrastructure operating within. The spatial elements can be simply deduced to the floor, the void and the skin. The main quality of industrial architecture is that it allows various spatial formations within itself, for example housing different types of technological processes in the same type of space. This is possible only because of its filigree and almost nonexistent structure footprint. Thus, the structure itself shall not be the object of transformation.

The method of intervention within the halls is focused on the vertical linking of the floor, the overground infrastructure, in this case the cranes and the void between them. Yet again a series of vertical communications may be introduced, not only linking the horizontal layers within the hall, but also linking the void of the hall with the layers of the postindustrial landscape outside. Due to its span the hall interior may be perceived as the extension of the exterior.

The open plans of the halls allow multiple scenarios of urban life to be tested. Depending on the different usages of space within different scenarios, various porosity of the skin may be achieved. The porosity would be directly linked to the amount of natural light needed for a certain scenario spanning from partial porosity to the absolute removal of the skin. The morphology of the openings would be a direct consequence of the architecture formed within the void.

Such methods of introducing various scenarios within a space which has a potential for rapid and simple transformations would be the way to establish criteria for the long term transformations and usages of the industrial heritage. As a result the heritage wouldn't be perceived as a monument of its time, rather as a living organism initiating change of the urban environment.

Conclusion

The key to a successful transformation of inactive industrial areas within an urban fabric is a systematic and wholesome method of planning such transformations. This method should address all the elements of industrial identity found in the urban tissue with the goal to find a unifying use depending on their location and their physical and structural properties. Interlinking the city with a newly transformed system of infrastructure and architecture is the base for perceiving and using the industrial heritage as the generator of new urbanity.

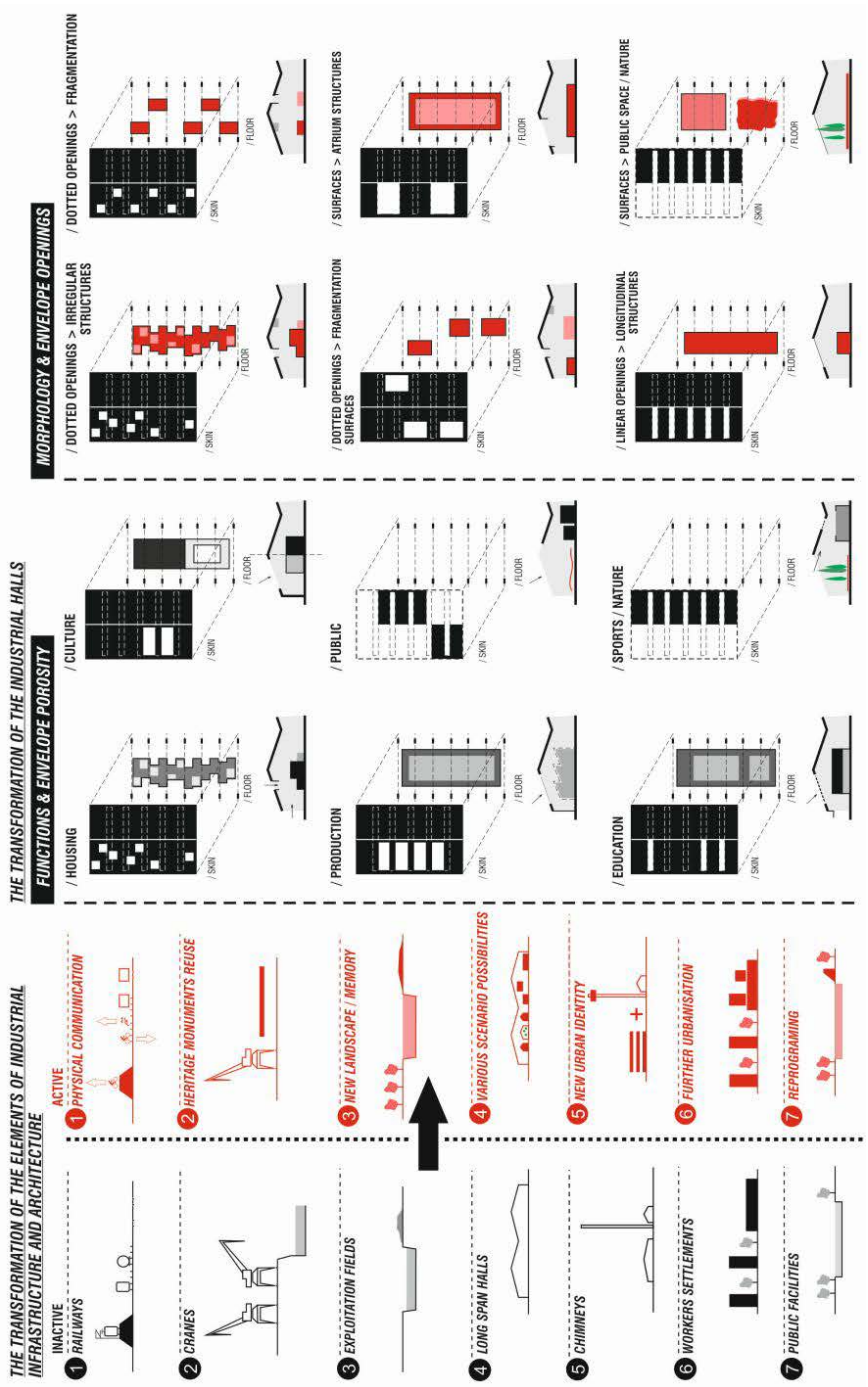

Fig. 3. Examples of transformation of elements of industrial infrastructure and architecture

Source: Sorić, Sven. Bojanić Obad Šćitaroci, Bojana. The transformation of the Sisak Ironworks' industrial landscape. Faculty of Architecture, University of Zagreb. Masters' diploma thesis. 2014 / 2015.

Results

Introduction

The first result of the study can be described as a new network of physical communication which interlinks inactive industrial areas and the city itself. The second result of the study is a system of interventions on the physical structure and the spatial concept of the typology of the industrial hall.

The perception of heritage

1. The perception and transformation of industrial infrastructure

The infrastructure forms the base for the functioning of any industrial activity. The decay of industrial infrastructure due to the inactivity of the industry, results in the potential deurbanisation of the city space. As a vital part of the urban landscape within an industrial city, the infrastructure is to be transformed with the goal to induce urban change.

In the case of Sisak Ironworks the studied infrastructure was viewed as a potential network of physical communications which links the Ironworks with other inactive industrial spaces and with the living city. Such a treatment of existing infrastructure shifts the perception of it from a series of technological corridors to an image of a new type of space, the postindustrial landscape.

2. The perception and transformation of industrial architecture

The quality of industrial architecture is its possibility to house different technological processes due to its specific structure. The transformation of such architecture should follow its qualities and preserve the elements which ensure its quality. Any intervention should address the spatial elements of such architecture or such elements that may be easily transformed. Thus the objects of this transformation are the skin, the floor, the void and the infrastructure within. The case study of the transformation of the Sisak Ironworks halls may be applied to any industrial space of such a morphology as the interventions are not the result of specific historical or architectural circumstances, but they are a series of possibilities in which various scenarios are tested with the aim to find the most suitable one for the context of the present. All of these scenarios should be perceived as temporary and adaptable, as such they become a base for a sustainable development of urban space.

Conclusion

The sum of the research

The image of Sisak as a once prosperous industrial centre deteriorated during the economical transition period of the ninety nineties, erasing almost all of the positive aspects of its industrial identity. As the collective knowledge and experiences of the industrialised era faded away, problems concerning inactive and unsafe city areas took over. With no strategic planning or visions for development, the municipal authorities maintain a status quo towards these derelict spaces.

The study was based on the method of mapping of the elements of the industrial identity of Sisak, namely the elements of industrial infrastructure and architecture. Such an inquiry has proven a high integration of the mapped elements in the urban fabric of the city, which leads to the conclusion that in combination the form a wholesome identity of an industrial city, the infrastructure itself forming a specific type of spatial relation recognised as the industrial landscape. A systematic transformation of these elements is the key to a successful regeneration of derelict areas of the urban landscape.

Infrastructure and architecture transformation has for a result a shift in the perception of industrial heritage which now perceived as a living system capable of initiating urban change, rather than as solely a monument of its time.

The key factor that supports the possibility of introducing various scenarios within the transformed industrial landscape is the open plan nature of industrial architecture itself. The transformability of industrial infrastructure and architecture is the basis for a sustainable management of the spacial resources within the city. The industrial heritage is thus perceived as a generator of a new urbanity.

Further research issues

The basis for the further research of the potentials of the industrial landscape being the generator of urban change, is testing the potentials of the infrastructure interacting with other urban elements. Different contexts of industrial urbanity should open a number of possible relations between the infrastructure and the types of landscape and urban fabric that may occur due to specific geographical or historical circumstances.

The technological requirements and functioning of certain types of industrial infrastructure remain the same regardless of their context, thus certain methods of mapping and rethinking infrastructure proposed in this paper may be applied to different contexts, while keeping in mind that specific relations of industrial landscapes to urban elements are to occur in any given location.

Note

This research is a part of the scientific project *Heritage Urbanism – Urban and Spatial Planning Models for Revival and Enhancement of Cultural Heritage* (2032) financed by Croatian Science Foundation, which is being carried out at the Faculty of Architecture, University of Zagreb, under the project leadership of academician Mladen Obad Šćitaroci.

NEW IMAGE OF POST-FACTORY BUILDINGS IN LODZ IN KOPERNIKA STREET

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Intoduction

Space, regardless of what perspective we view it from, creates an environment for mankind to inhabit. This space is constantly changing under the influence of people and their behaviour that is visible in economic and social activity forms. Lódź is a particular example of such changes resulting from the efforts to redevelop abandoned factories. The present appearance of the city is connected with the possibility of preserving and transforming many historical, post-industrial estates.

As a 19th-century city, Łódź was created mostly for industrial purposes[1], but it is also a peculiar sensation among cities of this kind, because the industrial part is not clearly separated from the residential part. As a result, we now have a mosaic of factories, manufacturers' villas and tenement houses. All these types of buildings create a unified urban fabric that constitutes the character and the beauty of the city. As in Europe, today's use of factory buildings is related to the change of the functions they play.

An important issue for the factory buildings is to maintain their historical character and values. To keep their industrial heritage, rather than changed, these buildings should be preserved. Keeping these buildings alive plays an important role, as this shall be considered valuable and vital to the cultural identity and the image of the city.

Historical context

Łódź is not so old a city. The first mention of the modest settlement named Lodka dates back to 1332, and 91 years later, in 1423, under the privilege of King Wladyslaw Jagiello a Wroclaw-based Bishop Jan Pella received incorporation charter for the city of Łódź. Despite having the status of the city, until the end of 18th century the buildings in the city had no urban character The beginnings

[1] The authors (Kusiński J., Bonisławski R., Janik M.) of *Księga Fabryk Łodzi* (The Book of Łódź Factories) have listed nearly two hundred buildings destined for production.

of large-industry Łódź are connected with the development of Kalisz-Mazowieckie industrial zone, as this is when the great manufactories in Łódź were constructed.

Kopernika Street was constructed around 1873 as a secondary, peripheral road leading from the center of Łódź to the town forest. Initially, it was named Milsza (Milscha) Street (Route) after industrialist Theodore Milscha, who built a brewery and his villa nearby. In 1923, to celebrate the 450th anniversary of Nicolaus Copernicus' birth, the street received its present name. In 1900, a tram line was constructed along the street and then, both, the street and the line were extended to a newly created Łódź Kaliska railway station. This prompted the development of the street as well as the parcelling of surrounding areas into building plots. The development of Kopernika Street was as rapid as the development of the city at that time. And so, at the very beginning of the street, at the intersection with Wolczanska Street, Ernest Wever's industrial complex was built. The factory produced haberdashery. There were also several other factories located in Kopernika Street like Frederick Alba's mechanical weaving mill, and after 1920 also a weaving mill of silk goods, Aron Kreutzberg's haberdashery factory, as well as Stanislaw Jaroszynski's engine manufacturing plant "Elektrobudowa", Karol Kretschmer's wool and cotton products factory, and Otto Wever and Emil Reul's carded wool spinning mill (Fig. 1).

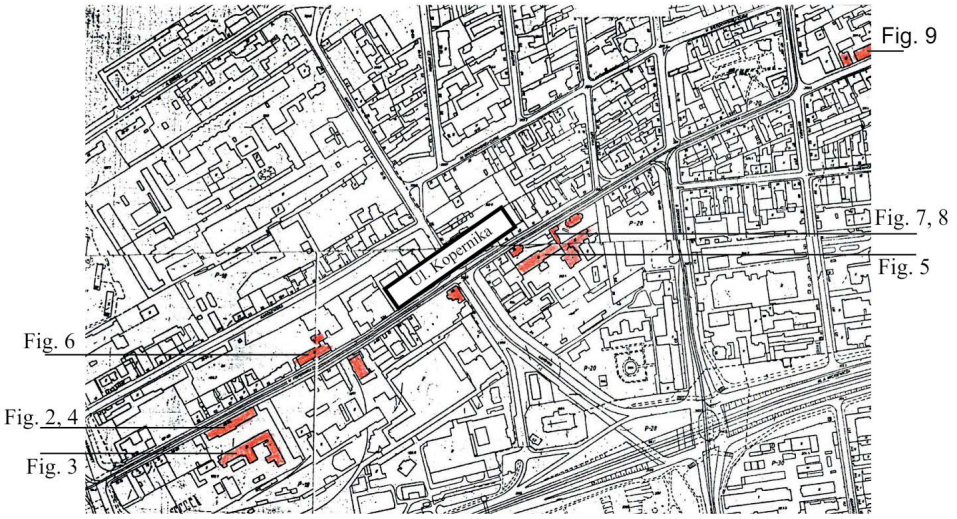

Fig. 1. Location of post-industrial facilities at Kopernika Street
Source: developed by author.

Examples of revitalization

In recent years, there have been several significant revitalizations in Łódź, including the discussed area. The revitalizations conducted concern not only the buildings themselves, but also their surrounding areas.

The attention is drawn to objects that after transformation gained new features and regained their importance. These buildings not only represent a new architectural quality and signal a new era for post-industrial areas, but also they create a new image of Kopernika Street. One of the most successful revitalizations is Karol Kretschmer's wool and cotton products factory located at 62 Kopernika Street. This large plot includes a complex of post-industrial buildings. It is worth mentioning that before World War II the main gateway into the factory was crowned with an emblem, and Kopernika Street had a line of trees, thanks to which it could become a green alley.

The main building from Kopernika street side has been transformed into "Tobaco Hotel" (Fig. 2) with interior decoration based on the fifties, whereas the remaining post-industrial buildings have been converted into lofts. Since 1925 the building housed a cigarette factory that belonged to Public Tobacco Monopoly, the name of which refers to the name of the hotel (Tobaco Hotel) and the residential complex (Tobaco Park). In the post-industrial interiors of the main building, there are 115 3-star rooms.

The remaining areas, designed to be lofts, are characterized by red-brick walls – typical for factories in Łódź – that are complemented by modern architecture.

The architectural design has taken into account the need to preserve the characteristic features of the factory, such as a red bricks in the facade, but it also introduced new walls plastered in white, with transparent railings that fit in well with the existing walls. The last floor stands out with grey cladding panels (Fig. 3). As Danowski points out[2], there are basically two methods of restoring industrial facilities in Łódź. The first one is called "puristic" and it entails that a building is cleaned of all unnecessary imports in order to restore its original form, but with some acceptable changes (i.e. internal divisions) introduced, as the need for these might result from a change in the function of the building. This method is applied to the most valuable buildings or to those where the investor wants to conduct a faithful reconstruction in order the highlight the prestigious or historical character of the building.

The second method is the method of "active adaptation", where the most valuable elements of the architecture are highlighted, but the dimensions of the building itself are enlarged by a construction that does not overwhelm the building (e.g. made of glass).

It is worth noting that in recent years (2013-2014) Kopernika Street was renovated. The street looks different than it used to. First of all, it has been narrowed to the width of 7 m, which allowed to increase the pavement area. The tram and bus stops have been elevated and, there, the street is 6.5 meters wide. The surface, track and traction poles have been replaced. The street has been equipped with elements such as stylized roofs and light fittings (Fig. 4). This helped to enrich the image of the street, and the section of Włókniarzy Avenue near the Tobaco hotel is the most representative part of it. Thanks to revitalization, this place has gained in prestige and significance. Unfortunately, this applies solely to a certain section of the street. When we walk towards the Eastern direction, we come across abandoned

[2] Danowski, Andrzej. *Po co komu stare fabryki*? Komisja Opieki nad Zabytkami, 2010, http://konz.pttk.pl/artykuly/4-po-co-komu-stare-fabryki (accessed 13.03.2015).

Fig. 2. Transformation of the former Karol Kretschmer's factory (1930, also before and after revitalization)
Source: http://refotografie.blogspot.com http://www.skyscrapercity.com/showthread.php?t=1297179&page=5, photo by author.

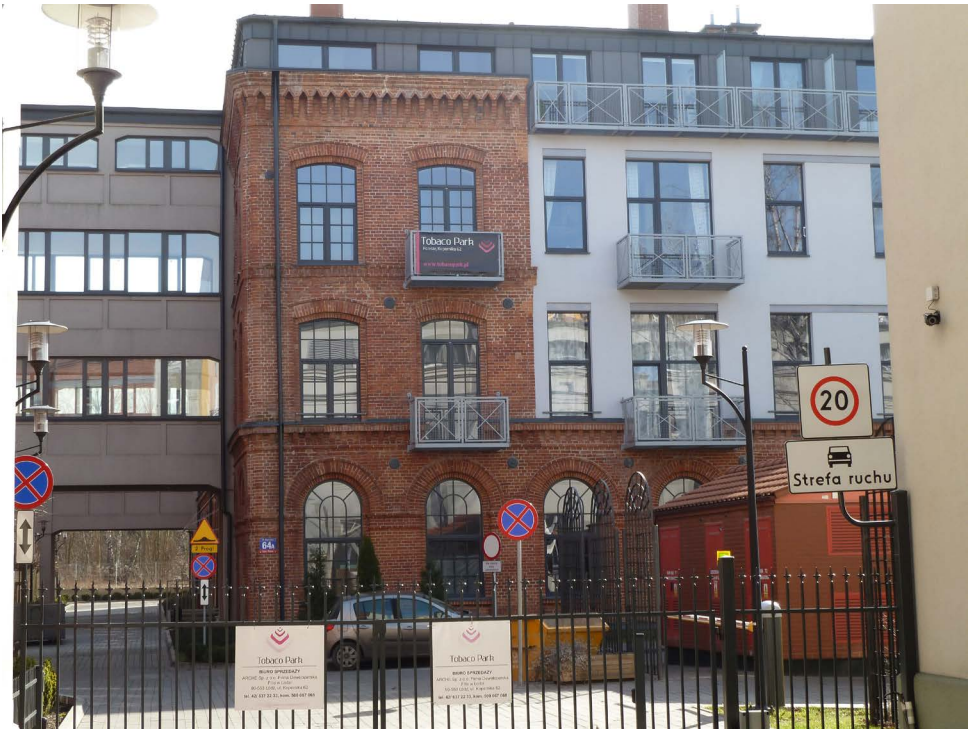

Fig. 3. Architecture at the intersection of the new and the old. A residential building – lofts
Source: photo by author.

Fig. 4. The current Kopernika Street near the Tobaco hotel
Source: photo by author.

and neglected areas. These include even Aron Kreutzberg's haberdashery factory and Stanislaw Jaroszynski's engine manufacturing plant "Elektrobudowa", which are located at 56 and 58 Kopernika Street – but also several other buildings. This is a stark contrast when we combine it with the aforementioned adapted spaces, and for an average person it may be a surprise.

Another example of revitalization of a former factory is Otto Wever and Emil Reul's carded wool spinning mill at 38 Kopernika Street. It was built in 1894 and it employed 55 workers. During the II World War occupiers organized a resettlement camp for the residents of the city inside the factory. Currently, Medical Clinic Magnus is located there (Fig. 5). The adaptation of the building took place with full respect for the historical structures.

The post-factory building, which housed a mechanical cloth weaving mill, a spinning mill and Frederick Abel's finish at 55a Kopernika Street, has also been restored and adapted to new functions. The factory operated since 1890 and it employed 367 workers. In 1920 Mozes Lipszyc opened a silk weaving mill in the building. During the occupation, from 1940 to 1944 to be precise, the factory was used as a resettlement camp for Poles. After the war, the building became the property of the University of Łódź. Currently, Prophylaxis and Rehabilitation Centre "Creator" is located there (Fig. 6).

Fig. 5. Former Otto Wever's factory after revitalization, currently Medical Center
Source: photo by author.

Fig. 6. Former F. Abel's factory before and after adaptation
Source: http://www.skyscrapercity.com/showthread.php?t=1297179&page=5 and photo by author.

In the vicinity of the Medical Clinic Magnus building (mentioned above) at 36 Kopernika Street in Łódź, there is a former residence of an industrialist Emil Wicke (Fig. 7), which is included in the modernization plan under the program "Mia100 kamienic" ("The city of 100 tenement houses").

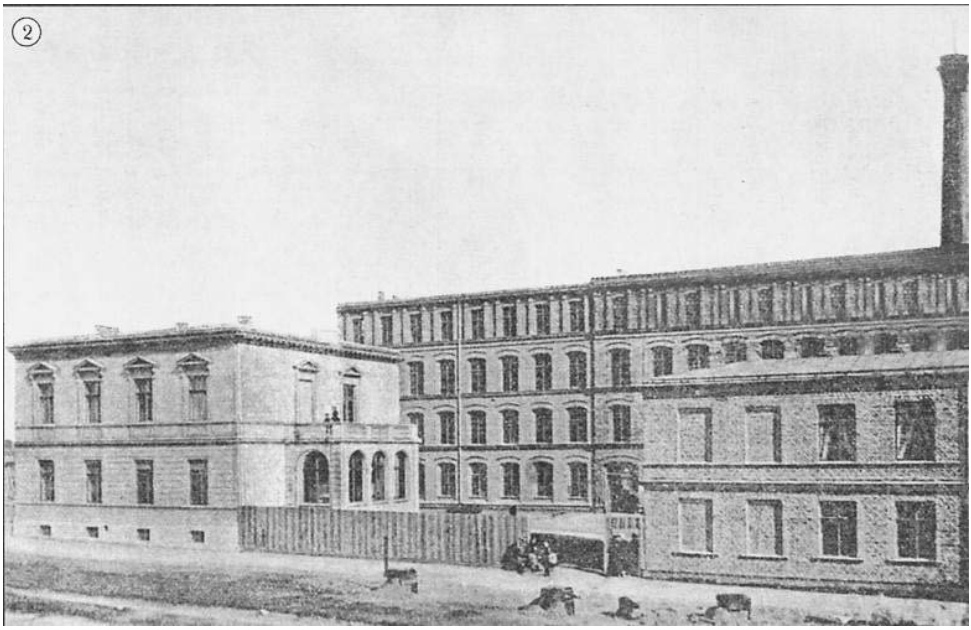

Fig. 7. Emila Wicke's factory and villa
Source: "Lodzer Zeitung" 1888.

At the same address there was his factory producing rubber bands. In 2011, a part of this historic factory was demolished (the remaining part of the building needs revitalization) (Fig. 8). A new building was built and it alludes to the old architecture. Nevertheless, the original establishment was not retained. Currently, in the former factory there are offices and sewing rooms. The newly created space is designed for retail and offices.

In recent years, Ernst Wever's villa has undergone revitalization (Fig. 9). Wever was the owner of the former lace, ribbons and tapes factory (located on the corner of Kopernika Street and Wólczańska Avenue). The villa is located at

Fig. 8. The current buildings at Kopernika Street – view from the street and the courtyard
Source: photo by author.

Fig. 9. E. Wever's villa after revitalization
Source: photo by author.

5 Kopernika Street. It should be noted that Ernest Wever's villa was built around 1900, in the immediate vicinity of the factory, and Wever was its owner until 1925. This is a one-storey eclectic building equipped with windows of different shapes, one of which is closed with a full arch, and has a wreath in the decoration of the lintel. An interesting element of it is a dormer surrounded with a circle of plants placed at the top the building. The building survived the II World War and in the years 1951-1994 it served as the premises of "Lenora" industrial plants. In 2003 it was purchased by the "W. Lewandowski" company.

Following adaptation, both the interior and the exterior of the villa look delightful. The interior is characterized by a proper selection and fine tune of the smallest details, and the building itself (together with its eclectic style and its surrounding) is well-suited to the industrial character of Łódź. It is worth noting that the current owner has conducted a careful revitalization of the building, restoring its prewar character and taking care of every detail. These efforts have been appreciated, because this office building was awarded first place in the national competition "Modernization of the Year 2004" (category "Residential Buildings") and third place in the competition held by Piotrkowska Street Foundation under the patronage of the Mayor of Łódź (in the category "Interiors building the identity of Łódź")[3].

Unfortunately, the old factory located by this villa is still abandoned. Currently, only the ground floor is used. The factory was built in 1882 in the modernist style with elements of Gothic architecture. The building was expanded in 1900. Both

[3] http://www.lewandowski.com.pl/willa_ernesta_wevera.php

buildings, designed by two different architects (Edward Creutzburg and, most probably, Fryderyk Miksa), were merged with a tower. In 1930, after the death of the owner, the building was taken over by one of the directors, who established there the "E. Wever, tenant Gustav Patberg and Company". After the war, Zjednoczone Fabryki Tasiem i Wstążek Patberg i Triebe (plant producing ribbons) and Państwowe Zakłady Przemysłu Pasmanteryjnego Łódź-Południe (a heberdashery plant) had their premises there. By the end of the twentieth century, the building belongedto the "Lenora" company (again, a heberdashery plant). Now the building is privately owned and the new investor was supposed to change the factory halls into offices. It is a shame that is has not happened yet. As Hollier[4] rightfully points out, the things we build shape the identity of our cities, but any piece of architecture lies in the hands of the designer for a brief period in relation to the time it lies in the hands of its owners and users.

The identity of our built environment is surely influenced by the objects we place in it, but that identity is also built by the way users handle those objects over time.

The importance of transformation

The architecture of Łódź entails the city's cultural values and its role seems to be clear – to channel proper ideas that are very important for recipients. The revitalizations, which are meant to respect the existing structure, at the same time relate to the presence. Their aim is to enrich the city. Peter Zumthor who writes about architecture points out that construction works in the modern cultural landscape often do not have their own value and are not related to the landscape[5]. That is why objects that have merged with the landscape through good relations with surroundings seem to be so valuable.

Nowadays, old factories that were once the main driving force of industrial Łódź no longer serve their original purpose. The buildings have been transformed to provide different functions but they still symbolise the old city – the city of factories (built of red brick) and chimneys, the city with an interesting architecture and a rich history. These objects remind us of the glory of Łódź and the potential that can still be used. As Bataille points out, "Architecture is the expression of every society's very being"[6].

It should be noted that revitalizations protect the value of the space in conjunction with the historical and cultural record. Revitalizations create a new image of the spaces and influence their quality. Łódź needs such "new" sites, considering the fact that the scale of the issue is significant. There are a lot more factories that are waiting to be redeveloped. The city can gain spaces that will live their own lives. Kopernika Street was conducted on the sidelines and developed quite

[4] Hollier, Denis. *Against architecture: The writings of Georges Bataille.* Cambridge, MA: The MIT Press. 1989.

[5] Zumthor, Peter. *Myślenie architekturą*. Karakter, Krakow 2010.

[6] Hollier, Denis. *Against architecture: The writings of Georges Bataille*. Cambridge, MA: The MIT Press, 1989.

late in relation to other streets in Łódź, but because of its history and its distinctive elements it has played a significant part in building the identity of our city.

The examples of successful revitalization of factory buildings (in the opinion of the author) discussed in this article through positive connotations play an important role in the perception of the city and have an impact on the image of urban spaces. It is worth adding that further comprehensive revitalization of Kopernika Street may be crucial to obtaining genius loci.

Conclusions

The adaptations of old factory buildings at Kopernika Street described above serve as a positive example of the processes of revitalizations. They also serve as proofs of the city's potential and are a testament to its cultural heritage. The vast majority of buildings retained their original character, and new buildings fit in well with the existing ones. They have been brought back to life with changes in their function, as they have been transformed into office spaces, residential spaces – lofts, hotels, healthcare facilities, etc. Buildings gain new features, new life, and a new image. They also shape a new image of the street and the city.

The revitalizations discussed show how much change is needed to improve the quality of post-industrial areas. Despite the passage of times and transformation, the city still needs concrete action to improve the environment and its aesthetics. Kopernika Street is but a small part of the city, which has, both, attractive places and places that reveal the existing contrasts. What is needed is to achieve consistency by conductive successive adaptations of factory buildings (former Aron Kreutzberg and Stanisław Jaroszyński's factory and the old factory of Ernest Wever) and the adjacent residential tenement houses.

In a broader perspective, there are many areas in Łódź which are in a critical condition – and which require revitalization. The scale of the challenge signals the need for, both, action points and a broad perspective on the direction of the revitalization of the entire city. This process might not only affect the image of the city, but it also has the potential to improve the social and economic conditions of its inhabitants.

PART 2

PERCEPTION OF THE PAST

UNDERSTANDING PAST SENSIBILITY TO GRASP PRESENT ARCHITECTURE: THE EXAMPLE OF SOLAR RADIATION

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The sensory turning point in architecture

In the past few decades many authors have highlighted the need to grasp the architectural and urban aesthetic in all its human sensory dimensions, sonic, tactile, thermal, aeraulic, kinaesthetic or olfactive[1]. The various sensory tonalities condition our aesthetic grasp of built environments and the emergence of the ambiances in which we are immersed. For example A. Berleant[2] writes:

> Using sensibility as a key to aesthetic apprehension can illuminate our understanding of the appreciative experience of the arts. But aesthetic sensibility has particularly rich possibilities for identifying and enhancing the aesthetic experience of environment. Perception of the built environment is through multi-sensory bodily engagement. Such aesthetic engagement transforms our environmental perception of space, mass, density, force, and directionality when apprehended not as abstractions but as direct experiences in the acute sensory experience of everyday life. Indeed, it is in relation to environment that aesthetic sensibility may have its most extended development, for environment is the broadest, most perceptually inclusive human context.

This new sensory conception of the human environment is at work in various disciplines. In France the prime movers have been historians and anthropologists such as L. Febvre[3] and R. Mandrou[4], who realised very early on the considerable potential of this new line of investigation. A. Corbin[5] then brought it to its full

[1] See: Zardini, Mirko (ed.). *Sense of the city: an alternate approach to urbanism*. Montreal: Canadian Centre for Architecture. Lars Müller Publishers. 2005. Pallasmaa, Juhani, *The Eyes of the Skin. Architecture and the Senses*. New York: John Wiley. 2005.
[2] Berleant, Arnold. "Environmental sensibility", in: Thibaud, JP., Siret, D. (eds.), *Ambiances in action: Proceedings of the 2nd International Congress on Ambiances.* Montreal: Canadian Centre for Architecture. 2012, p. 55.
[3] Febvre, Lucien. "La sensibilité et l'histoire. Comment reconstituer la vie affective d'autrefois?", *Combats pour l'histoire*. Paris: Armand Colin. 1952, pp. 221-238 (1st Edition in *Annales d'histoire sociale*, No. 3, 1941).
[4] Mandrou, Robert. *Essai de psychologie historique*. Paris: Albin Michel. 1961.
[5] Corbin, Alain. *Le miasme et la jonquille. L'odorat et l'imaginaire social, XVIII^e^-XIX^e^ siècles*. Paris: Flammarion. 1982. Corbin, Alain, "Histoire et anthropologie sensorielle". *Anthropologie et Sociétés*,

expression. In the English-speaking world D. Howes[6] and R. Sennett[7] have also sought to reveal the role of the body and senses in understanding social facts in the course of history. The 'sensual turn', as defined by D. Howes and applied to urban issues, enables us to look closer at the architecture and town planning of the past, no longer seeing them as some sort of still life, but rather as a living milieu, irrigated by multiple streams and sensations related to its activities and partly determining its qualities and identity.

Our own research, over the past few years, fits into this movement. It questions the place and role of sensitivity to direct solar radiation in architecture and urbanism past and present. The sun is a fundamental component of our world, through its vital role, the power of its various tactile forms (brushing against or stroking the skin, but also striking and burning), through the cycles it organizes in our lives, and because its rays afford a glimpse of the power of the cosmos. At the interface between the technical history of radiation in the built environment, on the one hand, and the history of sensibilities and taste for the sun, on the other, our work seeks to lay the foundations of a cultural history of architecture and planning in the sun.

Within this overall context, our main hypothesis is that the relation which societies entertain with solar radiation is a cultural fact which directly influences their symbolic, social and material production, in particular the way they design the architectural and urban environments which they inhabit. In proposing a cultural approach to architecture and urbanism in the sun over time, we aim to show how the built environment reflects and organizes at one and the same time our individual and social relation to solar radiation.

Towards a cultural history of architecture and urbanism in the sun

Many books and articles have analysed the question of solar radiation in architecture and urbanism, focusing on issues relating to energy[8] or hygiene and public health[9]. Work in the field of sociology and ethnography, for example by Martin de la Soudière, in France, throws additional light, of particular interest,

Vol. 14. No 2. 1990. Corbin, Alain, *Les Cloches de la terre. Paysage sonore et culture sensible dans les campagnes au XIX^e siècle*. Paris: Flammarion. 1994.

[6] Howes, David. "Les cinq sens". *Anthropologie et Sociétés*. Vol. 14. No. 2. 1990. Howes, David. *Empire of the Senses. The sensual Culture Reader*. Oxford: Berg. 2005.

[7] Sennett, Richard. *Flesh and Stone: The Body and the City in Western Civilization*. New York: WW Norton & Comapny. 1994.

[8] See, among others: Kryza, Frank T. *The Power of Light. The Epic Story of Man's Quest to Harness the Sun*. New York: McGraw-Hill. 2003. Butti, Ken and Perlin, John. *A Golden Thread: 2,500 Years of Solar Architecture and Technology*. New York: Van Nostrand Reinhold. 1981. Knowles, Ralph. *Sun Rhythm Form*. Cambridge: MIT Press. 1981. Audibert, Pierre. *Les énergies du soleil*. Paris: Editions du Seuil. 1978.

[9] See, among others: Boubekri, Mohamed. *Daylighting, Architecture and Health, Building Design Strategies*. Oxford: Elsevier, Architectural Press. 2008. Carter, Simon. *Rise and Shine. Sunlight, Technology and Health*. Oxford, New York: Berg. 2007. Hobday, Richard. *The Light Revolution: Health, Architecture, And the Sun*. Forres: Findhorn Press. 2006. Campbell, Margaret. "What Tuberculosis did for Modernism: The Influence of a Curative Environment on Modernist Design and Architecture", *Medical History*. Vol. 49. No. 4. 2005. Cremnitzer, Jean-Bernard. *Architecture et santé, le temps du sanatorium en France et en Europe*. Paris: Picard. 2005. Medici, Tullio C. "100 ans de la Ligue pulmonaire suisse: La tuberculose et l'idéal de l'habitat moderne". *Médecine et hygiène*. Vol. 61. No. 2448. 2003.

on our contemporary perception of the climate[10]. More general works on the anthropological dimensions of sunlight have long existed[11], but we have recently seen renewed interest in these subjects with the development of analysis of our sensitivity to sunlight and our taste for its effects in the course of history. Situating his work in the context of a history of such sensibilities, C. Granger has done the groundwork for a cultural history of the construction of the taste for sunlight in western society since the 18th century[12]. Other historians have recently explored the specific question of the relation between solar radiation and the body, focusing in particular on tanning[13]; their analysis reveals the social construction of the relation to sunlight and its importance in the history of the 20th century.

Taking the same route our research offers an understanding of how solar radiation, a fundamental component of life on Earth, acts on the various ways we organize our environment and conceive both architecture and urbanism, which by definition create shadows. Our research seeks to put into perspective the various modalities by which exposure to the sun is expressed, present in discourse on architecture and urbanism since the mid-19th century. These forms of expression reveal the various uncertainties in our grasp of light and solar radiation over time – what we refer to as different 'sensations of the sun'[14] – and the consequences which these various sensibilities have had on the production of built forms. This gives rise to a history of architecture and urbanism in the sun, which is not an incantation to some supposedly 'better' allowance for the sun in the production of buildings (a recurrent feature in the discourse of militant sun-lovers of all eras), rather an invitation to understand the various ways of reconciling human habitat with a natural element which exerts its physical and symbolic force on all of us.

From bathing in light to a solar jet

Whereas exposure to the wind and movement of the air were among the key concerns of 18th century architects, natural light as a distinct phenomenon, likely to influence the layout of towns and shape of buildings only appeared in architectural discourse in the mid-19th century. The social utopias were the first to express this new sensibility. Direct solar radiation does not feature much in these declarations, which put the accent on light from the sky as a whole, as an essential component in construction of an ideal city, in its social and symbolic goals. Celestial light must pour down and purify beings; it is consequently often grasped by analogy with air and

[10] De la Soudière, Martin, Tabeaud, Martine (eds.). "Météo. Du climat et des hommes", *Revue Ethnologie française*. Vol. 39, No. 4. 2009. De la Soudière, Martin. *Au bonheur des saisons. Voyage au pays de la météo*. Paris: Grasset. 1999.

[11] Jobé, Joseph (ed.). *Le grand livre du soleil*. Lausanne: Edita, Paris: Denoël. 1969.

[12] Granger, Christophe. "Le soleil, ou la saveur des temps insoucieux", in: Corbin, A. (ed.)*, La pluie, le soleil et le vent. Une histoire de la sensibilité au temps qu'il fait*. Paris: Aubier Flammarion. 2013. Granger, Christophe. "(Im)Pressions atmosphériques. Histoire du beau temps en vacances", *Ethnologie française*, Vol. 34. No. 1. 2004.

[13] Ory, Pascal. *L'invention du bronzage*. Paris: Edition Complexe. 2008. Andrieu, Bernard. *Bronzage. Une petite histoire du soleil et de la peau*. Paris: CNRS Editions. 2008.

[14] Siret, Daniel. "Les sensations du soleil dans les théories architecturales et urbaines: de l'hygiénisme à la ville durable", in: Beck, R., Krampl, U., Retaillaud-Bajac, E. (eds.), *Les cinq sens de la ville du Moyen Âge à nos jours*. Tours: Presses universitaires François Rabelais. 2013.

water, as a fluid spreading in space and over bodies, which 'bathes' and 'penetrates' buildings to purify, as V. Considerant wrote, when describing Fourier's Phalanstery[15].

If light is a fluid, then hydraulics must inform the technology for bringing it to all places. Accordingly the new hygienic architecture was based on ideas of channelling and diffusion. Space should be laid out in such a way as to allow light to flow, as J-B. Godin specifically notes in his Familistère[16]. As such the designed space 'helps' the luminous fluid to penetrate the dwelling. The channel of light is the luminous cone which one may draw on the cross-section views of streets and courtyards. The engineer J. Borie, who published radical proposals for urban reform entitled Aérodrome in 1865, explored this approach to light, making a direct connection between 'the amounts of light falling on a structure' and the cones opening onto the sky[17]. In his demonstration, which involves cones of light plotted on the basis of non-specific rays, there is never any question of aspect, time of day or season. The light cone acts as a funnel, channelling and dispensing celestial light which is assumed to flow down in a uniform stream. Direct solar radiation is wholly absent from this approach to conceptualizing the light of the sky.

Then, in the last two decades of the 19th century, the perception of natural light as a fluid which bathes buildings and beings gradually gave way to a stricter geometrical representation, defined by the dynamics of the ray of sunlight marking out clear-cut planes, volumes and shadows. This shift opened the way for a new era in natural light, which may be defined as a solid or angular age, the time of the sensation of a 'solar jet' induced by the dynamics of the sun.

The discovery of microbes, on the one hand, and the role of direct solar radiation in killing microbes, on the other, contributed to this shift. Statistical studies of housing conditions in industrial towns drew attention to the part played by darkness in the spread of tuberculosis. The ability of the environment to combat the spread of tuberculosis was demonstrated and this role specifically involved direct exposure to solar radiation. Up until the end of the 19th century direct exposure to the rays of the sun could be seen as a discomfort better avoided, then it gradually became a part of the hygienic ideal[18]. The architecture inspired by this new 'sensation' of the sun replaced the hydraulic analogy with an optical metaphor. Above all this was to be an architecture of opening and exposure. The bath of liquid light which prevailed in the theory of the previous century was no longer adequate. Buildings must be opened up to a powerful 'jet' of direct light. The recommendations made by tuberculosis conferences served as a scientific justification for demands for more sun, which became an absolute imperative in architectural and urban thinking.

This prompted a huge debate, in France and elsewhere in Europe, on what 'maximum' insolation might mean. Many authors asserted that the solar optimum could be defined simply in terms of length of exposure. The body was seen as

[15] Considerant, Victor. *Description du phalanstère et considérations sociales sur l'architectonique*, Paris: Librairie sociétaire, Librairie phalanstérienne. 1848.

[16] Godin, Jean-Baptiste. *Solutions Sociales*. Paris: Le Chevalier Editeur. 1871.

[17] Borie, Jules. Aérodomes, Essai sur un nouveau mode de maisons d'habitation, Paris: Morris et Compagnie. 1865.

[18] Medici, Tullio C. "100 ans de la Ligue pulmonaire suisse: La tuberculose et l'idéal de l'habitat moderne". *Médecine et hygiène*, Vol. 61. No. 2448. 2003.

a photographic plate which soaked up light: it should be exposed to the rays of the sun as long as possible, regardless of the season or time of day. Following this assumption, the optimal alignment for a road network was north-south, exposing alternately east and west-facing walls. In particular this led to the heliothermal theory of A. Augustin-Rey[19], reused by Le Corbusier in his Ville Radieuse (radiant city) project in 1935[20]. Others, on the contrary, maintained that the duration of exposure was not the only factor: variations in the angle of incidence of sunlight over time should also be considered. In the first decade of the 20th century the theoretical work of F. Marboutin, among others, demonstrated the superiority of south-facing facades in summer and winter.

The aspect controversy remained a topic for debate in hygienic architecture until the outbreak of the second world war[21]. At the same time as these ideas on the optimal solar exposure of towns and buildings developed, new building techniques using concrete, steel and glass opened the way for the material expression of Modernist aesthetic principles. Extending the use of glass roofs, as seen on 19th century markets and arcades, vast lightweight glazed facades started appearing on early-20th century housing projects. This in turn confronted architects with the problem of the greenhouse effect, prompting an emblematic invention of the Modern movement: the 'brise-soleil' capable of acting as a diaphragm in front of the sheet glass deployed by the new 'optical architecture'[22].

From a solar jet to an energizing flux

From the 1960s onwards the solar age, with its beaming, radiant architecture, went into decline. With widespread use of Penicillin after the second world war, exposure to sunlight came to play an insignificant role in prevention of tuberculosis. In the post-war years this architectural style lost its hygienic justification. Furthermore, in the context of economic growth, large-scale urban development and abundant, cheap energy which characterized this period, lighting, heating and ventilation systems encouraged most people to forget the random side of the elements.

However at the beginning of the 1970s the first oil crisis once more focused attention on the use of alternative energy sources, in particular solar. This went hand-in-hand with the quest for a new social order, breaking away from the consumer society. New solar utopias took shape, harking back yet again to the Civitas Solis and the age of Solarians, and the Cité Radieuse, whether real or merely projected.

[19] Augustin-Rey, Adolphe, Pidoux, Justin, Barde, Charles. *La science des plans de villes, ses applications à la construction, à l'extension, à l'hygiène et à la beauté des villes, orientation solaire des habitations*. Lausanne: Payot et Cie, Paris: Dunod. 1928.

[20] Le Corbusier. *La ville radieuse: éléments d'une doctrine d'urbanisme pour l'équipement de la civilisation machiniste*. Paris: Editions de l'Architecture d'Aujourd'hui. 1935.

[21] Harzallah, Amina, Siret, Daniel, Monin, Eric, Bouyer, Julien. "Controverses autour de l'axe héliothermique: l'apport de la simulation physique à l'analyse des théories urbaines". *International Conference Changing boundaries: architectural history in transition*. Paris: INHA. 2005.

[22] The history of the invention of the 'brise-soleil', from the end of the 1920s to the beginning of the 1950s, was explored in our previous research works. Cf. Siret, Daniel. "Généalogie du brise-soleil dans l'œuvre de Le Corbusier: Carthage, Marseille, Chandigarh". *Cahiers thématiques : architecture histoire conception*. No. 4. Lille: Ecole nationale supérieure d'architecture et de paysage. 2004.

In his famous 1978 book D. Wright describes the coming of new 'solar citizens', who would take responsibility for their lives and natural environment, drawing intelligently on the resources of sunlight[23]. This new solar age, setting aside the solar jet and switching to a stream of energy capable of meeting the economic and social demands prompted by the crisis, has renewed the relation to the sun, driving new changes in the built environment. Solar capture in architecture, first studied in the early-20th century particularly in the United States[24] and experimented all through the Modernist period, is once again moving centre-stage. Passive exploitation of radiation, its conversion into heat through greenhouses and storage in the adjoining thermal mass, has opened the way for bioclimatic architecture which is now developing original solutions, in particular for individual housing. Meanwhile the principles of active capture, using thermal or photovoltaic solar panels have gradually been established. At the start of the 1970s G. Rottier's utopian Ecopolis revealed a whole town designed in terms of its relation to the sun[25]. In 1979 G. Alexandroff projected towns equipped with heliostats large enough to collect the radiation falling on a whole town, concentrate it and divert its heat into inter-seasonal storage[26]. The first projects involving roof-mounted photovoltaic arrays feeding into the grid were launched in the 1990s, entering the mainstream in the early 2000s.

The architecture of the past is both familiar and exotic

The brief architectural excursion offered by this article shows that in the past 150 years architecture, in its discourse and forms, has apprehended sunlight in different ways. We have organized them into three main moments, three main 'sensations' which condition three approaches to organizing the urban environment. The first is the sun bath with its fluid, almost liquid conception of light, which must quite literally bathe the city and its bodies; it defines an architecture of channelling and diffusion inspired by hydraulics. The second sensation hinges on the solar jet, an almost solid directional light which forms a powerful jet purportedly shining on the city and its bodies. Bodies and facades strip off and expose themselves to the sun. This architecture of exposure defines the 'radiant' city, which presents itself in black and white, the black of the shadows cast by exposed volumes, and the white of the sunlit facades. The third and last sensation, which we are now experiencing, centres on the flow of energy. Light has become an energizing resource for both beings and buildings. Captured, converted and stored it has become a commercial good, over which thinking on the sustainable city exercises ambiguous control.

[23] Wright, David. *Natural Solar Architecture: A Passive Primer*. New York: Van Nostrand Reinhold Company. 1978.
[24] Siret, Daniel. "William Atkinson, pionnier de la science de l'ensoleillement en architecture en Amérique du Nord". in Mondini, D. (ed.), *Light and Darkness in XX Century Architecture*. Mendrisio: Accademia di Architettura. 2014.
[25] Ragon, Michel. "Urbanisme et énergies solaires". *Revue Urbanisme*. No. 139. 1973.
[26] Alexandroff, Georges. "Les feux du soleil. La ville solaire", *Techniques et Architecture*. No. 325. 1979.

Our analysis seeks to contribute to an understanding of past sensations in order to perceive present architecture. It aims to overcome the various forms of anachronism in our interpretation of past architecture. The latter is both present and familiar, because it accommodates our daily activities and because we have grown used to it. It is also exotic, resulting as it does from reasoning and sensibilities different from those we know today. A period of architectural and planning history cannot be summed up exclusively in terms of its 'style'; it must also be understood through the specific sensibilities of the men and women who inhabited it, their way of being in the world. Understanding these past sensibilities may make the familiar architecture of our present unexpectedly exotic.

LOCAL PERCEPTION OF A CONSERVATION HERITAGE AREA, A CASE STUDY OF THE DARMO RESIDENTIAL AREA, SURABAYA, INDONESIA

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Background

Historic residential area is one part of urban heritage that is difficult to be conserved due to large amount of buildings and large area. In the context of Indonesian cities, in this case Surabaya, the growth of the city has impacted on the old residential area[1]. The houses are located in the Arterial Street tend to change into commercial, and not the entire owners of the buildings follow the heritage regulation. There is highly competed land within the area. In this area, some listed heritage houses change. They could be converted into modern style houses and multi storey commercial building. It is important to involve the inhabitants in the urban heritage conservation program. This research is conducted in The Darmo area; one of the oldest planned residential areas in Indonesia that was developed in around 1940.Several old houses were built in periods 1920s[2].

There has been little research attention focusing on conserving residential area. In the period between the 1900s and 1940s conservation concepts mainly focused on buildings. Recently, the conservation trend goes to the area, and an expanding reason for people heritage[3]. As an old part of city, it keeps citizen memories and has a function as amenities for the city, so that many scholars argue that it is important to conserve this area[4].

[1] Surabaya is the second largest city in Indonesia, the inhabitant is around 3 million people with 326 km^2 land area and 226 km^2 coastal area, with density 7.996 people/km^2, which consists of 31 District and 163 Sub District (www.surabaya.go.id accessed in 20.07.2015).

[2] Surabaya layout of Darmo area has similarities with plans for South Amsterdam which were made by Berlage architect in 1915. Dutch architects at that time considered Indonesian cultural value in designing the area and houses. Darmo area was designed by Henri Mclaint Pont in 1914 (Hellen Jesup, 1985).

[3] The reasons for conservation have been changed from physical value to social value, such as: psychological and historical values (Peter Larkham,1996)

[4] The city is a "container" of memory and heritage area functions as an amenity of the city as stated by Spiro Kostoff in Derek Worthing and Stephen Bond pages 25. The argument is conserving the cities based on its significance.

This research aims to explore the inhabitants' perception toward conservation of residential heritage area. In this research, the following factors are important to be considered: a social aspect, an economic aspect and motivational ideas. The social aspect refers to social network, how inhabitants interact with others, how this interaction affect in the conservation process. The economic aspect within this context implies to the inhabitants' circumstance for conserving the buildings. The latest aspect, motivational ideas, is related to the sense of place, which is the motive for the inhabitants to preserve this area.

Inhabitants within the area are consisting of three categories: senior inhabitants, middle active persons and people who work in this area. For the first categories, they inherited the house from their parents, so inhabitant perceive their houses as a family house which need to be preserve. Due to the Indonesian cultural context, people usually cannot sell houses. Senior inhabitants view their houses as a fortune, who show more appreciation to the area than younger generation during the interview.

Research methods

This study is a part of my doctoral research project and the result presenting here is the preliminary result. The data are collected through semi structured questionnaires, which aims to describe inhabitant's opinion. The advantage of a short questionnaire is like ice breaking to a deeper conversation, opening an opportunity to hear comments and challenges from the inhabitants. The answers are divided into five attitude scales: strongly agree, agree, disagree, strongly disagree, and neither agree nor disagree. These answers are chosen to indicate the inhabitants' preference, in order to get better understanding of the Darmo inhabitants' opinion. The characteristic of interviewees are people who live in this area, owner of the houses and employees in commercial buildings. The field work was conducted in 2014, lasting three months, and has interviewed 64 respondents[5] in total.

A new approach toward conserving heritage area

Urban heritage theories are based on western context that have been largely adapted to conserve other part of the world. Recently, a trend of reinventing eastern heritage preservation, through the Nara Document and the Hanoi Charter, is getting more significant and widely discussed among the scholars. One agenda of the latest ICOMOS conference in Florence, November 2014, discussed important element and context of the Nara document, exploring the western perspective view toward heritage which become more east, due to the similarity conception.

[5] The Darmo area is selected to be conserved by Surabaya Municipality in 2003. The area consists of twenty four streets. In regulation 2008, there are six hundred buildings both houses and commercials listed as heritage buildings. The area was designed for residential area; in along with Surabaya economic growth, than the area became mixed function.

In the case of conserving the Darmo area, the modification of conceptual western conservation theories is necessary. Western policy in conserving heritage area has much advantage: incentive to the inhabitants, additional value and privilege living in heritage area[6].

From this approach, we can learn that, for a sustainable policy to a large area, it is important to draw the inhabitants' resources. This policy cannot be easily transferred to the Darmo settlement case. For example, the heritage policy priority is first given to the single building[7], but the western conservation policy is built in the different context. The policy has clear regulation, an incentive and fine mechanism, which cannot be applied directly to the normal Indonesian city.

Fig. 1. Illustration of competing for commercial purpose
Source: author, 2014.

The major problem within conserving heritage area in the Indonesian cities is competing land for commercial purpose to the housing purpose[8]. Two others residential heritage cases in Jakarta and Bandung are also facing this problem. Due to the city growth, the residential area became closer to the city centre, the houses in the area need to compete to commercial buildings.

[6] The Western models of conservation need an adjustment to be implemented to the community with very different cultural tradition (Derek Worthing and Stephen Bond 2008, pp. 57).
[7] Surabaya Heritage Regulation 2005 has listed important buildings and areas.
[8] An ilustration of competing land in the city center, the hotel build around 2010.

The building changes into modern can be seen as adaptability toward current activity of the inhabitants, in order to survive toward Surabaya economic growth. The trend shows that the building that has been changes into modern tend that can better survive compare to the original one.

Those Darmo inhabitants mentioned that the main challenges for them are land and building taxation. Conserving heritage area often seen as an unrealistic program by many scholars, because it does not fit to current city economic growth. Escalating price of land in city forces inhabitants to sell their old buildings. Then the questions are: which conditions, what kind of scheme, and which supporting regulation are relevant for Surabaya city?

Inhabitants' perception of the heritage area

Conservation criteria in Surabaya city are based on historical values that, indicated by context and ages, the heritage object should be minimum fifty years old. The second criteria are architectural value, which indicates by aesthetique and uniqueness[9]. Within the Darmo area, a benchmarking is valued firstly by rareness compared to other area in Surabaya, a grid pattern. Surabaya's traditional settlement has organic form. The second aspect of rareness is considered for unique architecture type, compared to typical traditional and common type of Surabaya houses (see figure 2 one house in the Darmo area). In the third aspect of historical value, the area has special significance, such as, served as locus of the battle of Indonesian's independence war in 1945.

In figure 2, we can see the house in the right side is deteriorated, as an example of natural process of changing in the Darmo area. The abandoned buildings in the area are a motivation for the Surabaya municipality to conserve the rest old buildings. According to the author's records during the fieldwork, there are around 10% of buildings deteriorated from the 600 listed by the Surabaya municipality. Than the question arises is, why inhabitants abandoned their building, just simply lack of funding for maintenance? Or a lack of awareness toward the old building, and what are inhabitant's opinion?

Inhabitants have showed high appreciation during the interview. They perceived designated area as it will bring positive impact. But they also worried about difficulties to sell their houses. The inhabitants seemly also faced a challenge to conserve their buildings. Then they asked compensation for the Darmo area designation: what kind of positive impact to them. In order to gain positive image of conserving process, a benefit toward the inhabitants need to be formulated. Value that is perceived by people is important, because it is part of sustainability managing of the area[10].

[9] Surabaya Municipality set urban heritage criteria for conservation of buildings and sites criteria in 2003.

[10] A process of assessment of a place should follow the procedure: Firstly, the identification and assessment of the overall and particular values embodied in and represented on the site. Secondly,an evaluation of what aspects and elements of the site contribute to the overall significance of the place (Derek Worthing and Stephen Bond, 2007).

Fig. 2. One example of mixed function house in the Darmo Area
Source: author, 2014.

Fig. 3. One example of residential house in the Darmo Area
Source: author, 2014.

A listed process conducted by the Surabaya municipality is seen as a program without benefit for the Darmo inhabitants. This first attempt to list building is a start of inventory data, but then it is not yet improved, because the priority was given to other single heritage buildings which were considered more important compare to residential scale heritage.

There are several types of these old housings, not all has very unique architectural significance. However, it does not reduce the Darmo inhabitants' interest toward their old buildings. I argue that this expression can be explained from tradition, a culture of honouring ancestor houses. To this extent, it is different from western conservation, which ideas are based on used value[11].

Sense of place and rootedness

The sense of place, generate inhabitants' motivation to keep the area. Most household inhabitants have showed a high appreciation to the Darmo area; they perceived the area with social value[12]. Throughout the interview, inhabitants express their proud as inhabitants of the Darmo area, due to the unique character of the area. Most of them are the second generation, owning the houses since 1950. They mentioned trees, wide road of street, cleanliness, and facility like large open space (Fig. 4-5). In those newly built houses, these facilities cannot be found anymore. In comparison to a newer residential in Surabaya city, the Darmo area has wider open space, old vegetations and walk ability. Family value also perceived as very important for the inhabitants. They perceived their houses as objects that need to be kept.

A question "What do you appreciate from the Darmo area?" From this feature in the Darmo area: a) Cleanliness and sidewalk, b) Garden or open space as recreational area, c) Trees for Sun shading. These tree features in the Darmo area are highly appreciated.

Architectural value

This aspect, the appreciation of value, is one of the important theses of this research. It is not yet applied, but in theoretical perspective, it has shown an early awareness of the inhabitants into heritage issue. There is a debate to reconsider if the value is still relevant as a base of raising conservation of urban heritage. The concept of value is not given much consideration in urban heritage policy studies.

[11] Conservation value within the Vienna charter basically for an object or site in Europe, for other places context, an contextual discussion is needed (Dennis Rodwell 2006, John Pendlebury 2008). The ideas putting people as tools for conservation are based an assumption that linking the social interest internal the inhabitants are a useful approach (Worthing and Bond, 2007).

[12] Social value implied to the benefit of social cohesion and grup identity (Derek Worthing and Stephen Bond, pp. 66). The Darmo settlement inhabitants are upper middle class citizens in Surabaya city. Surabaya citizen know the area as an elite class settlement. In comparison to residential heritage area in UK "most people do not live in a conservation area, and most residential conservation areas cover areas of relatively expensive and architecturally superior middle-class housing" (Pendlebury, 2009, pp. 125).

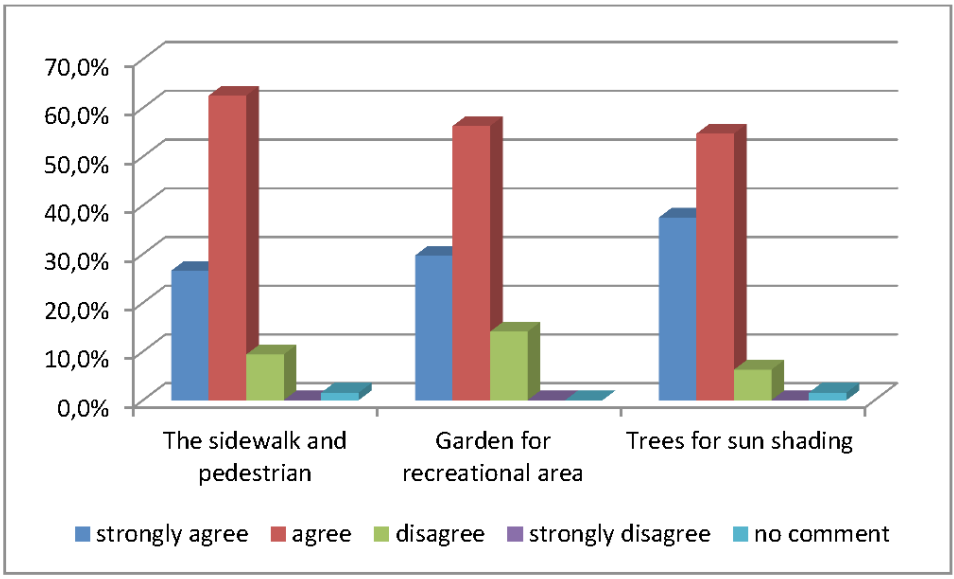

Fig. 4. Appreciation toward the area
Source: author, 2014.

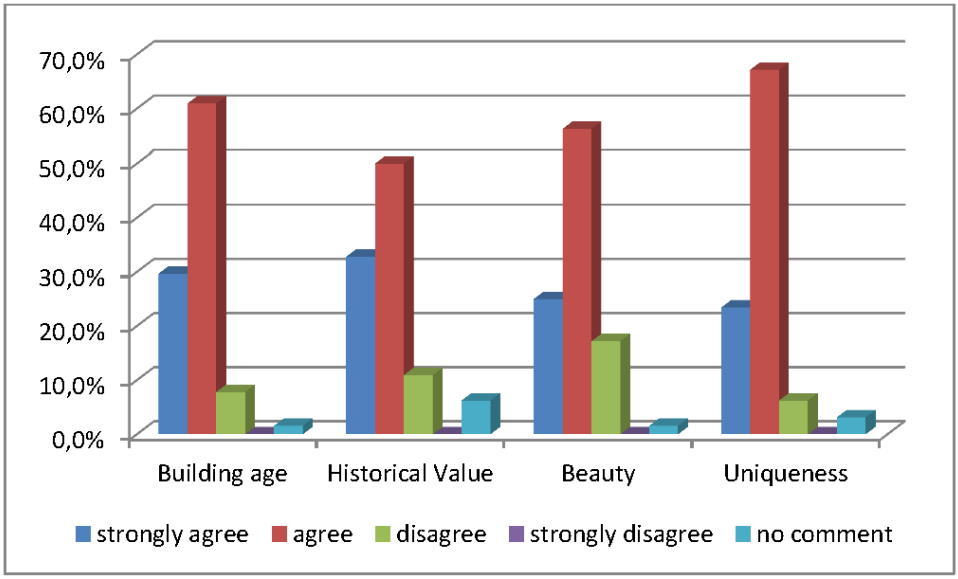

Fig. 5. Inhabitant's perception of architectural values
Source: author, 2014.

This field even more get critic into inapplicable into the field of urban policy[13]. The statement has raised attention scholar particularly to the field of intangible heritage. And then why it should be related to the residential area context? Until now, the object of built heritage in the past got its physically tangible value like the building age, historical value, beauty and uniqueness. Inhabitants were asked about "What do you appreciate in your building?" Inhabitants have shown an appreciation to the architectural values; most of them perceived their building has quality of aesthetic and unique (90%) respondent answer strongly agree and agree. I argue that this perception of aesthetic toward mixed local and non-local architecture can be seen as a motivation for conserving heritage area.

The value of age tends to be a debatable fact. The consensus of how old an object can be conserve are vary from one to one, depending on the context. In Surabaya city, the appreciation by minimum 50 years old is based on cultural value that in translation "an object after 50 has a soul that need to be appreciated"[14]. Inhabitants also perceived that their old buildings in this case need to be honoured, which is an interesting finding. A different perceptual to an old object can be explained within cultural context of Indonesian people.

In the scope of Indonesian built heritage research, a focus toward inhabitants' perception should be considered. So far, local planners consider more into regulation of the physical appearance, but the root problem of the conservation issue has not been yet paid enough attention. In 2012, one heritage activist of Bandung city was raising question in a conference in Bandung "why always only architect and planner discuss about what it should be, not what people want and need". In fact, urban heritage policy then resulted in a piling document, not yet successful actions and implementations in Indonesian cities. There is a growing awareness of urban heritage in Indonesian scholars that they must concern about sustainability and management in this type of residential heritage.

From the concept of heritage to the application of people's perception, how to design an interpretation within the Darmo inhabitants, the process can be explained as below: taking the inhabitants need into account, investigating problem within the Darmo heritage area and adapting with the current function as a mixed area[15].

[13] The implementation of the research value in solving urban heritage conservation problem need further work (John Pendlebury, 2009).

[14] One of Surabaya heritage expert mentioned traditional philosophy for appreciation of old building after 50 years. It seems like an adaptation process from international value of conservation which then becomes a new interpretation into the local context. On the other hand there is a raising movement of conservation of Modern architecture, for conserving relatively new architectural objects done by DOCOMOMO and the Getty Institute.

[15] The Surabaya heritage area should not rely on subsidies from the municipality, a scheme of heritage funding needs to be designed (Johan Silas, 2014).

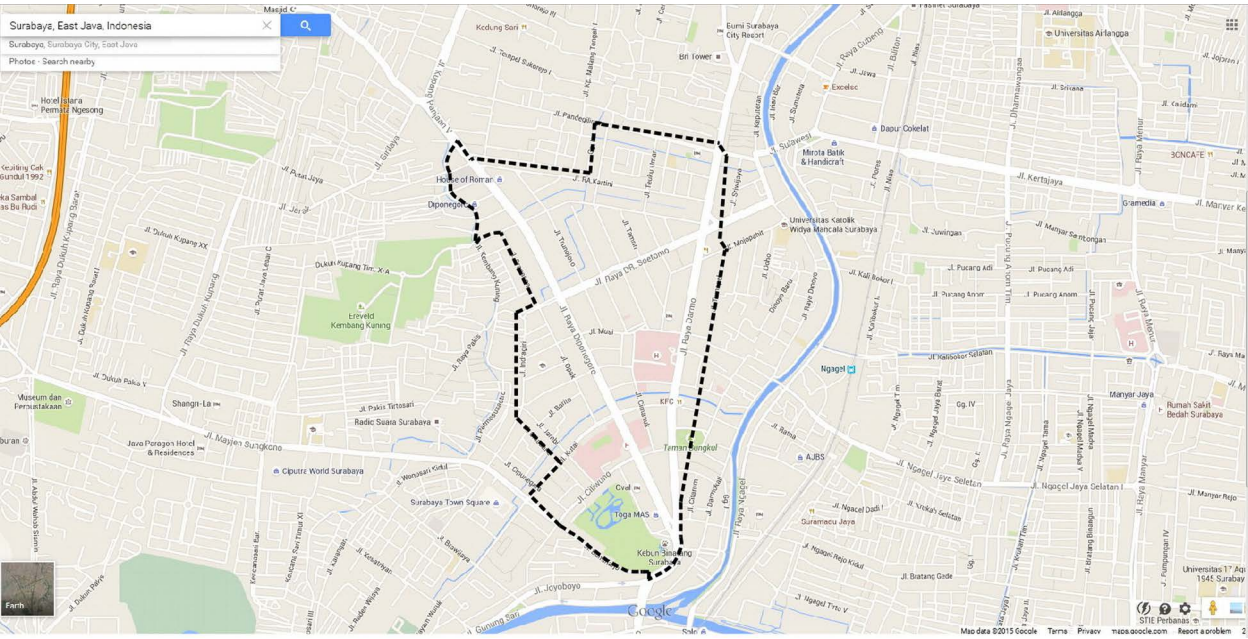

Fig. 6. Images of the Darmo Settlement
Source: Google map with addition by author (2015).

Conclusion and Discussion

This research is based on interdisciplinary approach to get better understanding of the problem within the built heritage area. Inhabitants perceived the mixed heritage architecture as their own, an appreciation also expressed toward a perception value of building. They perceive the buildings with additional value of uniqueness, aesthetic and age. These aspects are formed through internal value embedded through tradition: a deep sense of rootedness and social network.

As the discussion above, it shows that inhabitants in the Darmo area perceive that the residential area are worth to be conserve due to the function such as the city amenities, attribute of the shady environment, advantage of large scale of houses and sun shading in the roof. The Darmo area functioned as an oasis to the Surabaya city. A better understanding of inhabitant's awareness will contribute to the successful conservation program. From this case study, it shows that the inhabitants have internal cultural attachment as motivation for conserving the area. Policy in heritage preservation in the scale of city needs to consider the inhabitants needs.

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ON (NEW) RUINS RECONCILIATION CAPACITY

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Introduction

Ruins capture our imagination, mysterious, full of hints to a past long gone, and future abundant with potential. To a world that struggles to expose, protect, and decipher its logic; ruins put up an obscure mirror. They are illogical, dysfunctional, and disorderly; they expose mankind's faults and shortcomings. Ruins nurture creativity and playfulness, spark philosophical contemplation, and inspire unpredicted prospects. This paper takes a look at the characteristics of new ruins and analyzes their unique mysterious atmosphere. It contends that ruins usefulness is in their capacity to reconcile, and as such to yield alternative modes of operation, social and architectural.

During the several past decades the ruination process has greatly accelerated. Economical storms and technological eruptions rapidly transformed large industrial complexes, whole cities, and even regions into abounded ruins. This phenomenon has brought about a similar swell in the ways ruins are used, discussed, and understood[1]. Diverse occurrences such as squatting, parkour, urban exploration, ruin photography, and ruin archaeology flourish through and in new ruins. New ruins unpredictable way of emergence has spread them on a varied range of localities, from the marginal to the condensed urban[2].

Ruins expose binary oppositions; they represent failure and achievement, attract and repulse. Ruins are objects of desire and disgust; they expose presence and absence, power and vulnerability. Ruins have no function, they have sensual materiality, constantly transforming. Ruins generate strong sense of nostalgia and melancholia; they inspire philosophical contemplations regarding the past, our place in the world, and our extinction[3]. New ruins reconcile binary opposite conditions inherent in reality. This reconciliation potential is expressed in the ways ruins generate creativity, excite the imagination, and the ways experimentation and education can relate to them (Fig. 1).

[1] DeSilvey, Caitlin & Edensor, Tim. "Reckoning with Ruins". *Progress in Human Geography*. Vol. 37, 2013, pp. 465-485.

[2] Alongside the academic theoretical material, a large amount of internet sites were scrutinized as visual material. It allowed experiencing, however partially, the many points of view toward new ruins. Ranging from tourism, shelter solutions, crime infested areas perpetuating sadness and poverty, to environmental disasters, and to artistic material with endless inspirational energy.

[3] Harbison, Robert. *Eccentric Spaces*. London: The MIT Press. 2000.

Fig. 1. A ruin near the Dead Sea, Israel
Source: Sharon Raz (by permission of Sharon Raz).

Ruins pose intriguing prospects to the questions of how our public spaces are used, and for what ends? How can the process of design make responsible room for unpredictable conditions? What is the relationship between ruin and heritage? The role of ruins as negotiating the past, authorizing the present, and influencing the future has become a source for discourse. The paper focuses on ruins mental atmosphere and understanding their reconciliation capacity.

Attitude toward Ruins

The attitude toward ruins can be divided to negative understandings, and positive interpretations, including one that accommodates simultaneously negative and positive qualities. Negatively presented ruins are a result of misfortune or neglect, natural or manmade. They emerge as a result of economic, political, or social catastrophe. Ruins are mistreated, crime infested, toxic, and a continuing financial burden. Such derelict architecture is considered ugly. Italian scholar Umberto Eco explains the ugly as everything that displays degradation, dismemberment, and fragmentation. Man is repulsed by manifestations of the possibility of his own decline, in Eco's words:

> Let us imagine we look at a tooth-less man in the street; what disturbs us is not the shape of the lips or the few surviving teeth left in his mouth, but the fact that these remains are not accompanied by the other teeth that should have been in his mouth. […] standing before this inconsistency and incompleteness of the whole – we are right to determine, without any emotion, that his face is ugly[4].

[4] Eco, Umberto. *Storia Della Bruttezza*. Tel-Aviv: Knneret, Zmora-Bitan. 2013, p. 19.

On the positive side ruins reflect historical achievements, are a sign of heritage and tradition, source of inspiration and knowledge, remainder of hope and renewal. Ruins are embedded with symbolic meaning and complex philosophical messages. Ruins appreciation has flourished through history, ranging from the 'cult of ruins' during the 18th century, to their adaptation into Post-Modern architecture of the 20th century[5]. Many theoretical interpretations have emerged as well, such as Paul Zucker's who discussed ruins usage in art, architecture, and their relationship with nature[6]. Ruins qualities of indeterminacy and uncertainty have been pointed out by Dana Arnold who reviewed ruins shifting role in shaping historical understanding: "where the past was used as means of validating the present"[7]. Others such as Andreas Huyssen had critically observed the shift in society's conception of ruins from a romantic artifact toward a negative object that contaminates space[8]. Dalibor Vesely explored the power of ruins as it is manifested via representations, both realistic and imagined, to inspire new forms and sensibilities of (re)envisioning architecture[9]. Researcher Tim Edensor endorses new ruins as repositories of memory, and locations of activity and performance[10]. An example to contemporary understanding of new ruins scope and potential can be found in landscape architect Mira Engler's analysis of the history and shifting qualities of waste spaces, she states:

> Unofficial places where waste accumulates […] retain a peculiar mix of disgust and fascination. […] these places ripe for play, action, and fantasy. They evoke varied sensations and contain enduring delights. Children, less inhibited by accepted ideas of beauty, value, and cleanliness, like junk. They find much to explore in it, seeing it as diverse and stimulating[11].

Atmosphere of ruins

The uniqueness of ruins is manifested in their enigmatic feel. The fragmented forms, expressiveness of materials, lack of function, and binary oppositions, all contribute to this mysterious impression. Mysterious feel is subjective and undefined condition, therefore, this paper intention is to decipher this condition, inherit in new ruins, and evaluate it as their capacity to reconcile human condition. The experience of a ruin is complex and accumulating, sensual and holistic. Orhan Pamuk, Nobel prize winner for literature, writes of the term '*hüzün*' which translates as a form of melancholy, unique to the city of Istanbul (Fig. 2). It is shaped by the overwhelming presence of ruins abundant throughout the city:

[5] Woodward, Christopher. *In Ruins*. London: Vintage. 2002.
[6] Zucker, Paul. "Ruins. An Aesthetic Hybrid". *The Journal of Aesthetics and Art Criticism*. Vol. 20, 1961, pp. 119-130.
[7] Arnold, Dana. "Facts or Fragments? Visual Histories in the Age of Mechanical Reproduction". *Art History*, Vol. 25, 2002, pp. 450-468, p. 458.
[8] Huyssen, Andreas. "Nostalgia for Ruins". *Grey Room*. 2006, pp. 6-21.
[9] Vesely, Dalibor. *Architecture in the Age of Divided Representation: The Question of*. London, England: MIT Press. 2004.
[10] Edensor, Tim. "Sensing the Ruin". *The Senses and Society*. Vol. 2, 2007, pp. 217-232.
[11] Engler, Mira. *Designing America's Waste Landscapes*. Baltimore: JHU Press. 2004, p. 16.

Fig. 2. A street in Beşiktaş, Istanbul
Source: by the author.

> […] in Istanbul the remains of a glorious past civilization are everywhere visible. No matter how ill-kept, no matter how neglected or hemmed in they are by concrete monstrosities, the great mosques and other monuments of the city, as well as the lesser detritus of empire in every side street and corner – the little arches, fountains, and neighbourhood mosques – inflict heartache on all who live among them[12].

This effect is also renounced in the words of architect Juhany Pallasmaa:

> Melancholy is the recognition of the tragic dimension within the moment of bliss. This mental state combines happiness and sadness, possession and loss, understanding and bewilderment, into heightened experience of being. Melancholy is the sorrow accompanying the comprehension of limits[13].

Form

We expect of architecture to convey meaning, intention, order, and logic. Ruins confront these propositions. In ruins, forms are detached from meaning, parts are missing or broken, systems malfunction, there is lack of apparent logic, and absence of human activity, but we view them as architecture. Ruins are not completely accidental, marks of order and coherency are still embedded in them. Yet the position of former order is unclear, its authority is lost.

Metaphorically fragments represent moral breakdown, loss of belief, detachment from tradition, and alienation from all that is good[14]. The fragment invites completion by the imagination; it suggests the possibility of multi and changing interpretations. The fragment is exposed as representing the possibility of many truths, conflicting, and constantly shifting.

[12] Pamuk, Orhan. *Istanbul: Memories and the City*. New York: Vintage. 2006, p. 101.
[13] Pallasmaa, Juhani. *Encounters 1: Architectural Essays*. Helsinki: Rakennustieto. 2013, p. 316.
[14] Bergdoll, Barry & Oechslin, Werner (eds.). *Fragments: Architecture and the Unfinished: Essays Presented to Robin Middleton*. London: Thames & Hudson. 2006.

Fig. 3. Ruinous fragments
Source: www.pixabay.com – anonymous (free of copyrights).

The observer is pulled into an uncanny state of mind, compelled to think metaphorically and philosophically (Fig. 3). As such ruins are not the space of collapse and degradation but rather the realm of the possible and the evocative.

This peculiarity of ruins was understood by German artist, 'Dada' member, Kurt Schwitters. He was renowned for obsessively collecting fragments and debris of all sorts, using them as artistic material and inspiration. He attempted to use the accidental as methodology, a way to return to art its mythic, spiritual spirit. In his main artistic endeavour, 'Merzbau', there is priority for everything which is not complete, neglected, and unfit. At the time, Schwitters was pioneering the use ruins as materials that allow the new to re-emerge[15].

The atmosphere created by ruins and fragments can be traced in the works of Italian architect Piranesi, well known for his series of dark engravings, the 'Carceri' – dating 1749, depicting a series of imaginary prisons. Time and function, in many of the detailed engravings, are ambiguous; this enhances their allegoric and mysterious effect[16]. The researcher Huyssen claims that the fragmentary ruins represented by Piranesi have a lack of completion "whose failure [is] the measure of their success"[17]. This is also noted by Tafuri who refers to Piranesi's works as illustrating the 'principle of contradictions', which do not offer solution only recognition. Piranesi has no intention to repair the world by rearranging it, but rather by accepting its disordered, and flowing state. He accepts the world's contradictions and incompleteness as fate[18].

[15] Scharfstein, Ben-Ami. *Spontaneity in Art*. Tel-Aviv:Am Oved. 2006. [In Hebrew].
[16] Tafuri Manfredo. *The Sphere and the Labyrinth*. Boston: MIT Press. 1987.
[17] Huyssen, Andreas,. "Nostalgia for Ruins". *Grey Room*. 2006, pp. 6-21, p. 15.
[18] Tafuri Manfredo. *The Sphere and the Labyrinth*. Boston: MIT Press. 1987.

Fig. 4. Ruinous materiality
Source: www.pixabay.com – anonymous (free of copyrights).

Material and nature

In ruins materials lose their original state, some disintegrate faster, failure happens chaotically. Layers of material content are exposed and are rearranged along surprising formulations (Fig. 4). Nature, which was deprived from the building, emerges back to reassert itself. The complexity and diversity of shapes and compositions that exist in nature, ironically, by the process of neglect has been able to re-emerge.

The landscape artist Robert Smithson showed in his renowned 'Tour' that materiality of abandoned and neglected architecture can be evaluated aesthetically, and experienced emotionally detached from historical and political meanings[19]. Materials in ruins encourage to explore, experience, and decipher. Yet we are repulsed, obliged to practice caution and reluctance. In ruins materials sensuality takes over as predominant. Vividly recited by Journalist Bill McGraw writing about the abounded Packard plant, a gigantic industrial ruin, once the pride of industrious Detroit:

> Today, the complex is brooding, immense and silent. […]A labyrinth of rusted steel, shattered glass, crumbling concrete, standing water, freshly dumped trash, vivid graffiti, junked cars and crud-encrusted artifacts of a bygone age. […]It looms like a frightful fortress […] Sturdy trees, some three stories tall, grow from numerous places on Packard's roof […]Green moss spreads along the floors in some areas, and oozes out of the walls in others. Chalky stalactites, several inches long, hang from the ceilings […][20].

[19] Dillon, Brian. *Ruins: Documents of Contemporary Art*. London:Whitechapel Gallery. 2011.
[20] McGraw, Bill. "Life in the Ruins of Detroit". *History Workshop Journal*. 2007, pp. 288-302, p. 292.

This material condition creates a sense of loss, an atmosphere of sadness, a deep psychological force which is similar to Freud's argument that the power of the uncanny lies in the fact that it should remain hidden but keeps coming into the light[21]. An example of this can be seen in the architectural works of Italian architect Carlo Scarpa that intended them to be understood as a ruin from the outset. This is most evident in his restoration of the Castelvecchio museum in Verona[22]. In it a ruinous process of becoming and decomposing is clearly established by his use of materials, both new and existing[23].

Function

Ruins have no apparent function; the signified is detached from the signifier. Architecture remains in its abstract form. The structure still preforms, it holds the building and transforms the loads downward. The space retains only its relationship to human scale with no other purpose or objective. If water trickle through the roof it is failure of the building, if water accumulate inside a building to the point that flock of fish thrive in it, it is in no way a failure of the ruin, for that matter neither for its success[24]. What is a deserted prison, empty from convicts, free from its bars, in rejection equally from inmates and warders? Architecture as pure abstract ideal, stripped bare of function, meaning, or significance. A building, by becoming a ruin, has actually achieved its status as pure architecture. A ruin, is, among other things, a riddle, a mystery, it engages the mind as a question. The answer to which is a mute response. This is more profound quality in new ruins. They have not yet attained the quality of archaeological site, or symbol of historical meaningful place.

A similar perception toward architecture was adopted by the architect Louis Kahn. He valued architecture as at its purest when it is not yet finished and functioning, or in its mirror image as a ruin. Kahn turned his view to 'beginnings' as source of inspiration and deeper understandings[25]. These concepts are subjective, as such they were communicated by Kahn in a poetic and personal manner: "When its use is spent and it becomes a ruin, the wonder of its beginning appears again"[26].

The architecture philosopher Neil Levine also states this about the relationship between architecture function and spirit:

> As time passes, when it is a ruin, the spirit of its making comes back. It welcomes the foliage that entwines and conceals, everyone who passes can hear the story it wants to tell about its making. It is no longer in servitude; the spirit is back[27].

[21] Armstrong, Helen. "Time, Dereliction and Beauty: An Argument for «Landscapes of Contempt»". *The Landscape Architect, IFLA Conference Papers*. 2006, pp. 116-127.
[22] Frampton, Kennth in Bergdoll, Barry & Oechslin, Werner (eds.). 2006.
[23] Bar-Eli, Amos. "On the Fragment, the Worn, the Twisted, and the Aesthetics of the Non-Complete". *International Journal of Arts & Sciences*. Vol. 7. 2014, pp. 161-168.
[24] An abandoned shopping mall in Bangkok where flock of fish thrive. See: http://www.thisiscolossal.com/2014/07/an-abandoned-bangkok-shopping-mall-hides-a-fishy-secret/
[25] Levine, Neil in Bergdoll, Barry & Oechslin, Werner (eds.). 2006.
[26] Latour, Alessandra (eds.). *Kahn, Louis I. Writings, Lectures, Interviews*. New York: Rizzoli. 1991, p. 248.
[27] Levine, Neil in Bergdoll, Barry & Oechslin, Werner (eds.). 2006, p. 323.

Fig. 5. A ruin near the Dead Sea, Israel
Source: Sharon (Raz by permission of Sharon Raz).

The ruin has no value of functional meaning. The arrangement of the elements is released from the need to be functional; they can not imply any coherent meaning. There is no linearity, no intention, and scale is not clear or unified. New ruins offer creative freedom, free from the constraints of reality[28]. The role of imaginative reinterpretations of ruins is suggested by Armstrong:

> […] empty places are fundamental to the evocative potential of the city. They are latent places where the absence of use can create a sense of freedom and expectancy – the space of the possible[29].

Time, philosophical wanderings

The architectural ruin is an object that exists in the present but contains a past no longer existing (Fig. 5). It offers a strong incentive for feelings of nostalgia and melancholy. The ruin gives strong sense of absence, it contains both present and past, nature and culture, life and death[30]. Ruin reflects time and its consequences:

[28] Harbison, Robert. *The Built, the Unbuilt, and the Unbuildable: In Pursuit of Architectural Meaning*. London: The MIT Press. 1993.
[29] Armstrong, Helen. "Time, Dereliction and Beauty: An Argument for «Landscapes of Contempt»". *The Landscape Architect, IFLA Conference Papers*. 2006, pp. 116-127, p. 118.
[30] Vesely, Dalibor in Bergdoll, Barry & Oechslin, Werner (eds.). 2006.

disintegration, destruction, and ultimately death[31]. This aura is poetically pointed out by Japanese writer Tanizaki:

> Still for better or worse we love things that carry marks of deterioration, decay, and dirt, and we love the color and tone that recall the past in which they were created. To live in those old houses among the old objects is in a mysterious way a source of calm and peace[32].

We are unable to ignore the past communicated as a puzzle from the ruins state, we cannot imply meaning to its present condition. As a consequence the future, the capacity to a variety of possible futures, suggested within the ruin, is a definite though provoking condition. Free from a specific destination to carry this thought in time, it becomes a philosophical contemplation about human condition in the world. Past, present, future? what is the point of human endeavour? Is fate of all doomed for ruin? Is there hope? The ruin pose the question and can do no further, it proposes no answer, it advocates no direction or attitude, it hold steady to an open question, sustaining us in a state of wonder and thought evoking meandering.

Concept: simultaneous dual meaning

Finally, we are confronted with a bewildering attribute of ruins, being a facilitator of simultaneous binary opposing conditions. Ruins are, at the same time, signs of failure and remainders of great achievements. They disgust and repulse, but by the same qualities, they generate attractiveness and desire. Ruins constantly remind of presence and use but do it through absence and void. Ruins expose man's control of technology and victory over nature, yet render technology's breakdown and nature's triumph. We are confronted by these conflicted oppositions as practical problems, as metaphoric issues, and as philosophical concepts. Ruins are objects in a liminal state – objects that both exhausted their purpose while still await further interpretation. This liminal position endorses further the ambiguity of ruins and their mysterious qualities.

Summary

The paper discussed the complex mental structure that is created by and in new ruins. By the failure of the functioning building it is elevated to a pure and inspirational status. An atmosphere that generates a mental paradigm which offers us the possibility to reconcile with reality, with its ambiguous uncertainty and conflicting conditions. Ruins can be understood not only as misfortune or accidental but be initiated as a by-product of every human endeavour. As such ruin is a condition that exists internally, as potential, in every architectural act. Their quality is described by Armstrong saying that they:

[31] Huyssen, Andreas. "Nostalgia for Ruins". *Grey Room*. 2006, pp .6-21.
[32] Tanizaki, Jun'ichiro. *In Praise of Shadows*. Connecticut: Leete's Island. 1977 (1933), p. 12.

> […] can accommodate reflective meditations where marginal places provide a different beauty in the city. They evoke an aesthetic of disorder, surprise and sensuality, offering ghostly glimpses into the past and tactile encounters with a forgotten materiality[33].

The reconciliation quality of ruins can be used in current experimentation and methods of architectural education. Examples for this can be seen in the attempt of the architect Lebbous Woods to reconcile with the continuous process of distraction of architecture and to except it as fate. He does not wish to hide or fix reality but attempts to continue it in a positive way[34]. In his own words: "the present – always both decaying and coming into being, certain only in its uncertainty, perfect only in its imperfection."[35].

The abundance of diverse and nihilistic social phenomena such as parkour, squatting, urban exploration, ruin photography; although radically different from one another, can all be seen as spontaneous responses to the ruins reconciliation trait. In a world in which everything is a commodity, and must have a value in order to exist, ruins represent a different attitude that resists this trap, ruins actually offer an escape, an alternative. The network of emotional and conceptual structure of ruins, emerges as a reconciliation capacity.

Ruins are not only a source of embarrassment, a mirror of society's shortcomings; they are also a source of inspiration, a root for unexpected opportunities, and a source for sprouting the imagination. Their psychological mysterious condition, their presence as unexplored territories, their spatial and material potential, their reintegration with nature, all have the capability to inspire, to suggest, to offer, to allow, and to inject our built environment with new ideas, conditions, solutions and possibilities.

[33] Armstrong, Helen. "Time, Dereliction and Beauty: An Argument for «Landscapes of Contempt»". *The Landscape Architect, IFLA Conference Papers*. 2006, pp. 116-127, p. 119.

[34] Woods, Lebbeus, Myers, Tracy & Harries, Karsten (eds.). *Lebbeus Woods Experimental Architecture*. Pittsburgh: Carnegie Museum of Art. 2004.

[35] From http://lebbeuswoods.wordpress.com/2009/06/08/doom-time/ (accessed 1.3.2015). The article "Doom Time" published in 2009 by Woods.

ENVISIONING OUR FIRST-PRINCIPLES PREDECESSORS: LEGACIES OF CLIMATIZATION IN ANCIENT ANATOLIAN STRUCTURES

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Introduction

In most buildings designed today, energy consumption exceeds the standards set by the World Green Building Council, and reports by the Energy Information Administration state that building-sector energy consumption is expected to continue growing in the coming decades. This fact conflicts with the mission of global institutes of architecture to drive fundamental change in architectural practice with regard to energy consumption through the development of adaptive and resilient building environments that can preserve natural resources while providing direct access to low-cost, rapidly renewable energy resources. One track toward this fundamental change resides in the lessons provided by vernacular structures whose attributes have adapted over time to modulate factors dictated by the natural environment[1].

With the aid of state-of-the-art performance modeling tools, our understanding of these structures has advanced to disclose the progressions, shifts, and continuities of passive climatization across history. Instead of focusing exclusively on the romanticized beauty of building form itself, these tools allow researchers to establish an associative relationship between systems of physical enclosure and the resulting built environment. Patterns of spatial organization can be mapped to local climate inputs, revealing a historical vocabulary of climatization that provided improved comfort ranges, well suited for seasonal inhabitation.

By adding emphasis on the passive climatization potential of historical structures relative to variable inputs, including prevailing winds and solar path, this paper presents a new method of interpreting and communicating vernacular heritage. The ancient Anatolian region and its repository of engrained knowledge serves as the area of investigation, encompassing a territory that stretches from

[1] Fathy, Hassan. *Natural energy and vernacular architecture: principles and examples with reference to hot arid climates.* Chicago: University of Chicago Press. 1986.

the Aegean coastline in the west to the Mesopotamian plateau in the southeast. The settlements investigated cover a 6000-year period, from the Neolithic Age settlement of Çatalhöyük to the Roman Period settlement of Mardin, and thus enable a longitudinal assessment of vernacular architectural responses to varying environmental inputs.

Background

Vernacular Heritage

Vernacular heritage is a designation for structures that contain indigenous forms of knowledge from centuries of experience built on the relationship between material construction constituents and local eco-social factors. While vernacular heritage takes on many different elements within architectural design, this paper draws from distinct architectural characteristics that reframe our understanding of heritage moving forward; namely how thermal comfort was achieved through principles of spatial organization in relation to local climate conditions. In vernacular structures located in temperate climates, thermal comfort is often achieved through passive daylighting, heat mitigation, and ventilation control.

However relevant these structures are in contemporary planning, they are declining in use and being replaced by buildings that tend to favor supplemental technologies for high performance outcomes instead of offsetting energy use with the material enclosure itself[2]. This homogenization of building culture makes vernacular structures around the world extremely vulnerable to desuetude and calls into question how new forms of representation can highlight alternative facets of our built heritage as further substantiation of its relevance amidst an ever-growing energy crisis[3]. With the aid of performance modeling tools, our understanding of centuries of knowledge embedded within such structures can be clearly visualized in a holistic and integrated manner.

Computational Simulation

Today, with use of state-of-the-art computer simulation programs, much can be envisioned about the unique performance characteristics of historical structures and their connection to the immediate environment. Computer simulation platforms offer a highly interactive and diverse toolset to researchers, facilitating testing sequences which acutely disclose how a range of historical building configurations intensively shape the behavior of light, heat, and airflow present within the extensive environment. As a set of tools that create observable output states[4],

[2] Foruzanmehr, Ahmadreza and Vellinga, Marcel. "Vernacular Architecture: Questions of Comfort and Practicability". *Building Research and Information*, Vol. 39 (3), 2011.

[3] *ICOMOS Charter on the Built Vernacular Heritage.* Charters. ICOMOS 12th General Assembly. Mexico: ICOMOS. 1999.

[4] Augenbroe, Godfried. "Building Simulation Trends Going into the New Millennium". *Proceedings of the Seventh International IBPSA Conference*. Rio de Janeiro, Brazil. 2001.

they reinforce the first-principles, physical relationships adhering between a building and its ambient environment, and are distinctly relevant when identifying patterns of spatial organization across distinct periods of time.

Envisioning Climatization

Passive climatization is the act of modifying the natural environment through the employment of purely architectural strategies, putting building attributes to task in order to establish adequate levels of comfort within the built environment. Using building constituents to provide adequate heating, cooling, and lighting is central to an architect's domain and returns architectural design to its first principles, the fundamental roots of satisfying human comfort needs from predominantly renewable sources. In this sense, developing methods that allows researchers to reconnect to this art of climatization, otherwise displaced by electro-mechanical conditioning systems in recent decades, has immense value in light of current energy crises.

Consequently, for such a methodology to fulfill such a task, it must provide adequate visualization of heat, wind, and light within the inhabitable spatial zones of a building complex. Instead of focusing on the physical forms of vernacular structures alone, this approach measures the associative relationship between the physical, spatial boundaries and the atmospheric characteristics of the interstitial space itself. This paper present the methods used to flesh out both the range of boundary types and the resulting spatial vocabulary utilized by early cultures.

Methodology

Analysis Methodology

In this study, portions of three Anatolian settlements from diverse time periods are analyzed to disclose the heritage of signature intermediary space types found in the region. Each of these space types are digitally reconstructed and analyzed using state-of-the-art computational simulation platforms to identify how early populations organized intermediary spaces around constraints dictated by climate. Polygon meshes derived from image-based modeling and background raster images representing each ancient settlement are scaled and located within the simulation domain, serving to approximate the building boundary conditions for each group of structures (Fig. 01). Computer simulations analyze the performance of those boundary conditions by assigning environmental states to each domain. In generating observable output states, this analytical method provides critical insight into processes such as air change, daylighting levels, and radiant heat gain occurring relative to the boundary configurations of each intermediary space type (Fig. 2). Furthermore, these tools allow the testing of associative relationships between spatial configurations and environmental flow fields through the rapid adjustment of simulation states, including wind direction, sun position, and alternative boundary

configurations. Once this relationship is established between the intermediary enclosure system and the locally specific environment, findings are compared to identify archetypal patterns of performance and space, highlighting underlying continuities as well as shifts in spatial organization across distinct periods of ancient building practices.

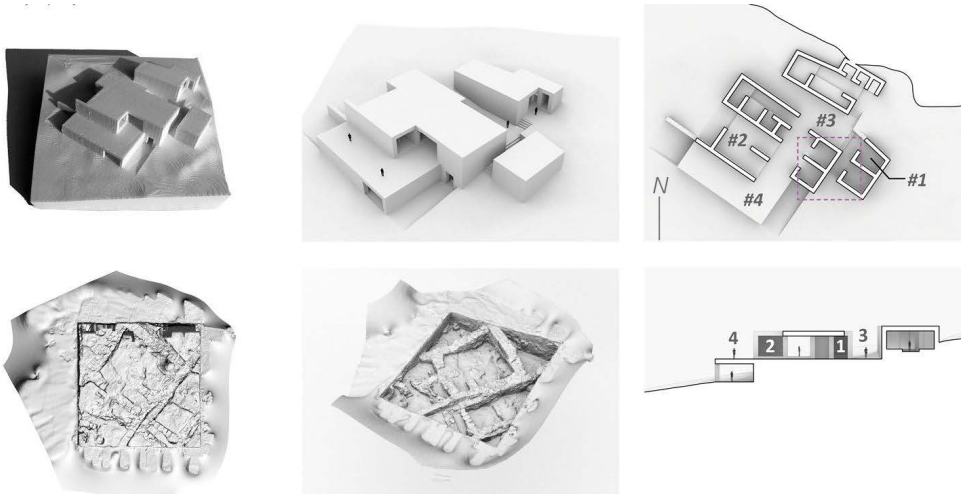

Fig. 1. Reconstructions of an ancient settlement. From left to right: the top row presents a 3D print, an aerial perspective, and a plan reconstruction; the bottom row presents an excavation area surface model, an aerial perspective of the same, and a section reconstruction

Source: Gygaia Projects and Tim Frank.

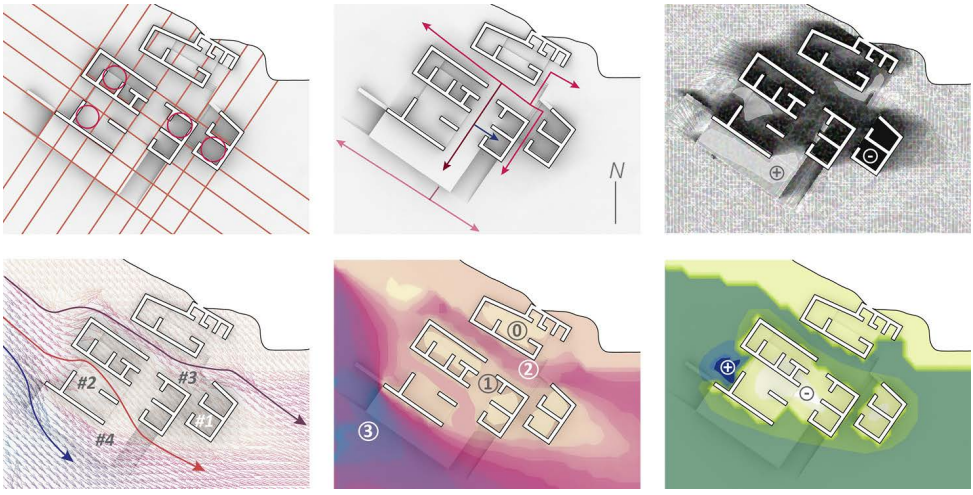

Fig. 2. Computer simulations of an ancient settlement. From left to right: the top row presents structural, communication, and shadow analysis; the bottom row presents ventilation velocity, pressure, and flow-vector analysis

Source: Gygaia Projects and Tim Frank.

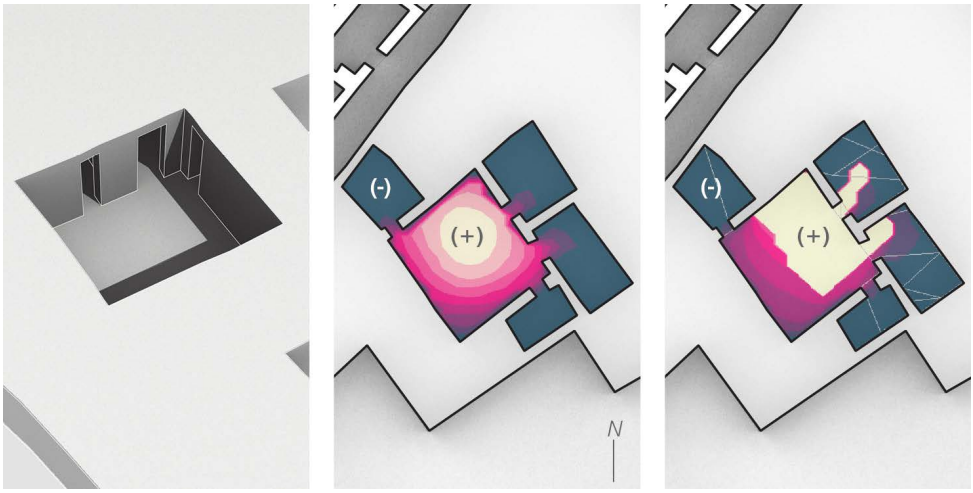

Fig. 3. Ray tracing tool tests. From left to right: shadow simulation from the low-resolution tool; insolation analysis from a low resolution tool; and insolation analysis from a high resolution tool
Source: Tim Frank.

Two primary simulation-tool types are used in this study: ray tracing tools and computational fluid dynamics tools. Ray tracing tools model the influence of solar gain and daylighting, measuring the areas of incident gain, shadow, and illumination on the surfaces of each intermediary space type. Computational fluid dynamics tools, on the other hand, model the influence of prevailing airflow; measuring airflow patterns, air velocities, and pressure differentials within the flow field of each space type. This coupled approach places emphasis on first-principles relationships between environmental factors, such as the solar path and prevailing wind, and the physical boundaries of each space type.

The base platforms used to carry out the analysis are McNeel® Rhinoceros™ and Autodesk® Ecotect Analysis™ with plug-in components, such as Desktop Radiance, Autodesk® Project Vasari, Simulation CFD, and WinAir4, used to expand the domain range of the basic platform. While these simulation tools are still in development phases, validation tests are run using an array of tools from high to low resolution to ascertain the bandwidth of reliable information provided across all platforms. Within the spectrum of performance-modeling platforms, low-resolution simulation tools are those that provide a highly interactive graphic user interface appropriate for use during early analysis stages. These simplified simulation tools are preferred because of their provision of wide-ranging analysis options; they are suited well for use by those who seek to examine the various parameters that characterize environmentally responsive vernacular-design strategies. With regard to ray tracing tools, three programs are tested: the native engine within Ecotect Analysis; Vasari's solar radiation tool; and the reverse ray tracing tool provided by Desktop Radiance. The ray tracing tool tests indicate that while the reverse ray tracing tool was better able to predict the loss of energy from solar ray redirection, all three tools were adequate in representing the areas of incident gain

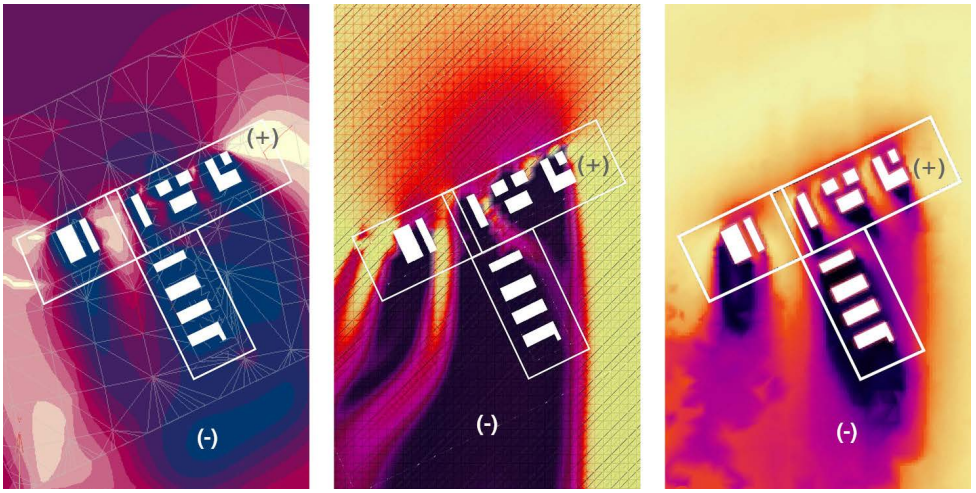

Fig. 4. Computational fluid dynamics tool tests. Outputs from tool sets with identical input values, from left to right: low resolution; medium resolution; and high resolution
Source: Tim Frank.

and shading that would influence the thermal characteristics of the intermediary space types studied (Fig. 3). With regard to computational fluid dynamics tools, three programs were tested: WinAir4; the wind tunnel feature in Project Vasari; and Simulation CFD. The computational fluid dynamics tools tests indicate that while higher resolution tools like Simulation CFD and Project Vasari were able to predict a higher range of flow behavior, all three tools were adequate in modeling the basic flow-velocity differentials around spatial boundary conditions (Fig. 4).

Case Study Analysis

Anatolian Climate

The region of Anatolia, or modern day Turkey, is classified in the Köppen system as temperate with hot and dry summer seasons. This climatic region resides approximately between 36-42 degrees north of the equator and between 27-44 degrees east of the prime meridian. Major cities where baseline weather data is collected and maintained for this study include Izmir (38°N, 27°E) along the western Anatolian coastline, Ankara (40°N, 33°E) in central Anatolia and the Iranian city of Tabriz (38° N, 46°E), the nearest weather location to eastern Anatolia. Significant seasonal variation is present in all three weather locations, with daytime high-temperature averages in the winter ranging from 3-12°C and in the summer ranging from 28-33°C. Prevailing winds in the region generally come out of the north with year-round average speeds ranging from 4-6 m/s and with peak velocities in the summer ranging from 15-18 m/s. Finally, from winter to summer solstice, the sun's elevation angle in the region shifts from 25-75° when measured at noon.

Ancient Anatolian Structures

In order to assess the effectiveness of the proposed method when envisioning the progressive characteristics of climatization across a building tradition, ancient vernacular building types located in Anatolia are examined to determine how systems of physical enclosure are put to task to achieve high-performance outcomes. Ancient complexes taken under study include the following: terraced structures in the Neolithic settlement of Çatalhöyük, dating to the 6th millennium BCE; domestic courts of the southeastern Anatolian city of Titriş Höyük, dating to the 3rd millennium BCE; and modular courtyards in the southeastern Anatolian city of Mardin, dating to the 2nd century CE. These sites were selected because they exhibit a clear progression of intermediary space types that aid the transition between harsh climatic conditions and modulated interior environments. One would presume the importance of these space types to be paramount in such a temperate climate, as they serve as transitory spaces, allowing user groups to adapt use patterns to the signature extremes of environment present within temperate climate regions[5]. Therefore, one could conclude that these space types are crucial to achieving passive climatization in regions such as Anatolia, which necessitate building boundaries to shape sun, wind, and temperature extremes. This study focuses on particular types of intermediary spaces that are centrally located within the spatial disposition of their associated settlements, namely, courtyard and arcade spaces.

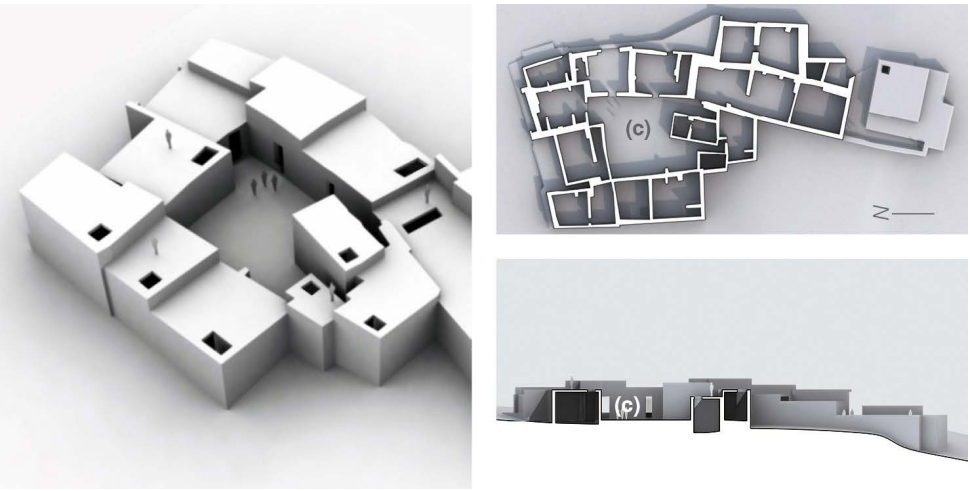

Fig. 5. Partial reconstructions of Çatalhöyük. From left to right, clockwise: an aerial perspective; a plan; and a section. 'C' indicates the midden/courtyard space
Source: Mellaart 1967 and Tim Frank.

[5] Frank, Tim, Luke, Christina and Roosevelt, Chris. "Thermal Zoning and Natural Ventilation in Vernacular Anatolian Settlements". *Vernacular Architecture: Towards a Sustainable Future*. Leiden: CRC Press/ Balkema. 2015, pp. 305-310.

At the Neolithic settlement of Çatalhöyük early courtyards emerged with the function of middens. Midden courtyards were larger spaces located central to settlement areas and defined by clusters of earthen living units surrounding them (Fig. 5). While public spaces like plazas or streets were not prominent in the early levels of Neolithic settlements like Çatalhöyük, the midden served as an early form of common space used primarily to store rubbish[6]. While these early courtyards appear not to have been inhabited for long periods of time, it is interesting to note, nonetheless, that their environmental behavior so closely resembles that of their Anatolian successors.

In the Early Bronze Age city of Titriş Höyük courtyards took central positions within standardized domestic housing units. Like the midden courtyards at Çatalhöyük, each court was open to the sky and contained a cobbled stone flooring system. However, the domestic courtyards of Titriş Höyük differ from the middens at Çatalhöyük in the character of communication patterns that served them. While the midden was presumably accessed by ladder from the rooftops of contiguous structures above, if entered at all, evidence from Titriş Höyük reveals pathways that would have provided shared access to courtyards from neighboring earthen spaces integral to the domestic compound. Furthermore, such lines of communication corresponded to points of entry to each house as well as the street network serving the settlement itself (Fig. 6). These characteristics suggest the evolving role of this space type within collective societies and suggests that its performance characteristics were found suitable to the population is served[7].

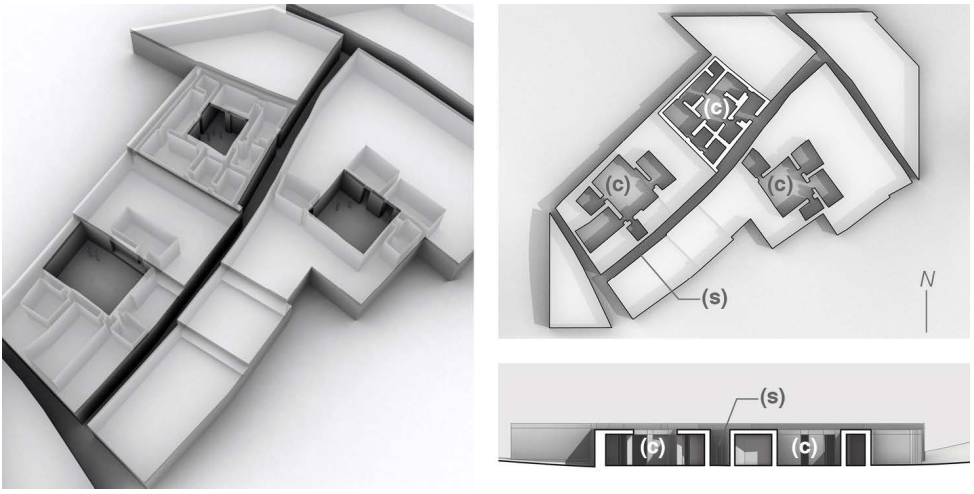

Fig. 6. Partial reconstructions of Titriş Höyük. From left to right, clockwise: an aerial perspective; a plan; and a section. 'C' indicates the courtyard space while 'S' indicates the street network.
Source: Algaze and Matney 2011 and Tim Frank.

[6] Mellaart, James. *Çatalhöyük, A Neolithic Town in Anatolia*. London: Thames & Hudson. 1967.
[7] Algaze, Guillermo and Matney, Timothy. "Titriş Höyük: The Nature and Context of Third Millennium B.C.E. Urbanism in the Upper Euphrates Basin". *The Oxford Handbook of Ancient Anatolia*. Oxford: Oxford University Press. 2011.

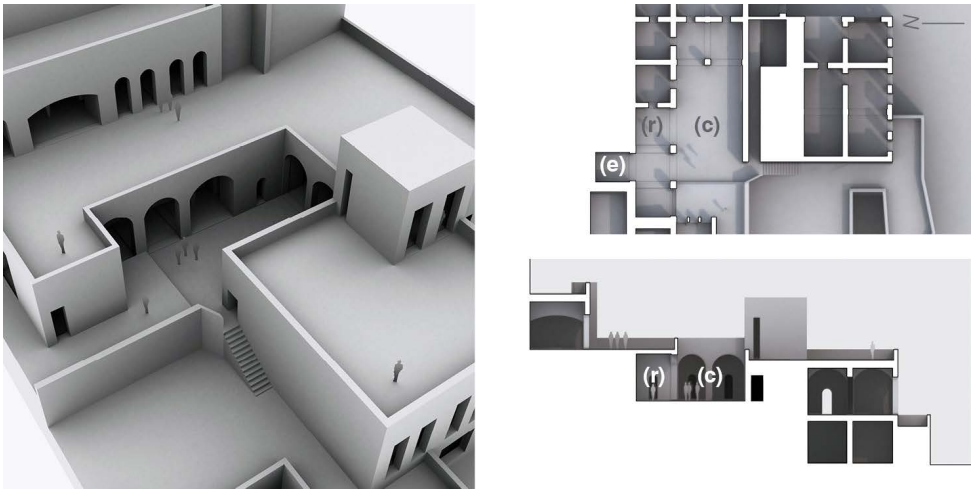

Fig. 7. Partial reconstructions of Mardin. From left to right, clockwise: an aerial perspective; a plan; and a section. 'C' indicates the courtyard space while 'E' indicates the eyvan and 'R' the revak
Source: Alioğlu 2000 and Tim Frank.

Similar to Titriş Höyük, the courtyard is central to each domestic housing unit in the Roman city of Mardin. Unlike that of its predecessor, the spatial vocabulary in Mardin is strictly derived by a 4-meter square module[8]. As the module repeats to form each domestic housing complex, variations in the degree of spatial enclosure provide a spatial gradient from fully enclosed, as in the case of the private room, to fully open, such as at the southern terrace. This gradient provides a rich inventory of intermediary space types, including the eyvan, the revak, and the courtyard space itself (Fig. 7). The eyvan is a vestibule space that serves to transition from the open courtyard to an enclosed room, while the revak is a type of inner arcade that opens towards the courtyard through the use of an applied boundary and serves as an extension of the courtyard space with the addition of an overhead plane[9]. These are important advances in intermediary space types in Anatolian architecture whose performance characteristics shed light on why the courtyard shifts to include perimeter types of semi-enclosed space, like the arcade and vestibule, in the 2nd century CE.

Outcomes

Analysis results disclose interesting correlations between the evolving configuration of intermediary space types in ancient Anatolian structures and the resulting principles of passive climatization. These principles include passive heating through provisions of radiant solar gain and wind sheltering during cold

[8] Alioğlu, Fusan E. *Mardin Şehir Dokusu ve Evleri*. Istanbul: TarihVakfı. 2000.
[9] Güleç, Saadet Armağan; Canan, Fatih; and Korumaz, Mustafa. "Analysis of the Units Contributing Climate Comfort Conditions in Outdoor Spaces in Turkish Traditional Architecture". *Proceedings of the 23rd International PLEA Conference.* Geneva, Switzerland. 2006.

winter months; passive cooling via natural ventilation and shading during hot summer months; and the maintenance of transitory zones during spring and fall months with optimal climate conditions.

Passive heating in temperate climates largely involves the use of energy from the sun to provide warmth and to buffer cold winter air. When simulating incident solar gain during summer months the courtyards show a development of space types distinctly suited for radiant heat gain. At Çatalhöyük, concentrated heat gain is present on the northern faces of the midden courtyard; at Titriş Höyük and Mardin, however, spaces adjacent to the northern edge of courtyards begin to be delineated so as to collect significant amounts of incident solar gain. When simulating air-change rates during winter months, the courtyards exhibit only slight air change within their lower spatial pockets. The rectangular courtyard running parallel to the prevailing wind direction at Çatalhöyük, however, encourages moderate air change within the courtyard space, while the square courts at Titriş Höyük and the rectangular courtyard oriented perpendicular to the prevailing wind at Mardin improve the buffering capacity of cold winter winds, respectively (Fig. 8).

Passive cooling in temperate climates predominately includes buffering of heat from the hot summer sun and evaporative cooling provided by natural ventilation. When simulating the shading potential of the courtyards during summer months, the tall, bounding perimeter walls enable the capacity to protect the southern edges of the courtyard spaces. Of greater note, however, is how Titriş Höyük and Mardin extend their courtyard spaces into adjunct areas, with higher degrees of enclosure and added protection from the hot summer sun. These spaces, regardless of orientation, create a new set of intermediary spaces with direct access to the exterior environment, yet with a high degree of protection from extreme elements of the natural environment.

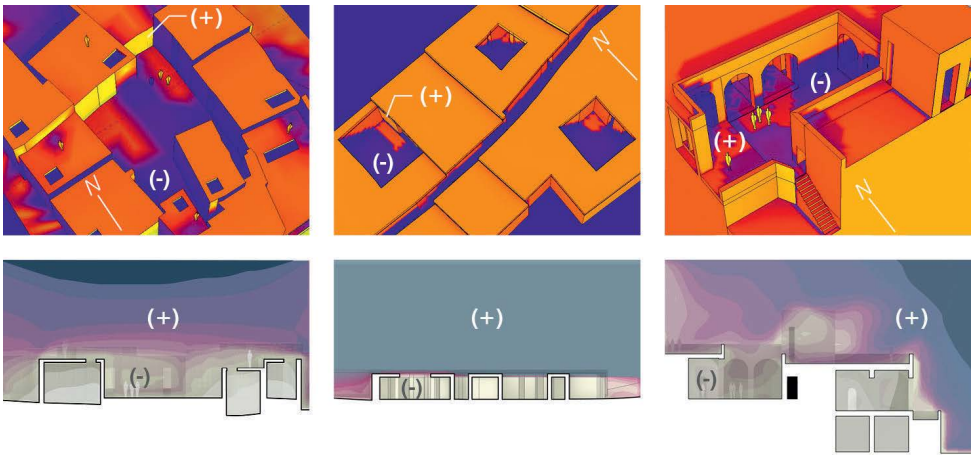

Fig. 8. Computer simulations of passive heating strategies at the winter solstice (December 21st). From left to right: Çatalhöyük; Titriş Höyük; and Mardin. The top row presents solar exposure; the bottom row presents wind velocities in each courtyard space

Source: Tim Frank.

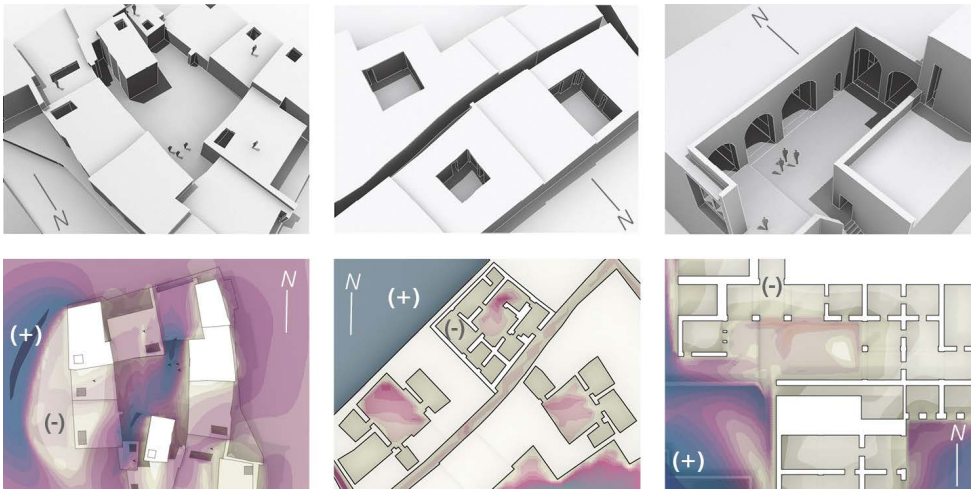

Fig. 9. Computer simulations of passive cooling strategies at the summer solstice (June 21st). From left to right: Çatalhöyük; Titriş Höyük; and Mardin. The top row presents shading patterns; the bottom row presents wind velocities in each courtyard space
Source: Tim Frank.

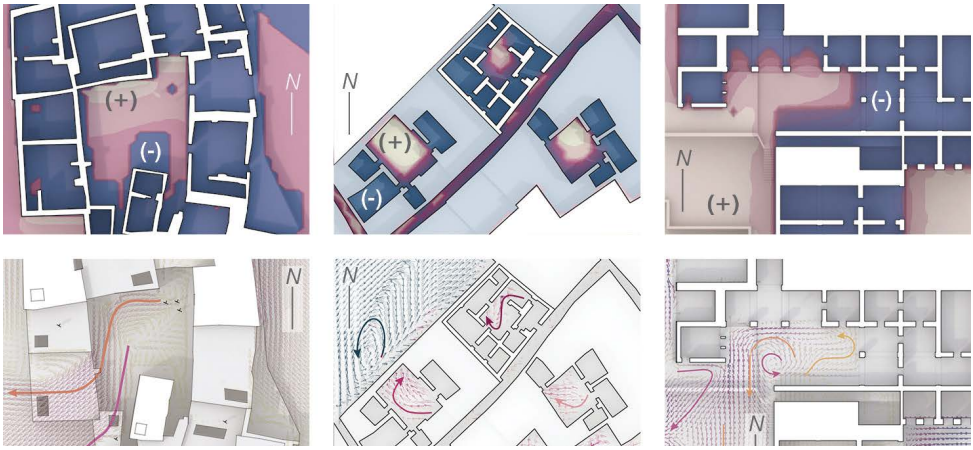

Fig. 10. Computer simulations of optimal zoning strategies at the spring equinox (March 21st). From left to right: Çatalhöyük; Titriş Höyük; and Mardin. The top row presents solar exposure; the bottom row presents wind-flow vectors in each courtyard space
Source: Tim Frank.

When simulating wind-driven ventilation rates during summer months, the courtyards again demonstrate very little air change because of their positive pressurization. The aforementioned intermediary spaces contiguous to the central courtyard, however, enable increased air velocities in the transitional zones where spatial circuits have generated differential pressurizations (Fig. 9).

The maintenance of optimal zones in temperate climates is mainly achieved through areas of expressed solar and airflow gradation where ranges of sun and wind exposures are available to inhabitants. When simulating changes in solar radiation in courtyards during spring and fall months, we find a natural gradation from more to less solar exposure as one moves from the north to the south sides of courtyard spaces. At Titriş Höyük and Mardin, however, the spatial gradient and the resulting shifts in solar exposure are doubly present as one moves along the east-west axis, because of the spatial layering in both examples. When simulating wind-flow vectors during the spring and fall months, mild turbulence develops in courtyards, while in adjunct spaces, such as the revak and eyvan at Mardin, more stable and laminar air currents persist (Fig. 10).

Conclusion

The initial outcomes presented in this paper are part of a larger research project that envisions first-principles approaches to building, as encapsulated in the vernacular traditions of ancient to modern cultures. Specifically, the work looks at intermediary space types and associated architectural attributes as they modulate the temperate climate of the Mediterranean region. As evidenced above, the courtyard takes full advantage of the temperate Mediterranean climate, whereby wind and sun directions are oblique to one another. Solar energies predominantly come from the south, while wind energy is northerly in origin. This creates a seasonal and climatic ring around courtyards, making northern spaces winter zones, southern spaces summer zones, and east-west spaces transitory zones that support activity shifts from morning to night during fall and spring seasons.

The passive climatization functions of intermediary spaces recognized here reveals new knowledge about the progression of decision-making that constitutes the built heritage of ancient Anatolia. In using simulation tools to reverse engineer climatization strategies employed by ancient populations, the work develops a new appreciation of vernacular structures. These tools allow us to gain insight into how building enclosure systems were tasked by ancient societies to provide zero-energy solutions that respond to human needs with clean renewable energy sources, such as prevailing wind and solar energy. In this sense, these tools and associated methods offer alternative meanings to notions of heritage. Instead of solely considering heritage as a purely consistent formal motif, we can also consider it to mean traditions in passive climatization. The Anatolian courtyard is an exceptional example of this. While formally the courtyard appears to be neutral and centralized in its configuration, it is actually quite eccentric in providing myriad thermal zones for inhabitants to employ.

Furthermore, the full extent of passive climatization strategies identified by these case studies has clear relevance in contemporary times and extends the survival of these traditions by highlighting their continuing cogency. These examples embody alternative approaches to sustainable development that create heterogeneous series of thermal zones instead of a number of homogenously steady-state environments enabled by high-grade energy systems. Further work is needed in using these analysis routines to bridge the gap between ancient structures and those undergoing preservation threat in contemporary times. By extending the legacy of passive climatization into modern urban planning, a community of building developers and officials can envision new sets of characteristics about building culture that not only foreground their relevance in given climate systems, but also facilitate conceptualizing how they can be adapted for myriad new uses.

STORYTELLING AS STRATEGY TO ENVISION THE CHANGING MEANING OF HERITAGE FROM AN OBJECT-FOCUSED APPROACH TOWARDS AN INTERTWINED CONTEXTUAL ONE[1]

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Introduction

Locality and place making as elements of social sustainability are of great importance in a world of growing globalization. Although more and more researchers and professionals realize that the identity of small communities is also constructed by their heritage in the majority of current research there is still little attention paid to the vast amount of small modest heritage located in villages or in the rurbanisation[2] areas unless it is related to important historical sites.

Once we focus on the historical, social, cultural and ecological tissues, we transcend the solely focus on the object to explore the emotional and experiential realities of place and how these are rooted in the individual and collective memory as they unfold in the everyday life. In the creation of a sustainable and resilient society the meaning and the appropriation of that heritage is too important and too complex to restrict the significance of it purely to the artefact itself with its architectural, historical or archaeological values.

Current developments such as the changing vision on heritage from an exclusive 'substantial'[3] to a more anthropological perspective and the changing meaning of it from a top-down to a bottom-up 'right to heritage' imply a shift in heritage paradigms. A renewed reflection on heritage research and an interdisciplinary approach involving Art, Architecture, Engineering Sciences (Conservation of Monuments and Sites) and Social Sciences & Humanity (such as Antropology and Archaeology) are required.

[1] Ongoing PhD research project: 'The Architect – Heritage Practitioner as Storyteller. Tracing the Ecological and Cultural Significance of rural built heritage of local importance in the framework of adaptive reuse.' By dra Gisèle Gantois, Architect & MSc in Conservation of Monuments and Sites, Promotors Professor Yves Schoonjans and Professor Krista De Jonge.

[2] Rurbanisation: urbanization of formerly rural areas on the fringes of towns or cities. http://www.oxforddictionaries.com

[3] Davallon, J. The Game of Heritagization, in: X. Roigé & J. Frigolé (eds.), *Constructing Cultural and Natural Heritage Parks, Museums and Rural Heritage*. Girona: ICRPC. 2010, pp. 39-62.

This paper concentrates on these issues in the complex urban countryside of the region of Flanders (Belgium) a highly dense and post-industrialized area. Within the fabric we detect numerous small-scale historical buildings as chapels, rectories, ice-cellars, donjons, square farms and wind- and watermills and lots of relicts of an industrial past. As an architect specialized in restoration and reuse of built heritage of local importance, I developed a special interest for the fragile more hidden significances of these structures. With this contribution I want to share possible methods and tools I employed in my own practice and tested out with International Master students[4]. By exploring, detecting, unveiling and mapping the intangible dimension of the tangible we can develop a more inclusive understanding of heritage. Within my research I explore the more hidden relationship of heritage with its multi-layered context using the strategy of storytelling as a spatial practice.

The changing vision on heritage

The region of Flanders is under a growing urban pressure in current times of increasing migration and mobility of both humans (ex-city dwellers, immigrants, tourists) and non-humans (nature with different animal groups has (re-) claimed this sites creating habitats that are exceptional for biodiversity), with a tension between them and between them and policy makers.

Next to the monuments of national or international interest we are surrounded by modest structures that we inherit and that have important familiar but sometimes hidden, cultural meaning for our landscape and its inhabitants. However we can detect in the current local discourse that the value of rural built heritage is more and more measured according to its financial profitability or its picturesque character. The fabric is then judged according to its charming 'authenticity', based on visual and often superficial qualifications. The accent lies on the materiality and the attractiveness of heritage composed of historical artefacts that finally become empty shells ones restored and reused. Its educational role is put in the foreground, narratives of memories being a common tool to do so. Although interesting and even important the danger is that the highly urbanized cultural landscape is exclusively promoted as a touristic destination and risks to be colonialized by leisure seeking tourists. Decision makers hereby often oversee the high community involvement and heritage appropriation.

Modest heritage played and still plays an important role in the identity, quality and social cohesion of a region but several of these fabrics have experienced decline leading to at first sight disused sites.

Inside the range of methods for managing and valuing monuments and sites, there is a well-known and good functioning framework to cope with the material aspects of conservation and restoration, but a framework for the intangible layers

[4] Leuven, K.U., Faculty of Architecture, campus Sint-Lucas Ghent/Brussels. www.internationalmasterofarchitecture.be

is clearly lacking. The interaction of locals and newcomers with local built heritage and its territory is often neglected, the special cultural and fragile ecological values not considered. Remarkable enough the 'perimeter' of the site, the intangible or cultural and ecological significance very often seems to lie at the very centre of the challenge of the restoration project posted. Yet in the meetings with clients or decision makers, this rarely comes up as a topic of discussion, its existence either taken for granted or neglected awkwardly. Forgetting about them is not difficult as they are often invisible or disappearing amid all the other elements, especially if one focuses only on the artefact as historic or economic data. This is enforced by the fact that there are no approved ways for tracing these special values.

Until recently the paradigms dealing with protected heritage where widely accepted, the particular problem-solutions already achieved without question. The tradition in which their characteristics were conceived is partly gone. The current frequent and deep discussions on legitimate methods, problems and standards of solutions mark a pre-paradigm shift and can be seen in a global renewed vision on sustainability. Existing paradigms are under attack and are subject to change in interesting debates and conferences all over the world. This not only implies a transformation in the approach from an object-focused towards an intertwined contextual one but within the academic world and the government policies one also detects a shift from conventional top-down to bottom-up community-based decision-making and to a more participatory way of working. The roles of architects are redefined responding to this shift.

The question of empathy becomes paramount.

Storytelling as a spatial practice

Next to the historical and material layering there are these timeless immaterial attachments expressed in an endless conversation between the landscape and building and the individual or community.

One side of it involves places having meaning for the natives through the events in their lives, which have taken place in the specific landscape or building. Generations pass knowledge of these events down to each other by marks and traces. People remember what has happened as if they 'see' the events inscribed in their collective memory.

The other side of the interaction is the triggering of memories and feelings by the simple sight of a place: this is the landscape or fabric 'talking' to us. The way the individual sees the built form in the environment is affected by what he already knows, believes or remembers from other places. Here enters the value of the newcomer (the new dweller, tourist, immigrant, architect-heritage specialist, etc.) for heritage and landscapes in our intercultural society as he attributes new layers of significance to the existing.

This implies a move towards a heritage, which is organically integrated into the life of different communities and by this territorialized and anchored.

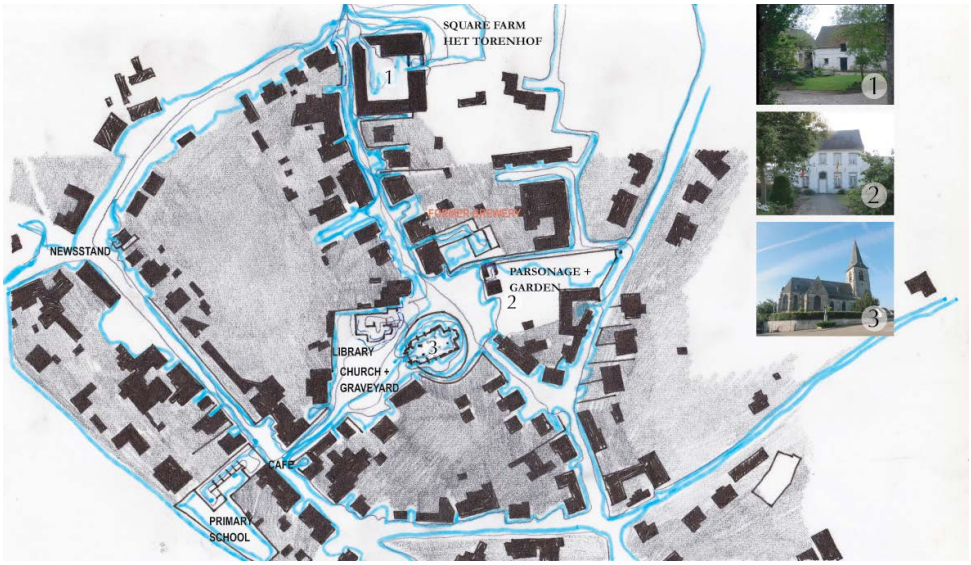

Fig. 1. Village of Brussegem, Province of Vlaams-Brabant, Belgium. Pathways and trials of natives and newcomers both human and non-human are thoroughly entangled as part of subtle social, cultural and ecological meshwork (2014)
Source: Gisèle Gantois.

In the physical world, context will have a dimensional and a historical dimension, both of which go to make up the layering of a place with masses and territories with enclosures or boundaries that determine the landscape. For inhabitants however the territory of local built heritage comprises not necessarily the surroundings of a bounded place (the legally protected artefact/area as heritage) even if physical walls or hedges surround it. It is as if no one owns the place but at the same time all have use of it. It is a place of collective independence where people can take initiatives that support their desire for the collective but also highlight an inherent sense of personal freedom, balancing the concept of togetherness with the concept of independence. This makes it a place of attachment and recognition appropriated in different ways.

The rural built heritage is then not purely an artefact but rather a zone in which the pathways and trails of natives and newcomers both human and non-human are thoroughly entangled as part of subtle social, cultural and ecological meshwork[5] (Fig. 1).

It belongs to the well-known trusted things and attributes the human scale to the landscape and includes all living things.

The link between heritage and landscape then becomes increasingly important and by focusing on 'cultural heritage' we can explore the close relationship between it as well as the limits between the natural and the cultural[6]. The main

[5] Ingold, T. *Up, across and along,* in: T. Ingold, *Lines: A Brief History.* London: Routledge, 2007, pp. 72-103.
[6] Gravari-Barbas, M. *New challenges for cultural heritage: Synthesis of the final report,* France, Université Paris, Agence Nationale de la Recherche. 2014.

viewpoint on heritage matters does not depend anymore on the different meanings of its individual buildings alone but rather on the entwined fabric of buildings and landscapes that in their grouping or agglomeration create a valuable human made cultural landscape in the past, present and future enforcing the identity, quality and social cohesion of a place and region.

Thorough preliminary investigations of the architectural, historical and archaeological values, now the primary determinants of significance in heritage matters by archival research and building archaeology[7] can become a support to better understand the attachment of individuals and communities to heritage places. We can add to the literal layers of archaeological remains the different cultural and ecological values as we realise just how great the implications of these values are and just how minimal the extent in the projects of restoration often is (Fig. 2).

At the basis of all possible methods to explore, to detect, to unveil and to map this intangible dimension of the tangible lays the participant observation. As Tim Ingold puts it we should join with those among whom we work.[8]

The key thing is that the architect – heritage practitioner is an outsider in the local landscapes and buildings he has to study. One can never discover the world of meaning just by observing a place *from outside* and doing material survey only. (Collecting information) The architect as a stranger has to develop the ability not only to discover the history of the artefact and of the material it is made of but to take time to listen to and to observe both the local and the newcomer *from inside* (Collecting meaning) because he finally intervenes in a process that is already going on. It is crucial not only to map in a precise way the artefact itself but also the complex mesh of meanings to relate it towards a bigger framework of cultural and spatial experiences, urban and landscape structures. To gain insight into people's and other living creatures' *why* and *how* and their and our relation to places we can express perceptions through mapping *from the ground*.

Fig. 2. Rectory of the village of Meuzegem, Province of Vlaams-Brabant, Belgium. Left: Restoration of the mural paintings (2015). Middle: Mural paintings discovered behind the wallpaper (2006). Right: Children playing in the former reception room of the house of the priest, thus appropriating the space 'in between', the time between the original occupation and the new one (2001)

Source: left: courtesy local inhabitant. Middle & right: G.Gantois.

[7] Building archaeology: Bauforschung.

[8] Ingold, t. op. cit.

This implies that to be able to understand the processes of heritagization, appropriation, motivation, aspiration, to perceive fears, hopes, emotions, memories and traces and to express our own understandings we not only use cartographical techniques but: 'We have to take time to step across the roads, to visit the places of which the inhabitants tell'[9]. The investigation then turns into a travel story, storytelling into a spatial practice.[10] The institutional database (information) is enlarged with data collected by walking (meaning).

Every new event or interference intervenes in a specific historical situation. Society is conceived as an organic and integrated whole. Cultural landscapes grow in an organic continuous or discontinuous way. They might be viewed under the aspects of economy, or family, or religion, or politics but all these interpenetrate one another and constitute a single reality. Subdivision fades into the background of human experience because it is omnipresent: the cultural landscape is a receptacle for people and events, endlessly moved, exchanged, replaced, forgotten.

The classical way of analysing by layering and slicing information appears too limiting here. We can refer to the Middle Ages where instead of maps, they used what the modern Historian François de Dainville called 'cartes parlantes'. These 'terriers' listed hundreds, or even thousands of individual plots of land in a set of fields, giving the exact location of each.[11] They were judged according not to the adherence to coordinates or scale, but rather according to the faithfulness with which they described relationships between people – usually landowners – and their physical environment.[12] This way of mapping reveals complexity, instead of a way of simplifying (Fig. 3).

This can be expressed in drawings and sketches, by making plans and models. The drawings and models are used to generate knowledge, to test existing theory and as mediating tool with different stakeholders.

The act of watching closely can lead to real closeness. Retracing the existing makes things clearer and feeds the understanding of the meaning of the existing today in its context. The act of drawing is a way of observing and therefore a way of reflecting. Drawing makes one see things differently. The drawing so becomes a tool for the eye (Fig. 4).

Model making can help us in visualising the intangible, by using different materials and scale.

[9] Lee, J. and Ingold, T. (2008) *Introduction* in *Ways of walking: Ethnography and Practice on Foot,* (Anthropological studies of creativity and perception) England, Ashgate, 2008, pp. 1-19.
[10] Certeau, M. De. *The practice of everyday life,* Berkeley, CA : University of California Press. 1984.
[11] Oles, B.T. *Recovering the wall*: enclosure, ethics and the American landscape, PhD, Citable URI: http://hdl.handle.net/1721.1/45437. 2008.
[12] Sack, R.D. *Human Territoriality: Its Theory and History*. New York: Cambridge University Press, 1986, p. 62.

Fig. 3. Carte Parlante. Line of walk 1 – Brussegem-Grimbergen - 28 September 2014. Assembling of extracts of the "Caertenboek van Grimbergen 1699", maps registering the properties of the abbey of Grimbergen in former times. Indication of the old road in the fragile meshwork of paths and trails, *villages protected heritage and new reference points and experiences*
Source: Gisèle Gantois.

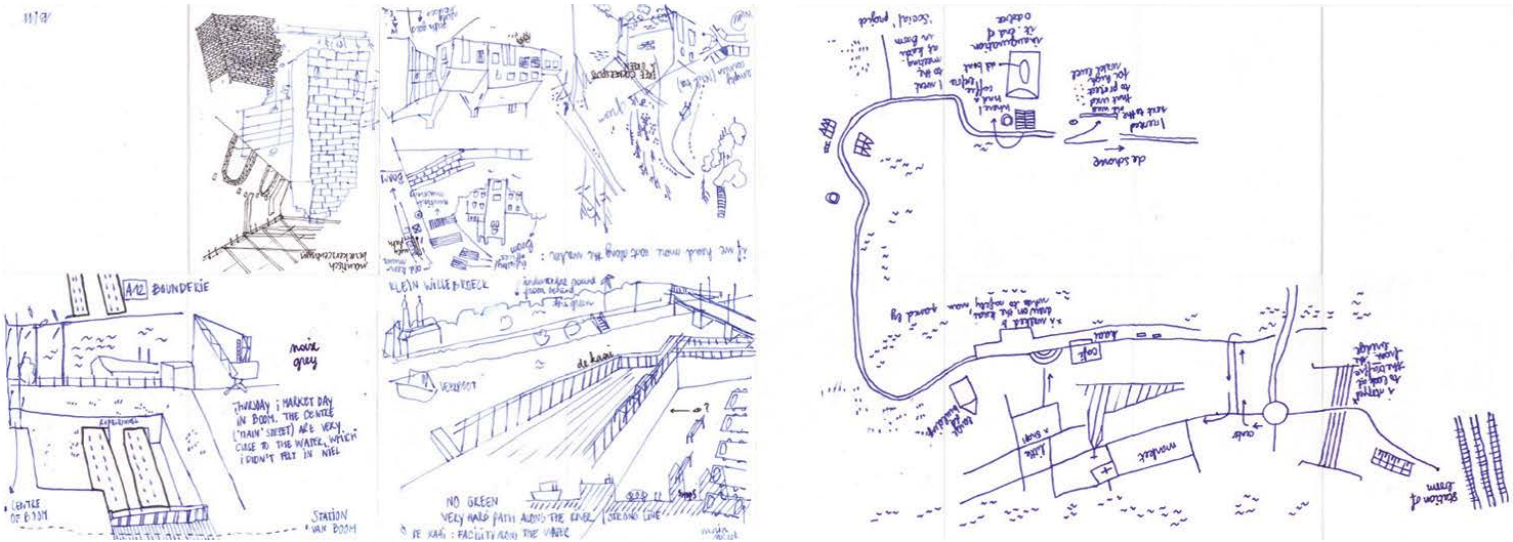

Fig. 4. Personal mapping of experiences and observations in little jot booklets, drawing becomes a tool for the eye and makes things clearer. (Sketch booklets are fold out of an A4 piece of paper to an A7. They have the advantage to be discreet and small, *one can always have them with them on a walk, to take note of unexpected encounters)* 2015

Source: Floor Clinckemalie, student of the International Masters 2014-2015, KU Leuven, Faculty of Archtecture, campus Sint-Lucas Ghent/Brussels.

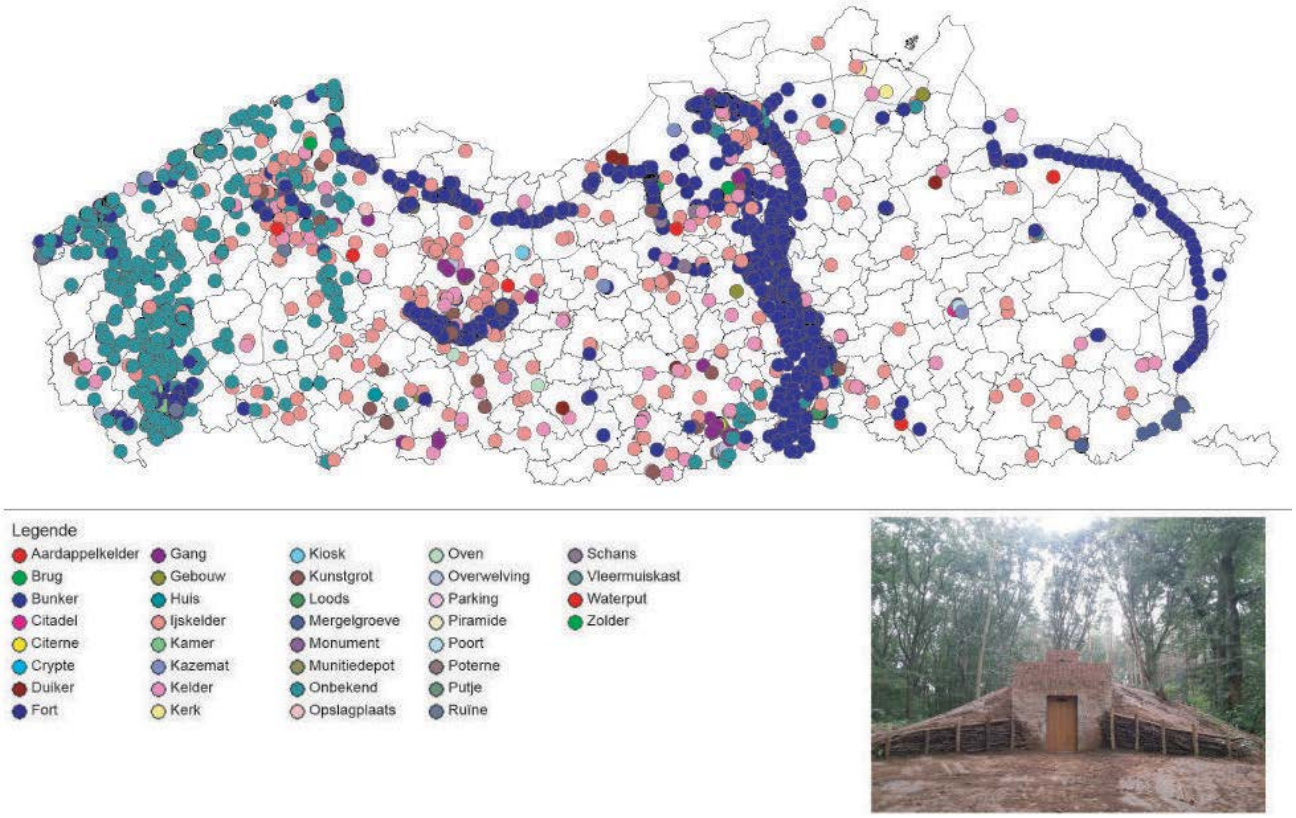

Fig. 5. Map of the region of Flanders, Belgium with an indication of the hibernation places of bats. These places are former ice cellars, forts, bunkers etc. The bats add new significance to this small hidden heritage and a different mapping of heritage based on intrinsic qualities with its actual ecological value is generated. Right under: Former ice cellar of Schiplaken, Zemst, Province of Vlaams-Brabant, Belgium, converted into a hibernation place for bats

Source: map: @Vleermuizenwerkgroep Natuurpunt, ice cellar: Gisèle Gantois.

Fig. 6. 4 pages out of the Chronicle of the project of Peizegem, 2014
Source: Gisèle Gantois.

Once we develop the ability to transcend the focus on heritage as an artefact (a finished *project or thing*) we can discover the evidences of live, human or non-human. The monuments are than considered as *processes of growth*. By bringing them back from their *passive* to their *active* materiality 'we (can) rescue them from the cul-de-sac into which they had been cast and restore them to the currents of life.'[13] Heritage is than changing into a phenomenon cutting across all fields of cultural and ecological activity. It becomes a meta-cultural *process* in the sense that artefacts are not by themselves heritage unless there is value attached to them.[14]

Intrinsic qualities can be discovered by studying which 'plants are growing on it, what animals living in it, how all living creatures human and non-human move in, over, through or around it, what it sounds and feels like at different times of day, after dark or in various weathers.'[15] (Fig. 5).

I discovered an interesting parallel in my working methodology of an architect-heritage practitioner and the strategy of the storyteller. In "Der Erzähler. Betrachtungen zum Werk Nikolai Lesskows" Benjamin[16] states that 'the figure of the storyteller gets its full corporeality only for the one who can picture both the man who has stayed at home who knows the local tales and tradition and the one who comes from a far. One could picture these two groups through their archaic representatives, one is embodied in the resident tiller of the soil and the other in the trading seaman.'

As Christopher Alexander explains in the Oregon Experiment: 'When an individual creates his own place, he takes these extra, subtle needs into account as a matter of course, because he can feel them. But when he has to explain these needs to an architect, the only ones which get across are the ones which he can state in words.'[17] This implies that the method of *interview* appears not always adequate in finding out the significances for the native or the meaning given by the newcomer. The architect – heritage practitioner has to be immersed registering the off-the-record. This can be expressed in chronicles based on historical research in situ and archives, observation and conversation rather than using the interview or questionnaire. Chronicles create the opportunity to revise at each moment the restoration project in relation to new experiences and encounters (Fig. 6).

[13] Ingold, T. *Making; Anthropology, Archaeology, Art and Architecture*, Routledge, London and New York. 2013, p. 12.

[14] Sánchez-Carretero, C. Significance and social value of Cultural Heritage: Analyzing the fractures of Heritage in *Science and Technology for the Conservation of Cultural Heritage* – Rogerio-Candelera, Lazzari & Cano (eds.), Taylor & Francis Group, London. 2013.

[15] Ingold, T. *Making; Anthropology, Archaeology, Art and Architecture*, Routledge, London and New York. 2013, p. 12.

[16] Benjamin, W. *The Storyteller, Reflections on the Works of Nikolai Leskov*.
http://slought.org/files/downloads/events/SF_1331-Benjamin.pdf

[17] Alexander C. *The Oregon Experiment*, Oxford University Press. 1975.

Conclusion

With this shift of heritage from object to relationship, it becomes a canvas or a medium, which creates social projects. Understanding the attachment of individuals and communities to their territory together with the land-shaping factors of our cultivated landscapes and structures can help us in developing better and more nuanced restoration/reuse projects as rural built heritage truly enables resilient environments. The ecological aspects of these buildings and their material assures the minimal environmental hereditary effect on the next generation; the cultural significance in the local context on the other hand gives them a true and authentic character and connects the buildings with the social fabric over different generations. Local built heritage can very well adapt itself to a changing society; even give a dynamic force to shifting citizenry as it integrates alterity and is community driven.

Just like the storyteller, the architect can be the mediator between the local nameless inhabitant and the newcomer ‘retelling’ both their stories by adding his own experience when dealing with an existing structure with its own values in a given environment.

MODERNITY AND SCHOOL ARCHITECTURE OF THE THIRTIES IN FRANCE. A COMPLEX PARENTHESIS OF PROGRESS AND HOPE TODAY VANISHED

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Introduction

From the analysis of the project of preservation and rehabilitation of the "groupe scolaire"[1] Karl Marx (1932) in Villejuif designed by André Lurçat, it was possible to bring into light the existence of a corpus of homogenous constructions, which unfortunately didn't receive a fair recognition until today. It consists in a group of elementary schools – nursery and primary – designed and built during the 1929[2]-1939 decade. Most of them keep their original purpose today. A majority of these schools is located in close Paris' suburb. This study then looks at them particularly. Regrettably, their vicissitudes altered their image and actual perception. Their meaning escapes us, their importance, what they can communicate to us as testimonies of a period of strong ideological conflicts, where the claimed modernity of these buildings seemed to announce the freeing of the man from class struggle.

The aims of this study are to question about the value of this heritage, to try to bring out its meaning and to envision which would be the mechanisms that should allow modifying its actual blurred and wrong perception. It will articulate itself around a process of knowledge and recognition of the historical and artistic values of this patrimony, particularly interrogating the sense of "modernity" given at that time and its possible actualization.

[1] A "groupe scolaire" is a primary school, which includes both a nursery school and two elementary schools, one for girls, one for boys.

[2] 1929 is a key year, in worldwide history with the breakout of the crisis. It is also in French history. Municipal elections (municipalities are in charge of the public elementary school). Foundation of the magazine *L'école libératrice*. Last improvements for the design of the new schools of Maisons-Alfort, Condorcet and Jules Ferry, by Hummel and Dubreuil. Foundation of the UAM, "Union des Artistes Modernes" (Union of Modern Artists), which celebrates the restauration of the dialog between industrials and creators and modify the notion of ornament, wishing to marry beauty and utility.

This work adopts a holistic approach, being only able to envision the singular inside the totality. In fact, putting into perspective this group of buildings, through the prisms always more specific of history, history of architecture, history of school architecture, history of institutions, history of urban and sociological development and evolution of Paris' suburb, allowed to give back its entire signification and also to enlighten the reasons of its still relative ignorance.

The experience of the preservation and renovation of the "groupe scolaire" Karl Marx

The "groupe scolaire" Karl Marx is a symbol. Beyond its symbolic nature, its case is emblematic. "Ecole la plus moderne de France", "Ecole la plus belle de France"… During its opening ceremony, magnificent celebrations were organized. Popular theatre. Fireworks. Catering. Ball. A very "agitprop" moment to sum up. Heads of French Communist Party proposed speeches. As Bruno Zevi wrote about it, this school was offering "a vision of architecture as a prophecy":

> The generous illusion was reaching its final goal, during the eve of the collapse of the left-wing politics provoked by the Hitlerism in Germany and the protectionist evolution of the culture[3].

For several years, this school was able to keep the souvenir of its symbolic purpose and even the municipality wished to preserve its meaning. Therefore, it was asked to André Lurçat to design the new extensions, assuring this way a very strong coherence of the building. It did not suffer and still does not suffer from a lack of critics' recognition. In fact, it is present in most of the manuals of architectural history from the 20th century.

The urbanization and the natural and human processes of degradation that endured the building chased away the innovative character of its architecture and its equipment. For instance, the solarium was not accessible anymore to the children for safety reasons and this lack of interest accelerated its deterioration. The progressive alteration of the social and urban context did not help also.

The project of preservation and valorization, beyond the important local and social benefits that should bring, allowed to rekindle the image of this architecture but also to make some interesting discoveries. For instance, it was possible to bring back into light five frescoes painted by Jean Lurçat, brother of the architect, and thought definitely vanished. A particular care was given to the windows strongly damaged, restoring the original architectural message.

[3] "Si era al traguardo finale dell'illusione generosa, alla vigilia del crollo della sinistra europea provocato dall'hitlerismo in Germania e dall'evoluzione protezionistica della cultura." Quoted, in: Miotto, Luciana. "André Lurçat. Scuola a Villejuif". *Universale di architettura.* No. 34. 1998, p. 14.

From this very succinct study of this symbol, many questions could then emerge. Do other buildings of the same type built during the same period exist? Where are they located? What were the conditions that made their edification possible? Of which movement are they the testimonies today? Which hopes were, at that time, brought into their realizations? Are they still identifiable? Is the modernity, designed during the 1930s, still today perceptible? What is the meaning of modernity? What were the vicissitudes of these buildings? Which would be the means and the methods to bring into play in order to allow the valorization of this heritage like for the "groupe scolaire" Karl Marx?

Cataloguing of the schools

The main goal of this cataloguing was to identify the school buildings then realized (1929-1939). It was decided to limit this study to the municipalities, except Paris, of the previous territorial subdivision known as "département de la Seine". In fact, from preliminary studies it appeared that, after First World War, this part of French territory was one of the few enduring a strong demographic increase, needing therefore new infrastructures and among them schools. This territory is also known as "the small crown"[4].

The mainly used source was the database of the French Ministry of Culture, so called "base Mérimée"[5], which gives access to the entire inventory of the artistic and architectural French heritage. Yet it could only offer a preliminary survey. In fact, it soon appeared that not all the schools were included inside the database. This is due to the way the inventory is done. Other sources were bibliographical, including magazines of architecture, national newspapers, artistic magazines, and encyclopedias about local heritage. The consultation of the archives has not ended yet. Above the municipal ones, it is possible to consult the national ones, which contain all the grant application files. They include plans, corrections and estimations of coast. Another archive is the AAM, "Archives d'architectures modernes" (Archives of modern architectures), which can also give for instance access to initial sketches or non-realized projects.

After crosschecking, it was possible to localize and identify 41 "groupes scolaires" and 11 only "écoles élémentaires" or "écoles maternelles". Some of them may have changed function, but, except the case of three buildings, they are all still used as elementary or secondary schools (Fig. 1).

[4] "La petite couronne."

[5] http://www.culture.gouv.fr/culture/inventai/patrimoine/

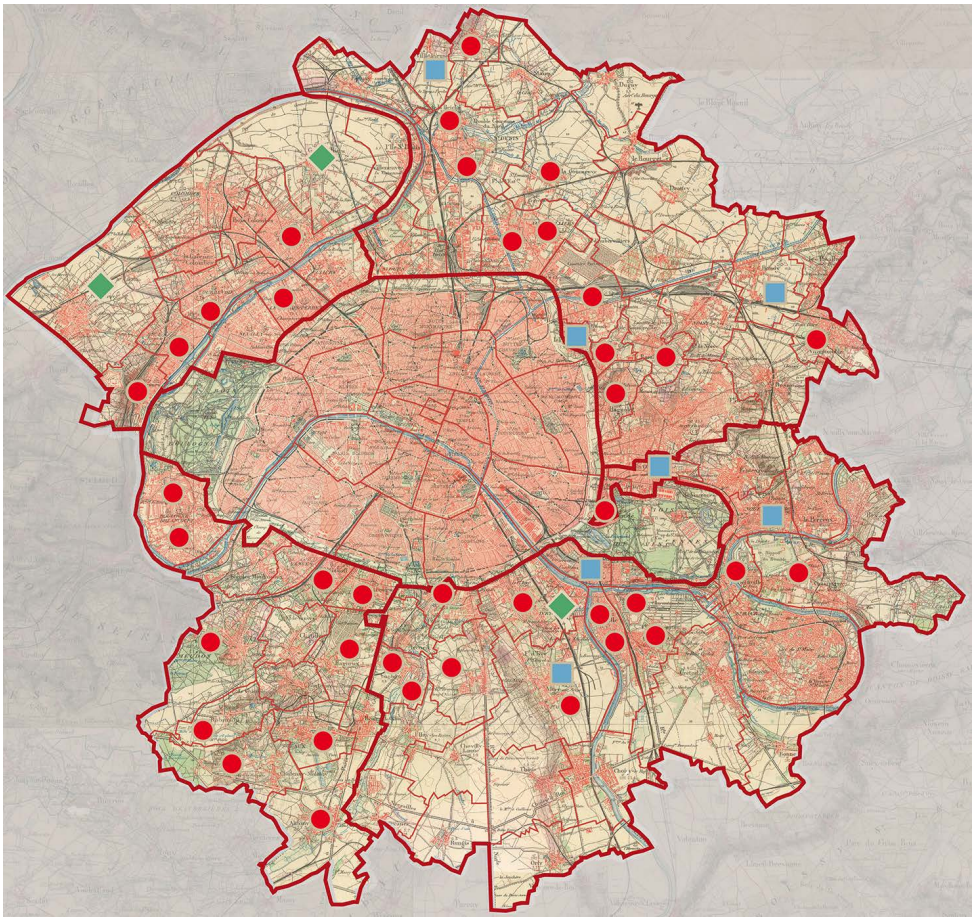

Fig. 1. Localization of the schools built in 1929-1939 in Paris' suburb. In red, the 41 "groupes scolaires", in blue, the 8 elementary schools, in green the 3 nursery schools

Source: personal study and map based on: carte topographique – environs de Paris (1906). www.ign.fr.

A place of memory

Public school has been and today remains a field of particularly intense political and ideological fights. The victory of the secular, free and mandatory model during the years 1881-1882 transformed the municipal primary school into one of the fundamental symbols of a republican regime, still looking for its stability[6]. Collective memory installed itself into these buildings, which form today a structuring and significant network inside urban French landscape. Unfortunately, the statue of "Place of Memory"[7] seems in general applied only to the schools immediately built after the adoption of the laws setting up the public school and before First World War.

[6] Teachers were called the "Hussards noirs de la République", black hussars of the Republic.

[7] According to the sense given by Pierre Nora. See Nora, Pierre (eds.), *Les lieux de mémoire. Tome 1: La République.* Gallimard: Paris. 1984.

Memory can invade the buildings we are dealing with now, but only on the condition to reveal itself again. These buildings conserve different levels of memory. One of this is the fight lead by left-wing politicians for the improvement of life conditions of the populations of the suburb.

During the interwar period, these populations continued to increase, when Paris' one started to decrease during the 1930s[8]. It consisted mainly in a working population living in the middle of quickly built factories during the industrial revolution, and without access at that time to enough services and infrastructures, including the most elementary hygiene. Consequently, left-wing majorities decided to equip their cities with new and modern ones, including sanitary services or social housings. For instance the OPHBM[9] of the district of la Seine, ruled by Henri Sellier, planed the edification of 15 "garden cities".

For the municipal elections of 1929, the French Communist Party (PCF) decided to change its doctrine and transformed it into "municipal communism", hoping that through local action and tangible realizations, the party should have been able to gain national elections. It was without counting on the concurrence with the SFIO[10]. Left-wing majorities ruled most of the cities of the suburb after 1929, so to be called "the red belt"[11]. A strong emulation existed between PCF's and SFIO's cities, even after June 26 1934 and the creation of a coalition between the two parties. Each party was supported by a newspaper: the SFIO by *Le Populaire* and the PCF by *L'Humanité*. These daily newspapers strongly advertised the inaugurations of public schools with photos of the buildings, repeated announcement of the opening ceremonies, transcription of the speeches of the local and national politicians present, interviews of visitors. They participated also to the municipal elections'campaigns, defending the achievements of the municipalities or attacking the ones ruled by rival forces.

A modern architecture for a new school

Air, light, hygiene and comfort. These four characteristics are a leitmotiv that we can find inside above-mentioned newspapers, architectural magazines, and more general literature and art magazines, and among pedagogues[12], politicians, visitors and users.

[8] This is partly due to the progressive renovation of the "ilots insalubres", which destruction forced their residents to move into the suburbs.

[9] Office Public d'Habitations à Bon Marché (Public office for social housing). The consitution of this local structures was authourized by the Bonnevay law on the December 23rd 1912. Because of First World War, first large realizations appear only during the 1920s-1930s.

[10] Section Française de l'Internationale Ouvrière, French Section of the Workers' International, name of the socialist party at that time.

[11] "La ceinture rouge".

[12] Célestin Freinet, member of the association, and founder of different schools based on its pedagogy was attending the inauguration of the groupe scolaire Karl Marx. He recognized inside this school a comfortable place in which new pedagogical methods could be applied but regretted that they would not be used. See Freinet, Célestin. "La nouvelle école de Villejuif". *L'Educateur Prolétarien.* No. 3. December 1933, pp. 157-158.

These schools provided without any doubt a strong rupture with the usual housing of the local populations. It is interesting to notice that the meeting between young architects, sensitive to the modern architecture at that time and, partly, to the ideologies and social hopes, and mayors with a strong personality, allowed to equip the suburb with the most advanced school infrastructures, from both aesthetic and technological points of view[13].

Almost all the five points of Modern Architecture are present in these schools, thanks particularly to the generalization of the use of reinforced concrete. Pilotis allow to place covered courtyards directly under the main buildings. Roof gardens will host solariums in order to get access to a more pure air. The horizontal window and the free design of the façade are possible thanks to the structure. The free designing of the ground plan had to face the rigidity of the regulations in terms of school buildings, which are based on the juxtaposition of the classroom unit. Yet we can find some kind of liberty inside the composition, thanks to new specific equipments, like gymnasium, library, pedagogic movie theater, drawing classrooms. The alignment of the façade on the road is more and more light, withdrawals and projections becoming an integrant part of this new school architecture.

Some renewal of the pedagogy can take place, even if it remains limited because of the existence of the regulations in terms of school design but also because of the uniform and equalitarian model of the French public school. The most significant improvements come from the new type of finishing work[14]: Lurçat's "meubles-immeubles" which are furniture directly integrated to the architecture; landscaped gardens, especially in the nursery part of the schools, allowing "show and tell" lessons. The diffusion of new technologies permitted to develop a new type of furniture, using light steel tubes or bent metal sheet for the structure and Bakelite for the board. The desks became light and easily movable[15]. It was then possible to design rapidly a new working space inside the classroom. The new regulations, enacted in 1936, integrated and codified the new fixtures brought by the schools built in the suburb during the first half of the 1930s. In the commission took part André Lurçat, but also Marcel Lods and Eugène Beaudouin[16].

Similar lives

These architectures suffered, for different reasons. They did not always keep their original image. One of the reason is the recurrent lack of a famous fatherhood. In fact, few are the famous architects, who participated to this strong effort of construction and innovation. For instance, Florent Nanquette, who designed schools

[13] Maniaque, Caroline. "Les édifices publics en France: de la décoration à l'équipement", in: Cohen, Jean-louis (eds.), *Les années 30. L'architecture et les arts de l'espace entre industrie et nostalgie.* Paris: Editions du patrimoine. 1997, p. 216.

[14] ibidem, p. 217.

[15] Lurçat, André. "Mobilier scolaire". *L'architecture d'aujourd'hui.* No. 1. 1933, pp. 95-96.

[16] They are the designers of the most advanced school in terms of pedagogy and technology, famous under the name of "Ecole de plein air de Suresnes".

during the entire interwar period, recently saw the destruction of a city stadium which was completing in symbiosis a "groupe scolaire" today hardly recognizable[17].

Furthermore, the use during this period of some technics and materials, which were then to the forefront of innovation and technology, involved a quick deterioration of some relatively fragile elements. For instance, in the "Groupe scolaire" Marius Jacotot, achieved in 1938, desgined by Jean and Edouard Niermans in Puteaux, strong deteriorations of the walls of "translucid concrete"[18] were already noticed in 1941. In 1967, the municipality decided to replace them with curtain walls because it was cheaper than respecting the original project, even if it was Jean Niermans to supervise the works. Another recurrent modification is the substitution of the windows with new ones not coinciding at all with the project and transforming its image and perception. In fact, the often replacement of sash windows with casement windows created a strong contrast with the usual horizontal lines of the façades. The use of terrace-roofs had been also limited by the new 1949 regulations for school constructions because of the numerous defaults encountered within realizations of the thirties[19]. Even some terraces of these architectures were replaced with traditional roofs using tiles. It is the case of the groupe scolaire Eugène Varlin in Pierrefittes, designed in 1933 by Georges Gauthier and La Guilde, a group of young and modernist architects, engineers and designers (Fig. 2 and Fig. 3).

Last but not least, another aspect is the urban development of Paris' suburb. The superposition of different administrations, the too much power in terms of urbanization of the mayors, the too high fragmentation of a territory[20], which already became an urban continuum, the lack of integration of this territory with Paris' one, led today to a hardly readable and understandable landscape. Already in the 1930s, different projects[21] were proposed for the realization of the "Grand Paris". Some of the "mayors builders"[22] involved also themselves. For instance, André Morizet[23], SFIO mayor of Boulogne-Billancourt, proposed the fusion of the 80 cities plus Paris into a single entity, through the departmentalization of all public services, in order to solve the strong inequalities, especially in terms of school equipment

[17] It is the former "groupe scolaire" Aristide Briand, today "lycée" (high school) Lapie, 1930-1933.
[18] "Béton translucide".
[19] Anthouard, P. "Le bâtiment scolaire", in: Vettier, René (eds.), *L'école publique française. Tome 1: De l'école de jadis à l'école d'aujourd'hui.* Paris: Rombaldi. 1951, pp. 270-271.
[20] In 1936, there were 2.829.746 inhabitants inside Paris and other 2.041.936 inhabitants inside the rest of the "Département de la Seine" distributed among 80 cities.
[21] In 1911 was created the "Commission d'extension de Paris", commission for the extension of Paris. Zieseniss, Charles-Otto, "Les projets d'aménagement de la region parisienne". *Annales de Géographie.* Vol. 47, No. 277, 1940, p. 28.
[22] "Maires bâtisseurs". All a number of the magazine *L'Urbanisme* was presenting the realizations of Henri Sellier for his city of Suresnes. "Suresnes. Etude sur l'évolution et l'aménagement d'une ville de banlieue". *L'Urbansime.* No. 32, 1935.
[23] He equiped his city with new infrastructures, such as a new city hall designed by Tony Garnier, two new primary schools, one designed by jacques-Debat Ponsan and the other one by Emile Cauwet.

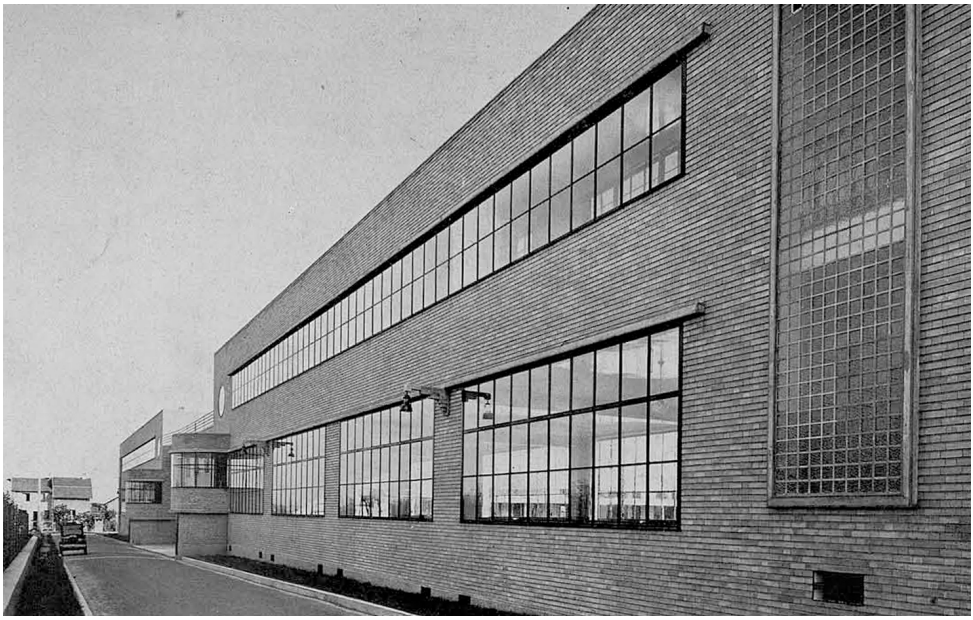

Fig. 2. “Groupe scolaire” des vignes blanches, Eugène Varlin in 1936, in Pierrefittes
Source: L’Architecture d’Aujourd’hui. *no. 5. 1936, p. 34.*

Fig. 3. “Groupe scolaire” des vignes blanches, Eugène Varlin today, in Pierrefittes
Source: www.google.com/maps/. Street view - july 2013.

and social housing[24]. After Second World War, the rapid construction of the “grands ensembles” for the working classes and then the vanishing of industries led to the degradation of the urban context. Most of the analyzed schools do not benefit from any kind of protection and are hardly recognizable inside this constantly changing environment.

[24] Morizet, André. *Du vieux Paris au Paris moderne.* Paris: Hachette. 1932, p. 368.

Conclusion

Finally, the holistic approach adopted allowed to enlighten a large corpus of architectures relatively homogeneous and significant, through emotions, hopes and inspirations, which both architects, politicians and citizens brought into their conception. However, it remained only a parenthesis. After Second World War, the war damages and the quick increase of French population during the end of the 40' and the 50' required the development of heavy and rationalized prefabricated schools. Even the regulations for school buildings published in 1949 took into consideration the emergency of the situation and simplified the requirements in terms of space required for each child, in order to decrease the costs and increase the productivity. Only remained then the traces of a fertile souvenir, which unfortunately vanished by the years. Beyond their historic significance, which we could introduce here, it was also possible to enlighten some strong similarities, from the points of view of their typology, morphology and vicissitudes. By analogy, these architectures are suffering today, partly, from the same pathologies. We can hope then that a future study, taking into consideration the different experiences encountered during several projects of preservation and rehabilitation applied to these buildings and their actual state of conservation, one by one, will be able to propose a guide helping to restore a disappeared meaning.

TOWARDS THE NEW BAROQUE WITHIN THE HISTORIC CONTEXT OF A CITY

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Introduction

In the twenty-first century, architecture changes its role, becoming part of an experimental exploration of topological and computational geometry, robotics orchestration, in the production of materials offering a new kind of experiences and sensations. A new approach to design is a global phenomenon. In many cities, curvilinear forms designed in synthetic digital spaces begin to emerge. It is a predominantly public architecture. It indicates the direction of a new turn in architecture, interest in its structural and environmental aspect.

Architectural historians and theoreticians rely mostly on visual and historiographical claims to argue that contemporary architecture is an advanced interpretation of the Baroque period. This view considers the visual effects created by the convoluted, folded and twisted morphology, to be formally associated with the Baroque since the 1990s. On the other hand, the two periods are perceived as different interpretations of similar ideas, not only because of the transformations in the cultural conditions that brought about the different architectures, but also because of the technological means that assist in the articulation of the respective ideas. With digitalization and computation, contemporary Baroque is considered to be an empirical praxis that evolves out of, and goes beyond, visual manipulation into the optimization of form, function and matter based in information streams. For more than two decades, these new forms have been introduced into the urban fabric to mitigate the arising conflicts. The role of the new forms in the context of historical development has been emphasized in particular.

Folding and non-linearity

Can contemporary architectural discourse, which focuses on the paradigms of digital and computational design-research and novel fabrication technologies, be described as neo-Baroque, as it may seem to promote a new global style of architecture: complex and dynamic, smooth and topological, technological and decorative at the same time?

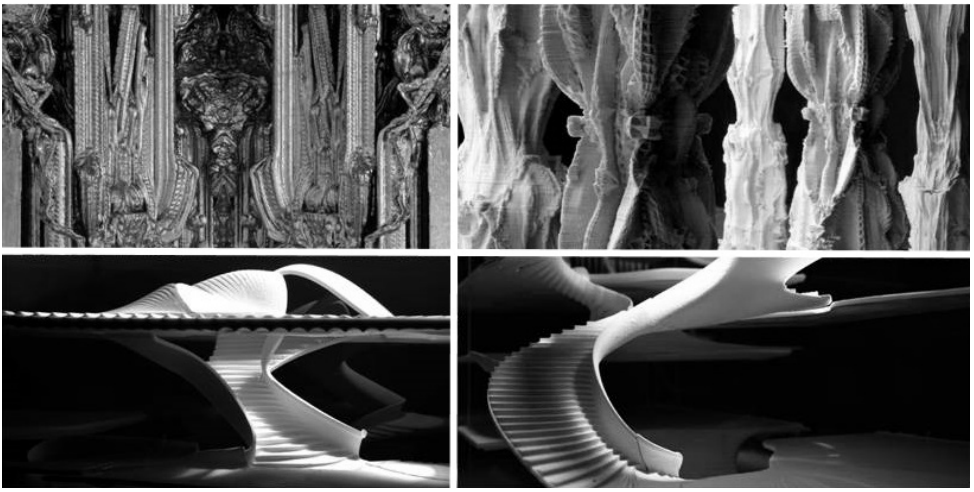

Fig. 1. 3-D printing top: Hansmeyer and Dillenburger, Digital Grotesque – 1:3 scale prototype of the room at the Materializing Exhibition, Tokyo, 2013, a new decorative column order based on subdivision processes. bottom: Emergent Design, the model of present interior spaces with their historical counterparts in terms of their richness, coherency and precision of formal organization
Source: Hansmeyer and Dillenburger, Studio Ali Rahim and Patrick Schuhmacher.

Two-dimensional computer-aided design, three-dimensional modelling techniques and rapid-prototyping technologies, four-dimensional animation and simulation protocols, as well as synchronized multimove robotic systems lie at the core of the theorization and manifestation of post digital architectural production – in academia as well as in practice. Although there is a strong emphasis on materiality, feasibility and sustainability, what emerges is an explicit agenda promoting material ornamentation, spatial spectacle and formal theatricality. Assuming that architecture is cultural production, it's talk discusses the intrinsic neo-baroqueness of the present-day architectural debate with a critical eye directed at the engagement of technology and emotion on various scales (from micro to macro).

Contemporary approaches to architectural design are also influenced and informed by the writings of theorists and philosophers, ranging from the German philosopher, mathematician and logician Gottfried Wilhelm Leibniz (1646-1716) to Gilles Deleuze (1925-1995), one of the most influential French thinkers of the twentieth century.

In the book published in 1988, titled *Le Pli. Leibniz et le baroque,* Gilles Deleuze predicted the inevitable shift towards curvilinearity in different kinds of art[1]. For Deleuze *le pli* (the fold) is the principle of construction of the world, leading directly to the concepts of continuity and continuation, so eagerly used by architects today. Continuity is included in the definition of *le pli* and is to be understood not as rectilinearity, but on the contrary, as a linear maze of continuation. It is assumed that there are no discontinuities, refractions or tears in the world of matter, which

[1] see: Deleuze Gilles. *Le Pli. Leibniz* et *le* baro*que,* Editians de Minuit, Paris 1988.

at the immaterial level means no conflict or contradiction. It is different in the tissue of old towns, where the substance has layered for centuries. The old techniques are in a constant conflict with the newer ones, and the evocative content of the forms and their associations contradict each other in the dialogue of history. However, the preserved buildings or their remains represent the state of consciousness of the eras in which particular styles were born. Historical continuity is perceived through the complexity and contradiction of various interventions performed constantly on the body of the city. In the maze of streets and squares, daily life is lived, which no longer corresponds to the spirit of the past and requires new technical and spatial solutions, new forms at the point of contact. According to Leibniz's idea, Deleuze's maze of matter continuity corresponds with a maze of continuity in the human soul. The two planes communicate because "the continuity of matter raises the soul" to the next level. And on the curtain stretched between the levels, the folds are formed, like the skin on the body. This is a great Baroque assembly, created by Leibniz between the lower level with windows and the higher level blind and closed, but intelligent as a music room, which translates the movement visible below with the sound. A few years later, Jeffrey Krausse takes this discourse explaining the fold as "something more than a surface" because the fold has potential energy and, like the skin on the body, it reacts to the organism's internal stimuli and external influence of the environment[2]. As in Leibniz's description cited by Deleuze, architecture can be understood as the "skin of matter" stretched over the immaterial organism of internal program, economic, or institutional events, and through the "windows to the outside", (defined as a contact with the outside), responsive to the environment. This meant the replacement of deconstructivist discontinuities with a new continuity, and for Krausse it was a shift from the concept of "architecture-the-costume" to the concept of "architecture-the-skin" with all the consequences of that procedure[3].

Referring to the growing interest in curvilinearity and folding in architecture, in 1993 Greg Lynn published an essay in AD *Architecture Curvilinearity: The Folded, the Pliant, and the Supple*[4]. He tied together Gilles Deleuze, Rene Thom (the French Mathematician 1923-2002), cooking theory, geology, as well as the aesthetics of the viscous substance and ductile material. He also pointed to the work of Jeffrey Kipnis and John Rajchman to refer them to the representative work of Peter Eisenman, Frank Gehry, and Philip Johnson. The essay argued that the interest in curvilinearity is not new, as proved by the architecture of the Baroque period. Greg Lynn's essay forms a basis to agree that curvilinearity newly cemented the architectural thought by identifying and stressing the importance of the new smoothness in architecture[5]. His background of philosophy and his attraction to computer-aided design made him an ideal person to publicize, in effect, define the fold in architecture as the intense interest during the remainder decade.

[2] see: Krausse Jeffrey. "Information, Folding in Architecture"*, ARCH* 4/1996, pp. 73-74.
[3] see: Januszkiewicz Krystyna. *O projektowaniu architektury w dobie narzędzi cyfrowych*. *Stan aktualny i perspektywy rozwoju*, Oficyna Wyd. PWr, Wrocław 2010, pp. 66-67.
[4] see: Lynn Greg. "Architecture Curvilinearity: The Folded, the Pliant, and the Supple"*, AD,* Vol. 63. No. 3-4, March-April 1993, pp. 9-15.
[5] ibidem, p. 14.

Fig. 2. Nicolas Grimshaw, Waterloo International Terminal, London, 1989-1993
Source: Nicolas Grimshaw Architects.

The publication of Lynn's essay in AD coincided with the extension of Waterloo International Terminal (1989-1993) by Grimshaw in central London site. The existing station determined the geometry of the new building, including the distinctive roof which is like a smooth snake, whose body squeezes between the existing development. The building is essentially a 400-meter-long glass-clad train shed, with a "tapering" span that gradually shrinks from 50 m to 35 m. The clad in glass provides passengers with an impressive view of Westminster and passers-by with a panorama of the city. It was then a completely new approach to design in the historical urban context. The complexity and variation in the size and shape of the structural elements involved in the train shed were possible thanks to the application of structural analysis of CAD techniques, the essential feature of which was the ability to represent parametric relationships. This design is a clear demonstration of conceptual and developmental benefits afforded by the parametric approach to design.

At the same time, Frank O. Gehry using CATIA software designed "Dancing House" (1992-1996) in Prague.

Fig. 3. Frank O. Gehry, Dancing House, Praque, 1992-1996
Source: photo by Roman Dvořák.

Fig. 4. Foster & Partners, Sage Gateshead, Gateshead, 1998-2004
Source: photo by Foster & Partners / Wojtek Gurak.

This corner building was set on a property of historical significance[6]. The very non-traditional design was controversial at the time because the house stood out among the Baroque, Gothic and Art Nouveau buildings which Prague was famous for, and in the opinion of some, it did not accord well with these architectural styles.

Over the last decade of the 20th century, contradictions in form and urban space were represented with the development of complex design. We observed two typically taken paths: conflict/contradiction and unity/reconstruction. "Dancing House" is different, in a dialogue with the existing pre-formed matter it picks the main points of its design to express its own complex opinion. The shift from the concept of "architecture-the-costume" to the concept of "architecture-the-skin" announced by Krausse, is represented by Sage Gateshead (1998-2004) by sir Norman Foster. The building is located in Gateshead on the south bank of the River Tyne, opposite the center of Newcastle. The architectural form of the building was designed in a virtual environment. The animation software was used not as a medium of representation, but of form generation. The digital tools are important for any parameter-based design to create both the unfolding of an internal system and the infolding of contextual information fields. Architectural form, is not only a manifestation of its internal, parameter-driven relational logic, but it also has to engage and respond to dynamic, often variable influences from its environmental and socio-economic context.

Architectural form, instead of being conceived as a stationary, inert construct, is conceptually a highly plastic, mutable entity that evolves dynamically through its transformative interactions with external, gradient forces[7]. The building was designed with environmental issues in mind and its aerodynamic form channels the predominant local winds to provide natural ventilation.

[6] Its site was the location of a house destroyed by the U.S. bombing of city in 1945. The plot and structure lay decrepit until 1960 when the area was cleared. The neighbouring plot was co-owned by family of Václav Havel who spent most of his life there.

[7] see: Kolarevic Branko, (ed.). *Architecture in the Digital Age: Design and Manufacturing*, Talyor&Francis, New York 2005, p. 19.

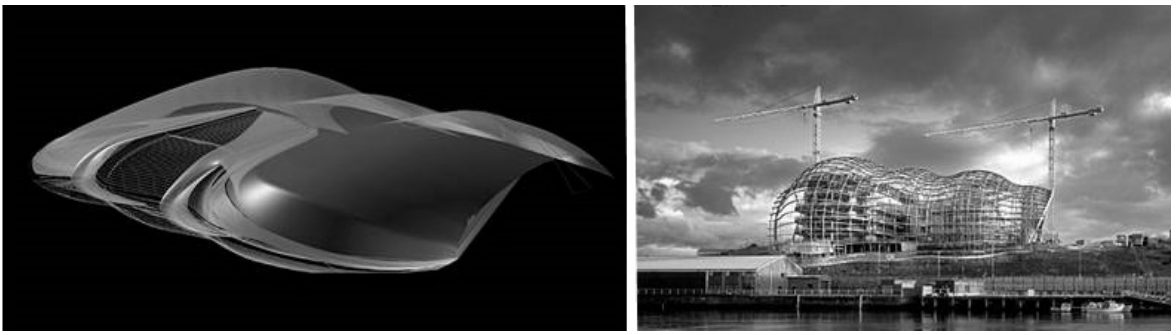

Fig. 5. Foster & Partners, Sage Gateshead: initial digital model, building under constructionin Gateshead view from the Newcastle site
Source: Foster & Partners.

The Sage Gateshead is a regional music centre of international standing, with approximately half a million visitors each year. The stainless steel roof encloses the entire complex, which is "shrink-wrapped" around the buildings beneath. The spectacular curved steel roof, which weighs 750 tonnes, is made from 3,000 stainless steel panels and 250 glass panels. The Sage Gateshead addresses the nature of public space and the concept of the democratic, accessible "urban living room".

The building at the waterfront is located at the contact point between the historic urban landscape of Gateshead with its traditional local development, and the world heritage – the arched bridges that are masterpieces of engineering. Last of them, the Gateshead Millennium swing footbridge completed in 2001, is the first bridge designed and fabricated completely digitally.

Does this historic context, being already in opposition, call for mediation and a dialogue mitigating a conflict, or rather a spectacular manifestation of the higher level of awareness and technical capabilities, emphasizing the beginning of another millennium of civilization development?

The presented examples of introducing new, non-linear forms into the existing urban tissue, prove the need for a new urban design strategy. At the turn of the twentieth and twenty-first centuries, new architecture called neo-Baroque or digital Baroque, driven by the development of technology is looking for contemporary theoretical basis for the new common practice in design and construction.

As a historical causality, the Baroque and digital Baroque are compared for their similar mode of operations. Like Baroque architecture, contemporary architectural manifestations are claimed to implement geometry and morphology that criticize previous practices: Baroque reacted against Renaissance spatial idealism, while contemporary twisted morphology refers to Modernist idealism as expressed most evidently in the early Corbusian Euclidian geometry and space. Nevertheless, digital Baroque, as it is argued, does not run counter to this Modernist perception of architecture, but tries to use the advanced, early twenty-century preoccupations with more sophisticated technological tools by referring to Baroque formalism. The digital Baroque is perceived trough Modernism in such a way that Baroque contributes the formal articulation, while Modernism suggested the technical discourse.

Fig. 6. Peter Cook and Colin Fournier, Kunsthaus, Graz, 2000-2003
Source: photo by Christian Plach Harry Schiffer.

New Baroque architecture within old development – the case study

In the 21st century, another path is coming to the forefront that involves a smoothness that steers away from these other methods. This smoothness is obtained by mixing different elements that work together to create the smooth or pliant form. Pliancy depends upon alliances with all other elements involved (whatever they may be), both internal and external. The third element of this method of design are folding and curvilinearity. Folding involves mixing unrelated elements together to create one continuous mixture. The elements within the mixture are still intact in and to themselves, yet integrated to form a cohesive element. One way to achieve pliancy is through viscosity. A good example of viscosity is hot lava flowing through the path of least resistance while picking things up that are in its path. Where the form is contradictory, it is further designed using continuous, flexible systems. Pliancy depends upon alliances with all other elements involved (whatever they may be), both internal and external. This kind of architecture is typically cited where other buildings are posing a contradictory, conflicting, and discontinuous identity.

A spectacular example is Kunsthaus in Graz (2000-2003), where Cook and Fournier synthesized the innovative design approach within the old town in Graz saturated with the Baroque architecture, designated as a UNESCO world heritage site. Graz Art Museum was built as part of the European Capital of Culture celebrations in 2003 and has since become an architectural landmark in the city.

The right bank of the river Mur, then a neglected part of the town, seemed a good location, and the old cast-iron Eisernes Haus (1848) was an ideal starting point[8].

These forms are a lively correlation with the distinctive architecture of the Kunsthaus smooth building. Biomorphic shape of the Kunsthaus has been achieved by Peter Cook and Colin Fournier as a result of adjustments after environmental analyses performed by engineers Bollinger + Grohmann from Frankfurt. This form can be contrasted with the last addition to the Museum der Kulturen in Basel (1999-2001) by Herzog and de Meuron. Their design is described as a "stunning crown for the historical walls: the rooftop of irregular folds fits into the rooftops surrounding the cathedral". The first question is, if this roof really is resonated with the medieval roofscape in which it is embedded? Their approach is typical - conflict/contradiction in the effort to maintain continuity. In contrast, Cook and Fournier attempted to synchronize the architecture of information and communication technologies in order to develop a strategy for unifying the "old" material reality and the "new" immaterial realities that surround and increase the present.

The Curvilnear BIX Façade of the museum represents a singular fusion from architecture and New Media. BIX, ("Big" and "pixels") is the acrylic glass skin of the eastern side of the building toward the Mur and the old town, and represents an oversize urban screen, which serves as an instrument for artistic productions. BIX projects accompany different exhibitions and are not transported into the public area, also the direct environment is defined and shaped. Beyond that, the skin offers also a possible drilling platform for art projects, which bring up for discussion the dialogue between media and area. 930 40 Watt fluorescent rings are embedded in the 900 m² outer skin, with the illumination level of each one being steplessly variable between 0 and 100%. Each light ring is as a pixel, which can be served by a central computer. In this way they can be developed as roughly screened indications, texts and film sequences, which radiate far into the urban area and thus, the blue blister of Graz with a screen of immense size makes an art gallery. Thus the original architectural concept of the skin was radically redefined transforming the facade into a low resolution computer display, a "communicative display skin", fusing architecture, technology and information. The Kunsthaus facade as a display constitutes an extraordinary medium for presenting art and related information transfers. It is an attempt to describe the way in which the representational sphere (the reception of an image) and the instrumentalized sphere (the reception of a form) become respectively deterritorized and deconstructed into a new image-form with a new intensity.

Multiplication and deformation of the image on curved surfaces often leads to a curved and unreal reality. Smooth curvilinear forms are capable of creating unpredictable references and associations with a cultural context. One such example is the department store Weltstadthaus in Cologne (2005) designed by Renzo Piano.

[8] The Eisernes Haus completed in 1848 was the first cast-iron structure in Austria and one of the earliest cast-iron buildings on the European mainland. Designed by architect Josef Benedict Witthalm (1771-1864), the building is innovative for the period not only in the novel structure but also in its large window apertures and flat roof.

Fig. 7. Renzo Piano, Weltstadthaus, Cologne, 2005
Source: photo by Paolo Rosselli, Michel Denancé, Maciej Holcer.

Fig. 8. Future System, Selfridges Department Storers, Birmingham, 1998-2003
Source: photo by Pawel Libera.

It is the object of a double-curved surface responsive to environmental changes. Its form is the result of a search for adaptability. A contact with the architecture of the past eras determines the relationship of the object with the existing urban fabric, destroyed during World War II. This fabric defines a path which extends to the direction of the form, where continuity and flexibility results from calculation relationships between the surface and the structure, the function and the form.

The curvilinear architecture of Weltstadthaus redefines not only the conceptual side, but also the perception of the building as a *per se structure.* There is no façade developed in the past, with the ”correct” articulation. It is the result of a sequence of parametric equations which define the span between the wooden ribs with individual curvature. Glass panels are mounted onto the ribs, each with a different curvature, and a shading system and sensors from the inside to enable the facade to react to the sun's path. Also, the rain-water is collected[9]. Curvilinear form of Weltstadthaus creates continuities between site and structure, implementing conceptual design that entrain perception to follow patterns that connect the outside and the inside, both physically and psychologically. It works differently than the form of the Selfridges Department Store by Future System in Birmingham completed in 2003.

This building provides a distinctive new home for Selfridges and establishes a landmark for Birmingham in the West Midlands. The bulbous, metallic volume sits in the Bull Ring area of Birmingham, a historic market district in the centre of the city. The building itself becomes a genuine catalyst for urban regeneration. St Martin's Church, rebuilt in the nineteenth century, has long acted as a landmark in this congested area. Selfridges Birmingham is located adjacent to the church and provides a twenty-first-century icon for the city. This department store building responds to the curves of the site, formed by a U-shaped confluence of streets.

In both cases, the curvilinear forms express the pursuit of the logic of an agreement, continuity, consistency and negotiations in terms of a given urban context and utility program. Where previously the complexity and contradiction resulted from spatial conflicts and historical layers, those forms are an attempt to alleviate or weaken them to bring out the historical identity of the place.

The development and distribution of parametric design tools based on NURBS (Non-Uniform Rational B-Spline) in the first decade of the 21st century has increased the interest in various kinds of spatial structures. Parametric thinking has introduced the shift in the mindset between the search for a specific static and defined formal solution, and the design of the specific stages and factors used to achieve it. Intensive experiments with three-dimensional modelling techniques, rapid-prototyping and CNC technologies were commenced both in academia as well as in practice. Especially on university campuses, various kinds of spatial structures were built, using most often plywood, cardboard, wood or plastic.

The Metropol Parasol (2005-2011) by Jurgen Mayer H. Architects is within historical context of Seville. This is the world's largest wooden parametric structure. It has dimensions of 150 by 70 m and an approximate height of 26 m. The structure is

[9] Januszkiewicz Krystyna. „Architektura performatywna w Kolonii”, *Archivolta* 2/2012, pp. 32-45.

located at La Encarnación square, in the old quarter of the city. The stalls were knocked down in 1842, but it was not until 1973 when a decision was made to build a car park there. An underground car park was planned for the space, until an archaeological dig in the 1990s revealed the remains of a Roman colony, with figurative mosaics and architecture. In a bid to integrate the site with everyday commerce, the Seville Urban Planning Agency held an international competition in 2004.

The structure consists of six elements in the form of giant mushrooms, whose design is inspired by the vaults of the Cathedral of Seville and the ficus trees in the nearby Plaza de Cristo de Burgos. The free-standing parasols cover an area of 150 m x 70 m, which is one of the largest architectural timber structures ever built. The Metropol Parasol is organized in four levels. The underground level houses the Antiquarium, where Roman and Moorishremains discovered on site are displayed in a museum. On the first level there is the Central Market. The roof of the first level is the surface of the open-air public plaza, shaded by the wooden parasols above and designed for public events. Interior fountains and plants also help to provide a cool climate during the intense summer heat. Levels numbers 2 and 3 are the two stages of the panoramic terraces (including a restaurant), offering one of the best views of the city centre[10]. The polyurethane coating protects the wood and allows it to breathe - a sort of natural air conditioning - and the wood itself doesn't give off hazardous fumes when it burns. It is also sustainably planted, with a certificate PEFC (Programme for the Endorsement of Forest Certification schemes), granted by the Finnish Forest Council of Certification. The coat of the structure is self cleaning, and only needs repainting every 20 to 25 years.

The multi-curvature structural form of high complexity refers to the Baroque – its harmony and fusion of the arts and the sciences, the structural "truthful" efficiency of the Gothic, which nowadays is experiencing a revival under the premise of the parametric approach, of virtual scripts, and formal organicism (understood as evolutionary mimicry)[11]. In this sense, the Metropol Parasol is part of the existing historic context of the city, developed by the subsequent eras and their style. It re-defines the complete dependence on the square of the fabric of the city (effect, action, space), the separation of below (matter, function) and above (manner, vision), of tectonics and textures, of movement and stasis, of knotting and folding, of light and shadow, of thick and thin, of topologies (multiplicities of geometry and methods) and infinity (convolutions and illusion). The Metropol Parasol is a good example of viscosity using continuous, flexible systems.

The presented case studies show how curvilinear forms of digitally designed architecture coexist with the historic context and how they inscribe into the existing urban fabric with a complex historical substance. Following the spirit of the times (zeitgeist), the new architecture reconfigures the expression, reception

[10] see: Moore Rowan. "Metropol Parasol, Seville by Jurgen Mayer H – review, Art and Design", *The Observer*, London, 27.03. 2011 (Retrieved 05.03. 2015).

[11] see: Colletti Marjan. *CyberBaroque and other DigiTales, OS1: LSBU Lecture Series 2007/08*, London South Bank University UK, 2008. see also: http://marjan-colletti.blogspot.com/2009/10/cyberbaroque-and-other-digitales-marjan.html (accesed 24.02.2015).

Fig. -9. Jurgen Mayer H. Architects, Metropol Parasol, Seville, 2005-2011
Source: J. Mayer H. Architects.

and materiality, as well as uses the context to validate its existence. The features of this new architecture may be referred to the achievements of the Baroque and considered in a wider context of historical changes in the urban fabric. In fact, as Gilles Deleuze writes in *Le Pli*, the Baroque "represents the ultimate attempt to reconstitute a classical reason by dividing divergences into as many worlds as possible, and by making from incompossibilities as many possible borders between worlds"[12]. Within a digital architectural debate, we can consider the Baroque to be remarkably contemporary because it discovered and also shattered a plethora of binary conditions, boundaries and frames that provide an analogy to today's actuality-digitality feedback system[13].

One can agree with the view that beyond the generation of innovative engineering forms, digital design has the potential to affect the wider complex cultural landscape of today in profound ways.

[12] Deleuze Gilles. The Fold: Leibniz and the Baroque, (trans. Tom Conley), Minneapolis: University of Minnesota Press, 1993, p. 81.
[13] see: Colletti Marjan (ed.). Exuberance. New Virtuosity in Contemporary Architecture, John Wiley and Sons Ltd, 2010, p. 24.

Conclusions

As it was in the Baroque period, contemporary architectural manifestations are claimed to implement geometry and morphology that criticize previous practices. Baroque reacted against Renaissance spatial idealism, while contemporary twisted morphology refers to modernist idealism. Nevertheless, digital Baroque, as it is argued, does not run counter to this perception of historical architecture, but tries to use the advanced early twenty-century preoccupations with more sophisticated technological tools by referring to Baroque formalism. The curvilinear architecture with its submissiveness to the context, may be perceived as a new way to rehabilitate urban fabric, rich in various layers created in the past. Especially European medieval cities have zones requiring the introduction of new utility functions for their social reactivation[14].

New Baroque architecture involves and invokes a plethora of arguments on the performance (understood both as a task and as staging) of poetics in digital architecture. Under these circumstances, what is at hand is an alternative to the understanding and the production of truly contemporary, innovative and progressive digital architecture.

[14] see: Paszkowski Zbigniew. *Architectural Heritage – Today. Architecture As Culutral Heritage, Architectural Volumes,* Publisher Exemplum, No. 2-3. 2011-2012, p. 37.

ANALYTICAL DRAWINGS OF ARCHITECTURAL BUILT HERITAGE

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Introduction on the material and cultural values of built heritage

The following paper provides reflections on the importance of analytical drawings in the process of understanding the architectural built heritage together with relevant aspects to analyse, theorie and tools to produce them. Beyond every analytical drawing there is an interpretative process linked to the application of concepts and theories, hence it is not a simple graphic document which requires mainly technical skills. The main aim is to undertake an analysis through the use of one or more drawings representing the graphic translation of an anlytical thought.

The architectural built heritage is one of the most important research field for the quantity, quality and diversity of buildings and artifacts it contains. The importance of this heritage, the current global economic recession, the need of reducing resource consumption (not only non-renewable energies, but also the excessive sampling of the renewable ones), along with the importance of preserving the cultural roots for the future generations, confirm and strengthen the importance of this research field. This field includes both famous monuments and vernacular architecture, hence there is a considerable variety of buildings pertaining to all cultures worldwide. In many cities the marketplace made of recovery and maintenance interventions of the built environment has overtaken that of newly constructed buildings. Many urban areas worldwide have also a remarkable number of industrial heritage worth to be regenerated for various purposes including tourism. Therefore, thanks to these reflections, it is possible to distinguish two main values in the architectural built environment: a first value as a cultural resource and a second one as a material resource. In order to preserve, reuse, evaluate and promote in an appropriate way this resource, it is necessary to comprehend, document and disseminate it properly. In some circumstances, the architectural built heritage has been studied superficially, both from the cultural and material point of view.

The negligence of those who study and work on this heritage is often translated into a wrong or incomplete interpretation and analysis leading to inefficient actions of valorization, promotion, safeguard, maintenance, refurbishment or reuse. These aspects, together with other difficulties, have negative consequences from the economic, functional and cultural point of view. These difficulties can be connected to material characteristics (difficulties arising from the characteristics of the site; other difficulties

result from the characteristics of the artifact or from extraordinary situations, such as an earthquake) or methodological and cultural approaches.

The production of analytical drawings can represent a method to improve, deepen and communicate information and meanings on the architectural built heritage.

The role of analytical drawings

Each building is a complex system of tangible and intangible characteristics that could hardly be understood and analyzed in an efficient way and just with the traditional graphic drawings (plan, elevation and section). The role of the analytical drawings it to analyze, document and communicate only a few aspects of the building. Thanks to these graphic drawings it is possible to split the characteristics of a building to better study and represent them individually or in sub-groups. Consequently, attention is paid to one or more aspects, isolated from the whole building and analyzed through one or more graphic works. In this way it is possible to better comprehend the buildings and highlight hidden aspects with a single overview. In fact, an overall view of the building can limit, or make more difficult (and sometimes impossible), the analysis of a particular characteristic. Some unnecessary elements could obstruct the study of some features. The analysis process could lead to a detailed understanding process that becomes a critical analysis open to new intuitions and interpretations. The role of these analytical drawings in architecture can be compared, to some extent, to the one of the "Anatomical sketches" created by Leonardo Da Vinci. Thanks to his drawings, it has been possible to have new documents and information on the human anatomy and to share them with a wider audience of scholars and enthusiasts. Analytical drawings are scientific drawings, where objective information and subjective interpretations coexist. During the study phase of a building belonging to the built heritage, it is often necessary to use a creative approach to overcome the lack of information.

Analytical drawings can be used in different situations, such as:

- in the analysis of an existing building through new point of views to discover new aspects, hence to improve and widen its knowledge;
- in restoration, renovation, regeneration, recovery and maintenance actions;
- in the identification of particular qualities that should be safeguarded and valorized, such as in reuse projects of existing buildings, namely in the modification of their destination use with respect to their characteristics;
- in comparative studies, when two or more buildings belonging to one or more cultural contests are compared, to better understand similarities and differences;
- to spread information difficult to understand through texts or other communication methods.

It is always possible to find out new characteristics or qualities through the definition of new theoretical approaches and tools that allow new and innovative interpretations/critical readings of existing buildings. Moreover, each era brings new tools and news methods to study the built heritage.

Historical buildings are continuously studied since the ancient times, but there is not a complete and definitive study of any building, even for what concerns the most famous monuments such as the Coliseum, the Gothic Cathedrals, etc. All buildings, mainly the ones belonging to the built heritage, are subject to new interpretations, because it is always possible to find out new aspects that can be analyzed with in-depth studies. Remarkable pieces of architecture are like the literature classics: they always have something new to say[1]. Moreover, holistic, multidisciplinary and trans-disciplinary approaches always lead to new and innovative research path on the existing buildings. A different theoretical approach in the study of a building can lead to different interpretations and analytical drawings because it could be possible to take into consideration different elements (never taken into consideration) or to read elements already studied in new ways (new or different meanings and/or functionalities could be attributed to them). The analytical drawings could be also used to study unbuilt, lost or damaged buildings.

Analyzing the features of architectural built heritage

Every building pertaining to the architectural built heritage has specific tangible and intangible characteristics resulting from different aspects, influencing one another and in different ways during the course of history: cultural, social, political, economical, religious, etc. When a building belonging to the built heritage is studied, not only are the functional aspects considered as the anatomical sketches by Leonardo Da Vinci, but also as intangible aspects like the emotional, poetical, sensorial ones. The first passage for the preparation of the analitical drawings is theorical and it consists of the identification of the characteristics to be studied.

Features of the architectural built heritage

The number and variety of tangible and intangible characteristics to be analysed is very wide. Every buiding can be analysed throughout different point of views but some features are particularly important in most situations. The first characteristic that has to be analyzed is the morphological one, the others add new depth layers on different tangible and intangible aspects.

- *Morphological:* The first contact with an artifact is visual. If we are not able to understand, represent and document its general morphology, we will never be able to break it down and analyze its single elements, or to understand the structures that regulate it;
- *Constructive:* The concept of constructive peculiarities indicates the constructive system of an artifact, referring to the number and type of technical elements and the materials that compose it, to which requirements it corresponds and how they are connected/assembled;
- *Evolutionary:* The analysis of these peculiarities focuses on the temporal variable which has been considered in two different ways, both combined by the

[1] Calvino, Italo. *Why Read the Classics*. London, United Kingdom: Penguin. 2013.

progression of the actions. At first, it has been considered the transformations which have interested an artifact or a settlement during the centuries or years, and they have influenced the actual configuration; afterwards, the various realization phases of an artifact, characterized by the assembling or a progressive construction of technical elements have been considered;

- *Perceptual:* The perceptive phenomena, which are intangible as lights, shadows and colors, characterize an artifact of a settlement as well as the tangible features, because the whole of these phenomena contributes in making a unique and unrepeatable built environment, characterizing its atmosphere.
- *Functional:* The spatial arrangement inside the same room and between different spatial units, both horizontally and vertically. This aspect directly affects the movement in those spaces; the arrangement and sequence of spaces are key elements that contribute in the experience of a place.

A recent research by the author which took place at the Mackintosh School of Architecture (in the Glasgow School of Art), in collaboration with Prof. Tom Maver, has presented a different theoretical and methodological approach to read buildings, focusing on their *narrative* characteristics[2]. A narrative architecture is an architecture that, like a book, communicates a story through its tangible and intangible features. A story implies impressions, reflexions, sensorial and cultural emotions presented during a path through one or more spaces. These characteristics are then communicated during the direct experience of a building. This approach includes part of the characteristics previously expressed, even if they are analyzed throughout a different theoretical framework. All the selected features are important to improve the comprehension, management and valorization of the architectural built heritage. Of course other characteristics can be analyzed in addition to the ones described in this paper. Once selected the characteristics to be analyzed, which define the content of the analytical drawing, it is necessary to choose the graphic representation to be used. The relation between content and representation is the same occurring between message and language. Hence, the set of theoretical principles used to analyze some aspects of the buildings is graphically translated into the drawing.

Types and methods of analytical drawings

Drawing to produce analytical drawings means to study, analyze, discover, represent and communicate. The selection of the technique to be adopted is mainly influenced by the final objective of the graphic works that have to be produced, namely by the information that have to be communicated (shape of the building, construction techniques, perceptual phenomena, etc.). Analytical drawings can be produced in scale or out of scale and with various abstraction levels. The details that have to be added or omitted depend on the final objective and by particular communication choices

[2] Di Mascio, Danilo. "Investigating a narrative architecture: Mackintosh's Glasgow School of Art", in: Thompson, Emine Mine (ed.), *Fusion*. Newcastle upon Tyne, UK: ECAADE 2014, pp. 653-663.

The main graphic representations to be adopted are two-dimensional and three-dimensional:

- *Orthographic projections:* These graphic works are two-dimensional representation of the building, realizing projecting lines on a chosen plan. These drawings form the traditional graphic works to document the survey of a building: plans, sections and elevations. Each of those drawings become an analytical drawing when some aspects are highlighted, such as spaces, bear structure, openings, paths, etc. For example, the same plan can present different information each time it is studied.
- *Three-dimensional images:* The category of three-dimensional images includes both perspective views (both from the first person point of view and other locations) and parallel views (Axonometric and isometric). Three-dimensional images succeed in communicating information that would be too difficult, if not impossible, to convey with plan, section and elevation drawings because of the complexity of some details or buildings. The axonometric/isometric images for example can be very effective in communicating constructive details.

Both representational techniques can be creatively used in different ways and there are some elements that can contribute in highlighting some aspects of the analysis: colours, thickness and types of lines, hatchings, textures and lighting techniques (types of lighting, etc.) in the three-dimensional representations.

Traditional and digital tools

Different tools and representation models can be used to produce the previously mentioned graphic representations, starting from freehand sketches to digital three-dimensional models[3]. In recent years we have seen a diffusion of digital reconstructions in the study of the architectural heritage: not only the digital reconstruction allows a better comprehension of the building during the process itself, but also it allows the preparation of a wide range of graphic works, from rendered views to other graphic representations. Hand made sketches made during on site inspections or while studying projects on books can be considered as analytical drawings[4], and, at the same time, they constitute an important documentation to prepare more complete and precise drawings, including 3D digital models. Sketches are always useful to study those characteristics that cannot be observed immediately. Different references can be used in the creation of analytical drawings:

- Representational and analytical sketches;
- Existing drawing, both historical and produced during surveys;
- New surveys;
- Photographic surveys;
- Physical models;
- Laser scanning data (point clouds).

[3] Farrelly, Lorraine. *Representational techniques*. Lausanne, Switzerland: AVA Publishing. 2008; Yee, Rendow. *Architectural Drawing. A visual Compendium of Types and Methods*. Hoboken, New Jersey, United States: John Wiley & Sons. 2013.

[4] Unwin, Simon. *Analysing Architecture*. Abingdon, Oxon: United Kingdom: Routledge. 2009.

The following paragraph will describe some analytical drawings, produced during previous research projects, in order to understand, document and communicate some of the previously described characteristics.

Analytical drawings and features of the historical built environment

Every tangible and intangible characteristic of the built environment can be studied through different analytical drawings, both two-dimentional and three-dimensional. The following examples describe the analytical drawings produced during some researches on different case studies pertaining to different scales and cultural contexts: Italy, Scotland and Morocco. These examples show only few possible solutions. All drawings were produced after a digital reconstruction of the buildings but using some of the references previously mentioned.

Morphological

The following table shows a classification of some of the main volumes of the Glasgow School of Art, designed by C.R. Mackintosh in Glasgow, Scotland. This table aims at showing and comparing the dimensions and shapes of the different spaces. The dotted lines of the hidden sides are needed to communicate the overall shape of the spaces. Different colours were chosen to highlight the nature of the spaces: green for special rooms, red for connection spaces, etc. A proper level of abstraction has been defined to make the visual comparison more straightforward, hence the shape of the rooms has been reduced to a few essential lines (Fig. 1).

Constructive

The UNI Norms of the Italian Normative and specifically the ones related to the technological break-down (functional classification of components) are used as classification scheme for the preparation of the analytical drawings to study and document the constructive characteristics of a building. The selection of the criteria to classify and analyse the elements of a building is a critical factor that requires particular care because most of the buildings pertaining to the built heritage cannot be easily classified using a standard knowledge management system.

Various analytical drawings have been used for every technological sub-system in the study of the Turchinio's Trabocco[5], mainly to understand the relations among the different parts. For instance, a rendered exploded axometric drawing with the textures (providing information on materials) has been prepared for the fishing platform, together with a series of two-dimensional drawings describing the different elevations and the constructive layers of the fishing platform. The two-dimensional drawings with fine lines allow to read in a clear and efficient way the different components of the structure (Fig. 2).

[5] Di Mascio, Danilo. "Digital Reconstruction and Analysis of Turchinio's Trabocco: A method of digital reconstruction of a complex structure as a way to improve our knowledge of a cultural heritage artifact", in: Abdelhameed, Wael; N. Hamza and A. Bennadji (eds.), *Digitizing Architecture: Formalization and Content.* Manama, Kingdom of Bahrain: ASCAAD. 2009, pp. 177-189.

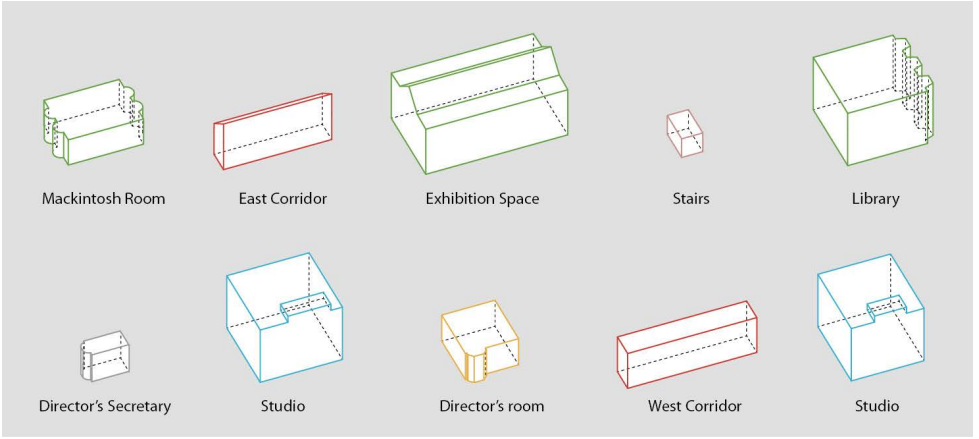

Fig. 1. A scheme where are classified some of the volumes of the spaces of the Glasgow School of Art designed by C.R. Mackintosh

Source: personal archive of the author.

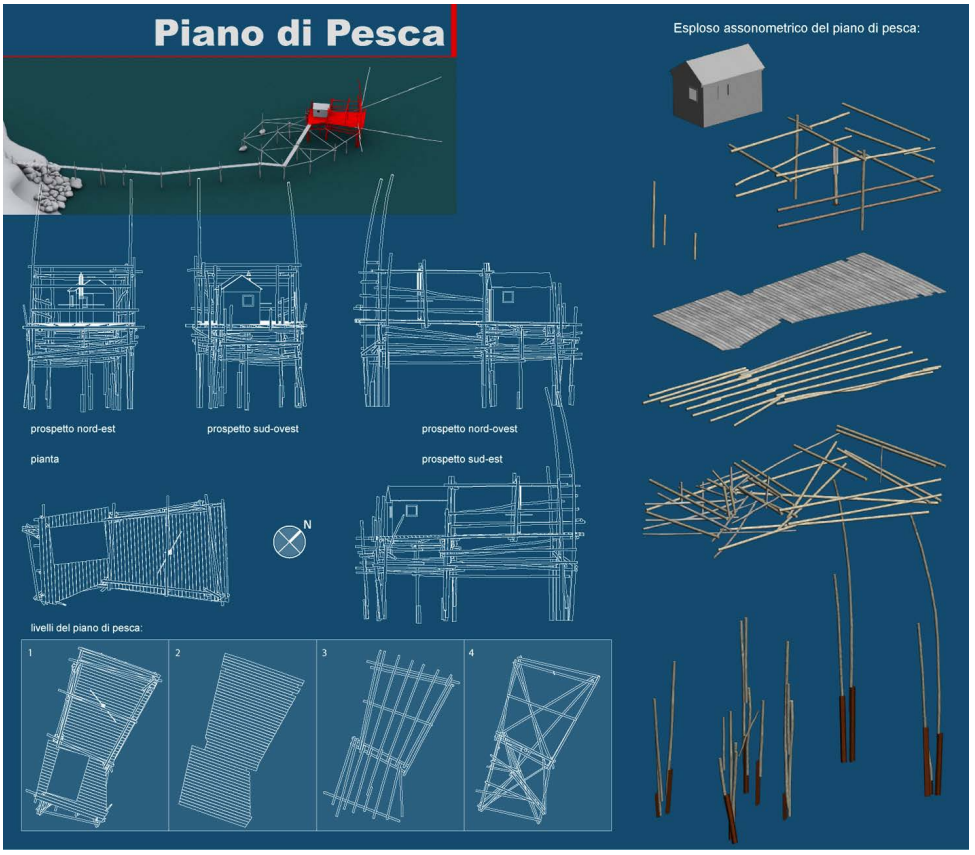

Fig. 2. Analytical drawings of the fishing platform of the Turchinio's Trabocco

Source: personal archive of the author.

Perceptual

To analyze the perceptive characteristics (lights, shadows, atmosphere) of the Castelnuovo fortified centre[6], a series of rendered images have been produced, in particular lighting and shadows of the internal paths: prospective views in first person and from above. A black wireframe grid underlines the division of the different horizontal and vertical dwelling units and it helps to comprehend the scale of the settlement. The choice of neutral colours – white for the horizontal surface and light grey for the volumes of the builidings, and of the lighting (sunlight and global illumination) - has allowed to clearly highlight lights, shadows and the atmosphere of the inner roads of the fortified centre (Fig. 3).

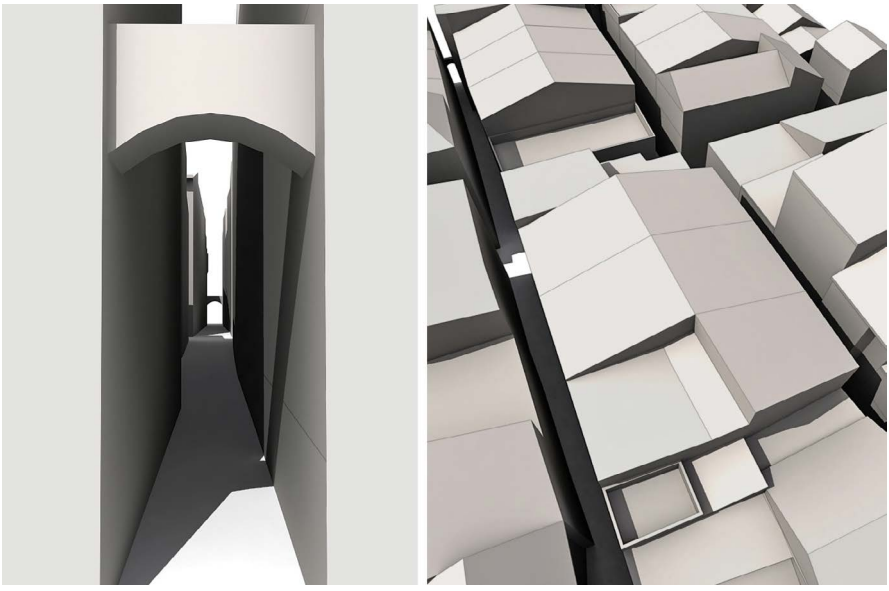

Fig. 3. Study of the lights and shadows in the inner paths using different perspective views
Source: personal archive of the author.

Evolutionary

The evolutionary features of the trabocco and of a raw-earth house in Figuig (Marocco) have been analysed through a sequence of rendered axonometric views where each single frame describes a construction phase. Theories and techniques from the filmmaking world were used as reference to produce these analytical drawings[7]. The images show also the constructive characteristics of the raw-earth house. Textures have been applied only when it was necessary to communicate the materials (Fig. 4).

[6] Di Mascio, Danilo. "Preserving memories with digital media: a methodology for the reconstruction of Castelnuovo Village", in: Dave, Bharat; Li Andrew I. - Kang and Hyoung-June Park. *New Frontiers*. Hong Kong, China: CAADRIA. 2010, p. 83-92

[7] Di Mascio, Danilo. "Digital mediated techniques for the knowledge of the evolutionary peculiarities of the built environment: Three case studies", in: Yu-Cheng, Lin and Shih-Chung Jessy Kang. Taipei, Taiwan: CONVR2012, pp. 37-46.

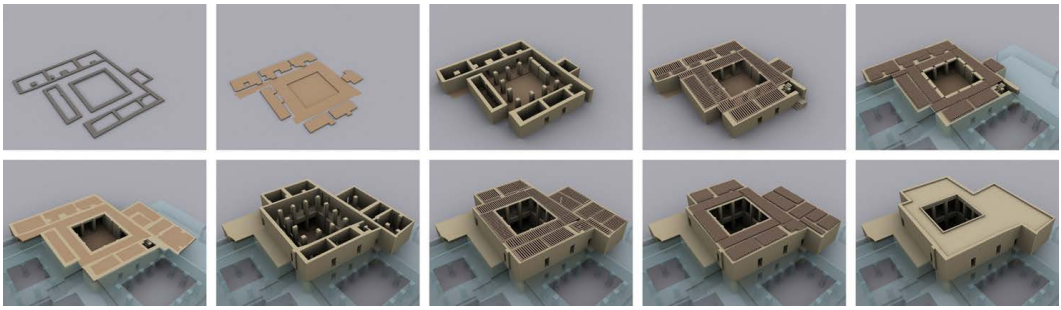

Fig. 4. Frames documenting the building sequence of the raw-earth house
Source: personal archive of the author.

Discussions

For each artifact/building or settlement the information related to their most relevant features with various analytical drawings have been interpreted and represented in various analytical drawings using various graphic representations. These case studies have also permitted the use of tools provided by technology and to define and experiment new methodologies. In this way, each case study has represented a research within the research, because it caused difficulties that required specific solutions in order to be solved. The same feature analyzed in two different case studies presented different problems and solutions, for this reason it is necessary an open approach to experimentation.

Conclusions and future developments

In this paper the importance of analytical drawings in the process of understanding, maintaining and evaluating our architectural built heritage has been described. Without a proper analysis of our built heritage there is always the risk of damaging or even losing it. These drawings are useful to improve and deepen the understanding the aesthetical, technical, functional, poetical and cultural values of the building. This piece of writing highlights and describes relevant aspects, namely concepts, methods and tools, that are significant for the creation of analytical drawings. Some concepts and key features of the built heritage are proposed. The examples of some case study show the flexibility of these graphic works to study and convey information about objects pertaining to different scales. Thanks to the advance of technology, both two and three-dimensional images can be produced using CAD and modelling software, in order to increase the variety of analytical drawings that can be developed. The support of digital technologies and the formulation of new, supporting, theoretical background can open new research paths and bring the comprehension of the heritage to a new upper level. The usefulness of traditional techniques is recognized (such as freehand sketches), together with techniques coming from other disciplines (cinema).

These graphic works can be useful in increasing the sensibility of people towards these architecture and make them aware about the importance and safeguarding of the architectural built heritage for present and future generations.

Future research paths include a further development of theoretical approaches to analyse the architectural built heritage joined with different representational techniques through other case studies both aimed at investigating new ways of studying building through analytical drawings. The author is currently working on transferring and developing theories and concepts elaborated for the Narrative Architecture to a new theoretical approach to read the city, called: Narrative Urban Environment. It is planned to apply this new theoretical approach to the analysis of the historical heart of Newcastle upon Tyne.

STUDY ON PSYCHOLOGICAL EVALUATION OF ARCHITECTURAL ELEMENTS AND SPACES IN WESTERN PAINTINGS

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Introduction

The perspective drawing is one of the most effective presentation tools among the two-dimensional representation, conveying the prospective image of the architecture and spaces. The ultimate goal of the research is to understand the perception of the two-dimensional perspective images representing architecture and spaces in various frameworks, scales and compositions. As the initial stage, this paper specifically focuses on the Western paintings as a case study of the spatial representation in broader frameworks. Many techniques of the two-dimensional space representation, such as mathematical perspective methods, were originally developed for the paintings. It may be presumed that the perspective images, which we consider as the "accurate" representation of the space, give different senses from what we feel from the actual sight, through the drawing techniques as well as the painted elements and their composition.

Also, the two-dimensional spatial representation includes not only the visualization of the stand-alone architecture as an object, but also the way it appears with its surrounding environment and landscape. In this case, architecture, among the other elements, become one of the visual components, and their interrelationship represents "space" as a whole.

In this study, the psychological evaluation experiment based on the SD-method (Semantic Differential) was conducted, in order to quantitatively analyze the reception of the painted spaces, composed of the architecture and other elements. Based on the results, the spatial structure in Western paintings is analyzed to comprehend the way the common perception and images of the space are being formed. Through the understanding of the integral spatial images of architecture and environment in two-dimensional representations, this paper aims to gain some fundamental insights into the better measures for the future architectural representation.

Selection of the Surveyed Paintings

The 15 paintings (Tab. 1) were selected as the subject of the experiment through the following procedure (Fig. 1). First, the representational painting between the periods of Late Renaissance, when the mathematical perspective drawing method was established, and the Modern age were listed from the leading art history textbooks[1] in Japan and the U.S. Although the interior space is an important part of the architectural spaces, the depictions of the interior and exterior space have considerably different characters, thus, this paper focuses on the exterior view of architecture as one of the visual components of space. The exterior views of the architecture include various cases, such as close-ups of parts of the buildings as well as groups of building in the background. The religious paintings are excluded because they are based on particular symbolism. Considering the final goal of the research to relate to the architectural drawing, the paintings over B0 size (1030 x 1456 mm) were omitted. Out of 39 selected paintings, for the purpose of this paper as a case study, 15 paintings are randomly chosen from different time periods.

Table 1. List of Surveyed Paintings

Title	Abbr	Painter	Year
The Tempest	TEM	Giorgione da Caselfranco	1510
The Judgement of Paris	JOP	Lucas Cranach the Elder	1528
The Blind Leading the Blind	BLB	Peter Bruegel the Elder	1568
Pelkus gate near Utrecht	UTR	Jan van Goyen	1646
A Pastoral Landscape	PAS	Claude Lorrain	1648
Bleaching grounds near Haarlen	HAA	Jacob van Ruisdael	1670
Mezzetin	MEZ	Jean Antoine Watteau	1718
The Gleaners	GLE	Jean Francois Millet	1857
On the Bank of the Seine	SEI	Claude Monet	1868
Max Schmitt in a Single Scull	MAX	Thomas Eakins	1871
Snap the Whip	STW	Winslow Homer	1872
The Scred Grove	GRO	Pierre Puvis de Chavannes	1884
La Place du Thetre Francais	PTF	Camille Pisarro	1898
Mystery and Melancholy of a Street	MMS	Giorgio de Chirico	1914
American Gothic	AGO	Grant Wood	1930

Source: Kiwa Matsushita, Hiroshi Tsumita.

[1] Davies, P.J.E. et al. *Janson's History of Art*. Eighth edition. New Jersey: Prentice Hall.2011., Kleiner, F. S. et al., *Gardner's Art Through Ages*. Twelfth edition. Belmont:Wardsworth/ Thomson Learning. 2005., Takashina, Syuji et al., *Western Art History*. Tokyo: Bijutsu-Syuppan. 2002, Nagai, Kazumasa; Kijima, Syunsuke. *High School Art I/II*. Tokyo: Nihon Bunkyo Syuppan. 2014.

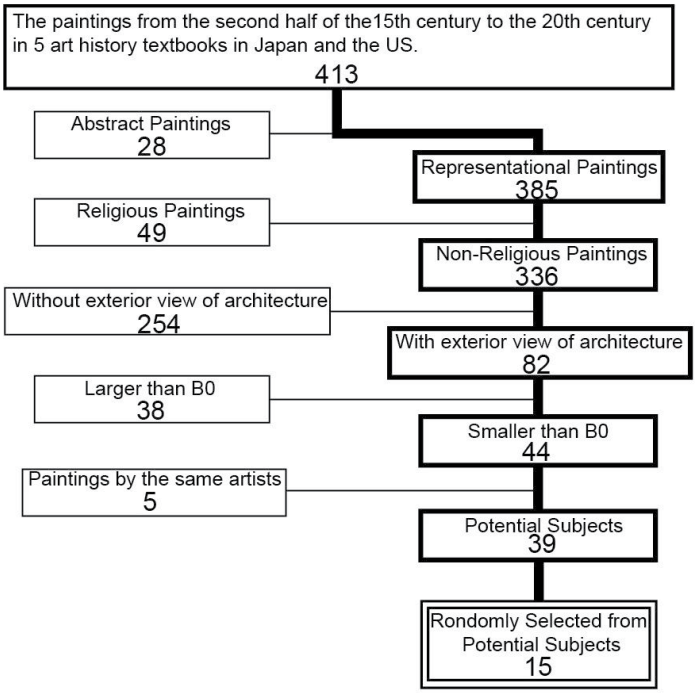

Fig. 1. Selection Procedure Diagram
Source: Kiwa Matsushita, Hiroshi Tsumita.

The reception of the two-dimensional representation presumably depends on the viewer's cultural background and age. In this experiment, the architectural students in Japan were chosen to be the research participants for the following two reasons. First, they are accustomed to view two-dimensional spatial representation and have more vocabularies to describe it than a layman. Secondly, Japanese architecture students are generally not so familiar with Western paintings and the most of them have never seen the subject paintings, so that it can be expected that their reception on the composition and structure of elements is straightforward without bias.

Analysis of Psychological Evaluation Based on SD-Method

To investigate what types of composition of the paintings influence their psychological evaluation and perception of space, the experiment based on the SD (Semantic Differential) method was conducted. Originally devised to measure the meaning of words, the SD-method has been adopted to the research of Architecture and Space as one of the widely used methods to quantitatively measure various psychological evaluations of spaces. In order to capture the psychological reception from the painted spaces, 31 pairs of bi-polar adjective phrases were selected carefully through the preliminary experiment. The images of the 15 paintings are printed at high resolution[2] in the actual sizes and posted on the wall so that the

[2] HP DesignJet T790 ePrinter (max. Resolution: 2400 x 1200 dpi) was used.

center of each painting is at 1.5 meters from the floor. Uninformed of the titles of the paintings, the 50 students from the Department of Architecture (22 Males, 28 Females) were to stand at the distance twice as the diagonal dimension of each painting, and view each image (Fig. 2). They were to rate their impression between each set of bi-polar adjectives at 6 grades.

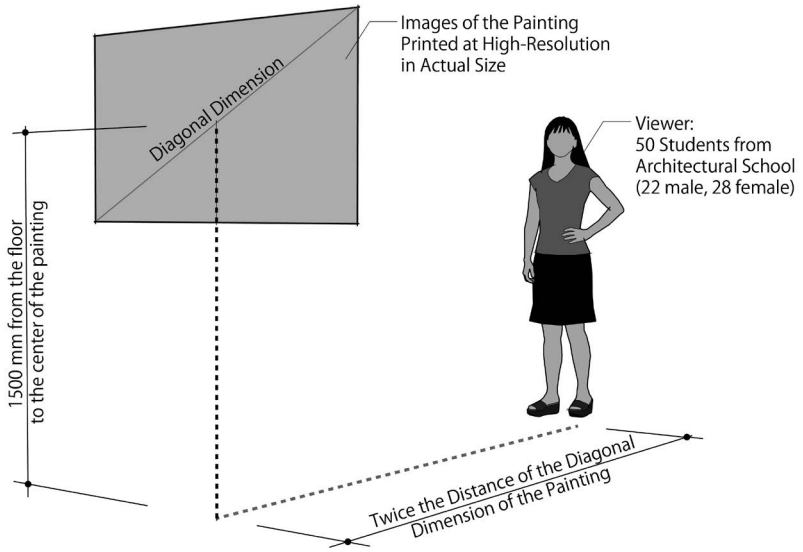

Fig. 2. The setup for the Experiment based on SD-method
Source: Kiwa Matsushita, Hiroshi Tsumita.

The average ratings of each pair of bi-polar adjective phrases and their standard deviation for each painting are calculated for the analysis. The landscape paintings generally received high grades of evaluation, and among them, most characteristic one was [SEI]. It was evaluated highest in 13 out of 31 phrases. [PAS] also received similar evaluations as [SEI]. Especially small standard deviations of ratings for both paintings indicate that all the viewers had similar impressions on them. Overall, the bi-polar adjectives whose average ratings were more than 4 or less than 3 were "Deep Space" (12 out of 15) as well as "Rural" and "Quiet" (11 out of 15). These results show that while many of the subject paintings depicts natural environments, they tend to evoke similar impressions to the viewers.

Extraction of Representative Factors of Psychological Evaluation

The factor analysis[3] is performed using the ratings for 31 bi-polar adjectives on 15 paintings as variables in order to understand the structure of the psychological evaluation on spaces in two-dimensional representation (Tab. 2).

[3] Statistical Software: SPSS (Principal Axis Factoring Method, Varimax Rotation).

Table 2. List of Psychological Factor Loadings

Factor Name	Variables (+: Left Factor, -: Right Factor)	Factor						
		No.1	No.2	No.3	No.4	No.5	No.6	No.7
Ambience Factor	Comfortable - Uncomfortable	0.82	0.08	-0.11	0.12	0.17	0.04	-0.10
	Beautiful - Ugly	0.78	0.17	0.10	0.02	0.23	0.03	-0.08
	Cold - Warm	-0.76	0.17	0.03	-0.16	0.07	-1.01	-0.05
	Dark - Bright	-0.76	0.21	0.05	0.01	0.12	0.03	0.07
	Pure - Muddy	0.73	0.21	-0.02	0.05	0.26	0.05	0.06
	Stiff - Soft	-0.69	0.13	-0.03	-0.33	-0.06	-0.13	0.17
	Enjoyable - Boring	0.68	-0.30	0.13	0.08	0.04	-0.09	-0.08
	Closed - Open	-0.65	0.16	0.12	-0.14	-0.37	-0.01	0.02
	Dull - Atmospheric	-0.57	0.09	-0.15	-0.05	-0.08	-0.02	0.42
	Colourful - Monotonous	0.55	-0.30	0.20	0.07	-0.22	0.05	-0.10
	Disproportion - Harmonious	-0.54	-0.09	0.30	-0.11	-0.17	0.07	0.12
	Transparent - Opaque	0.51	0.23	0.01	0.03	0.20	0.10	-0.21
Dynamic	Quiet - Noisy	-0.07	0.78	0.01	0.09	0.15	0.08	-0.08
	Restless - Calm	-0.26	-0.70	0.04	-0.09	-0.12	-0.09	0.02
	Dynamic - Static	0.12	-0.66	-0.02	0.08	0.08	0.03	0.03
	Eventful - Uneventful	0.25	-0.56	0.17	0.01	0.08	0.04	-0.12
Dramatic	Fantastic - Realistic	0.08	0.08	0.76	-0.04	0.01	0.03	-0.03
	Ordinary - Dramatic	0.15	0.29	-0.62	0.06	0.11	0.17	0.11
	Insipid - Symbolic	0.06	0.12	-0.39	0.09	0.22	0.39	0.20
	Decorative - Plain	0.18	-0.30	0.33	-0.07	-0.23	0.08	-0.11
Rurality	Urban - Rural	-0.18	-0.20	-0.01	-0.65	-0.10	0.09	-0.06
	Natural - Artificial	0.39	0.17	-0.10	0.50	0.34	0.05	-0.09
	Rectilinear - Curvy	-0.16	0.16	-0.14	-0.44	-0.04	-0.22	0.08
	Human Scale – Inhuman Scale	0.01	-0.03	-0.17	0.43	-0.09	0.04	-0.07
	Old - New	-0.31	0.08	0.23	0.33	0.18	0.11	0.01
	Being in Image – Distant from Image	0.16	-0.03	-0.20	0.30	0.03	-0.03	-0.22
Openness	Broad Space – Tight Space	0.50	-0.07	-0.13	0.15	0.55	0.08	-0.04
	Deep Space – Shallow Space	0.16	0.07	-0.06	0.01	0.41	0.17	-0.06
Strength	Weak - Strong	0.02	0.30	-0.07	0.05	0.05	0.57	0.20
	Symmetrical - Asymmetrical	-0.01	0.09	-0.01	-0.02	-0.06	-0.34	0.12
Humidity	Humid Air- Dry Air	-0.22	-0.06	-0.19	-0.16	-0.06	-0.01	0.41
	Eigenvalue	7.63	3.75	2.02	1.82	1.40	1.16	1.04
	Contribution (%)	23.30	10.54	4.69	3.96	2.47	1.99	1.25

Source: Kiwa Matsushita, Hiroshi Tsumita.

The factor loadings were calculated and 7 representative factors whose eigenvalues are above 1 were assessed. The first representative psychological factor consists of the evaluation scales, such as "Comfortable – Uncomfortable", "Beautiful – Ugly", and "Cold – Warm". It can be defined as "*Ambience Factor*" since it represents the atmospheric characteristics of painted space. The second representative factor consists of the evaluation scales, such as "Quiet – Noisy", "Restless – Calm", and "Dynamic – Static". This factor expresses a sense of movement in the space, so that it can be defined as "*Dynamic Factor*". The third representative psychological factor includes the evaluation scales, such as "Fantastic – Realistic", "Ordinary – Dramatic". It can be defined as "*Dramatic Factor*" since it represents the dramatic quality of the painted space. The forth representative factor consists of the evaluation scale, "Urban – Rural" and "Natural – Artificial". This factor represent the scale of rurality in the painted space, so that it is defined as "*Rurality Factor*". The fifth representative factor consists of the evaluation scale, "Board Space – Tight Space" and "Deep Space – Shallow Space". It expresses the extent of space, thus it can be defined as "*Openness Factor*". The sixth representative factor consists of "Weak – Strong" and "Symmetrical – Asymmetrical". It expresses the strength of space, so that it can be named "*Strength Factor*". The seventh representative factor was "Moist Air– Dry Air" and it can be defined as "*Moisture Factor*" since it expresses the aerial dryness of the painted space. These seven psychological representative factors accumulate to the contribution of 48.477%. The following analysis uses the representative psychological evaluation scales, which are selected from these 7 representative factors (Shaded evaluation scales in Tab. 2).

Classification of Psychological Evaluation Characteristics

To categorize the distinctive types of the reception from the psychological evaluations and the composition of the corresponding paintings, the Cluster Analysis[4] was performed by taking the average ratings of the 7 representative psychological scales for the paintings as the similarity and they were classified into 4 types (Fig. 3).

The average ratings of the representative psychological evaluation scales were plotted in radar charts according to the categories of the paintings to analyze the characteristics (Fig. 4).

The first group is "Serene Rural Type", which was characterized by "Quiet", "Ordinary", "Rural", and "Broad". [PAS], [SEI], [HAA], [MAX], and [GLE] belong to this type. These paintings characteristically depict rural sceneries with large amount of sky and the background in far distance, but the presence of specific human or building is not stressed. Even when humans are depicted, they do not give strong impressions, since they are painted small or their faces are turned to back, so their expressions are unreadable.

[4] Statistical Software: SPSS (Furthest Neighbor Method).

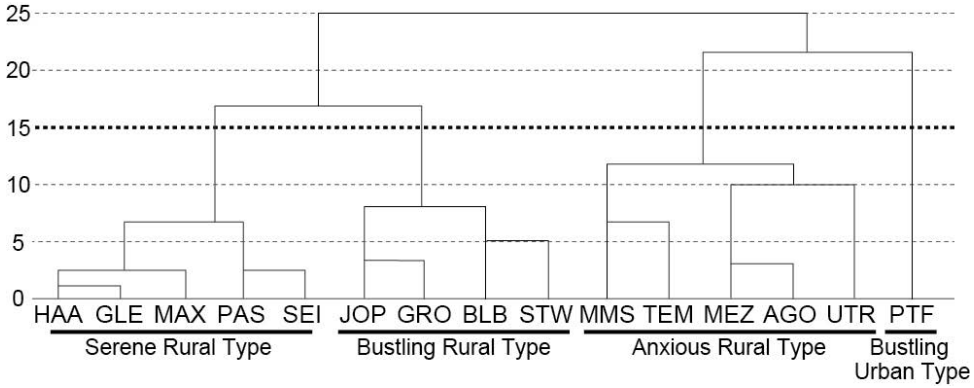

Fig. 3. The Classification of the Paintings based on the Cluster Analysis
Source: Kiwa Matsushita, Hiroshi Tsumita.

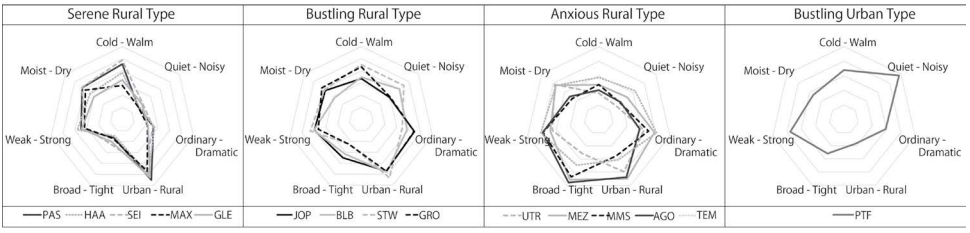

Fig. 4. The Radar Charts of the 4 Categories of Paintings
Source: Kiwa Matsushita, Hiroshi Tsumita.

Also, the orientation of 4 out of 5 paintings in this type are landscape, and 3 out of 5 paintings have rivers placed horizontally, which make the stable compositions. These characteristics presumably lead to "Quiet" and "Ordinary" impressions. [PAS] and [SEI] shared especially similar evaluations and even though they are painted in different age and styles, their compositions are remarkably alike. They both have a river flowing in the middle-ground as well as the large tree on right or left in the foreground, which express the expanse of space horizontally and vertically. The viewers' eyes start from the human figures at foot of trees in the foreground and are lead deep into the space by the buildings in the background. These compositions supposedly contribute to the sense of "Broadness" (Fig. 5).

The second is "Bustling Rural Type", which shows similar tendencies in the some evaluation scales, such as "Rural" and "Broad", but also rated high on "Noisy" and "Dramatic" scales. This type includes [BLB], [JOP], [STW], and [GRO]. The characteristics of the painted spaces in this type is, on one hand, similar to "Serene Rural Type". They both depict rural scenery with many trees. The major difference is that "Bustling Rural Type" have several human figures in the foreground. The scale of "Noisy" impression was proportion to the level

of human movements, while the rating of "Dramatic" was high, regardless of the level of movements. 3 out of 4 paintings in this category had considerably noticeable architecture in the middle-ground. These architectural elements presumably act as a backdrop, partitioning off the human figures in the foreground from the large sceneries in the background, in order to focus the viewers' eyes to the acts of human figures (Fig. 6).

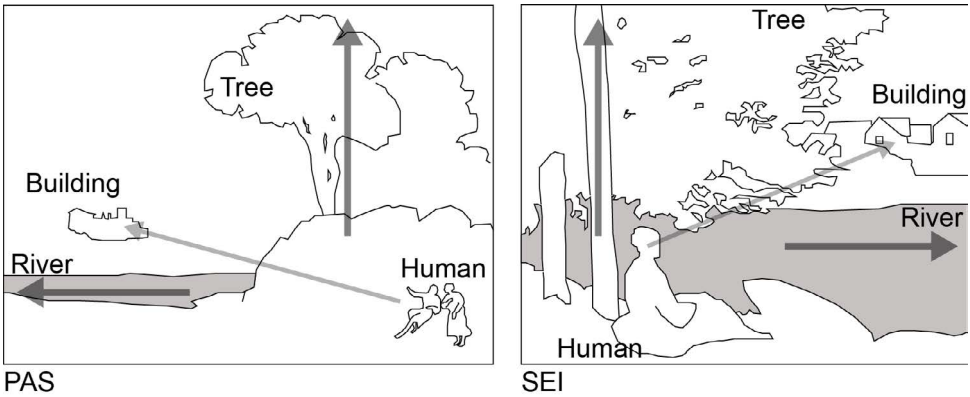

Fig. 5. Composition Examples of "Serene Rural Type"
Source: Kiwa Matsushita, Hiroshi Tsumita.

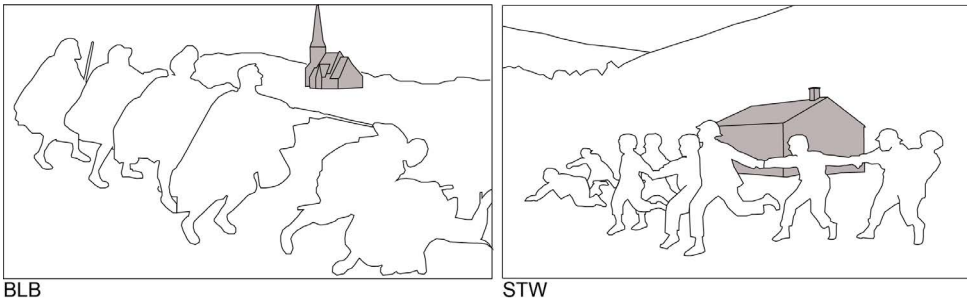

Fig. 6. Composition Examples of "Bustling Rural Type"
Source: Kiwa Matsushita, Hiroshi Tsumita.

The paintings in the third group also had high rating in "Rural", but also the evaluation scales, such as "Cold" and "Tight" were particularly rated high. [UTR], [MEZ], [MMS], [AGO] and [TEM] were categorized in this group, which can be defined as "Anxious Rural Type" from the characteristics of the painted spaces. 4 out of 5 paintings in this group are portrait orientation and have dark colour tone. The impression of the buildings are relatively strong, but their appearances as well as the distance from the other elements are distorted, creating the sense of tension and anxiety (Fig. 7).

The last type is characterized by the evaluation scales, "Noisy", "Urban" and "Dry", so it is defined as "Bustling Urban Type". Only [PTF] were designated to this type. It depicts the hustle-bustle traffic scene in the central urban area with countless number of people, so it gives noisy and urban impression. The composition

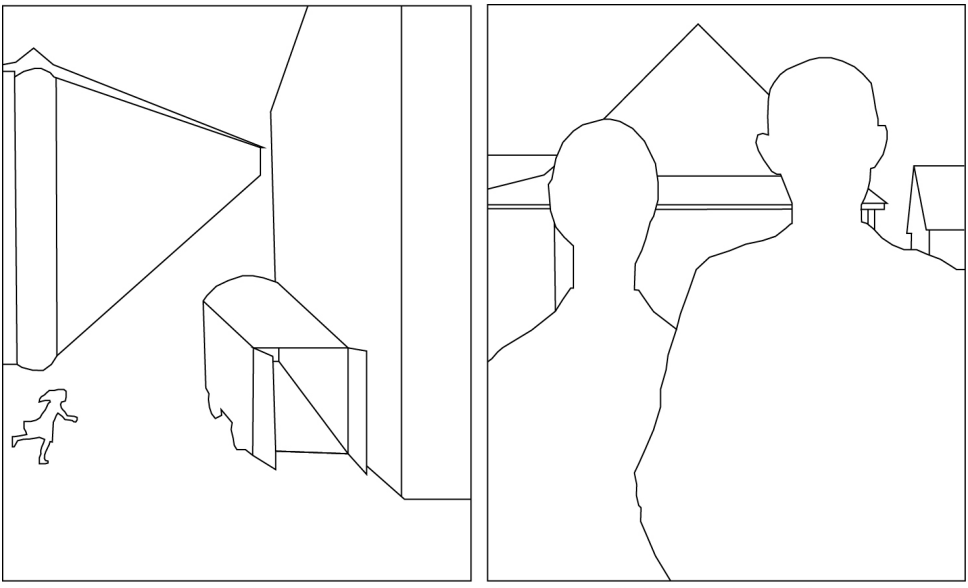

Fig. 7. Composition Examples of "Anxious Rural Type"
Source: Kiwa Matsushita, Hiroshi Tsumita.

is birds-eye-view, so no sky is painted. The trees without a leaf suggest that the scene is in dry winter, giving the impression of "Dry Air".

Conclusion

The psychological experiment based on the SD method was conducted using 15 Western paintings between the 16th and 20th centuries in order to survey the psychological evaluation of the two-dimensional spaces. According to the propensities of the evaluations, 7 representative factors are selected as well as the representative evaluation scales. The subject paintings were categorized into 4 types through the Cluster analysis using the representative evaluation scales as similarities and the compositions of the paintings are compared in each categories.

These analyses revealed a part of the characteristics of the perception on the architecture and spaces in the form of Western paintings. Regardless of the time period or style, the elements and their compositions have influences on the viewers' impression and psychological evaluation of the paintings. Especially in the rural scenery, human and architectural elements are considered to be the factors to evoke dramatic and/or dynamic impressions.

Based on the result of this research, by increasing the number of the subject paintings and more variation in ways of depicting buildings, the next experiment will analyze more various architectural representations, and clarify the relationship between the psychological evaluations of two-dimensional spaces, and the their compositions and the painted elements.

CONTEXTING OUR PERCEPTIONS OF THE PAST: TRANSFORMATIONS OF MAKING

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Change happens slowly in architectural history despite the speed to which our perceptions can allude. When skimming back through the relevant images and narratives of our built past, snapshots seem isolated and frozen in time. The sequence of these milestones stack like sheets of paper, numbered and ordered by dates, years, days in the life of a space. And while the chronologies of these ideas and events do follow a linear path carved through time, our experiences of both architectures and cities does not. They are a richer, more complex amalgam of layered influences, biases, knowledge-bases, and support data that fuse with a place for create both collective and singular perceptions of the built environment. But how we engage this history and culture surrounding our temporal spatial settings is only partially conscious, the other side of our perception happens through the unconscious.

Artists, social scientists, architects and more have studied the effects of the unconscious mind and the creative process since the early twentieth century, and yet it is still an ongoing opportunity to discover the connection between form and narrative in architectural history. There is a strong correlation between the design process as an adaption of previous experiences of designers to their current situation[1]. This process of pulling from previous experiences, both historic and cultural, happens on the unconscious level, like the process of being an expert on a topic or specialty. It is the state of mind allows that a professional musician to play their instrument unconsciously, or without a thoughtful intention. The transformation of thought to notes is seamless. This accumulation of experience through making, whether music, or in form of architectural models and drawings, can be enriched by the breaking of traditional patterns and the acceptance of the intuitive actions and reactions to forces, criteria, and relationships of context. Maybe even, the happy accident or, the stumbled upon eureka, can only be understood by diving below the surface of our intentions.

[1] Jon Lang. *Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design*, New York: Van Nostrand Reinhold, 1987.

The intuitive mind is a sacred gift and the rational mind is a faithful servant.

We have created a society that honors the servant and has forgotten the gift.'[2]

But, the complex layers and fragments of experience certainly influence both the making of and the perceptions of our built environments. Events such as the blurring of facts, the superimposition of remembrances of the past, and future projections communicate the ideas of space. Looking through lens of the past while sitting in the present begins mix and mash ideas from our cognitive catalogue of known forms with the imaginative projections of the future to change our understanding of space.

The transformation vehicles become the hand-sketched diagram, cartoon scale representation, and models. The process of the paring down to the essentials is an important step of establishing design communication. Then, with the slip of a pen, the recognition of the result, and the magic of drawing and seeing, a new kind of purposeful confusion that can enable alternative seeing to emerge. There is a temporary amnesia of scale and program and even at times intention, that transforms our perceptions into alternative way of seeing, understanding and connecting relationships of the present to the past and beyond into the future.

The emphasis of this research is design communication through the medium of drawings and models from a collage-based generator. The generative content spans the historic through contemporary time line of architectural form and meaning. The jumps of realization and description of an idea into the formal language is rich with recognizable patterns, details, and motifs that transform the associative meanings of the content, much like the found paper and material of a Dadaist collage. Through collage, the unconscious mind can merge with the recognition and analysis to unlock unlimited possibilities. The traditional structures can be temporarily rejected. The original content fuses and creates new realities based on the layers of new suggestions found in the formal references.

Contextualism: The Embrace of the Unique

> It is suggested that a collage approach, as approach in which objects are conscripted or seduced from out of their context, is – at the present day – the only way of dealing with the ultimate problems of, either or both, utopia and tradition; and the provenance of the architectural objects introduced into the social collage need not be of great consequence[3].

Colin Rowe and Fred Koetter's, Collage City, 1978, starts out describing architecture and urbanism at a point of crisis. They fight through theories and methods to provide a common sense solution to the problems at hand. What results is the idea of contextualism and the idea that an environment are collaged from separate pieces through time and history, can be interpreted by the masses in differing, interesting, and sustaining ways.

[2] Albert Einstein.

[3] Colin Rowe, Fred Koetter. *Collage City,* Cambridge: MIT Press, 1978.

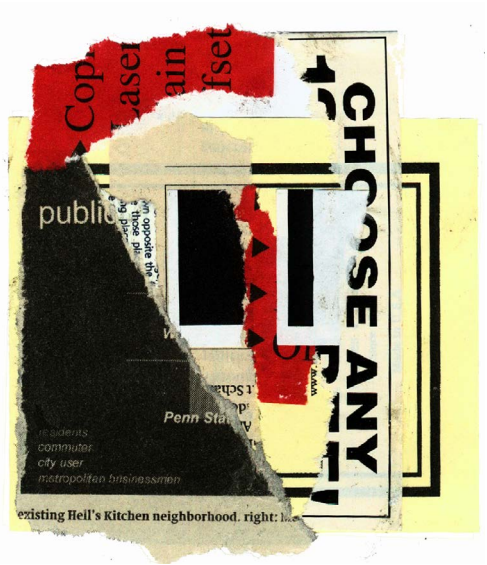

Fig. 1. Choice Collage
Source: Melody Farris Jackson - found paper.

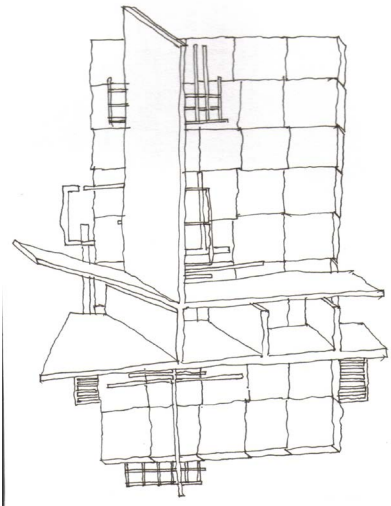

Fig. 2. Collage Sketch Artifact
Source: Melody Farris Jackson - Ink on paper.

The term contextualism refers to a new way of developing aesthetic strategies to represent the city's preconditioned geometry. Through the use of figure-ground analysis of urban configurations as a form of site study, they were able to introduce the idea of the intervention into the city systems. The result of these exercises was one of unpredicted magnificence in the sense that new understandings both formal and their social and political implications were brought to light. The research into a city, thought of as metaphorical collage, was a unique and fascinating fresh approach to the standards of urban design at the time. It flipped the previous associations of urban from a flat, two dimensional array of homogeneous elements into the transformative concept that a city is layered over time, with multi-faceted pieces of different origins and endings. There was an inherent poetry to their drawings and writing that validated the complexity of ambiguity of cities. Their research concluded that over time, these associations could change, transform, and suggest new things in the form of program, architecture, and space.

Many of these formal arrangements brought an intuitive flair back into the investigations of the city. Architectural histories, latent with sets of meanings through time, could be imaginatively investigated. These uncovered formal, social, and geometrical associations have the potential for suggestive and interpretative appeal in the contemporary city.

We are again at an interesting moment of design and its education. Designers are both embracing and fighting the seduction of the digital and virtual means and methods of representation. Digital media enables us to skip certain process steps of a conceptual strategy by cleaning up an idea quickly and adding a level of precision and intent from the start.

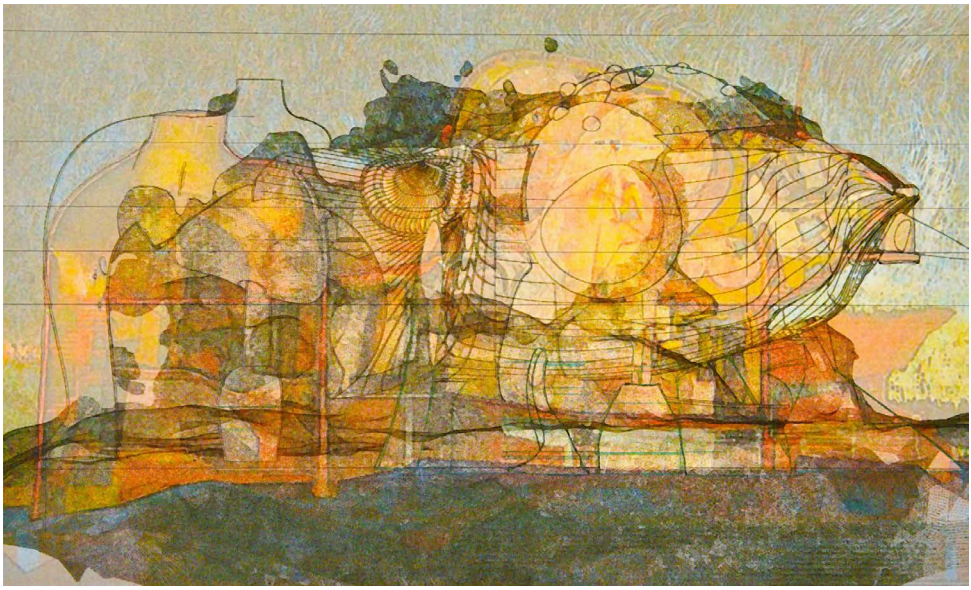

Fig. 3. Elevation: House of the Rising Sun
Source: Mark O'Bryan - Prismacolor on paper.

Fig. 4. "R" House Model
Source: Mark O'Bryan - Chipboard, Corrugated Cardboard, Paint, Chalk Pastel.

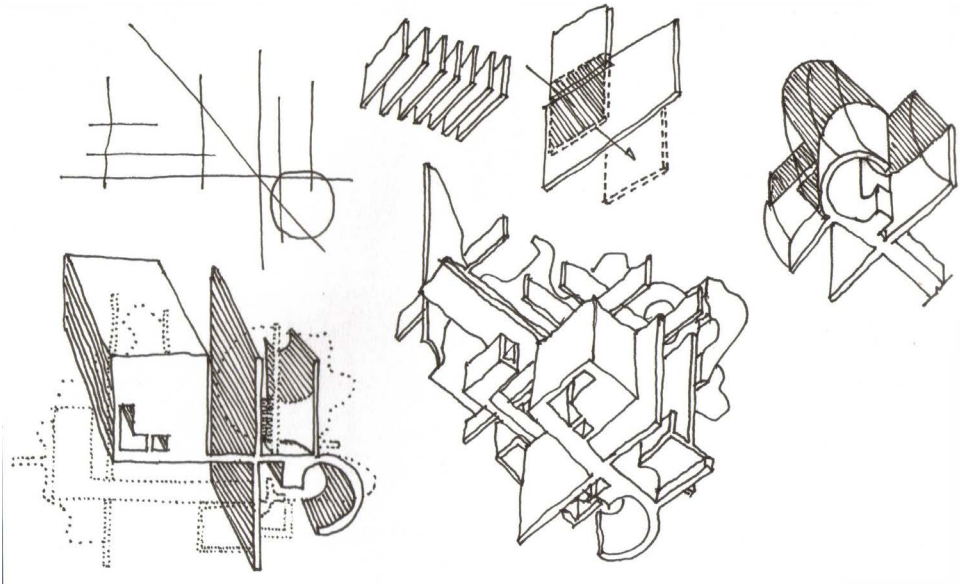

Fig. 5. Analytical Collage Sketches
Source: Melody Farris Jackson - Ink on Paper

The computer eliminates the sublimal and subconscious remembrances of the past and simply follows our directions of making. It does not make mistakes with its algorhythms and code. It does exactly as it is told; it reproduces with efficiency and precision. The computer does not allow for the mutation.

But even before the manifestos of Rowe and Koetter, collage had been established, perhaps as an unlikely process in the beginning, by those in reaction to the political, social, and economic forces at play within the movement of Modern Art early in the twentieth century. The disintegration of a fixed image was embraced by many artists and designers as provoked by a series of contradictions at the time[4].

Fragments, both physical and emotional, were pieces that a Post World War society was struggling to recombine. And, what started as a process of bitter irony soon became the beginning of a process that would later unlock many of the compositional conventions of architecture and urban design.

Those early collages that were crafted from the raw materials found in waste baskets and piles of rubbish, torn photographs, old buttons, ticket stubs, and newspapers, started the transformation from one mode of visual communication to another.

> They bound together all these fragments which were taken from their original context and had no logical connection whatsoever, and this random conglomeration of unrelated, fragmentary signs of meaningful pictures revealed an unexpected power of expression. Each material, each shape, each photograph carried within itself characteristics of the world from which it was

[4] Gyorgy Kepes. *Language of Vision*. Chicago: Theobald, 1944.

> taken. The observer was forced to find order in the unrelated fragments, to trace back some latent meaningful connections in the basically meaningless haphazard dada and merz-pictures, collages, or photomontages. The wider apart the elements were in meaning and the more impossible it seemed to find integration for them, the greater became the tension of the spectator as he struggled to find a source of integration. This tension was a zero point of the meaning-organization. It served as a basis for redirection[5].

There is tangibility to a physical drawing or model that allows for a subconscious wandering, thinking, and resonating that can enlighten a design. It can uncover forms, elements, and conceptual strategies of the past into new interpretations of the present or future. The process can bounce between action and reaction of the design forces at play, cumulatively building or constructing an idea piece by piece. This is where the unconscious and conscious mind can toggle between the rational and irrational world. It is precisely these in-between areas that we resonate with all the past experiences mixed with new ideas.

Digital vs Physical: Developing an Emotional Connection

At times, there is a struggle for an emotional connection and meaning in our cultural age as we transition into the era of the digital space. The virtual and digital realms, have seduced our formal sensibilities, yet, there is commodity of style and design that exists. Led by the disciplines of film and gaming, digital spaces have become the normative for architectural software development and project execution. Yet, while the space of the digital constructions can be initially breathtaking, it is the formative states of creativity that it questions.. The computer asks precise questions very early in a design process that has the tendency to not allow the subconscious to drift into a creative solution. Its exactitude eliminates the element of a mistake or of chance to enter into the discovery of idea or concept.

As humans, our livelihoods for thousands of years have been based on our body's senses plus the intuition to drive them. Early Civilizations have thrived from the capitol campaigns of building cities and urban communities in which to live, work, play, and protect populations. Our set of needs have produced both utilitarian and majestic works of architecture.

> Today abstraction is no longer that of the map, the double, the mirror, or the concept. Simulation is no longer that of a territory, a referential being, or a substance. It is the generation by models of a real without origin or reality: a hyperreal. The territory no longer precedes the map, nor does it survive it. It is nevertheless the map that precedes the territory – the precession of simulacra – that engenders the territory, and if one must return to the fable, today it is the territory whose shreds slowly rot across the extent of the map. It is the real, and not the map, whose vestiges persist here and there in the deserts that are no longer those of the Empire, but ours. The desert of the real itself[6].

[5] ibidem.
[6] Jean Baudrillard. *Simulacra and Simulation*, Paris: Editions Galilee, 1981.

The methods of a collage generator for form and embedded historical meanings is not a new one. But it could, in fact, challenge the self-similar repetition and spatial continuities of digital practice as alternative method to introduce elements of the unconscious roots of history and culture back into design. While these systems have become the hallmark of algorithm-driven design, today the most prevalent strain of making is through digital practice. Patrik Schumacher writes: "Give me any collage of unrelated elements and I can generate connections and resonances, invent correlations. So I reject the pure interruption, the pure discontinuity, collage."[7]

If the algorithm provides the possibility of smoothing over differences by absorbing them into a cohesive system of controlled relationships, its outcome arguably falls back into the Modernist vein of consistent, homogeneous space. It is a critique of this tendency today that animates the possibility of an aggregated project. If parametric or algorithmic-based design paradoxically lapses back into homogeneous space, how might an idea of aggregation produce the possibility of heterogeneous space, or more specifically "heterogeneity within an intensive cohesion rather than out of extensive incoherence and contradiction?"[8]

So the debate goes on and on. Can a collage space directed by chance from both a conscious and unconscious endeavor create and uncover latent understandings of place, history, culture and design? We would argue yes, in spite of criticism, that the unconscious indeed is a valid tool of exploration alongside the ever-expanding world of the digital.

Works: Perceptions of the Past, Visions of the Future

The Love Hotel

Architectural precedent defines the past and historical fabric of cultural marks through civilization and time itself. Unlike the fickle evolution of style and taste, precedent dives deeper beyond the appearances of the aesthetic and into the collisions of program and use. Whether public baths were common in Ancient Rome to fulfill a hygienic or social need, or the development of a the "drive-thru" window on restaurants to access the speed or convenience of modern life, precedents define the existence of needs of a place on a timeline. Like the fossils, these historic snapshots narrate a cultural existence.

Removing aspects from their historical resting place and re-positioning them into a new collage of temporal space strips them of the cultural baggage, frees their meanings and logic and they can transform into a new set of ideas and spaces. Perhaps without explicit definition, it allows for the mind of the architect to imagine and wander more freely.

[7] Patrik Schumacher. *Autopoiesis of Architecture: A New Framework for Architecture*, Chichester: John Wiley, 2011.
[8] ibidem.

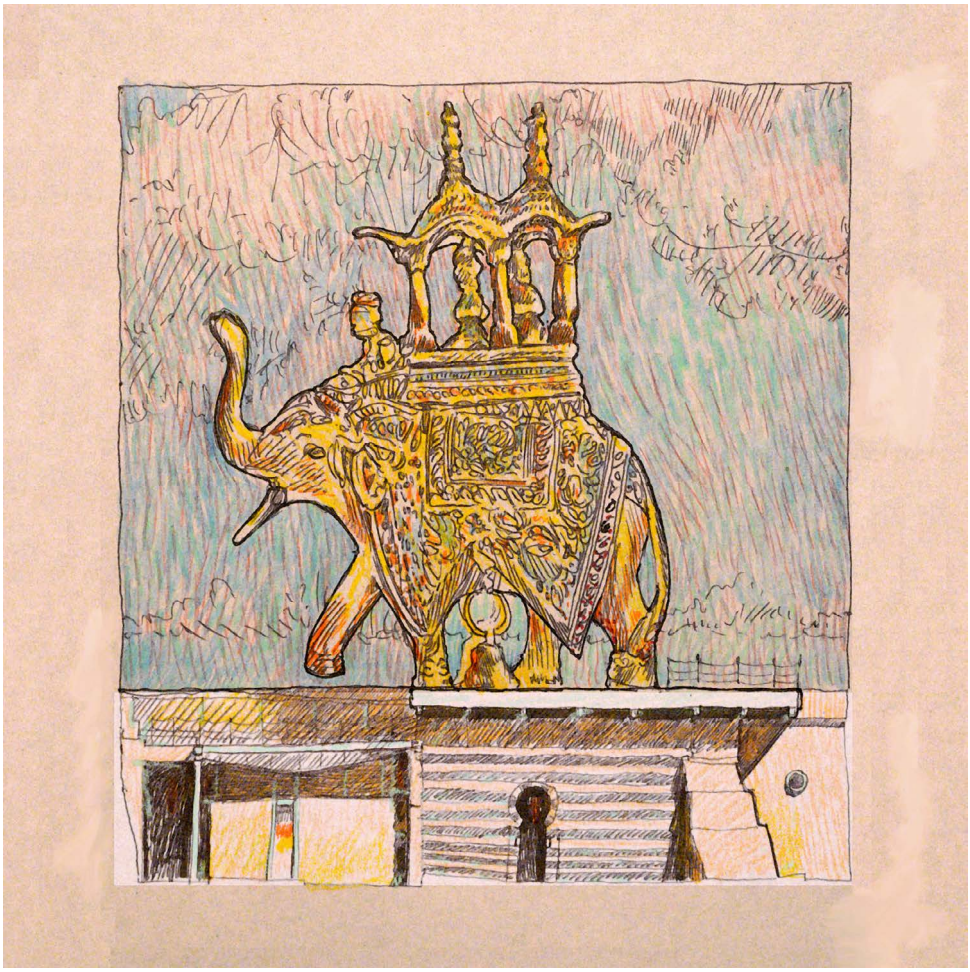

Fig. 6. Detail Sketch of Rooftop for the Love Hotel
Source: Mark O'Bryan - Ink, Prismacolor Pencils, Paper.

The Love Hotel is a conceptual design strategy to rekindle the flames of an architectural past coupled with a contemporary position of space…a dichotomy for sure. The very name is suggestive of the boudoirs and parlors of the 19th century while its program supports its wildly provocative opportunities for love. Its architectural tectonic, however, is a mixed, collage-style collection of eclectic detailing and formal gestures rooted in various times from history. Is it modern? Perhaps in its very assemblage of pieces is favors a contemporary feel. Is it historic? Maybe for its nostalgic nature and antiquated references to both the primitive and the ancient it can seem familiar. Is it crazy? Definitely. It hosts a large, colonially-decorated Elephant sculpture on its roof which harkens the element of the surreal, is meant to conjure the reference of the object-super-sized to beyond the human rational. It represents a piece transformed as a marker in time.

Fig. 7. Concept Model of Love Hotel
Source: Mark O'Bryan - Chipboard, Wood, Paper.

Fig. 8. Plan Process Drawings for Love Hotel
Source: Mark O'Bryan - Ink, Prismacolor Pencils.

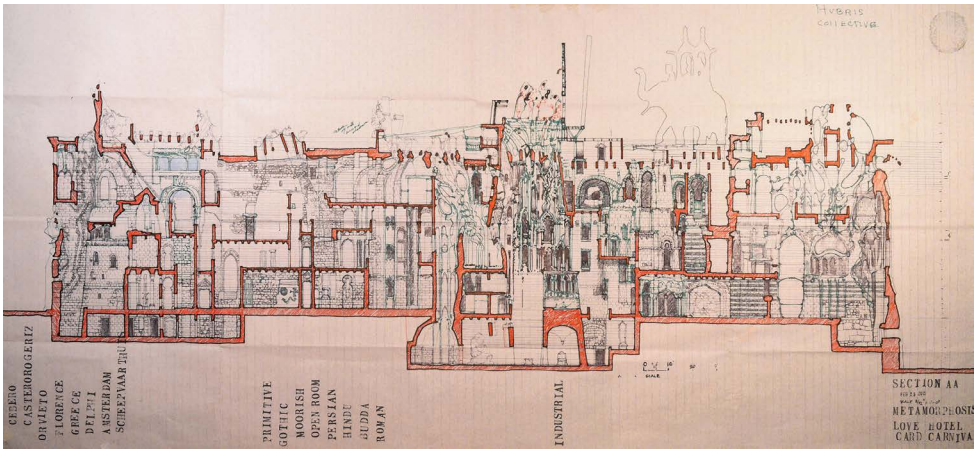

Fig. 9. Section Drawing for Love Hotel
Source: Mark O'Bryan - Ink, Prismacolor Pencils.

The Love Hotel is not a digital construction; it is conceptual project that has been constructed with pencil and prismacolor lines…mark by mark, element by element. Progress has been a non-linear journey of experimentation and discovery. It has progressed as a series of reactionary layers that have cumulatively grown from its embryonic idea into an act of illustrational mastery and architectural wonder.

The hand-made model also exhibits the roughness of a sketch model yet the precision of a detailed program. It has been a collage of materials from chipboard and cardboard to the skin of a paper mache and gesso. It is a "real" microcosm of the idea that exists as a miniature form in space, with shadows and phenomena at its disposal.

These are the transformative moments that give such physical models and drawings their power, their wonder. It is the very primitive roughness and messiness of the collage itself that creates a new space with new meanings from the connection of its original, historic and other, parts.

Epigram to a City

The urban experience presents an interesting typology of architectural representation through models and drawings. Our understandings of the collective, the urban, is based on the key elements of the multiple. The question of how and why a city has developed shifts between the forces of evolution and interventions. The Epigram to a City project is a conceptual study that looks at the contemporary city and begins a narrative based on the ever-changing and transforming nature of programmatic and cultural elements through time.

The premise of this project is that a mythical, ancient city is discovered with a series of three prose narratives. All that is left of the city are ruins, the architecture of the incomplete. So, an archeological grid is superimposed upon the formwork of the city and each square is examined both formally, spatially, and collectively. A poetry emerges that bisociatively describes the urban context.

Fig.10. Model: Collective Reconstruction of the City

Source: Melody Farris Jackson - Digital Collage of Individual Model Photographs.

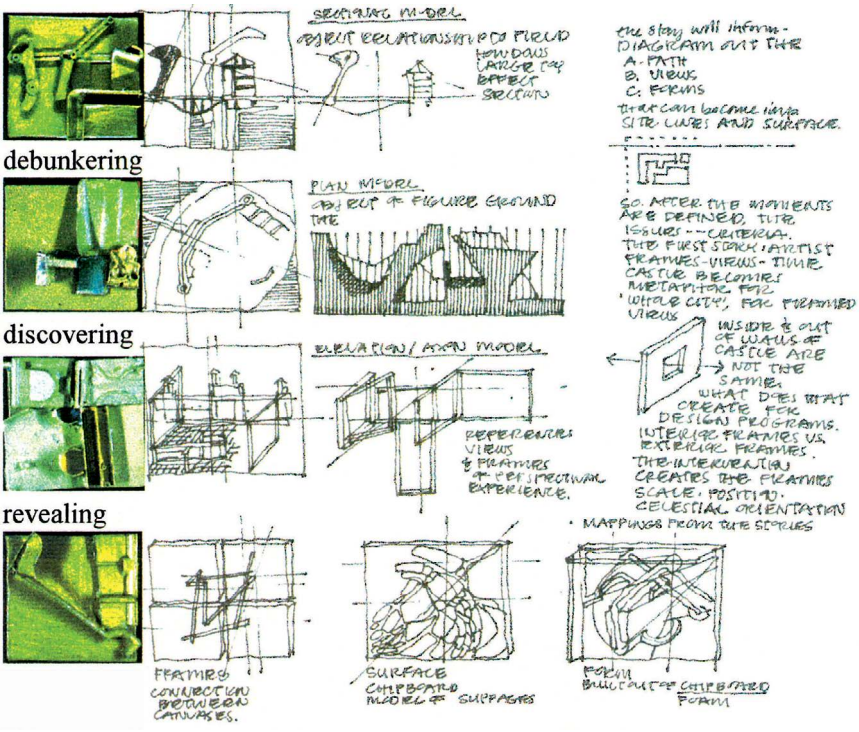

Fig.11. Process Diagram of City Fragments

Source: Melody Farris Jackson - Model Photos, Ink on Paper.

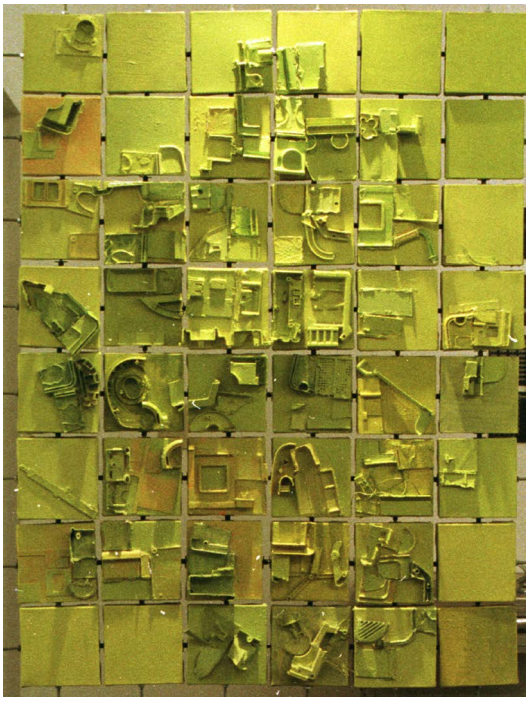

Fig.12. Green Series City Construction
Source: Melody Farris Jackson -Canvas, Plastic Toys, Oil Paint.

Then the order of the grid and squares is lost, and only with the reassemblage of the city, in many ways, can we begin to decipher the "story of the city".

The aspects of a collage space city are relevant tools in which we understand how architecture, both singular and urban, transform our experience of a spatial environment. The disparate pieces that are taken out of their original context and reconnected into new compositions can seek to challenge our understanding of both the old (historic) and the new (contemporary). Our minds can wander through the synaptic connection of one piece of historic fabric to the next, connecting the dots in new and interesting ways.

Similar to the fabrication of the Love Hotel, the Epigram to a City project was made by a series of drawings and models. The models final form is in a series of conceptual art pieces, oil-relief paintings, short stories, and wood/glass constructions. The models became the artifacts for the project itself. The drawings became the history. The narratives became the common threads that stitched the artifacts to the history and connected the ideas.

A Collection of Summarizing Thoughts:

Perhaps a movement back to the hand-made, the speculation of unknown, and the precedents collaged into a contemporary context just might bring that element of the unconscious, both individual and collective, back into our built environments of architecture. The creative process itself, that has developed and evolved, into the tools and technologies from pencil to mouse and back to pencil then back

to mouse…might be an agent of transformation in the digital statics that are tending to drive the trends of human experience.

" If one looks at cloud formations, or the pattern made by chance with an ink blot, and finds in them faces, mountains, animals, one creates images which are modelled by unconsciousness mental processes. The created image, a painting, has similar genesis; it is dictated by emotional necessities, thus stemming from unconscious realms."[9]

Ultimately, as designers and educators, we hope that our thinking can influence the quality of not just an architectural space, but of its perception and its context. We hope that spaces can emotionally connect with an audience and transform the visceral experience beyond just the image, but holistically. We should learn to embrace the imperfections, and look for ways to engage and embrace the uniqueness of cities and architectures through time. We can use our imaginations to project and connect the ink dots and rivets through time and use history to question, reexamine, and reposition a transformative context within our world.

[9] Gyorgy Kepes. op.cit.

ARCHITECTURE OF POST-WAR HOSPITALS AS A PART OF CULTURAL HERITAGE OF CONTEMPORARY ŁÓDŹ

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Introduction

In the period 1945-1989, the multidirectional spatial transformation of Łódź was accompanied by the development of hospital facilities, which are an essential part of the architectural and urban heritage of the post-war history of the city. Nowadays, their influence on the formation of Łódź identity seems to remain unrecognized or underestimated. Standards of architectural planning existing at that time do not always correspond with the contemporary idea of beauty, which is connected with the fact that the post-war history of the city was shaped by the communist ideology. However, the post-war hospital architecture in Łódź has become an essential element of the spatial and functional structure of the city, thus contributing to the concept of a magnificent, modern Łódź which has never been fully put into life. They represent a set of cultural, ethical and esthetic standards of their time, the knowledge and acceptance of which may play a key role in the development of the city tradition. In post-war Łódź, whose architectural landscape was not planned to evoke individual delight, the idea of functionalism *pro publico bono* was realized among others through health service facilities. Their presence in the city space reflects subordination of esthetics to the rules of expediency and usability, thus rejecting the model of architecture being a result of the individual needs of its promoters and future users.

This article is an introduction to the analysis of the developing for 70 years social role of the post-war hospital architecture in the context of the city's cultural heritage. The analysis includes selected issues connected with its past and the present perception, depending on the changing cultural and political factors. The Authors provide a synthetic description of the materialistic and non-materialistic elements of the discussed heritage as well as a general assessment of its significance for the city's landscape, which is expected to result in setting priorities and developing potential methods for its protection. The research includes preliminary selection of facilities representative for the studied period and essential for the formation of the identity of Łódź and its citizens.

Development of the social role of the Łódź socialist hospital

In 1945 Łódź required all kinds of facilities, an especially urgent need being the creation of a proper hospital base, which would enable establishing the state health care system for the constantly growing number of inhabitants. At the same time, architecture of medical facilities was part of the socialist propaganda. Populist slogans and postulates representing the imposed political direction seem to have had practical implications for the ideological layer of hospital architecture in the years 1945-1989. The after-war transformations also involved rejecting the tradition of church medical facilities by replacing their staff with secular workers and giving the places new non-religious names. In the late 1940s Łódź hospitals were referred to as social hospitals designated with consecutive numbers and later, according to the ordinance by the National Council of the city of Łódź, they were given the names of patrons.[1] The architecture of health care facilities was to become a symbol of anti-capitalism and egalitarianism. A beautiful modern well-equipped hospital providing medical care for the indigent and hitherto neglected social groups stood in contrast to pre-war poorly- equipped and overcrowded facilities as well as private clinics for the well-off members of the society. Thus, the radical rejection of the pre-war tradition became an indispensable element of forming the ideological layer of the new hospital.

Immediate extension and modernization of Łódź health care facilities was a result of both the real necessity and the socialist propaganda of a welfare state. The visible crisis in this field created an opportunity to emphasize the protective role of the post-war government, which offered modern facilities to a working man hitherto deprived of the protection from the state. This situation was convenient for the communist party, whose propaganda emphasized that: "the condition of health service in Łódź […] is a constantly bleeding wound"[2]. In the slogans concerning the development of the hospital care in the Polish People's Republic, the authorities responded to the hopes and expectations of the citizens. „Through extending the hospital network […] the socialist authorities were trying to make up for the long-lasting negligence in the field of health care for the working class"[3] – they said. The Institute of the Polish Mother's Health Centre in Rzgowska Street – hitherto the last Łódź hospital investment on such a scale – became a unique example in the history of the city. According to some contemporary researchers, the Polish Mother represented an essential element of the Polish propaganda during the martial law, as a symbol of the authorities' respect for the tradition and the family.[4]

The whole period of 1945-1989 was characterized by the trend of building facilities which had a unique structure and shape easily recognizable in the architectural landscape of the city due to their cubature and spatial forms. It can be

[1] Fijałek, J., Indulski J. *Opieka zdrowotna w Łodzi od 1945 roku. Studium organizacyjno-historyczne*. Łódź: Instytut Medycyny Pracy im. prof. dra med. Jerzego Nofera. 1995, pp. 64-65.

[2] Ptasiński, J. *Walka o Łódź socjalistyczną*. Łódź: Wydawnictwo Łódzkiego Komitetu Wyborczego Frontu Narodowego. 1952, pp. 12-14.

[3] *Łódź wczoraj, dziś i jutro*. Łódź: Wydawnictwo Łódzkiego Komitetu Wyborczego Frontu Narodowego. 1952, p. 50.

[4] Kenney P. „Pojęcie «Matki Polki» w języku opozycji i władzy", in: Szarota, T. (eds.), *Komunizm: ideologia, system, ludzie*. Warszawa: NERITON/Instytut Historii PAN. 2001, pp. 338-351.

suspected that the splendor of architecture was dictated not only by the real needs but also by ideology. „Public health care facilities – it was said – are aimed at providing services for the community, which should be reflected in simple and purposeful design forms."[5] The forms were supposed to create a sense of pure scientific objectivity. Thus, Łódź hospitals are characterized by harmonious elevation, rigour and logics, ruling out unnecessary decorations. Modern architecture, as a multi-tool, had a great potential in terms of the hospital function. It enabled a synthesis of constituent parts, their space, construction and function into one inseparable symbolic form.

A socialist hospital as part of Łódź architectural heritage

Looking from the present perspective, it is hard to decide what line of development will be taken by the evolution of the architectural landscape of Łódź, which was started by the transformation processes and changed the character of the city. Due to the fact that the radical transformation of the socialist hospital architecture is going to generate exorbitant costs which will be impossible to cover in the nearest future, it is assumed that the modernization should be conducted in several stages. Therefore, introducing a rational spatial planning system as well as establishing the priorities and forms of protecting the pre-war Łódź architecture from untimely devastation have become an urgent need. The uncontrolled devastation could be caused by inadequate recognition of the role of the discussed period in the development of the city architecture and urban planning among the investors and the local community, whose perception of the city space is based on the traditional images established by the postindustrial style of the city.

„Social attitudes towards historic heritage […] change with time from the full or partial acceptance to a strong desire for its complete elimination."[6] – as emphasized by S. Juchnowicz. Coming to terms with the past often takes a long time. There is an example of the changing attitudes of the inhabitants of Łódź towards the historic heritage created by previous generations. After 1945 the historic value of pre-war factories, tenant houses and palaces was not obvious and the architectural substance of the city was often treated as unwanted legacy, burden and limitation to the spatial development of the city. The indifferent and frequently hostile approach of socialist realism to old architecture did not encourage the acceptance of the 19th century tradition and only as late as at the beginning of the 1960s there appeared opinions suggesting that Łódź architectural heritage could be of great value and significance.

Following the changes in the political system in 1989, the ideas of social egalitarianism were rejected and the city landscape was given a new pre-communist value by e.g. bringing back the pre-war street names or getting rid of material identifiers of the communist ideology. A hostile attitude of the general

[5] Juraszyński J., Nitsch A., Porębowicz S., Radwański Z. *Projektowanie obiektów służby zdrowia*. Warszawa: Arkady. 1973, p. 237.

[6] Juchnowicz S. „Rola dziedzictwa kulturowego w projekcie rewitalizacji i rozwoju Nowej Huty i zdegradowanych terenów otaczających", in: Walczak, B. (ed.), *Rewitalizacja miast poprzemysłowych – rola dziedzictwa kulturowego*. Łódź: PRO-REVITA. 2004, pp. 111-112.

public towards real socialism could account for the common rejection of social modernism in architecture, which was perceived as a part of the system in which it was created. The esthetics of that time identified with a poor version of modernism and general standardization, limiting individualism and creativity, evokes common criticism. This heritage seems to be an unwanted burden which „deserves complete eradication"[7]. Łódź architectural design in the second half of the 20th century still remains under some kind of cultural censorship. Ewa Nekanda-Trepka emphasized a role of the time factor in the perception of the architectural heritage values: „It is claimed that masterpieces of art and architecture in the first period obtain a high level of acceptance, which tends to fall dramatically after a few years."[8]

In contrast to the common depreciation of the post-war achievements, the architectural and urban heritage of the period 1945-1989 is becoming a subject of consideration for many historians and architecture lovers, which could contribute to the popularization of social modernism or, at least, some of its examples described as *low-born*[9] items of the world class. There has been an increasing interest in the work of post-war architects who, due to geopolitical conditions, were pushed to the margin of the world architecture and who, in defiance of the oppressive system, managed to develop solutions, the quality of which was not inferior to that of western architectural achievements. The practical implications of this interest should involve a variety of future initiatives aimed at promoting the architectural value of buildings which fail to be effectively protected against thoughtless devastation.

Local conditioning of the protection of socialist hospital buildings in Łódź

Post-transformation urban phenomena involve encroaching into the unprotected but precious in terms of culture areas of Łódź, the shape of which is a result of the activities that took place in the second half of the 20th century. It should be emphasized that in order to identify the continuity of the social and cultural progress made by the city, it is necessary to preserve the characteristic pieces of its structure having been developed in the past years. In the case of Łódź, a young organism built up almost from scratch in the 20th century, the protection of the post-war elements of the city landscape is of particular importance.

The analysis of the local conditioning in the aspect of shaping the functional and spatial structure of Łódź points to the need of taking care of selected realizations representative for the studied period of the city's structure formation. The analysed collection of facilities includes hospitals which are unique and require individual

[7] Klein L. „Postmodernizm polski: od wielkiej płyty do architektury wczesnej transformacji", in: Klein L. (ed.), *P1. Postmodernizm polski. Architektura i urbanistyka.* Warszawa: Stowarzyszenie 40 000 Malarzy. 2013, p. 24.

[8] Nekanda-Trepka E. „Rejestr zabytków oraz gminna ewidencja zabytków a zbiór potencjalnych dóbr kultury współczesnej – refleksje na temat relacji i zasad ochrony". Seminar: *Dobra kultury współczesnej w stolicy i zasady ich ochrony w polityce przestrzennej m.st. Warszawy oraz ich realizacja w miejscowych planach zagospodarowania przestrzennego*, 13-th June 2005. http://warszawa.sarp.org.pl/php/galeria/dobra/r_trepka.htm, (accessed 10.07.2010).

[9] Springer F. *Źle urodzone. Reportaże o architekturze PRL-u*. Kraków: Karakter. 2012, p. 8.

instructions regarding their protection. These are among others: Maria Konopnicka's University Hospital nr 4 (Fig. 1), Medical University Clinical and Didactic Center (Fig. 2) and Polish Mother's Health Center (Fig. 3).

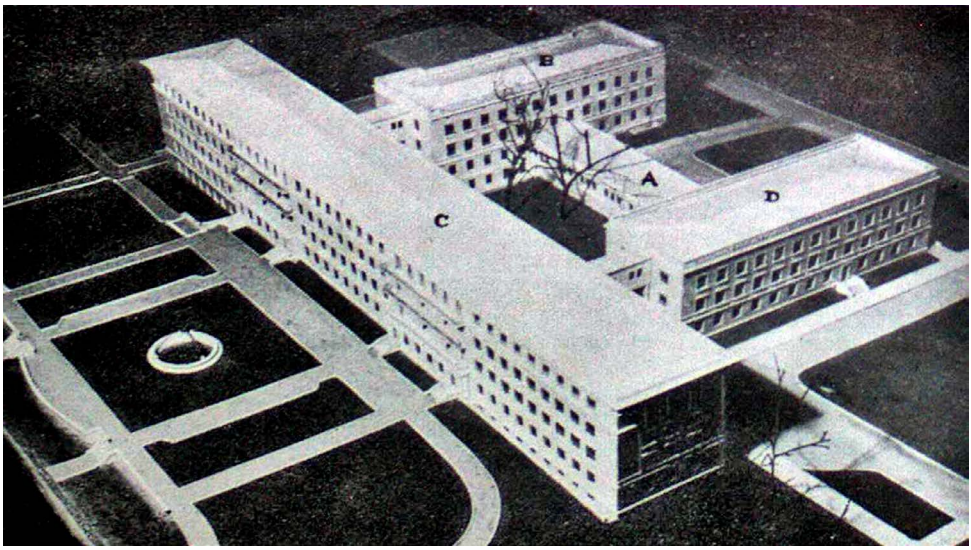

Fig. 1. Maria Konopnicka's University Hospital nr 4 in Łódź, 36/50 Sporna Street. The functional scheme of the hospital. Architects: J.Juraszyński, B.Żelaźnicka, J.Wesołowski
A – reception boxes; B – observation ward; C – bed wards; D – polyclinic.
Source: Juraszyński J. „Children Treatment". Architecture nr 4, 1955, p. 98.

Figure 2. Medical University Clinical and Didactic Center in Łódź, 8/10 Czechosłowacka Street, 251 Pomorska Street. A contemporary view of the north elevation of building A1. Architects: Janusz Wyżnikiewicz, Jerzy Arent, Mieczysław Tomczyk
Source: J. Olenderek, J. Borowczyk.

Fig. 3. Institute – Center for the Polish Mother Health, Łódź, 281/289 Rzgowska Street
A contemporary view of the north-east elevation of the gynaecological-obstetric hospital.
Architect: Janusz Wyżnikiewicz
Source: J. Olenderek, J. Borowczyk.

The sources of the presented below preliminary selection of hospitals to be included in the protection scheme (Tab. 1) were the Authors' comprehensive reviews of post-war facilities, which followed the assessment criteria such as: the role of the facility in the spatial structure of the city and its rank in the processes of shaping the city landscape. As the first selection of the facilities has an open character, it requires further corrections and supplementation. It is necessary to observe the changes in the maintenance state and functioning of the buildings as well as the functional and spatial transformations of the city.

Table 1. List of hospital facilities in Łódź built in 1945-1989 and planned for the protection scheme – preliminary selection

Hospital name and address	Time of origin
Maria Konopnicka's University Hospital nr 4, Medical University, Łódź, 36/50 Sporna Street	1954-1959
Nicolaus Copernicus' Regional Specialist Hospital with an oncologic unit, Łódź, 62/74 Pabianicka Street	1961-1973
Medical University Clinical and Didactic Center; Central Clinical Hospital, Łódź, 8/10 Czechosłowacka Street	1975-82-…
Institute – Center for the Polish Mother Health, Łódź, 281/289 Rzgowska Street	1982-1988
Independent Pubic Health Care Unit of the Ministry of Home Affairs, Łódź, 42 Północna Street	1970-1972

Source: J. Olenderek, J. Borowczyk.

The synthetic assessment of the maintenance state of the presented hospitals performed by the Authors allows concluding that the facilities have been generally preserved in an unchanged form and without any significant alterations to their function. The hospitals have been partly modernized or are still being extended. In some cases their technical condition and functioning point to the necessity for further architectural and conservatory modifications. Due to the level of their degradation being a result of a long-lasting exploitation, some parts of the facilities require fundamental modernization, which would lead to the optimization of their functioning. The mentioned hospitals, as architectural and urban units have preserved their unique character, which has been well-defined in formal and functional terms.

General procedures regarding the ways and forms of protecting the mentioned hospitals include: preserving the authenticity of each unit as well as undertaking all available measures to restore its value. Undoubtedly, in the future it will be recommended to give up fragmentary solutions and turn to holistic and coordinated activities to avoid losing the coherence of the particular components of the facilities. The range of coordination processes should cover not only the hospital building itself but also the surrounding area and its vicinity. It is recommended that the facility and its environment, including the buildings, should constitute a harmonious well-planned entity.

A chance of protecting the cultural value of the Łódź hospital architecture from the period 1945-1989 could be granting the status of the „contemporary culture heritage" to some selected facilities, which could lead to their better promotion in the future and evoke greater interest of the community as well as potential investors on a local, regional and national scale. Thus, prevention debates and research studies aimed at establishing priorities and procedures for protecting the potential „contemporary culture heritage" from thoughtless degradation are of great practical importance. „Is it true that contemporary culture monuments and facilities constitute two separate groups? – asks Ewa Nekanda-Trepka - They rather seem to be two sets that belong to one bigger group which is heritage."[10]

The protection of post-war hospitals, which are characteristic for the city, as potential „contemporary culture heritage" is regulated by statutory duties described in appropriate legal acts and depends on the spatial policy of the local authorities, as well as the recognized value of the facilities and social acceptance. In the opinion of the Author of the paper:

Cultural heritage understood as contemporary culture products is, according to the lawmaker, a kind of heritage which has a material character in a form of buildings – spatial creation of human mind, however, the spiritual – emotional aspect involved both in the act of creation and the social perception or acceptance of the masterpiece by contemporary and, particularly, future generations is equally important in the assessment of its timeless value.[11]

[10] Nekanda-Trepka, E. op. cit.

[11] Olenderek, J. *Polityka ochrony dóbr kultury współczesnej Łodzi. Opracowanie studialno-koncepcyjne. Etap II*. Typescript. Łódź. 2008, p. II.205.

Summary

With the end of the German occupation, when Łódź and the whole country were included in the zone of the communist influence, the city began a process of transformation into a modern metropolis proud of its thriving social, cultural and scientific life. The spatial and functional changes such as building new hospitals permanently shaped the architectural layout of the city. It should be noticed that these transformations led to the improvement of the living conditions and a change in the negative social perception of the „evil city"[12].

After 25 years of the new political system in Poland the heritage of the communist period still remains an unsolved issue. The involvement in unfavorable ideological and psychosocial circumstances makes the process of legitimization of the Polish socialist architecture extremely complicated. There are contradictory opinions concerning the readjustment of facilities from 1945-1989, their quality, artistic value and rank in the city landscape. Elements of the city formed in the post-war period belong to those phenomena of culture and art which generate many doubts and uncertainties. Independently of an affirmative or a critical view on the socialist achievements, in the after-war hospital architecture in Łódź one can find a particularly precious record of the history of design and line of transformations following the requirements of evolving technical knowledge and trends in the Polish architecture of the second half of the 20th century. The post-war architectural heritage of Łódź includes first of all a good quality structure, positively verified by time and meeting many criteria postulated for the post-war legacy.

Nowadays there is a possibility of increasing the cultural and material value as well as the social role of the Łódź hospital facilities of 1945-1989 through proper recognition, preservation and rational exploitation of their architectural advantages. The article presents those of Łódź hospitals which are characteristic and particularly precious with reference to the achievements of the post-war architecture of the city. The results of the research are expected to lead to establishing detailed procedures for the protection of the facilities.

The process of developing and preserving the identity of Łódź largely depends on proper, based on the solid knowledge of the subject, understanding of the specificity of the elements of the city architecture and urban forms. The quality and authenticity of the Łódź spatial structure do not only influence the living conditions of individual citizens but they also decide about the development of the social processes in the city, and thus have an impact on the economic and technological progress. At the same time, the ongoing development of the citizens' society, characterized by high activity and ability of self-organization as well as setting and achieving goals requires raising the awareness of the social needs and the pursuit to satisfy them, also through complex actions aimed at restoring the utilitarian value and exposing the cultural heritage of the city, the attitudes to which

[12] Kaczmarek, R. „Zarys historii miasta", in: Rosset, E. (ed.), *Łódź w latach 1945-1960*. Łódź: Towarzystwo Przyjaciół Łodzi. 1962, p. 3.

are going to evolve in the direction which cannot be predicted at the present time. The future seems to carry a burden of public opposition to the reminiscence of the socialist reality, its modern urban planning and aging architectural styles. However, Łódź post-war hospitals are units and complexes which are well-established in the contemporary city landscape. They have been shaping the city space and building the identity of the citizens for a few generations and have become places with which the inhabitants of the city have been connected through the history of their lives.

PHYSICAL MODELS OF BUILT HERITAGE – MAKING ARCHITECTURE MORE COMPREHENSIVE TO THE BLIND AND VISUALLY IMPAIRED

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Introduction

Historical architecture can relate to an individual through all of the senses, which means that it has multi-sensory dimension. Architecture experiences are the results of perception and experiences are required via sensory systems. Contemporary architecture struggles with a impoverishment of the multisensory qualities, whereas historical buildings generate haptic, gustatory, olfactory, auditory experiences. Cannot be denied that architecture is contingent on visual language and practice, however the haptic sense, or the sense of touch largely contributes to the experience of architecture. Pallasma claims:

> All the senses, including vision, can be regarded as extension of the sense of touch – as specialization of the skin. They defined the interference between the skin and the environment- between opaque interiority of the body and exteriority of the world[1].

Referring to the tactual perception, visual impaired in comparison to sighted visitors have better and more accurate sense of touch, resulting from, among others, greater sensitivity and the ability to differentiate shapes[2].

Historical architecture are often visited by sight impaired and partially sighted people, whose perception of form and space is limited and mainly dependent on their sense of touch. Vision loss is compensated with the other senses and when dealing with the reality cognition it is the touch that dominates. Géza Révész defined this as the 'vicariate of the senses[3], or the quest for a substitute for the senses. Haptic perception entails direct interaction with an object. The perception of architecture is often extremely limited if not impossible due to the size of a building, an ornament position or a top-down prohibition against touching objects. It is impossible to embrace the entire building, touch the detail on a ceiling or learn items not permitted for tactual perception. Mock-ups are considered

[1] Pallasmaa, Juhani. The Eyes of the Skin. Chichester: Wiley-Academy, (1996) 2005, p. 42.

[2] Lai, Hsin-His, Chen, Yu-Cheng. *A study on the blind's sensory ability.* International Journal of Industrial Ergonomice. 36, 2006, pp. 565-570.

[3] Révész, Géza. *Psychology and Art of the Blind*. London: Longmans, Green 1950.

a suitable method to depict architecture and that is why they are increasingly being ordered by various cultural institutions. Museum of the City of Lodz owns a model of the dining room of Poznanski Palace created with the blind and visually impaired in mind.

The touch replaces the sight; the mock-up supports the perception of architecture

The study on the perception of the blind and partially-sighted exploring the dining room and its mock-up showed that the sense of sight may, to some extent, be compensated with enhanced sense of touch when dealing with the architecture. Fingers sense shapes and recognize geometrical relationships. The skin reads the surface texture, the temperature and density of materials. It is believed that the touch is a form of a human control and the ultimate empirical evidence of reality. A doubting Thomas refused to believe without direct personal experience. The touch is the sense that is always considered to relate to the physical, immoral and sexual.

However, the sight differs from the touch in many aspects. The sense of vision is tele- analyzer while the touch is a contact- analyzer. This means that the receptors respond to visual stimuli from objects located at a great distance, whereas touch requires a direct contact. The way of perception is also different. We look at a number of objects or phenomena at the same time (simultaneous impression), by touch we learn step by step (successive impression). Haptics perception is characterized by discovering from general to specific, and the visual the other way, from the specific to the general. It translates into fragmented remembering and creating the whole picture. For example, a blind person gets to know a car through touching door handles, mirrors, trunk, later bumper and then creates the imagine of the entire car. Naturally, in the case of architecture the opportunity to trace the source of information is limited, and it is not possible to embrace the whole building by hands. A fundamental difference is how senses work. Stimuli operate at the sight continuously, in contrast to the touch, which seeks, and then detects the appropriate stimuli. Sensory receptors of sight and touch carry other information. Through vision people get to know the color, light and perspective. The touch informs about the texture and density of objects, however it is difficult to detect the movement understood in a traditional manner.

Meaning of historical architecture to the blind

Historical architecture, as part of the cultural heritage, plays an important role in the development of civilization, having an impact on social identification and tradition. Not only is it a source of knowledge in, among others, historical, social and engineering fields, but it is also a space. A number of historic buildings are often adapted to museums, concert halls, theaters, libraries and other cultural institutions. Being public utility facilities, they must meet legal accessibility standards for people with disabilities, however there are no requirements as to their perception. In order to show the architecture to the blind and partially sighted, the space and the

form are described in the following manner: Braille alphabet, audio description and occasionally through a mock-up. Physical models provide information, whereas the interpretation itself entirely belongs to the recipient, unlike the description which is often subjectively characterized. This article presents the process of creating a mock-up and its application as a proof of the usefulness in improving and providing information about architecture to the blind.

The subject of study – the dining room

The dining room is the most representative room in the palace built in stages from 1898 to 1903 by Israel Kalmanowicz Poznański and his heirs. This manufacturer's residence is one of the largest industrial palaces in Europe. The author of the first draft was Hilary Majewski. Its final form however, similar to the current one, was reconstructed according to the project of Adolf Zeligson in years 1901-1903. The palace is Neo Stylish with some elements of Art Nouveau decoration. All important business meetings, events and decision making processes would take place in the dining room because of its magnificence. Next to the design, the room dimensions are as strongly impressive. The hall is 10 meters wide, 20 meters long and 8 meters high. The interior is represented by a big fire place with a painting of Samuel Hirszenberg hanging above it and vast china closet decorated with allegoric sculptures and semicircular pediment, both integrating with oak-paneled walls. Sculptural decoration in the upper part of the room creates a three-dimensional frieze which surrounds a number of elliptical windows. The sculptures are the size of a man, and the frieze is 3.5 meters high. It surrounds all the walls forming the esthetic culmination of the space of the room. Rich stucco covers the entire surface of the ceiling. In the center of the room there is a large five meter long table with 8 chairs in the Neo-Renaissance style.

The dining room as the most representative space of the Museum of the City of Lodz is frequently visited. Once a month, the museum organizes special guided tours entitled 'Museum on at your fingertips' for the visually impaired visitors. The meetings are attended to by about 30 people on a regular basis in order to visit the hall of mirrors, Poznański cabinet (office), palace garden and the dining room, the latter being considered the most difficult for non-visual perception. The room space is not possible to be fully perceived due to the location of decoration and large dimensions.

The process of making mock-up

"Science (for) Art" project was launched by the Museum of the City of Lodz, which through the efforts of the Department of Dissemination and Education, had received a grant for the purpose in question. It is within the project that, inter alia, the model of the dining room was made. The purpose of the model was to teach visually impaired about proportions, shapes, scale and interdependencies in architecture. It is also a source of knowledge about the decor of the room. The mock-up is now available in the hall for an unlimited period and for all visitors.

Fig. 1. Mock-up in comparison with the interior of the dining room
Source: photo by author.

The model of the dining room was designed within four months in 3dsmax computer program by students. The final mock however lasted 5 months. Students of the second year of Architecture and Urban Planning (two groups - 30 persons) under the leadership of prof. Anetta Kępczyńska-Walczak, modeled the room in a scale of 1:1 with high precision. Previously, students had made an inventory and photographic documentation.

The process of preparing and creating mock-ups was divided into four stages:

- STEP 1: analysis of perception of visually im-|paired basing on visiting the dining room.
- STEP 2: the selection of scale, materials and technology to perform the mock-up.
- STEP 3: prototyping (mock fragments) –in-terpretation of the reality.
- STEP 4: the combination of prototypes and other elements, and the creation of the whole mock-up.

The project, at different stages, was participated in by six blind and partially sighted experts in the age group 27-70 years: 4 men and 2 women from the Foundation for the Blind Chance who participate in 'The museum at your fingertips' meetings on a regular basis. The group had different stages of vision loss. Two men were partially sighted with a limitation to recognizing shapes from a few centimeter distance. The third man was completely blind (congenital blindness) and the fourth one had lost his vision at a certain stage of adolescent life. The two women had also lost their vision at a certain stage of their adolescent life. The direct contact with a group of people with various visual impairments who shared their insights during the tour as well as making the mock-up prototypes provided lots of significant information.

STEP 1: Analysis of perception of visually impaired based on exploring the dining room

The process of creating the mock-up of the hall was preceded by the analysis of the perception of the blind and visually impaired. The impact of historical architecture on human experience proved to be useful and had an impact on the form of the model. While visiting the dining hall, the blind experts said that the historic buildings had multi-sensory dimension and interacted much better with their senses than the majority of contemporary buildings. People, who had lost their vision in childhood and subsequently developed other non-visual senses above average and do not have such abstract view of the world as those with congenital blindness, noticed that non-visual senses had a great impact on the uniqueness of perceiving the space and the form. They appreciated in particular the historic architecture that evoked emotions with the use of simple measures.

Pallasmaa and Rasmussen also stated that historical buildings appealed to all senses and build the tension in one's mind[4]. Strongly stimulating sensory stimuli created an experience that would remain in the visitor's memory for longer. Stimuli usually appeal to particular senses to varying degrees and intensify the sensations. The receptors of sense organs may be activated by the play of light (feeling of warmth), by the relationship between spaces (impact of acoustic wave), by using appropriate forms and finally by applying adequate materials (haptic elements). Materials, which are well applied in the specific context of architecture, have sensual features and are sense-making. Zumthor said that the suitable form and meaning compounds need to be generated in a concrete object[5].

Fig. 2. Exploring the dining room with blind experts
Source: photo by author.

The dining room has been described as sensual. Blind experts were touching wooden wall paneling, which has a different structure and temperature than commonly used plaster. They paid attention to varied raised coffers, which give the character to vertical surfaces. Richly decorated fireplace in the form of faces of four women representing the four seasons, located on each of the pillars of the lower part of the furniture, startled the blind experts and evoked their positive emotions. Carved in wood garlands composed from fruits grapes, pears, apples and pomegranates placed in the wall panels and in rounded corners of china closet were quickly recognized and aroused great

[4] Pallasmaa, Juhani. *The Eyes of the Skin.* Chichester: Wiley-Academy. (1996) 2005. Rasmussen, Steen Eiler. *Experiencing Architecture*. Cambridge, Mass: MIT Press. (1964) 2001.
[5] Zumthor, Peter. *Thinking architecture.* Baselin. (1999) 2010, p. 10.

interest. The decoration was easily perceived tactually because of its clear layout, adequate distance between the fruit and the scale that was close to the actual size. The key aspect in the tactual perception (in the context of information providing) whereas the texture and temperature played crucial role in sensing pleasure from the act of relishing alone.

Contrary to the ornament, the scale and the symmetry of the room were difficult to determine because of the proportions. Distortion of auditory perception, caused by the attenuation of the echo signal through the window curtains, was one of the reasons why people with visual impairments found the examined object vague. Earlier, in the middle of the room there had been a carpet, which would reduce the spreading footstep noise. Items such as furniture can be a helpful addition in the size assessment process, however in the case of the dining room it was a question of one table and chairs. Basing on the table width, the blind experts were able to identify the dining room as a large hall by determining its proportions with number of steps. The amount of windows seemingly simple was often given in inaccurate number. Two pairs of doors placed between evenly spaced windows, fully integrating with the interior, with the same width and decoration as windows, were often not distinguished by the visitors. The fireplace and the dresser would not have been recognized at all by blind experts if it had not been for the tips from a museum guide. The problem is about the aforementioned span. Hall elements are larger than the standard ones and above all, they are difficult to be fully embraced with arms.

The mock-up consisting of three walls (excluding the ceiling) aims to complement the information about the dining room which visitors are not able to notice.

STEP 2: the selection of scale, materials and technology to perform the mock-up

The model was constructed in a scale of 1:25 considering the comfortable model size of 40 cm x 80 cm x 32 cm (height). A smaller scale (1:50) would cause the reduction of details and furthermore simplify the whole design. Too big mock-up, could in turn split the perception into fragments. By reason of the existing scale, the entire object can be easily embraced by hands. The choice of the scale has an influence on the understanding of the room proportions , the sense of symmetry and rhythm as well as on understanding the relationship between the details. At 1:25, the upper frieze made on the Makerbot Replicator 2 printer with working area of 28.5 x 15.3 x 15.5 cm was printed in its entire height, which did not generate any additional joints. That would introduce unnecessary divisions in the model sensed by touch.

The mock-up was divided into two parts in terms of materials, and thus technology. With regard to the dining room space, the bottom part of the model is made of wood and the top one of white PLA plastic. For the purposes of its execution, the top part was composed of 8 fragments / PLA prototypes and the bottom part was divided into 3 wooden walls and a floor with additionally-cut and printed details. You can freely put your hands inside the model and conveniently grasp each element.

The top part was made in Fused Deposition Modeling Spatial 3D printing technology where PLA (poly lactic acid) filament diameter is 1.75 mm.

The potential of 3D printing technology was fully exploited when creating architectural models of historic buildings as they are rich in details. The building of soft shaped forms on a small scale would be very difficult, and its execution time-consuming and would additionally generate high costs. An alternative solution could be wood or clay carving and then mold casting or coating with fiberglass and resin. All these technologies however would delay the process of making so called prototypes which have been extensively modified following the consultations with blind experts. The printed elements in 3D printing technology from PLA plastic can be printed a number of times and successfully improved. They are also more durable as compared to other PLA plastic materials. They can be cleaned and disinfected and therefore they make an ideal material for the tactual perception.

The bottom part is made of birch plywood reflecting the oak paneling. The interior birch plywood class 2/3, 3 mm of thickness, size 1525 mm x1525 mm is the best to succumb to laser cutting. The dimensions of plywood were so large that there was no additional joints. The choice of thickness resulted from the scale of the model and the haptic perception of blind experts.

The laser cutting technology is indispensable in terms of complicated shapes and faux wood finish laminate sizes. It is about introducing energy of high-energy cutting jet. Manual cutting would be laborious and imprecise, even with the wooden elements. Smooth edges without the loss of veneer on the surface and in the core were achieved with the use of laser. It is vital for the comfort and safety of the blind.

STEP 3: prototyping (the mock-up fragments) – interpretation of the reality

The first step was to simplify the computer model and to create the basis prototypes. It was important to modify or eliminate all details that do not contain any valuable information and that cause confusion in the haptic perception. When making the mock-up the clarity of forms and the choice of appropriate size are crucial. Human fingertips are not able to detect some of the details, while the eyes will see even minor differences. In some cases, the form needs to be specially enlarged to emphasize its importance, and sometimes it should be omitted. Taking into consideration the clarity of the tactual perception, the prototypes were repeatedly consulted with blind experts. The main problem was either too intricate or too simplistic message. Some blind experts pointed out the unnecessary depletion of models in order to eliminate interference. People with visual dysfunction found interesting to explore different planes. Discovering forms and relationships of the formerly unknown architectural decoration is a great pleasure in discovering.

According to the guidelines of blind experts various elements of the model of the dining room, which are composed of reoccurring geometric plant and figural motifs, have evolved the strongest. Garlands of leaves and fruit such as: pomegranate, pear, apple and grapes have been simplified to irregular hemispheres and positioned in a manner allowing the fingers to easily distinguish their shapes. In this case, the model is not a projection in full, but only an indication of a detail existence in a particular location. Area designated for the garland was not big enough to present the plant theme meticulously. Referring to the above, a blind

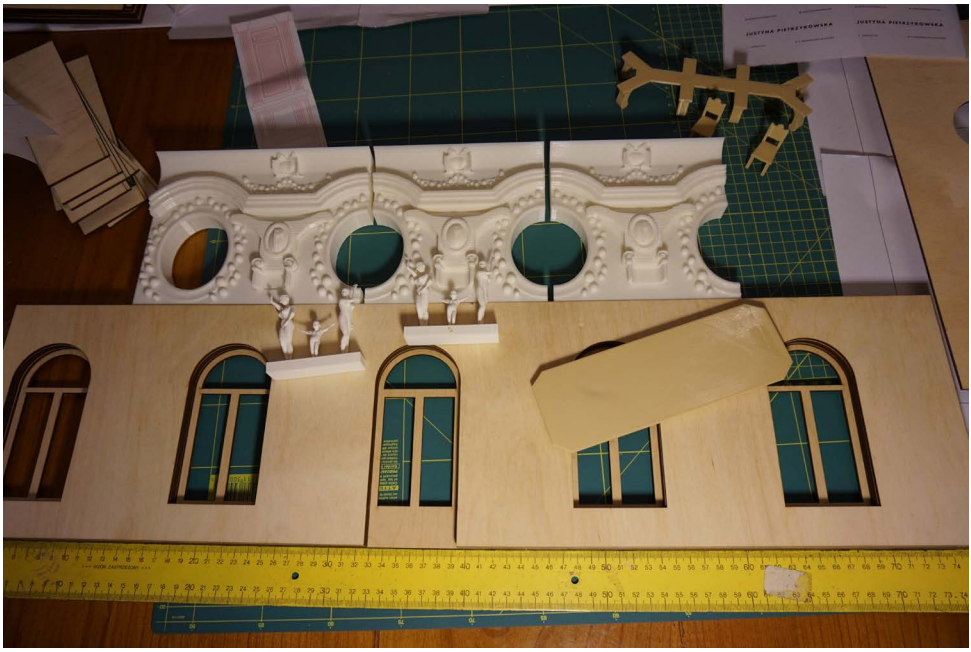

Fig. 3. Prototypes
Source: photo by author.

person is able to approach the real detail in the dining room through the touch. The palace mock-up sits in the hall and can be confronted abreast. Cartouche, which integrates the letter "P" for Poznanski, and is the background for the three allegoric statues, was also highly simplified. Some of the plant motifs and ogee, located by the sculptures of women, were omitted to the benefit of the communication transparency. What has also been reduced is the background scenery, which in the case of visual perception are visible, but obscured by the foreground elements are beyond the reach of touch. Cornice running around the whole space was highlighted to underline the continuity and link of all walls. Components such as oval windows, statues and some cartridges were not transformed or moved.

The bottom part made of birch plates was also consulted with blind experts. The thickness of a wall was obtained by combining 5 layers of plywood of 3 mm thickness. Three plates forming the walls were identical, whereas the fourth one included the division of window and door grilles. The fifth one, being the largest and external, was the support for the top part of the model. The wall coffers, doors leading to the next room and the fireplace were built by connecting properly laser cut wood plates. Changes made to this part of the mock-up were about reducing the coffers and the pilasters. Such elements as fluting were disregarded and the heads of pilasters reduced to a stroke. The form and proportions of the fireplace and doors were not simplified, yet without floral motifs. During the laser cut the laser beam burn off the plywood edges which resulted in their dark colour. The model

Fig. 4. The model 'seen' by the blind
Source: photo by author.

was designed for the blind, but quickly found interest among children and adults, so edges remain unchanged to emphasize three-dimensionality of the mock-up.

STEP 4: the combination of prototypes and other items, and the creation of the entire layout

The last step was to connect all prototypes and walls, and then laying them all out on the floor. In order to help visually impaired people to determine the scale of the model in an intuitive way, elements such as a table with chairs and statues of people were printed off for the purpose.

Conclusion

Is a blind person able to explore the architecture, which is commonly accepted as a form created for the eye? With a skillful combination of different media and basing on a properly created mock-ups the answer would be positive. The dining room mock-up in the Museum of the City of Lodz is an attempt of presenting the interior design to the blind and partially sighted. Through the mock-up the visual impaired can learn the detail of the frieze, which in reality is beyond the sense of touch. The model facilitates understanding of such details as the symmetry of the room, number of windows and the identification of the fireplace.

CITY-PALIMPSEST AND THE DEPTH OF HUMAN IDENTITY

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Introduction

> In that city… I just couldn't see the end to it. End… please… could you please just show me where it ends? […] It wasn't what I saw that stopped me, Max, it was what I couldn't see.[1]

With those words, a character called '1900' is explaining to his friend the reason why he couldn't leave the Virginia liner (his place of identity) and start his new life in the New York City. This picturesque image of the subtle approach to a space-place relationship, shows how important for people's identity is a spatial aspect of their environment – how they need it to be complex and stimulating, but still conceivable and safe.

Additionally, those spaces that people dwell rarely are tabula rasa. They contain past meanings, sometimes totally erased, often transformed or redefined. City is a palimpsest with diverse strata that still affect its growth, even when being hidden or seemingly unreadable. Yet, it is not a particular meaning that forms a heritage of a space. It is its capacity to contain variety of meanings valid for its dwellers and thus to be perceived as a place, and preferably – a good place.

Motive and thesis

In regards to the notion of the spatial heritage and its protection, it is easier to encounter extreme opinions rather than a moderate rational approach. Moreover, those views operate in the shape of paradigms that are very often presumed a priori. Similarly like in the politics, it seems like there is no consensus possible and strongly opposite ideas can simultaneously be very vibrant, despite of being non-falsifiable. What is more, conservatory postulates frequently reflect the current political situation of a country they operate in. This is a **macro scale** aspect of a problem.

[1] The Legend of 1900, director: Giuseppe Tornatore, 1998, in: c.a. 01:42:00-01:43:00.

On the other hand, the idea of identification is a psychological process that is defined in an individual scale and the importance of it in understanding of the concept of the heritage is undeniable. Without this **micro scale**, 'heritage' is merely an instrument of a state and serves to preserve its prevalence. While it is possible to fall for such an approach, authors wish to assume, that there is more to the mentioned phenomenon than only in means of a simple mechanism of control.

In the social sciences it is quite common to see a tremendous gap between macro and micro scales. They are very often regarded in opposition to each other and one is likely to be favoured over another. Hegel and his protagonists would deny the parts and concentrate on the whole, while individualist Stirner would easily reject a god, state, nation, family and morality as a representation of the macro systems which tyrannize a self and, thus, needs to be discarded.

This surprising discontinuity in the political and psychological standpoints seems to be unjustified. It is where the Deleuzian theory of assemblage presents a new ways of understanding the interaction and togetherness of those both perspectives[2] which construct **a spatial heritage of people**.

Process of identification in a micro-scale

To understand what a spatial heritage of people is, first one should investigate how a person attach to a certain spatial system. Without such an attachment, it is impossible to denote heritage as a vital phenomenon. Heritage that no one bond to is a simple propaganda.

Thus, notions of space, place, identity, place attachment, affordances, etc. need to be shortly introduced.

Space | Place in the eyes of a psychologist

Space and place are different notions, according to nomenclature of environmental psychology. Meaning, that a space can become a place under certain circumstances.

Cresswell, referring to Agnew's definition, describes place as "a meaningful site that combines location, locale, and sense of place"[3]. Location means a set of coordinates – a point in space with measurable distances to other locations, it says where the place is. Locale describes material setting of the place – the way it looks. It contains all visible and tangible aspects of the place like buildings, streets, etc. – so basically all of the concerns of architects, urban designers and planners. Finally, the sense of place refers to meanings associated with the place and it consists of feelings and emotions that place evokes. Those meanings can

[2] More about a nonlinear concept of a history can be found in: Manuel De Landa, *A thousand years of nonlinear history*, Swerve editions, New York, 1997.
[3] Cresswell, T. *Place*, Elsevier 2009, p. 1.

be both individual and collective. Therefore the sense of place can arrive either from personal experience or from cultural, religious or other shared significance. It's worth to emphasize that those meanings are not absolute, they depend on personal traits, values, schemas, etc. Same places can bear different meanings for different people. Moreover, those meanings can change for a particular person over time.

Place and identity

In environmental psychology recognition of the concept of a place and the means in which it is a factor in a human identity is relatively young[4]. It dates back to 1960s, but a vivid development occurred in 1980s and later on. Such a fresh discipline is still in the process of foundation and thus is still struggling with ambiguities in nomenclature and the lack of systematization. What adds up to this equation is the fact that there is no unified theory of identity in general. Nevertheless, as it was primarily understood

> ego identity ... is the awareness of ... self-sameness and continuity ... [and] the style of one's individuality [which] coincides with the sameness and continuity of one's meaning for others in the immediate community[5].

However the contemporary definition diverted from the Ericsonian, it is still one of the core concerns of psychological research.

According to the concept of Twigger-Ross and David Uzzella (1996) based of multidimensional theory of identity of Glynis Breakwell (1993), the place can be a part of person's identity when it [1] provides a sense of continuity; [2] helps to distinguish oneself from others [3] is a source of positive self-esteem; [4] builds a sense of self-efficacy and control over a given milieu.[6]

Such a relation with a place comprise of several superposed layers forming a complex phenomenon that is dynamically converted according to the current stage of development of a person. Two aspects should be distinguished: place-identity (emotional factor) and place dependence (instrumental attachment)[7].

Sentimental versus rational

Presented above relation with a place can be seen in two distinctive means: first, can be defined as **a bonding to a place** (connected with a notion place-identity[8]) and is developed as early as in childhood analogically to other traits of identity, often in a very irrational manner. Second is a complex **place attachment**,

[4] A vast introduction to timelines and problematics of a place psychology is provided in: Maria Lewicka, *Psychologia miejsca*, Wydawnictwo naukowe Scholar, Warszawa 2012, pp. 108-114.
[5] Erikson, E.H. *Youth and crisis*. New York, Norton 1968, p. 50.
[6] op cit., p. 111.
[7] Compare with: Shumaker S.A., Taylor R.B. Toward a clarification of people-place relationships: A model of attachment to place. In: Feimer N.R., Geller E.S. (eds.), Environmental psychology: Direction and perspectives (pp. 219-251), New York, Praeger.
[8] One of the precursors of the place-identity theory was H. M. Proshansky who discussed the developmental predicates of an emotional relation with a place as early as in 1980s.

that is a dynamic process, partially conscious, that involve evaluation of particular characteristics of the given space[9].

Hypothesis here is that **place attachment**, that grows in time and is evolving in accordance to the evolution of a personality, can be a rational basis for consideration in a discussion upon heritage protection. Although presumably it is impossible to separate the emotional factor from an instrumental attachment, information that flows from the latter is adequate for evaluation and planning. To understand such a multifaceted mechanism a short exposition of the most current theory is needed.

Components of place attachment

In 2010 Scannell and Gifford proposed very elaborate, tripartite model of place attachment understood as "the binding between individuals and their meaningful environment"[10]. First dimension – **Person** – describes to what extent is the attachment based on individual and collective meanings. Second – Psychological Process – says how are affect, cognition and behavior manifested in the attachment. Last dimension – Place – describes the object of the attachment – nature of the place.

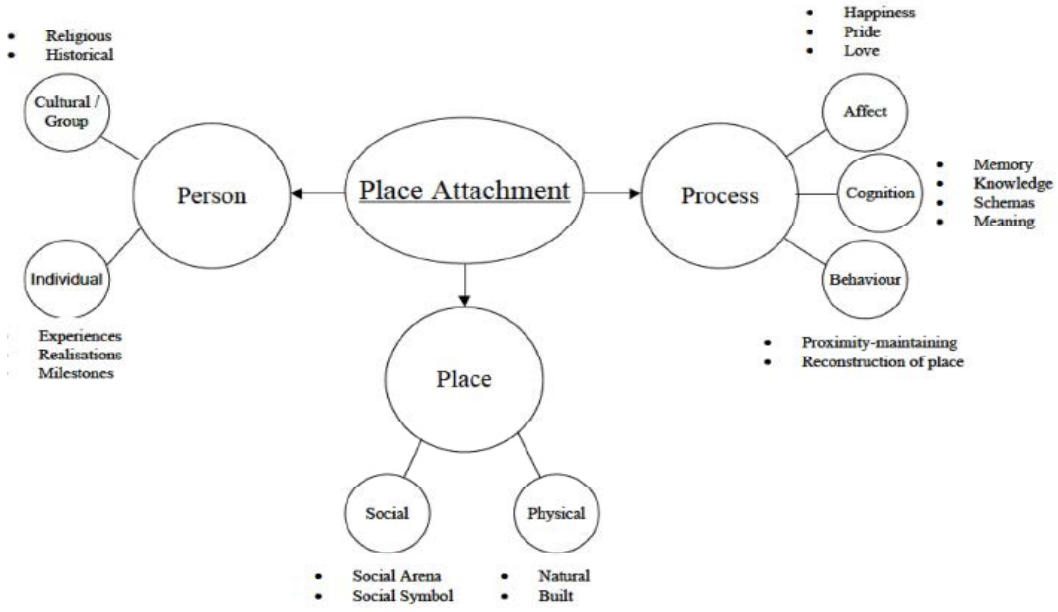

Fig. 1. The tripartite model of place attachment

Source: Scannell, L., Gifford, R., Defining place attachment: A tripartite organizing framework, p. 2 in: Journal of Environmental Psychology 30 (2010), pp. 1-10.

[9] More in: *The Role of Place Identity in the Perception, Understanding, and Design of Built Environments*, edited by Fatima Bernardo, Hernan Casakin, Bentham eBooks. 2012, esp.: Place, Place Identity, and Phenomenology by David Seamon.

[10] Scannell L., Gifford R. Defining place attachment: A tripartite organizing framework, p. 2, in: Journal of Environmental Psychology 30 (2010), p. 1.

The Person dimension pertain to individual and collective meanings attached to places. On individual level, those meanings comes from personal experiences, like realizations, milestones and personal growth. At collective level attachment comes from cultural, religious and historical meanings pf places. Those levels are not entirely independent, they may overlap and intertwine.

The Psychological Process dimension concerns relations and interactions of individuals and groups with significant places. It consist of affective, cognitive and behavioural components.

Affective component describes emotional connection to a particular place. Although relations with places can represent vast array of emotions, both positive and negative, attachment is usually defined in positive terms.

Cognitive aspect of place attachment involves memories, beliefs, meaning and knowledge, which by association, makes places important. Those memories and meanings are a base for creating cognitive schemas of certain types or categories of places. In consequence it's easier to attach to places that are familiar or similar to other places, that were objects of attachment.

Last aspect of psychological processes involved in place attachment is behavioural level, which involves action toward places. Examples of such actions are: maintaining proximity – the need to be close to significant place; reconstruction of place – either rebuilding destroyed places exactly as they were or selecting and transforming new places to be as similar as previous places of attachment (for example when people must relocate).

The third dimension of Scannell and Gifford model – Place – is divided into two levels: social and physical. Social level is similar with Riger and Lavrakas concept of 'bondedness', that consists of social ties, belongingness to the neighbourhood and familiarity with fellow residents. Physical aspect is connected with 'place dependence' and contain those features, that can be perceived as resources to support one's goals.

From presented above framework it is clear to see that if an attachment to a particular place is possible to be formed, there is a strong need to preserve it. Thus, when a place stimulates personal growth and experience in general, it becomes a heritage on a personal level. Moreover, humans tend to protect what they are attached to.

A space, a place and a 'good' place. Psychological standpoint

From what was said before it can be supposed that some places produce a better grounds in the means of resources and some are in this sense detrimental. A comment on what makes a place a 'good' place should be made, providing that we do not understand 'good' in moral terms, but rather as a short expression containing a meaning of being suitable for realization of personal goals.

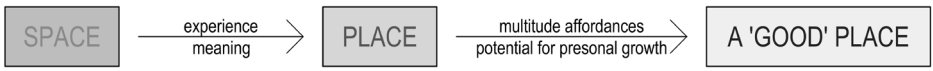

Fig. 2. Space | Place | a 'good' place diagram
Source: Rumież & Kłosiński.

Based on presented before theory of place as location, locale and sense of place, psychologically "good" place should simply evoke positive meanings on an individual scale. Those positive meanings arrives from symbolism adequate to personal values and from potential for personal growth. "Good" place should promote activities that are in line with personal goals and provide resources for their achievement. It should also reflect individual as well as shared values derived from people's identity (national, regional, religious and so on). Therefore "good" place should be relativized to its user, which in Gibson's terms means it should have many 'affordances'. Affordances are defined as "automatically readable invariables of an environment (…), potential ways of using"[11].

Macro-scale perspective

With all that was written about a micro-scale perspective in the means of how people attach to a space through attributing to it a meaning, a reasonable question arises: Are there any objective (physical) properties of a 'good' place? According to what was presented earlier, it should be relativized to its users. How to guarantee that, knowing that the users are so diverse? Is a compromise the only perspective that we have?

'Good' place = "good" space ? Architectural standpoint

Architects organize themselves around the problematics of the quality of space rather than on an idea of place. They struggle to distinguish such parameters of a building or an urban space that would be 'good' – meaning aesthetic or simply beautiful. Nevertheless, architecture is a human-centric domain and for the fact that it is used by people, the meaning that users attach to it (or rather a spectrum of meanings) is naturally in the area of interest of architects.

In a professional perspective space is most frequently understood and analyzed in the parameters derived from Gestalt – the theory of a form which was established by Christian von Ehrenfels in the late XIX century. This approach is particularly vibrant for the sake of its clarity and simplicity. It is disturbingly easy in use, especially in criticism and evaluation. Presumably for those reasons, Gestalt is so deeply rooted in the domain of architecture and urban planning. Till this day, one of the few handbooks available for polish students in architecture and urban planning is *O budowie formy architektonicznej*[12] and *Elementy kompozycji urbanistycznej*[13], both based mainly on the mentioned theory. In such an approach an architectural/urban composition is a more or less linear activity that falls under the fixed set of principles. A mastery

[11] after: Lewicka M. Psychologia miejsca, Wydawnictwo Naukowe Scholar, Warszawa 2012, p. 34.

[12] Żórawski J. *O budowie formy architektonicznej*, Warszawa 1973 (1961) is one of the first adaptation of Gestalt into architectural domain. It was written long before the resonant book of Rob Krier, *Architectural composition*, 1988, which is based on similar understanding of the theory of form.

[13] Wejhert K. *Elementy kompozycji urbanistycznej*, Arkady, 2008 (1974) is a theory derived from a key handbook in planning that was written by Kevin Lynch, *The Image of the City*. Cambridge MA: MIT Press, 1960, which, as above, is based on similar understanding of the theory of form.

in manoeuvring with those rules provides for a production of a 'good' space and thus, presumably, should induce attachment of meanings. As a consequence a place (assumed to be a 'good' place) is created.

Another possible approach lately introduced into urban design (but very rarely in architectural design though) is a **participatory** strategy. It appears in contemporary revitalization projects and, even more so, in spatial reconstruction plans.[14] One of the tools designed for such occasions are gaming simulations.[15] An idea behind it is to exercise possible spatial solutions with a participation of different parties: residents, governors, architects, planners, etc. All them are involved in a joint event or rather series of events leading to development of a structural plan. It is sometimes held in a virtual reality, expanding the range of people involved and the number of possible interventions. "Gaming simulation provides an interactive and efficient type of communication"[16]. Here, we encounter a strategy that is evolutionary, in which an ongoing evaluation factor is a main constituent. In such an approach a form is not constructed according to the set of principles (at least not explicitly) but as a particular answer to the concrete needs and affections of an assemblage of people.

The reasonable question is whether forms that are a product of those strategies differ from one another. It is worth to speculate which approach leads up to a space that is prone to be encoded with a meaning, which is to say: **to become a place**.

As the latter scheme naturally seems more adequate, simply because it is based on a particular assemblage of people that are actively involved in a production of spatial solutions, the former present itself as more conscious and structural. It is very unlikely that such a theory is a misleading concept, especially because, ignoring individual differences, we are constructed in a quite similar way regarding emotions, affections, motivations, goals and, the most importantly, perception. Criticism applied here to Gestalt is concentrated on widening the denotation of its categories.

Topological approach to physical space

Topology examines geometrical objects[17] in a more abstract way. It deals with certain properties of those objects – the ones that remain the same after applying to them homeomorphic transformations (such as stretching and bending)[18]. Generally,

[14] Compare with the works of Paula Rizzi, an Italian urban professor, co-organizer of *International Workshop The Future of the Past Design for Disaster Mitigation of Urban Cultural Heritage* [annual meeting, years 2008-2012].

[15] More on gaming simulations can be found in a canonic book: Duke R.D., *Gaming: The Future's Language*, Sage Publications, New York, 1974, or more recently, in: Klabbers J., *The Magic Circle*, Sense Publishers, Amsterdam 2006.

[16] Rizzi P. *Slang, language or metalanguage? On the fleetingness of words,* in: Defining the architectural Space. Durability and fleetingness of architecture, Technical Transactions, Wydawnictwo PK, Kraków 2011.

[17] When we say "geometrical" in such a context it is crucial to remember that it does not in general mean "of a metric space" or "Euclidean". As a matter of fact, those spaces are exceptional. It is more likely to encounter different geometries.

[18] There are numerous handbooks on topology. Inter alia, it is worth to browse: Kuratowski K., "Wstęp do teorii mnogości i topologii", Warszawa 1965. Another brilliant propaedeutics can be found, in: Burry J., Burry M., *The new mathematics of architecture*, Thames & Hudson, 2010.

it is impossible to categorize all topological objects, but when we guarantee that an item is "good enough"[19], we can assume more about it. It will "behave" in a more regular way.

Therefore, those limitations that are put on geometrical objects are: **continuousness** (as the most basic), a fact of being in a **connected** space, **compact** space, **complete** space, **separable** space, uniformly **convergent** sequences, **dense** set, etc[20]. Those notions resemble intuition that is behind theories of a "good" orderly physical space. The difference is that with such an approach they do not denote any particular shape. It is more connected with the organization of a set than with a properties of its elements (that consist of a physical object).

Mentioned above aspects of a space in topology guarantee our ability to speculate about it. It is, in other words, **conceivable** and, what is more important, more **predictable**. Such a regularity is definitely beneficial from a perspective of a state. Determinate means controllable – and that enables governing and power of inducing desired values and behaviours.

But do we need predictability? Is the city a place that should work as a well set machine? Where the safe zone ends and the boredom begins? **And when we are bored, can we really attach to places?** Is there a place (sic!) for an accidental, indeterminate, surprising and confusing in a contemporary city? Do we accept those traits as components of heritage (our heritage)?

On the other hand, spaces with a total entropy is not a place for humans. We are highly organised organisms with a plenitude of fixed processes. When it comes to development of spatial heritage (and its protection), manoeuvring on a stimuli-boredom slide rule seems crucial for identification with it.

Fig. 3. Safe zone | boredom
Source: Rumież & Kłosiński

Collective genius loci

Proposition here is that place attachment is a high-register occurrence that might be seen as a micro scale compartment of an overall distinctive and classifiable spirit of a place. It is where the notion of genius loci, which is often seen as objective, fixed and independent personification of a given space, is transformed into an **assemblage of subjective perceptual processes of individuals.**

It is crucial to point out that spatial consistency cannot be achieved by resorting to the primary (developmental) stage of a place-identity (bonding to a place that is settled as early as in childhood), which is most commonly irrational

[19] Using a mathematical slang. Meaning, it has additional fixed properties.
[20] All of those notions denote strict characteristic of a space in which an object is embedded. For more information about particular definitions, see above handbooks.

and sentimental. The only way to preserve a possibility to identify in those means is to protect everything that was built in the past, because the past is where those processes took place and were fixed.

In contrary to such a perspective, place attachment, which evolves in time and uses an evaluation processes, opens up a new way of thinking about heritage and the grounds on which it should be developed (also protected to some extent). In those means, spatial continuity can be achieved by protection of analyzable aspects of the place that forms this high-level phenomenon of identity, this so called **collective genius loci** that makes one place distinctive from another and that can be the source of individual positive self-esteem and self-efficacy.

City-palimpsest: togetherness and interactions. Summary

Another aspect that has been relatively recently added to an equation is the phenomenon of intensified mobility or at least the new means in which people in the XXI century can be dwellers. Individuals, contemporarily can identify with meta-places, occupying several different locations on a regular basis, existing in an extended space of reality and virtuality. That, surely, is transforming conditions of a place attachment and for this reason a person of an architect as well.

Proposed above "nomadic" schizophrenia, to follow the Deleuzian nomenclature, has a potential to help in distinguishing those aspects of place attachment that are rid of (or at least not limited to) sentimental aspects. It can help to analyze that **collective genius loci** composed of individual processes of identification with a place, that is perceived on the more objective means by those "«nomads», that possess multi-identities, who has lost his/her fixed identity"[21].

For such a dweller especially, city is not a linearly developed history of endings and beginnings (governed by the state), but a **palimpsest**, where all the strata – the new and the old, built and unbuilt, existing or demolished – coexist under the superior "rule" of its nonlinear dynamics of a constant matter-energy flow. Moreover, human identification standpoint and a city-palimpsest governed by some sort of state are the two strata of a constantly evolving and re-defining system which is recognized as **a spatial heritage of people.** Such a system is understood as an ongoing process of falling from periods of stable states into equally important times of bifurcations (transitions). It is the richness of such a process that enables personal attachment to the place, and thus the validity of a particular heritage.

[21] Erdem Ceylan. Palimpsest, Not Tabula Rasa: Thinking a Nonlinear History of Architecture, in: Creativity, autonomy, function, ARCHTHEO'13 Conference Proceedings, edited by Efe Duyan, Neslihan Catak, p. 365.

ARCHITECTURAL MEANS OF EXPRESSION IN THE CREATION OF CONTEMPORARY HERITAGE INTERPRETATION CENTRES AND THEIR ROLE IN ENVISIONING HERITAGE. EXAMPLES FROM SOUTH AFRICA

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Introduction

The changes taking place in the modern world also have an influence on the manner and form of protection of cultural heritage. The evolution of the concept of protection of cultural heritage lies in the fact that its meaning has become much wider. Anetta Kępczyńska-Walczak synthesised that heritage is a part of the present and serves contemporary purposes and it is "not all what past generations have left us as an artistic and cultural heritage, but what we want to accept as ours out of it". Heritage is not an object, but a message included in it, directed to the people and its authenticity is associated with feelings of recipients. It plays also an important role in self-determination of the community[1]. The result of this evolution includes the creation of Heritage Interpretation Centres (HIC):

> Heritage Interpretation Centres are specially created facilities for evaluation of the cultural and/or natural heritage of a given area and its transformation into an educational, cultural or tourism product. They provide visitors with an insight into a natural park, a specific territory or an event on the basis of a message highlighting what makes it especially unique. Unlike museums, they do not fundamentally aim to collect, preserve and study objects (although they may indeed do this). Instead their essential purpose is to facilitate public appreciation of the value of the specific cultural or natural heritage features, by raising public awareness and providing education. The main presentation strategy tends to be the scenographic exhibition, with technical and audiovisual support to aid and stimulate the discovery process[2].

[1] Kępczyńska-Walczak A. „Przeszłość architektury wobec ewolucji koncepcji ochrony dziedzictwa kulturowego, zmian społecznych oraz współczesnych problemów historycznych środowiska zurbanizowanego", in: Przesmycka, Trocka (eds.), *Architektura Przyszłości.* Wrocław: Wydział Architektury. Politechnika Wrocławska. 2014, pp. 99-112.

[2] Izquierdo Tugas, Pere; Juan Tresserras, Jordi et al. *Heritage Interpretation Centres. The Hicira Book.* Barcelona: Deputacio Barcelona. 2005, p. 41.

HICs apply to a present definition of architecture as the process by which the organisation of activities in space and time is defined and architecture as combined relationships and actions-reactions-in(for) reality in positive synergy with the environment. According to the definition "to relate" is interpreted as to explore and "to propose" as to imagine[3]. A heritage through a process can also be explored in the contemporary architectural spaces of HICs via architectural and non-architectural means of expression and become a part of the present. In this context architectural means of expression in the creation of contemporary HICs and their role played in heritage envisioning are the subject of the field studies based on examples from South Africa. The research was carried out in a culturally different environment from the European one, which enabled the author to discover other architectural solutions in this matter.

African cultural context

Depending on the location and the type of heritage, each Heritage Interpretation Centre may have its own specific features. Among the factors influencing each HIC, the cultural aspect may have a particular impact on their architecture. In order to understand HICs in a broader cultural perspective, it is worth mentioning some issues shaping the heritage of South Africa:

1. There are three main sources of historical knowledge of Africa: archaeology, palaeontology and oral sources. African heritage refers to the oral society that has relied on word of mouth for its preservation and dissemination and its culture is a communal creation, owned by everyone (e.g. storytelling)[4].
2. Mixing of uses was the norm in indigenous design. The focus was on human and walking scale tradition of indigenous urban forms (narrow, winding roads separating blocks of buildings)[5].
3. African system of perception is different from Western European one. The interconnectivity of beings and environments is the crucial element of it[6].
4. Heritage, reconciliation and nation-building makes South Africa's current politics of memory[7] of present multicultural Post-Apartheid society.

[3] Gausa, Manuel, Guallart, Vincent et al. *The Metapolis Dictionary of Advanced Architecture.* Barcelona: ACTAR. 2003.

[4] Strauss, André. "Namibian culture – unity, diversity and tolerance", in: http://www.nied.edu.na/publications/journals/journal13/Journal%2013%20Article%201.pdf (accessed 20.02.2015).

[5] Asomani-Boateng R. "Borrowing from the past to sustain the present and the future: indigenous African urban forms, architecture, and sustinable urban development in contemporary Africa". *Journal of Urbanism*. Vol. 4: 3, 2011, pp. 239-262.

[6] Kądziela M., Rynkowska-Sachse A. "Re-*discovering* the *African philosophy* of the *architecture through* the *other/other's lens*. European-based *considerations"*, in: Osman, Bruyns, Aigbavboa (eds.), *UIA 2014 Durban Congress Proceedings. Durban:* UIA 2014 Durban. 2014, pp. 552-563.

[7] Marschall, Sabine. *Landscape of Memory: Commemorative Monuments, Memorials and Public Statuary in Post-Apartheid South Africa.* Amsterdam: ASC Series. 2009, p. 4.

Case Studies

The field studies on HICs are illustrated by three examples from South Africa. These are: Mapungubwe Interpretation Centre – a museum situated in a cultural heritage site and natural landscape, Alexandra Interpretation Centre – a community and cultural centre in a poor district of Johannesburg next to Mandela's Yard and Freedom Park//hapo Museum – a museum and landscape architecture. The analysis and the personal experience allowed the author to learn the basis of the design process in reference to each heritage site. It was assessed, by means of which architectural and non-architctural factors, the message about the heritage was transmitted or how it was stimulated to be experienced by visitors. The HICs were also analysed in terms of a role played by the architectural means in promoting a heritage and in self-determination of a community.

Mapungubwe Interpretation Centre

Mapungubwe Interpretation Centre (MIC) (Fig. 1), designed to protect UNESCO World Heritage Site, is situated at the confluence of the Limpopo and Sashi rivers in the northern part of South Africa, at Mapungubwe National Park. The archeological site is thought to have been one of the major towns in 10th-13th centuries AD, which played an important role in the Indian Ocean trade in Southern Africa[8]. MIC was designed by Peter Rich who won a competition organised by South African National Parks in 2005. It was decided that a building should be set on a plot away from the archeological site and that artefacts needed to be displayed in a museum in order to educate and inform visitors of the area's heritage[9]. It looks like a series of triangle surfaces structuring the landscape which are designed around an axis linking the entrance and the archeological site. The design was inspired by the rocky landscape, artefacts from excavations (a triangle in local Venda culture), a khotla (a traditional structure – the idea of meeting under the tree)[10] and by a form of the route-makers found in South African cultures. The analysis of the site and the way it is structured informed the architect how to incorporate the museum's program and make use of the surrounding as a source of materials for construction.

As a result envisioning of this heritage is stimulated by different architectural means. There is a system of various stairs, terraces, elevated bridges offering a view of the original landscape the ancestors saw for ages. One can experience the sense of interconnectivity of the spaces inside the complex by the informal flow of outside spaces and landscape elements between them. The human-walking scale, the winding routes and the form of cave make this structure resemble the indigenious ones. The play of light and shadow highlight only the most important artefacts inside (Golden Rhino).

[8] *Zamani Project. Cultural Heritage Sites in Africa. Digital Collection of African Cultural Heritage Sites and Landscape Database.* Cape Town: University of Cape Town. 2014.
[9] Fagan G. "Mapungubwe Interpretation Centre". *Architectural Review*. No. 1356. 2010, p. 040.
[10] ibidem, p. 046.

Fig. 1.The Mapungubwe Interpretation Centre
Source: Anna Rynkowska-Sachse.

The structure of the building thanks to its cladding and form, merges naturally into the rocky hill, is linked visually to the archeological site and serves as a look-out point over the site and the Limpopo River. As a result the visitors today can experience the heritage site and its silence as it was 700 years ago.

The message about the heritage was also transsmitted through non-architectural means. The tourists are offered game viewing, night drives, guided walks, collection of rock art in the park, accommodation in boats and lodges, Bird Hide, rivers confluence look-out points or resting at a designated picnic place (braai) that all enable them to experience the heritage site as it was a long time ago[11]. The local community learned about the heritage site by being employed at MIC construction site. They were trained in the manufacture of stabilized earth tiles, which informed them of the abilities of natural materials used by ancestors who developed their culture in symbiosis with nature. MIC, awarded as the Building of the Year 2009 in World Architectural Festival in Barcelona, helps to raise awarness of the vulnerability of the local ecology and the importance of its preservation as world heritage site[12].

[11] *Mapungubwe National Park.UNESCO World Heritage Site. World Heritage Landscape.* South African National Parks. 2013.
[12] Fagan, G. op. cit., p. 041.

Fig. 2. Alexandra Interpretation Centre
Source: Anna Rynkowska-Sachse.

Alexandra Interpretation Centre

Alexandra Interpretation Centre (AIC) (Fig. 2) is located in the heart of historical township Alexandra, one of the poorest urban communities inhabited by black people in Johannesburg. It is situated at the street intersection and opposite a historical site – Mandela's Yard – a house that Nelson Mandela rented in the forties at the beginning of his stay in Johannesburg. The objective of the Centre was to draw attention to a place of the national heritage. Today, AIC is a cultural centre housing exhibitions, ideas and events that shaped Alexandra community, and resource archive documenting oral history and heritage. It is also community space for re-discovering the common heritage today. AIC was designed by Peter Rich. The architect consulted organizations working for dissemination of knowledge about Mandela's Yard and the local community in order to meet their expectations. He carried out cultural studies to learn about the local community and their spaces (style of life, the scale of space, yard and street structure) and as a result he could design a building that would be legible enough for local people to identify with. Today, the architecture of AIC allows the users to discover not only the heritage site but the heritage of the peoples of Alexandra as well. Firstly, the heritage is envisioned by merging of the building space with the space of pedestrian traffic obtained by its structure (a bridge suspended over the road) and by views of the township and Mandela's Yard through small windows and from a terrace. The visitors look at the conditions in which people live, street life, Mandela's Yard, a street grid

erected in apartheid. The visual connection between AIC and the sourrounding is obtained by spacial progression starting down the main street, proceeding along, passing through the ramp as an extension of the pavement, entering building and zig-zaging on a rough floor through an exhibition. The heritage of the community is stimulated by mixing of uses which was the norm in indigenous design. Therefore AIC's program consists of a shop, a bar, a restaurant, a jazz music archive to honor musicians who came from Alexandra, an exhibition and story-telling space, two open squares outside for formal (social, political events, film screenings, community notice boards) and informal meetings and activities (cutting hair, birthday parties, playing football or observing street life). Unfortunately, AIC doesn't function as it was planned, so its program is in a process of improvement (a built-in concrete seating allowing easy "socialising space" is one of its new elements)[13]. The heritage also plays an important role in forming the local community which is achieved by the open-structure of AIC resembling the neighbouring houses. It means it is prepared for possible future changes, considers the lack of funds, implements materials (multi-coloured transparent corrugated polycarbonate panels) reminescent of the ones from the surrounding by reference to the corrugated steel roofs. The building is legible in the space, not dominating the district. In this context the architecture of AIC promoted Alexandra and starts to create common grounds for the communities located around to continue their common heritage today. AIC is an example of a museum as a process, which was awarded for its architectural innovation. The heritage was envisioned also by non-architectural means. Highlighting Mandela's Yard attracted tourists[14] and contributed to re-discovering Alexandra's heritage. The local community was stimulated to get involved in the process of creating a common space of a new quality and to discover their common heritage which is being together and building together. It was achieved by taking part in the construction proccess by suppling and guarding the materials, decorating windows by local artists and children, creating the story telling friendly environment, giving the management to the locals to learn managerial skills they were deprived of in apartheid.

Freedom Park

The complex Freedom Park//hapo Museum (Fig. 3) is situated on a 52-hectare site in a nature reserve on a prominent hill Salvokop overlooking Pretoria. It consists of //hapo Museum as a 'living' Interpretative Centre, and the seperate elements emerged in the landscape linked with a spiral path terminating at the top of the hill. The complex is dedicated to reconciliation between peoples of South Africa through the use of history (geological, pre-colonial, colonial, Apartheid and post-Apartheid), culture and spirituality guiding the architectural and landscape interventions.

[13] An interview 29th July 2014 with Rogan Rich from Peter Rich Architects.

[14] Tourism is promoted by training the local tour guides, orienting local business to tourism market, supporting B&B establishments for tourists, organising exhibitions and meetings on art, culture and Alexandra's heritage, a heritage tour walk providing a secure corridor through Alex. Nieftagodien, Noor. "Public history in Alexandra", in: Silverman, R. (ed.), *Museum as process. Translating Local and Global knowledges.* New York, Routledge. 2014, p. 175.

Fig. 3. Freedom Park
Source: Anna Rynkowska-Sachse.

//hapo Museum was designed by GAPP Architects/Urban Designers, Mashabane Rose Associates and MMA Architects from Johannesburg. It is worth mentioning that "The Design Brief for International Architectural Competition" completed in 2003, but not contracted was an important input into the final design concept. It refered to indigenous African knowledge and culture, the structure concerning the nature of site, cultural sense of place, coherence with the surrounding, Spiral Pathway as a connector of ideas terminating at the top of the hill and a living museum as an active place recording national history, all of which were expressed in innovative architectural ways. It is worth recalling that another design concept by Marquart Architecten with Polish architects Monika and Michał Bernaciak was awarded with distinction at the competition in 2002[15]. The consultation process and workshops with various stake holders and communities conducted throughout the country were an important source of information for GAPP architects. In the final design concept the heritage was envisioned by the idea to link all the elements by a spiral path, Mveledzo „to experience our history, to walk where our ancestors

[15] The main idea was to discover the heritige by passing through a huge wall that cuts the hill and defines the existing conflict in SA. The Wall is a physical barrier between black and white citizens. The park's design is based on an idea of a journey to the top while experiencing natural environment and going through the elements placed in the Wall. Finally, the walk stops on the top of the hill at the meeting point – the connection between two divided sides of the hill: white and black people, *Description of the Design by Marquart Architecten* received by courtesy of Marquart Architecten, 03.2014.

have walked and to learn about our shared heritage as brothers and sisters"[16]. The path as a process guides the multicultural nation on a healing route through ongoing dialogues and interpretation. //hapo Museum, located at the foot of the hill, forms the primary entrance to Freedom Park and the start of the pathway into it. It was designed to blend into the landscape, as a series of abstract 'boulders', with story-telling spaces resembling the ones on the hill. Its interior and exterior surfaces are copper-cladded, which will fade and merge with the natural landscape. Each of the seven epoche is depicted in a seperate boulder dating back some 3.6 billion years to the present-day and the visitors experience them in layers. The spacial progression through the museum is like a movement through a cave-like spaces with natural light used to dramatize its forms[17]. The play of light and darkness are used to convey the narrative of the physical, social and belief-system evolution in this part of the world. The exhibitions are structured around social spaces that allow live interpretation, performance, storytelling, including a selection of cultural and historical objects that can be handled, discussed and used in practice. The idea of 'boulders' and 'cave' (that is what the typical African landscape is all about) gives form to traditional idea of healing and indigenous knowledge systems. The message about the heritage is discovered outside the museum in along the Mveledzo path. The visitors are taken on a contemplative journey in the natural landscape between the elements derived from African tradition and culture: Isivane as a sacred space, S'khumbuto as the main memorial and Moshate a high-level hospitality suite, Uitspanplek as a resting place, Tiva as a water point – a sign of leaving the sacred area[18]. The architecture of Freedom Park promotes the heritage site visually as a result of its location (strengthened by a ring of steel "reeds" up to 30 m high) and internationally thanks to the Award of Merit and the Award for Excellence announced by South African Institute of Architects (SAIA) during the International Congress of Architects (UIA) held in Durban in 2014. In daily life, the stimulation of envisioning the heritage is obtained by guided walks and by cultural events (the first ever Storytelling Festival), national events, debates transmitted to the local, national and international audience.

Summary

The analysis and the personal experience allowed the author to understand the basis of the design, architectural and non-architectural solutions in the heritage envisioning and to perceive HICs in a broader cultural perspective other than the European one. The analysis showed that a heritage can stimulate exploration of a heritage embodied in contemporary architecture and its discovery by the local community. It was obtained by creation of the space for events evoking interest in

[16] *Freedom Park. A heritage destination*. Johannesburg: An agency of the Department of Arts and Culture. 2014.

[17] http://www.archdaily.com/297713/freedom-park-phase-2-gapp-mashabane-rose-architects-mma/ (accessed: 20.02.2015).

[18] *Freedom Park. A heritage destination*…

a heritage (e.g. story-telling, performances) and by involving the local community in the construction process (natural materials used by ancestors, being together and building together). Highlighting a heritage can also help to re-discover landscape and ecology as a common heritage to be preserved, which is derived from African system of perception (interconnectivity of beings and environments). The analysis showed that South African perception of a heritage begins from geological processes that shaped the Earth and thus, the idea of 'cave' is ofen used to stimulate the discovery of the past. Finally, a heritage can be promoted by outstanding architecture of HIC, which becomes a source of pride and prestige to the national and international audience providing added-value to a heritage site.

Conclusions

Firstly, each Heritage Interpretation Centre interprets the heritage as a process which is in line with the new definition of architecture also being a process. In reference to architecture HIC can be a process of discovery by architectural means of expression and use of what has been discovered in the present. Secondly, if a heritage is not an object but a message included in it, directed to the people and its authenticity is associated with feelings of recipients[19], it should take into account each visitor's system of perception. In this case the author, as an European is not prepared cognitively for understanding African system of perception[20], so the analysis led only to a conclusion that a heritage envisioning, especially in HICs, must be considered in reference to various systems of perception at different levels – local, national and international. Finally, the author can assume that the role played by architectural means of expression in a heritage envisioning in HICs among others is to help stimulate exploration, experience and imagination process of the heritage, which is achieved differently in various cultural environments.

[19] Krępczyńska-Walczak A. pp. 99-112.
[20] Kądziela M. p. 559.

CAN PRESERVATION BRING BACK THE GENIUS LOCI? CREATING A JEWISH PLACE IN A TOWN WITH NO JEWS

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Introduction

The Jewish Suburbia, a historic urban complex outside the old city walls of Bardejov, Slovakia, was a place with a distinct character. This large, self-contained compound that was first developed in the early nineteenth century includes an Old Synagogue, a congregational study/prayer hall (*Beit HaMidrash*), and a ritual bathhouse (*Mikvah*). The Suburbia served as the spiritual and social center of Bardejov Jewish life well into the twentieth century when Bardejov was home to a vibrant Jewish community, comprising approximately one-third of the town's total population of 10,000[1].

With the mass deportation of Bardejov Jews to death camps in 1942, during WWII, the Suburbia was deserted. Only ten percent of the Bardejov Jewish population survived the Holocaust[2]. The handful of Jews that remained in Bardejov after 1949 did not use the Suburbia and its ritual buildings. The community was too small and unable to maintain the structures and so the Suburbia slowly fell into despair. It was later used as a commercial warehouse and storage facility for a large building supply company. Today, survivors and descendants of Bardejov live all around the world, but there are no Jews residing in Bardejov. The people, who gave this place its *Genius loci,* are no more.

In 2000, the Jewish Suburbia – together with the historic center of Bardejov – was included in UNESCO's[3] World Heritage List based on "its tremendous historical, architectural and urbanistic value"[4]. The historic town center, which was already declared a Town Reservation in the 1950s[5], continues to be a lively

[1] Fish, Emil A. (ed.). T*he Memorial Book of Jewish Bardejov, Slovakia: Dedicated to its People, History, and Legacy.* Pasadena, California: The Bardejov Jewish Preservation Committee. 2014.
Hudák, Peter. *K osudom bardejovskej židovskej komunity v rokoch 1918–1989* [The fate of Bardejov's Jewish Community, 1918-1989]. Ph.D. Dissertation: Constantine the Philosopher University, Nitra. 2013.

[2] ibidem. While some of the survivors returned to Bardejov after the war in 1945, most of them left by 1949 with the beginning of communist regime. The majority immigrated to Israel and the USA.

[3] The United Nations Educational, Scientific and Cultural Organization

[4] *Slovakia in the UNESCO Treasury.* © RAX,s.r.o., 2005: 106.

[5] ibidem.

urban center and the location of the city hall. However, the Jewish Suburbia, despite UNESCO's recognition, is still used as a warehouse and storage facility. Recent efforts by local organizations and individuals and by survivors living abroad seek to restore the Jewish Suburbia so that it will serve as a cultural heritage site. Yet preserving the past and communicating Jewish heritage is complex and problematic, because the reasons for the abandoned architectural and urban sites in Central-Eastern Europe are the atrocities of the holocaust and involve the memory of the victims.

The question that this paper tries to address is whether architectural preservation can bring back the historic cultural meaning – the spirit of place – and reinstate the representation of heritage sites in the urban landscape, without the people who occupied it – those who produced the *genius loci*.

Jewish Heritage in Slovakia

Most of the synagogues, Jewish communal buildings, and Jewish cemeteries in Central-Eastern Europe were razed by the Nazis as part of their agenda to annihilate the Jews. Yet hundreds of Jewish communal properties abandoned, empty or misused remained in the region. In Slovakia, most of the Jewish historic sites were handed over to the state authorities in the 1950s as the few Jewish communities that remained consisted of less than one tenth of their prewar size[6] and did not have the financial means to care for the large and unused structures. Jewish properties remained abandoned, empty or misused "simply because of the insufficient Communist economy, which was not oriented towards profit making or town beautification"[7].

The perception of Jewish heritage and Jewishness changed with the 1989 Velvet Revolution, when various Jewish issues were placed on the public agenda "including the return of confiscated communal and individual properties".[8] The local Jewish community, with support of Jewish associations from abroad, began the process of restoration of cemeteries and communal buildings. The interest of the broader Jewish community in the Jewish heritage of Central-Eastern Europe also influenced the involvement of foreign organizations such as the U.S. Commission for the Preservation of America's Heritage Abroad, established in 1985 by U.S. Public Law 99-83 as "In many countries, none [Jews] were left to continue to care for the communal properties that represented an historic culture in the area and constitute an integral part of the Jewish religion"[9].The Commission began its operations in 1990.

Growing interest of the global Jewish community manifested itself also with 'roots tours' of survivors and their descendants who could now, after the fall

[6] The number of the Jews in Slovakia continued to decline after the Soviet invasion in 1968. Heitlinger, Alena. *In the Shadows of the Holocaust and Communism: Czech and Slovak Jews since 1945.* New Brunswick (USA) and London (UK): Transaction Publishers. 2006: 19; 21.

[7] Gruber, Ruth Ellen. *Jewish Heritage Travel: A Guide to East-Central Europe*. Northvale – Jerusalem: Jason Aronson, Inc.1999: 9.

[8] ibidem, p. 143.

[9] http://www.heritageabroad.gov/About.aspx

of Communism, be allowed to visit their birthplace. In Slovakia, The Slovak Jewish Heritage Route, which was established in 2006, is a unique project "linking the most important synagogue buildings in Slovakia"[10]. The Route, a result of comprehensive research, is "part of a long-term vision that includes the establishment of a sustainable and multi-faceted Slovak Jewish Heritage Program"[11].

The Bardejov Jewish Suburbia was added to the Slovak Jewish Heritage Route in 2010 after the Old Synagogue, within the complex, was partially restored by the Central Union of Jewish Communities in Slovakia – the legal owner of the site. While an official plaque indicates that the Suburbia is part of the Slovak Heritage Project, "The Synagogue is closed. The commercial section of the compound is accessible during shop hours"[12].

The Bardejov Holocaust Memorial

Despite UNESCO's official recognition – in 2000 – of its iconographic stature, the Bardejov Jewish Suburbia remains occupied by a building supply company. While the Synagogue has been partially restored, the interiors of the *Beit HaMidrash* and the *Mikvah*, and the Suburbia grounds have not, and are exploited as a commercial warehouse and storage facility for pipes, metal and other plumbing and construction supplies and equipment.

In 2006 the Bardejov Jewish Preservation Committee (BJPC) – a USA based non-profit organization founded by Bardejov survivor Emil A. Fish – was established with the missions:

> (1) to restore the Jewish properties of Bardejov, (2) build awareness and promote knowledge of the important cultural and historical legacy of Jewish life in Bardejov, (3) memorialize the roughly 4,500 Jews from the Bardejov area who perished in the Holocaust, and (4) establish a permanent cultural center dedicated to Bardejov's Jewish History in the town's Jewish Suburbia. By achieving these goals, the Committee hopes to thwart the neglect and disappearance of the remaining traces of Jewish history from Slovakia and to honor and preserve the memory of the Jewish victims of the Holocaust who once were such an intrinsic element of the fabric of life in Bardejov and other Slovakian towns[13].

Different from the owner of the site – the Central Union of Jewish Religious Communities in the Slovak Republic (ÚZŽNO) [14] – the BJPC represents Bardejov survivors and their descendants, people whose personal memories are embedded

[10] http://www.slovak-jewish-heritage.org
[11] ibidem.
[12] http://www.slovak-jewish-heritage.org/bardejov-old-synagogue-compound.html
[13] Fish, Emil A. (ed.). T*he Memorial Book of Jewish Bardejov, Slovakia: Dedicated to its People, History, and Legacy.* Pasadena, California: The Bardejov Jewish Preservation Committee. 2014: 116.
[14] ÚZŽNO is the abraviation of the Slovak name of the organization: Ústredný zväz židovských náboženských obcí v Slovenskej republike.

in Bardejov and its Jewish places. For them, the state of the Suburbia, and the decision of ÚZŽNO to vacate only the Old Synagogue while *Beit Hamidrash* and the *Mikvah* continue to be under long-term use agreement for commercial purposes, has been a disgrace and humiliation. With their personal memories and a wish to honor the lost Jewish community of their hometown, the BJPC tried to raise local and international awareness of the 'status quo' of the Jewish Suburbia years after its recognition by UNESCO.

In 2010 restoration plans for the Suburbia were prepared by architect Ján Krcho for the City of Bardejov, transforming its three buildings into a cultural complex. BJPC tried to push for the fruition of these plans, and the partial restoration of the Old Synagogue in 2010 came about partly as a result of these efforts. The committee continued its pressure to vacate the commercial buildings and began to raise money to fund the creation of a Holocaust Memorial in the Jewish Suburbia. The intention was to add to Krcho's plans a Memorial Wall, dedicated to the holocaust victims from Bardejov, by inscribing their names on the walls of the synagogue or *Beith Hamidrash*. The goal of the BJPC was to complete the Memorial by May 2012 for the 70th anniversary commemorating the deportation of Bardejov's Jewish population in 1942. As it was impossible to negotiate vacating the Suburbia, a Holocaust Memorial inside the complex was not feasible.

The solution came with the acquisition of a vacant lot of approximately half an acre, adjacent to the Suburbia, where residential row houses, once home to Jewish residents before the deportation, stood. The houses were demolished in the 1970s and the site, owned by the City, was given to the BJPC by the Mayor of Bardejov for the purpose of building the Holocaust Memorial (Fig. 1). The agreement between the City and BJPC to build the Memorial on the site was signed in 2012 during the commemoration event in Bardejov.

Construction of the Memorial began in March 2013 and was completed in June 2014 with the dedication of the Memorial. The ceremony was attended by more than 450 participants – Bardejov citizens, dignitaries, and guests from around the world. It received major local and national media coverage.

The Bardejov Holocaust Memorial is designed as an enclosure of an open space: The external wall facing the main street (Dlhý rad) represents the houses that were once there and incorporated the idea of reconstructing the façades of the three demolished houses from historic photos and historic maps (Fig. 2). At the same time, Giora Solar, the principal architect and designer of the Memorial, explains:

> In detailing the façades, it was quite clear that they should be schematic. They would not try to replicate the old houses, but rather would reflect how they used to look. Conservation ethics and practical considerations (maintenance, potential vandalism etc.) necessitated the use of modern materials; therefore the façades were built of exposed concrete. The houses are represented by their external walls...showing their openings and part of the slope of their once gabled roofs[15] (Fig. 3).

[15] Fish, Emil A. (ed.). T*he Memorial Book of Jewish Bardejov, Slovakia: Dedicated to its People, History, and Legacy.* Pasadena, California: The Bardejov Jewish Preservation Committee. 2014: 132.

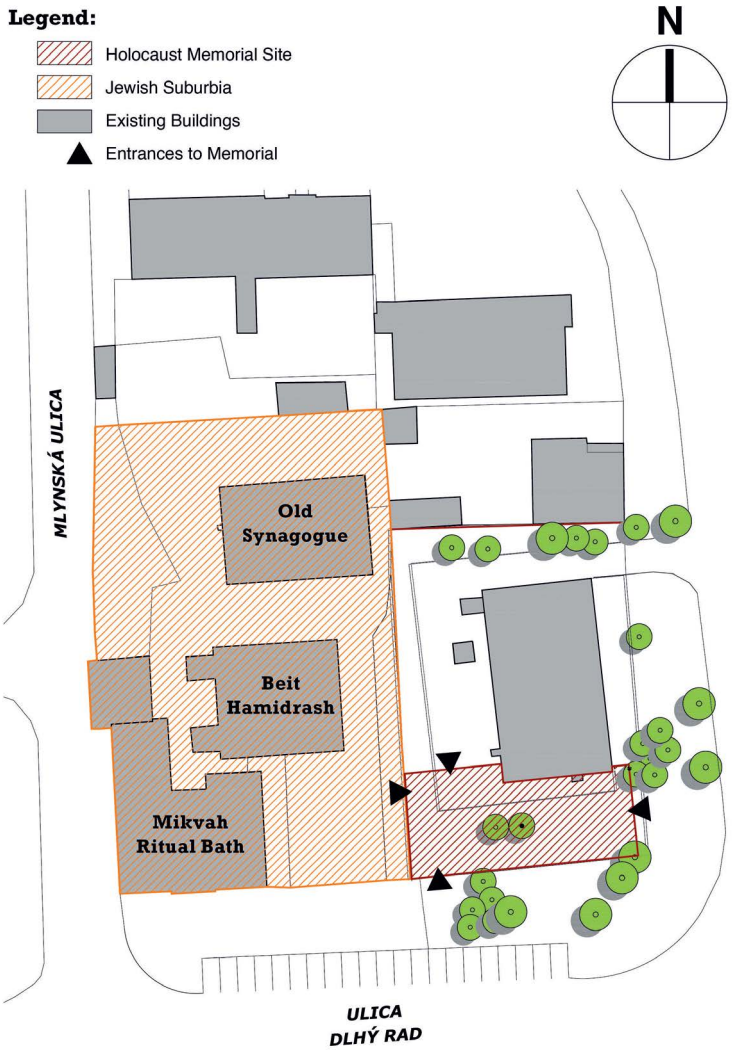

Fig. 1. The Jewish Suburbia and the Memorial site
Source: Drawing by OLEJAR Architect INC. for BJPC.

The interior of the Memorial includes fourteen Name Tablets, which were created in the shape of tombstones, on which the names of 3,381 Holocaust victims from Bardejov and surrounding villages are inscribed. Two of the fourteen tablets are blank. They are for the nearly 900 names that have, as of yet, not been verified as either victims or survivors. Although the likelihood of survival is remote, these names will be added only when the information is authenticated by descendants, family members, or new research[16]. Five History Tablets tell the story of the Jewish

[16] *The Bardejov Jewish Preservation Committee.* Information Brochures, Pasadena, USA.

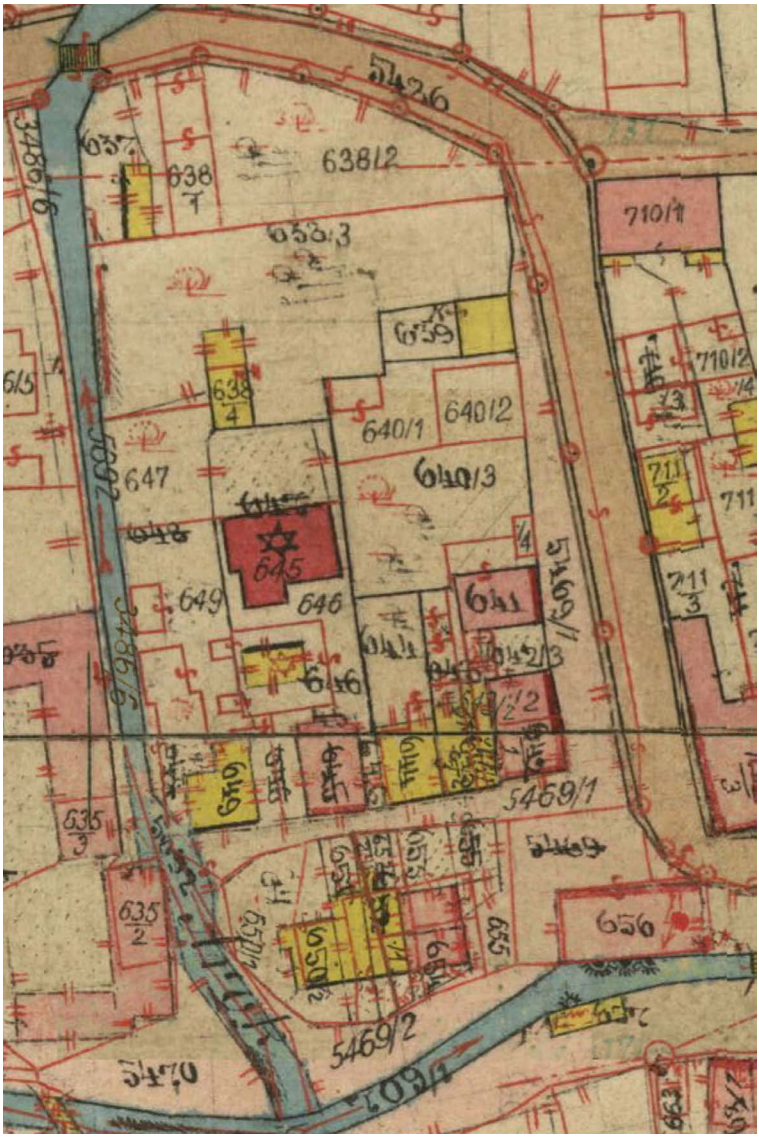

Fig. 2. Old map of Bardejov showing the Suburbia, 1869
Source: The Monuments Board of the Slovak Republic, Prešov Regional Centre.

community and describe the centuries-old legacy of Jews in Bardejov and the tragic dissolution of their community. One of the tablets recognizes the Righteous of Bardejov – those who, at great peril to their lives, helped Jews during the Holocaust. A most important element in the complex is the Star of David monument, located in front of the only remaining original wall. The three-dimensional star – on which the words "Never Again" are cut into the steel in Hebrew, English, and Slovak – is placed on train tracks, representing the transports that took Jews from Bardejov's train station to the places from which most of them did not return (Fig. 4; Fig. 5).

Fig. 3. Exterior view of the Memorial from Dlhý rad street
Source: photo by Marián Šoth.

Fig. 4. Interior view of the Memorial
Source: photo by Marián Šoth.

Fig. 5. View of the Jewish Suburbia from the Bardejov Holocaust Memorial site
Source: photo by Marián Šoth.

Heritage Sites versus Memorials

In the introduction to their book *Synagogues without Jews and the communities that built and used them,* published in 2000, Rivka and Ben-Zion Dorfman state:

> The hundreds of synagogues that still stand all across Europe – deserted or used for menial purposes – raise the question of what to do with them.… Some Jews maintain that, once defiled, synagogues bereft of Jews should be razed rather than be put to mundane use. In our view, every synagogue and cemetery still standing in central Europe is the landmark of a former Jewish presence. We believe that wherever feasible, these synagogues should remain. Let them stand as monuments across the continent of Europe, each a witness to a *kehillah*[17] that was born, flourished, and vanished[18].

A few years later, in the introduction to his book, *Synagogue Architecture in Slovakia: A Memorial Landscape of a Lost Community,* published in 2007, Maroš Borský states:

[17] *Kehillah* (Hebrew) means [Jewish] Community.
[18] Dorfman, Rivka and Ben-Zion. *Synagogues without Jews and the communities that built and used them.* Philadelphia: The Jewish Publication Society. 2000: 5.

> The fact remains, however: restored but vacant synagogues, whose congregations, rabbis, and Torah scrolls were consumed in the flames of the Holocaust, will stand for future generations as silent witnesses of a closed chapter of Slovak History: Slovak Jewish culture and its tragic obliteration[19].

Borský, the Dorfmans, and other scholars, historians, and researchers confuse the notions of preservation with commemorations. Indeed, one cannot discuss Jewish Heritage in Europe without the immediate connotation to the evils of the Holocaust and the communities that were lost. "When thinking about places of Jewish interest in East-Central Europe, or of the Holocaust, people tend to think more about the places of horror, where Jews died by the millions, rather than those places where they lived in even greater millions." [20] Thus far, Holocaust memorials have been built throughout the world in growing numbers, and most of the Jewish heritage sites became both memorials and tourist attractions, an issue that also raises controversy:

> Using Jewish Heritage sites for tourism and as a municipal economic development strategy raises difficult questions about authenticity and representation, and about the balances between education and remembrance and public and private funding. There is also the issue of the extent to which Holocaust sites and museums differ from other tourist attractions[21].

Heritage sites, especially those that comply with UNESCO's criteria (iii) and (iv)[22] such as Bardejov and the Jewish Suburbia[23], are recognized for their achievements rather than death and commemoration. The success of such preservation projects often has to do with how well preservation was able to communicate the heritage with its visible and invisible elements, so as to integrate both the physical and the social aspects of the urban environment.

Memorials, on the other hand, are usually located in more isolated places. "The memorial is a special precinct, extruded from life, a segregated enclave where

[19] Borský, Maroš. *Synagogue Architecture in Slovakia: A Memorial Landscape of a Lost Community.* Bratislava, Slovakia. The Jewish heritage foundation-Menorah. 2007, p. 11.

[20] Gruber, Ruth Ellen. *Jewish Heritage Travel: A Guide to East-Central Europe*. Northvale, Northvale – Jerusalem: Jason Aronson, Inc.1999.

[21] Heitlinger, Alena. *In the Shadows of the Holocaust and Communism: Czech and Slovak Jews since 1945.* New Brunswick (USA) and London (UK): Transaction Publishers. 2006, p. 148.

[22] UNESCO Cultural criteria: "(iii) to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; (iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;" http://whc.unesco.org/en/criteria/.

[23] "Bardejov Town Conservation Reserve: Bardejov is a small but exceptionally complete and well-preserved example of a fortified medieval town, which typifies the urbanisation in this region. Among other remarkable features, it also contains a small Jewish quarter around a fine 18th-century synagogue. Justification for Inscription: Criterion (iii): The fortified town of Bardejov provides exceptionally well preserved evidence of the economic and social structure of trading towns in medieval Central Europe. Criterion (iv): The plan, buildings, and fortifications of Bardejov illustrate the urban complex that developed in Central Europe in the Middle Ages at major points along the great trade routes of the period" http://whc.unesco.org/en/list/973.

we honor the dead" [24]. For example, the Vietnam Veterans Memorial Wall, huge in size and including 58,000 names, is isolated in a section of the national memorial in Washington, D.C. Other memorials, which are within an urban environment, usually consist of statues or art pieces as part of a city square or an urban park. Peter Eisenman's Holocaust Memorial in Berlin is an 'Urban Memorial' that captures a vast area of 19,000 square miles (204,440 sq. ft.) between the former East and West Berlin. Yet while his design defines space and creates a *place* within the urban environment, it is not a heritage site.

Envisioning the Past: Perception of Place

In the preface to his classic book, *Genius Loci: Towards a Phenomenology of Architecture* (1980), Christian Norberg-Schultz states:

> Man dwells where he can orient himself within and identifies himself with an environment, or, in short, when he experiences the environment as meaningful… It implies that the spaces where life occurs are *places*, in the true sense of the word. A place is a space which has a distinct character. Since ancient times the *genius loci*, or "spirit of place" has been recognized as the concrete reality man has to face and come to terms with in his daily life. Architecture means to visualize the Genius Loci, and the task of architecture is to create meaningful places, whereby he helps man to dwell[25].

This implies that the traditional 'place' carries with it much more than a shelter. Norberg-Schultz carries on the discussion of the concept of place in its existential or mental implications and demonstrates how "human identity is to a high extent a function of places and things"[26]. The qualities that Schultz is looking for in creating the *genius loci* are physical qualities of form and design, qualities that represent deeper notions of place-space as they provide possibilities for identification and affect social structure.

In contrast, the results of preservation in the context of Jewish heritage in Slovakia as well as in Central-Eastern Europe are restored empty buildings where 'no life occurs'. Restored synagogues, their remnants, or their empty sites, became memorials to Holocaust victims and serve as silent memorials to the life that is no more. They attract tourism, mainly Jewish tourism, but are usually of no interest to the local community as they did not become part of present-day city life.

The Bardejov Holocaust Memorial was built as a *Memorial*, not as a heritage site. At the same time, this new space could not have become the place it is, if not adjacent to the Jewish Suburbia with its cultural and historical significance. The

[24] Young, James E. *The Texture of memory: Holocaust Memorials and Meaning.* New Haven – London Yale University Press. 1993, p. 3.

[25] Norberg-Schultz, Christian. Genius Loci: Towards a Phenomenology of Architecture. New York: Rizzoli International. 1980, p. 5 (*author's italicized emphasis*).

[26] ibidem, 21; see also Abel, Chris. *Architecture and Identity Towards a global Eco-culture.* Oxford: Architectural Press. 1997.

Fig. 6. Architectural rendering of the Bardejov Holocaust Memorial (right) adjacent to the Jewish Suburbia
Source: rendering by Puchlick Design Associates for BJPC

Suburbia "is one of the most interesting Jewish monuments in Central Europe. It is a valuable architecture unit of Jewish communal institutions clustered in a small complex, the sole surviving witness to a once prosperous center of Jewish communal life in northeastern Slovakia"[27]. While the Memorial has two main entrances facing the street, a third potential opening was designed so that in the future there could be direct access between the two sites (Fig 1; Fig 5).

Since the dedication ceremony in June of 2014, more than 1000 people visited the Memorial, including teachers, students, local citizens, dignitaries, and tourists – from all parts of Slovakia and from around the world. It has become a place with its own new spirit: An attraction for descendants and survivors who still – emotionally – consider Bardejov their home; an attraction for local citizens who remember their Jewish neighbors and come to find their names on the Name Tablets, and an attraction for the younger generation for whom the stories, and the history of the Bardejov Jewish community, are new.

Another important issue is the Memorial's visual presence towards the street –the urban environment of the city. With the architects' wish to evoke the old houses that once occupied the site for the sake of historic representation, it was also their intention to 'fill-in' the void and re-create the continuity of the original street (Fig. 6). Indeed, an article that was published in a prestigious Slovak architecture magazine and describes the Bardejov Holocaust Memorial is titled "Urban Monument"[28]. Miloslav Olejár, the architect who was part of the Memorial's design team, additionally mentions the visual interface, which corresponds to the inclusion of the Jewish community in the non-Jewish society with the transparent gates that allow anyone passing by to get a glimpse of the inside[29].

Pedestrians, who in the past were unaware of the Suburbia, now notice its existence as the new urban landscape created by the Memorial makes it part of the Suburbia complex. The Memorial, a place with a new spirit, reawakened the *Genius loci* of the old Suburbia.

[27] Borský, Maroš. *Synagogue Architecture in Slovakia: A Memorial Landscape of a Lost Community.* Bratislava, Slovakia: The Jewish heritage foundation-Menorah. 2007, p. 94.
[28] Komrska, Jan. "Urbánny pamätník" [Urban Monument]. *Časopis ARCH, mienkotvorný mesačník o architektúre a inej kultúre - tradičné periodikum slovenských architektov.* No.12. 2014, pp. 24-29.
[29] ibidem.

Conclusion

In November 2014, the EEA and Norway Grants awarded 517,000 Euros for the complete restoration of the Old Synagogue in the Suburbia. While efforts to restore the Suburbia and the synagogue have been ongoing for years, it is clear that the new Holocaust Memorial and the place it created at a central location in the town have raised awareness to the significance of the site and the importance of the restoration of the whole complex.

The location of the Bardejov Holocaust Memorial outside the Jewish Suburbia began as a compromise to overcome political and physical obstacles. Yet the creation of a new *place*, which connects physically and spiritually to the existing traditional site, may have produced a new model for preservation of heritage sites: While the spirit of place, the *genius loci*, has been usually tied to the people who occupy it, this Jewish place in Bardejov where no Jews live reclaims its significance as a result of a new construction. What makes this site unique is the mutual relationship between the old and the new. The construction of a place with new visual representation and a new spirit brought back the spirit of the old as they have become one.

Only when the Suburbia is completely restored as a cultural, civic, and educational center, will we know if the old complex and the new Memorial indeed provide a visual representation of the past and at the same time also a meaningful place that is a living tribute to the once-thriving Jewish community of Bardejov.

PART 3
COMMUNICATION OF HERITAGE

THE EVOLUTION OF DIGITAL PATRIMONY IN THE BUILT ENVIRONMENT

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The modelling revolution

In the late 1960s, the first tentative steps in the representation of three-dimensional geometry – digitally – was initiated. Pioneers in the field demonstrated that the form of three-dimensional (3D) objects, such as buildings, could be communicated by a series of points in 3D space, joined together to form lines, lines joined to form surfaces and surfaces joined to create volumes. By applying the mathematical laws of perspective geometry, so-called "wire-line" drawings were produced and, before long, the key to creating stereoscopic pairs of images was encoded. Figure 1 shows two computer-generated wire-line perspective images – possibly the first ever produced – about to be viewed through an early (circa 1880s) device manufactured and sold to facilitate stereoscopic viewing of matched pairs of carefully taken photographs, often of the Boer War. Figure 2 shows the modern equivalent – the Oculus Rift head mounted display – in which pairs of full-colour high-definition computer-generated stereo images are fed, at the frame-rate equivalent to commercial movies, to the right and left eyes of the viewer.

Fig. 1. An early stereoscopic viewing device with computer-generated wire-line stereo pairs of a building
Source: personal archive of the author.

Fig. 2. The Oculus Rift head-mounted display for dynamic stereoscopic viewing
Source: website of Oculus.

The Oculus and similar emerging technologies) accommodates the most recent ITC technologies that allow very fast changes to the left and right eyes to provide the user of the head-mounted display with an experience of full immersion in the virtual world as he/she moves his/her head in 360 degree space. Such technologies are transforming how we model, shape and evaluate future worlds; our concern here however, is how we re-create, understand and value our existing heritage and patrimony.

Emerging technologies

It took the architectural profession the best part of a decade (1960-1970) to realize and take advantage of the emerging information technologies; these – photo-realistic imagery, dynamic energy prediction, simulation of movement, etc – are becoming commonplace in progressive architectural practice. It took considerably longer for those developing the technologies to anticipate and realize the application of the information technologies (IT) to our patrimony.

The Media Laboratory at the Massachusetts Institute for Technology, arguably, was the first to demonstrate the potential of what we now call "multimedia" – the conflation within one software environment of photographs, video footage, computer-generated images, sound, text, etc. What seems today a perfectly obvious development was – in the late 1970s – quite revolutionary.

Co-incident and subsequent IT developments led to the introduction of truly immersive "virtual" environments, as experienced in the Oculus Rift. Many different methods of allowing experience of 3D virtual worlds were developed including the Virtual Environment Laboratory (VEL) at the University of Strathclyde and the immersive facilities in the Digital Design Studio (DDS) at the Glasgow School of Art. In both of these, a number of people can simultaneously have the impression – as a result of surrounding visual and audio sensation – that they are within an entirely digitally created world.

Simultaneously there were developments afoot in how we can observe and record the *existing* world. Methods of achieving this include laser scanning. Laser scanning involve the "firing" of laser beams at 3D objects followed by a distance measurement based on the time the reflective beams return to the firing position. The mass of data captured – known as the "point-cloud" – can, with appropriate software, be interpreted as shapes of objects, buildings and/or landscapes. The technology can be deployed at various scales, from "flight-overs" of extensive landscapes to the fine-grain capture of small artifacts.

A parallel innovation, now an extraordinarily rapid development, was that of "rapid prototyping". It was realized that the digital representation of 3D objects (including buildings) could – with a little difficulty – be deployed in a number of emerging electro/mechanical technologies – in the manufacture of scaled physical models of reality. The Department of Architecture at the University of Strathclyde was an early experimenter of how these new technologies could be put at the disposal of architects. Figure 03 shows, at two scales, rapid prototypes of the millennium tower, planned for Glasgow; Figure 4

shows the rapid prototype of a wooded roof truss, part of the structure damaged badly in the recent fire at the Mackintosh School of Architecture at the Glasgow School of Art. Currently, increasingly sophisticated but readily accessible devices can produce scale models in plastic, steel and ceramic.

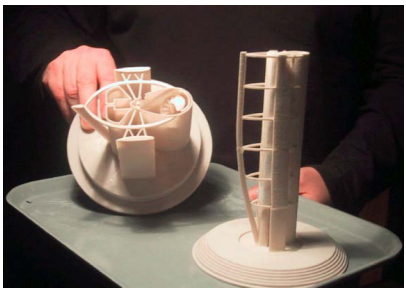


Fig. 3. Two rapid prototype models of the Glasgow Millennium Tower produced directly from a CAAD date-base
Source: personal archive of the author.

Fig. 4. A rapid prototype of a wooded roof truss, part of the structure damaged badly in the recent fire at the Mackintosh School of Architecture at the Glasgow School of Art
Source: personal archive of the author.

Early applications

In the author's experience, the earliest applications of multimedia documents include those of Sabater in the University of Catalunia and Mortola in La Terza University of Rome. Sabater worked on the contribution of Cerda to the planning of the city of Barcelona and Mortola worked, in collaboration with the Commune di Roma, on the participation of the citizenry on the reformation of areas of the city of Rome.

The Architecture and Building Aids, Strathclyde (ABACUS), in association with SCRAN – the Scottish Cultural Resource Access Network[1] built on its reputation for the early development of CAAD software to produce a number of innovative multimedia digital documents including Virtual Open Doors, Skara Brae, New Lanark and Glasgow 2000.

Virtual Open Doors (Fig. 5) is a CD-ROM that allows the user, interactively, to move around the interiors of some 50 of Glasgow's most important (and not necessarily accessible) buildings. It takes advantage of what then (circa 1999) was software known as Quick Time Virtual Reality (QTVR).

Skara Brae (Fig. 6) is one of Northern Europe's most extra-ordinary archaeological sites located on the Orkney archipelago off the north coast of Scotland. The unique features of this computer-based interactive exploration of the site include the embodiment of priceless artefacts found on site during the excavation in 1850 and "augmented reality" in which, regarding a hypothesis regarding the door mechanism, combines video shot on site with computer graphics animation.

New Lanark (Fig. 7) is a World Heritage Site developed in the 1880s by Robert Owen as a utopian vision of an industrial community, complete with a school, health care, etc. Owen went on to found the New Harmony utopian community in

[1] http://www.scran.ac.uk

Fig. 5. The home frame from the CD-Rom of 50 of Glasgow's most important buildings
Source: personal archive of the author.

Fig. 6. A frame from the pilot multimedia document on the World Heritage Site Skara Brae in the Orkneys
Source: personal archive of the author.

the USA. SCRAN funded the double CD-ROM produced by ABACUS to record the rise, fall and re-generation of the New Lanark community.

The City of Glasgow was established following a visit by Saint Mungo (aka Kernogan) in the 6th Century. The interactive CD-ROM – Glasgow 2000 (Fig. 8.) is a massive digital document including 2000 words of text, 12 ancient maps, 5 video clips, 300 images, and a musical time-line spanning 1,000 years.

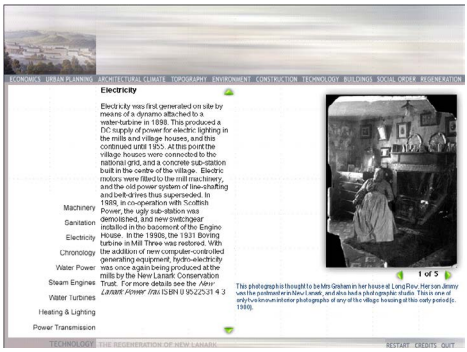


Fig. 7. A frame from the double CD-Rom on the World Heritage Site New Lanark
Source: personal archive of the author.

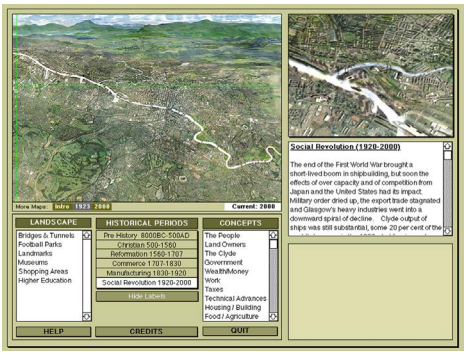


Fig. 8. A Frame from the multimedia document that records the text, images, videos and music over Glasgow's 2000 year history
Source: personal archive of the author.

Recent applications

The innovative application of laser scanning to digital patrimony has been pioneered by a number of institutions including the Digital Design Studio (DDS) at the Glasgow School of Art[2]. The DDS, in association with Historic Scotland, has brought into existence what is known as the Scottish Ten. The Scottish Ten comprises a collaboration amongst the DDS, Historic Scotland, the Scottish Government, the Centre for Digital Documentation and Visualization (CDDV) and

[2] http://www.gsa.ac.uk

Fig. 9. The laser scanning of part of Mount Rushmore
Source: the Scottish Ten.

Fig. 10. A composite image produced by the National Geographic Magazine of the digital recording of the Mount Rushmore heads
Source: the National Geographic Magazine.

CyArK, a USA company that specializes in laser scanning of world-class building and heritage sites.

Scottish Ten[3] is an ambitious five-year project to create exceptionally accurate digital models of Scotland's five UNESCO designated World Heritage sites and five international sites, in order better to conserve and manage them. The sites include: Mount Rushmore, New Lanark, Orkneys, Rani ki Vav, St Kilda, Edinburgh Old Town and the Eastern Qing Tomb.

A selection of these sites are described and illustrated in the following sub-sections.

Most people know of the extraordinary huge head/face/shoulder carvings of 4 previous Presidents of the USA. Figure 9 shows how perilous the scanning methods can be; Figure 10 is a composite image, featured in the National Geographic Magazine, showing the point-cloud representation, the geometric surface representation and the final textured digital representation.

Figures 11 and 12 show the scanning process and the point-cloud representation of the (now) deserted community of St Kilda – a tiny archipelago situated some 66 kilometres off the Western Hebridean islands of Scotland. The St Kilda community finally agreed to leave the main island in 1930.

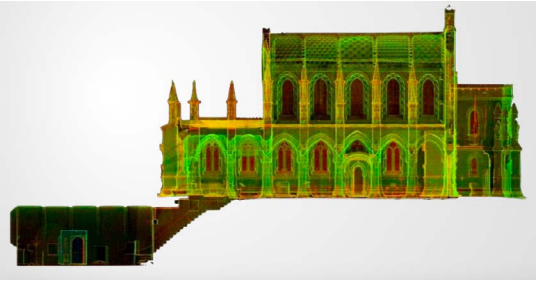
Fig. 11. Laser scanning of St Kilda in the Outer Hebrides
Source: the Scottish Ten.

Fig. 12. The point-cloud data of the St Kilda settlement
Source: the Scottish Ten.

[3] http://www.scottishten.org

The Scottish Ten scanned Rosslyn Chapel in Scotland which famously featured in the novel The DaVinci Code by Dan Brown. Figure 13 shows the point-cloud associated with this project.

Figure 14 shows a wide-angle 3D digital image by the Scottish Ten of Edinburg Old Town.



Fig, 13. The point-cloud data of Rosslyn Chapel
Source: the Scottish Ten.

Fig. 14. A scan of Edinburgh Old Town
Source: the Scottish Ten.

The issues

Digital patrimony is now properly established. In the superb Cumulative Index of CAD[4] that contains over 11,000 abstracts and full papers on CAAD, there are no fewer than 218 papers with either "heritage" or "patrimony" in the title. There are now several international conferences on heritage including the second international conference on Digital Heritage to be held in Spain in September 2015[5]. Nonetheless, it is entirely appropriate to ask "why create and disseminate digital representations of our most important cultural heritage/patrimony"? The following sub-sections provide some answers to this question.

1. Our physical patrimony, regrettably, is worryingly fragile. The recent fire that destroyed the world-renowned library and invaluable records in C R Mackintosh's Glasgow School of Art causes those responsible for the restoration to be grateful for the digital records prepared by the DDS and DiMascio. The recent destruction by the forces of the Islamic State in Syria cause us to regret not having captured, digitally, these treasures.
2. A detailed digital representation of man-made and natural phenomena, coupled with emerging IT for viewing, dynamically, 3D images, allows unprecedented opportunities for observing our heritage from hither-to impossible viewpoints. Effortlessly, we can climb Mount Rushmore, enter Wookey-hole, fly over remote sites such as St Kilda, Skara Brae, Ailsa Craig.

[4] http://cumincad.scix.net
[5] http://www.digitalheritage2015.org

3. We have a new opportunity to combine the visual experience of our heritage sites with potential auditory experiences – to hear the wild gannets of Ailsa Criag, hear Mendleson's Hebredean Overture while sitting in Fingal's Cave, hear Bach's Goldberg Variations while sitting in Utzon's Opera House.

Nonetheless, there remains the big issue: to what extent does the actual relate to the modelled, how the digital relates to the analogue, how the "virtual" relates to the "real". Big issues, it seems to the author, to pose to our students?

Acknowledgements

Great thanks to clever people in ABACUS and the Digital Design Studio and the imaginative people who record and cherish Scotland's patrimony.

RECORDING AND PUBLISHING TO ENSURE INFORMED CHOICES FOR FUTURE GENERATIONS

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Introduction

Conservation of architectural heritage requires a critical understanding of the significance, conditions and complexity of an existing building.

Getting used to the building under different aspects is an essential element of the conservation planning process and provides a long-term foundation for the monitoring, maintenance and management of a site.

The management of a great number of data and information acquired during the knowledge phase, moreover when they are related to a large building, needs a continuous awareness of the position of the single data within the entire complex and of the spatial, temporal and functional connections among every architectural element.

The paper illustrates an application of GIS (Geographic Information System) for conservation of a historical building, which takes advantage of the particularity of this system of overlaying and combining graphical, textual and numerical information together.

The achievement of this experimentation will be the publishing of the project as a web-gis which allows all the interested parts to easily access and consult the documentation recorded and use these information to make well-informed decisions about the conservation of built heritage and produce or improve its knowledge.

The Albergo dei Poveri in Genoa

The Albergo dei Poveri is a monumental complex in the city of Genoa, protected according to the Italian Code of Cultural Heritage and Landscape.

Its construction started in 1656 as a charitable hostel, founded by Emanuele Brignole, a member of Genoese nobility who devoted his life to this project.

The original design, a square plan with two crossed central wings, wasn't completed when the construction stopped at the beginning of the XIX century: western courtyards are smaller than eastern ones because excavating the nearby hill was too expensive, so the western wing is just a long corridor. However the building we can see nowadays has a total covered surface of more than 60.000 m^2, organized in eight floors.

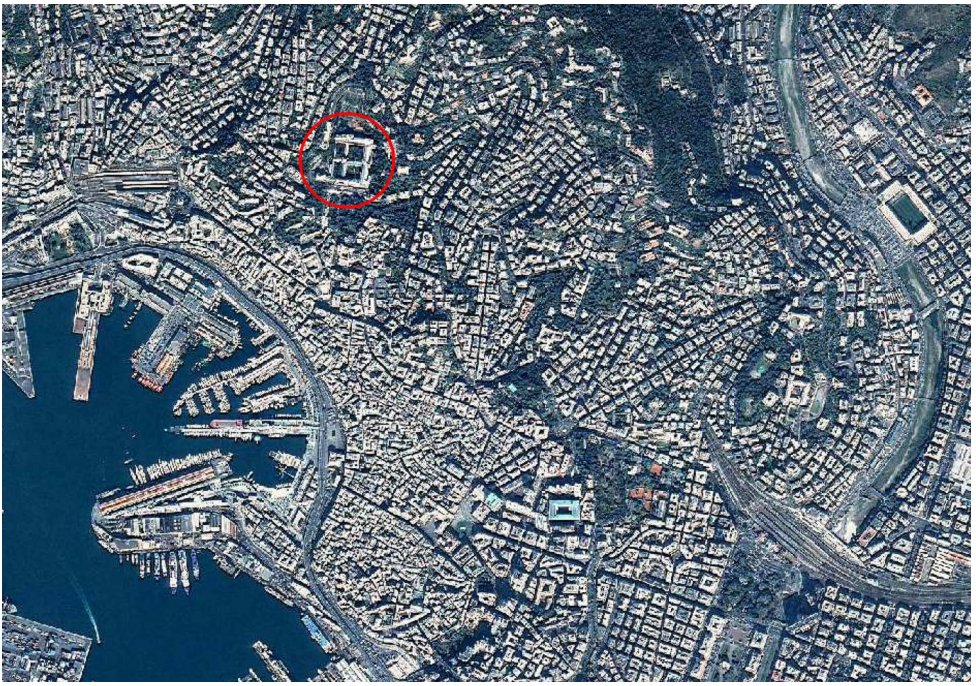


Fig. 1. High resolution satellite images - Eastern Genoa September 2007 (RGB 321): the Albergo dei Poveri in Genoa (red circle). You can easily realize its large size if you compare it with the stadium on the right
Source: http://www.cartografia.regione.liguria.it

The religious and spiritual element ruled both the internal management of the charitable hostel and the organisation of its plan, with the main altar of the Church as the visual and symbolic centre of the entire complex.

In the XIX century it was used as a hospice until 1991, when it was involved in a great intervention of conversion for university uses. Nowadays only 30% of the available surface has been restored and used for university activities, the remaining parts are still abandoned and exposed to decay: the Albergo dei Poveri has lost its functional and spatial unity.

The research framework

In 2009 the Athenaeum assigned to the School of Specialization in Architectural Heritage and Landscape of the University of Genoa the restoration/renovation feasibility plan, in order to allow a complete re-use of the complex as a university campus (scientific responsibles: Prof. Stefano F. Musso and Prof. Giovanna Franco).

The Albergo dei Poveri has been studied and surveyed for four years by the students and the teachers of the School of Specialization and by the students of the fifth year of the Master of Architecture. They analysed different parts of the complex, by architectural survey, archival researches, analysis of its conservation status (materials and decay phenomena) and developed some design hypothesis for the future of the monumental complex.

Today the Albergo dei Poveri is also a case-study of the Research Program of National Interest, "Built Heritage Information Modelling/Management" (PRIN 2010-11 – BHIMM, National Coordinator: Prof. Stefano Della Torre).

The MARSC Laboratory of the DSA Department (Analytical Methods for Restoration and History of Built Heritage) executed a rigorous topographic survey of the perimeter of the building and the digital photogrammetric straightening of all its external surfaces (façades).

All the researches at the University of Genoa were coordinated by Prof. Stefano F. Musso and Prof. Giovanna Franco.

An Information System for architectural heritage

The great number of data and information acquired and produced were initially organized in a relational database (File-MakerPRO-8.2) to ensure their storage and continuous updating.

In order to improve the understanding of data in their reciprocal and spatial relations we chose to carry out a GIS of the Albergo dei Poveri, making use of the free and open-source software QGIS, nowadays in the 2.8.1 version, with its useful plug-ins.

Starting data set

The data we have to process are heterogeneous and differ one from the other in types, media and sources (Fig. 2); some deal with current state analysis like:

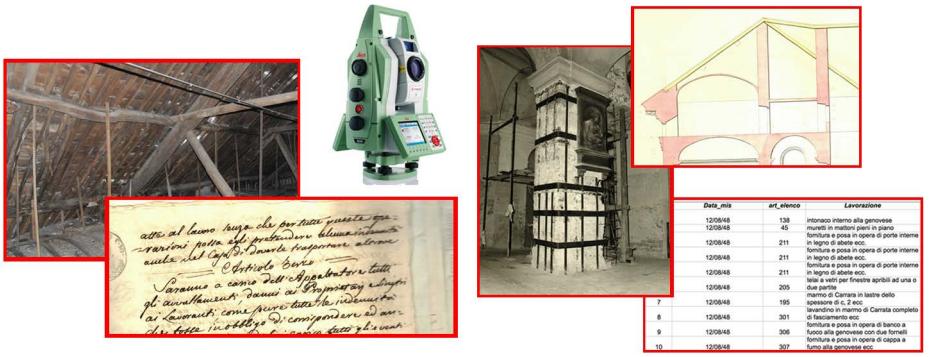
- topographic survey;
- digital photogrammetric straightening;
- photographic campaign;
- building features;
- maps of materials and decay phenomena;
- sample analysis;
- actual uses;

others with archival researches like:

- historical photographs;
- historical iconography;
- archival documents;
- bibliographical research;
- past place-names and uses.

We have different digital formats too: the previous relational database, carried out with File-Maker, gathered information about the organisation of the building and current photographs; we could export these data as tables in .dbf format.

Topographic survey was processed with Autodesk AutoCAD2014 and saved as .dxf files; textual, iconographic and photographic archival documentation was digitized as .jpg or .pdf format; some data were already organized in tables.



	Data_mis	art_elenco	Lavorazione
	12/08/48	138	intonaco interno alta genovese
	12/08/48	45	muretti in mattoni pieni in piano
	12/08/48	211	fornitura e posa in opera di porte interne in legno di abete ecc.
	12/08/48	211	fornitura e posa in opera di porte interne in legno di abete ecc.
	12/08/48	211	fornitura e posa in opera di porte interne in legno di abete ecc.
	12/08/48	205	telai a vetri per finestre apribili ad una o due partite
7	12/08/48	195	marmo di Carrara in lastre dello spessore di c. 2 ecc
8	12/08/48	301	lavandino in marmo di Carrara completo di fasciamento ecc
9	12/08/48	306	fornitura e posa in opera di banco a furco alla genovese con due formelli
10	12/08/48	307	fornitura e posa in opera di cappa a fumo alla genovese ecc

Fig. 2. Starting data are historical and current photographs, topographic survey, archival documents, schedule

Source: authors' elaboration.

Project structure and organisation

In order to manage all these data we created a database, paying attention to respect the simple ground rules the relational model bases itself on. The database oversees the relations among tables, each corresponding to one type of data, minimizing data redundancy.

To design each table attributes are assigned, the first step is to identify the basic attributes of the datum to be stored in the columns of the table; each row must be unique in some way.

In order to transfer these rules in our project, we had to identify elementary components for the Albergo dei Poveri.

As regards the spatial organization of the building we re-used the logical structure defined by the File-Maker database, which describes the whole architecture as wings, under-sectors, levels, fronts and rooms.

Qualitative and documentary data were defined and processed in our database as the following themes[1]:

- past place-names of rooms and wings;
- architectural elements (wall, pillar, column, floor, arch, vault, door, window, staircase, etc.);
- photographs (both current and historical);
- maintenance interventions (with different levels of detail);
- building materials;
- state of conservation of the elements;
- decay phenomena of the materials.

As we mentioned before, every theme has its own table; in an information system such as a GIS, you may link a geometry (spatial datum) to a table of contents.

This is the so-called shapefile format, which can spatially describe vector features (points, lines and polygons); the format consists of a collection of files with a common filename prefix, stored in the same directory. The three mandatory

[1] This list is open and could include every other types of data that future studies find out.

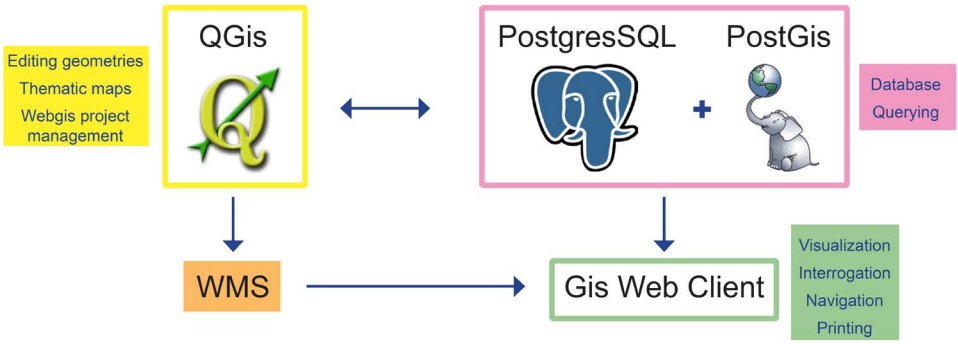


Fig. 3. project outline
Source: authors' elaboration.

files have extensions .shp (shape format, the feature geometry), .shx (shape index format, the positional index of the feature geometry) and .dbf (attribute format, the dBase table that stores the attribute information of features).

Our GIS is organized in different projects (plans, façades, sections and detailed studies related to specific parts) in order to allow a simple and immediate visualisation of the data: these projects use the output of topographic survey, enriched by digital photogrammetric straightening, instead of geographical maps, with customized reference systems.

Each project is distinct in terms of geometry, therefore the same datum may be associated to different shapefiles in different projects. Hence, we separated the feature geometry from the corresponding attribute information using a unique code to link (JOIN) the two tables[2].

The constantly increasing number of files and the appropriate management of relations among them require to use a unique DBMS (DataBase Management System), in order to carry out complex queries retrieving usable information (knowledge) based on different type of data.

We chose PostgreSQL 9.3[3, 4], a spatial database by means of its extension PostGIS.

In short, by means of the QGIS desktop application we edited geometries with their simple attribute tables, especially the unique code, and created thematic maps; then we connected our QGIS projects with a database in PostgreSQL through the plug-ins SPIT and DB Manager (Fig. 3).

In PostgreSQL we set relations among the geometrical items and decoding tables where we stored all the attribute information; and we created views, which are like "the illusion of a table".

[2] The main project regards plans of each floor; by means of specific links you can open the other projects.
[3] PostgreSQL is a free and open source software, as QGIS; it "is a DBMS that incorporates the relational model for its databases and supports the SQL standard query language".
[4] Neil, Matthew; Stones, Richard. *Beginning Databases with PostgreSQL: From Novice to Professional, Second Edition*. New York: Apress. 2005, pp. 11-12.

Views are read-only and always up-to-date: "each time you execute [...]" the command, "the data is rebuilt"[5].

Tables manipulated in the DBMS and views were imported in QGIS project as layers and dressed up in their visual appearance (Fig. 3).

Data access

The final purpose of this work is to publish our QGIS project file on a web-server making use of the QGIS Server[6], which provides a web map service using the same libraries as the QGIS desktop application: the resulting web maps look like the ones on the desktop.

The symbology of a layer is a fundamental aspect in order to allow the data access in terms of the prompt understanding of the map. "Having proper symbology [...] produce[s] maps and information which people will be able to use"[7] and easily to see what the map deals with [8].

All the files and projects, with the necessary applications, were placed and installed on a server in order to access them online by specific account.

Through the platform web-gis the user will be able to browse and consult the project and question it for information by means of forms we set up; the user will also be able to print the outcome of the queries, both as thematic maps and reports thanks to settled layout.

Applications

The following examples illustrate the benefits of using GIS for architectural aims.

- Storage and management of photos

The management and storage of photos taken during the surveys are always a delicate phase that, if not carefully designed, often prevents you from connecting each image with its precise place in the building. This problem is especially hard in case of such a huge building as the Albergo dei Poveri, which is composed of more than one thousand rooms.

The photos, classified in historical and up-to-date, have been stored in .dbf file containing information about the date of the shooting, the author, the name of the file, the link to the photo and a code referring to the different shapefiles placed in their QGIS projects. By creating a JOIN and by opening the feature form linked with a room (Fig. 4) you can have a preview of the historical and recent photos related to that room.

[5] *Neil, Stones,* p. 228.

[6] *Dr Annalisa Barla attended to IT support* .

[7] *QGIS User Guide. Release 2.2.* QGIS Project. QGIS Development Team. 2014, p. 21.

[8] In QGIS you may also customize the form for the attribute data capture phase by the creation of own custom forms, using the application Qt4 Designer provided as part of QGIS setup.exe.

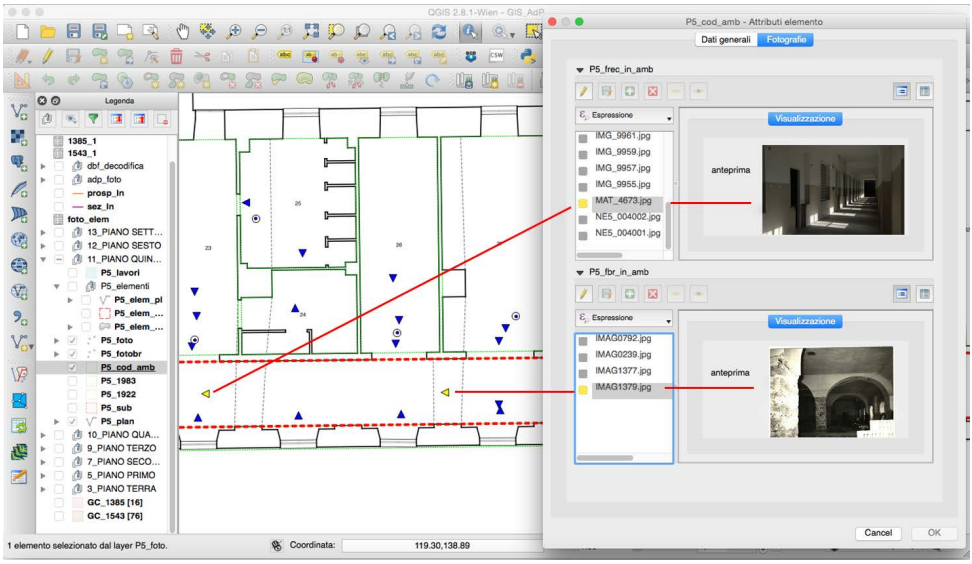


Fig. 4. View of the plans project. By selecting a room relevant information, including historical and current photos, are displayed in a form

Source: authors' elaboration.

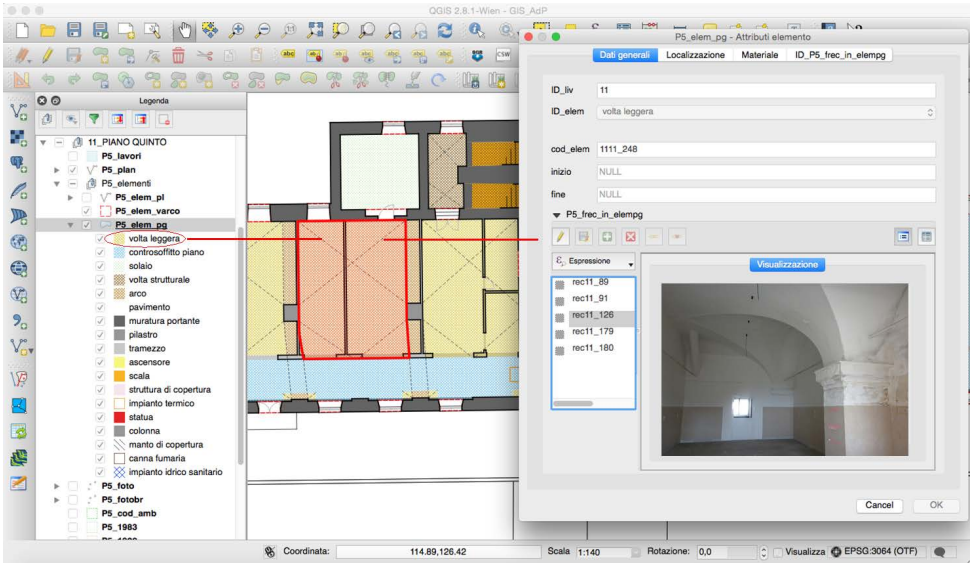


Fig. 5. View of the plans project. By selecting an element (a lathwork vault) relevant information are displayed in a form

Source: authors' elaboration.

Through a quick search, it is easy to find the information related to an architectural element (Fig. 5) and its photos. This process allows to keep all the data information when the project for the restoration and reuse of the building starts even if performed by architects who did not carry out the preliminary studies on the morphology and state of conservation of the complex.

- Maintenance interventions

An important part of the research carried out during these years concerns the archival documents since the construction. Usually the information derived from documentary sources are not directly related to the representation of the building (in plans, façades or sections), but the structure of the GIS allows to combine a document in the archival documentation database with one or more geometries that can be then related to architectural elements, rooms or areas of the building.

The Albergo dei Poveri was damaged by incendiary bombs during the Second World War and in the following years there have been many maintenance interventions carried out by the Genio Civile[9]. We collected a lot of documentation of these interventions, including measure booklets. These booklets were transformed into tables and each item was associated with a geometry defining the position of the intervention (Fig. 6).

By selecting an item, this is displayed on the map and the related information with the historical drawings are available in a form.

- Maps of materials and decay phenomena

Some parts of the building have undergone specific studies whose results have been, beside other things, the maps of materials and decay phenomena. In order not to lose these information specific projects have been carried out in QGIS.

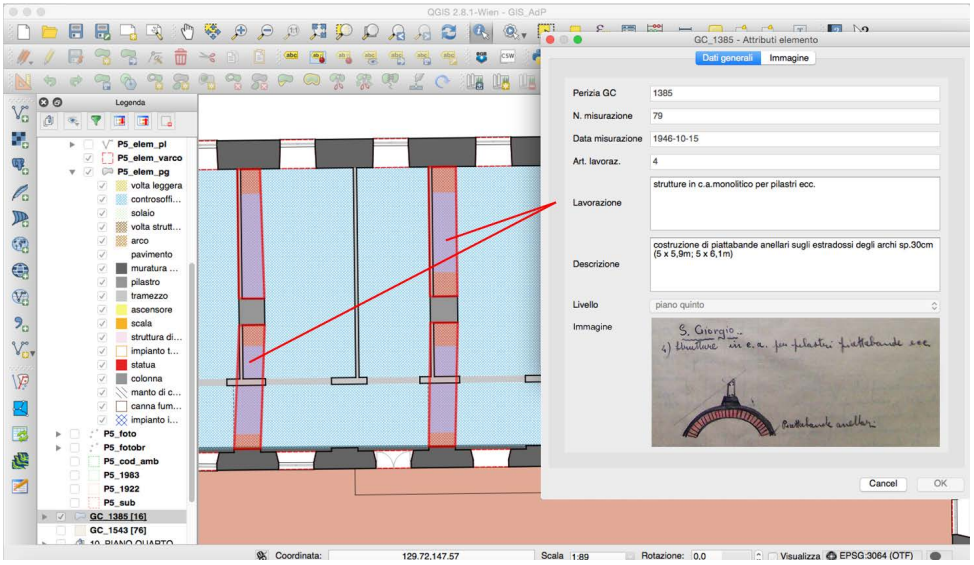


Fig. 6. View of the plans project. By selecting a geometry related to maintenance intervention you are allowed to know specific information coming from measure booklet

Source: authors' elaboration.

[9] The Genio Civile is a State agency situated in each Province that projects and manages public works.

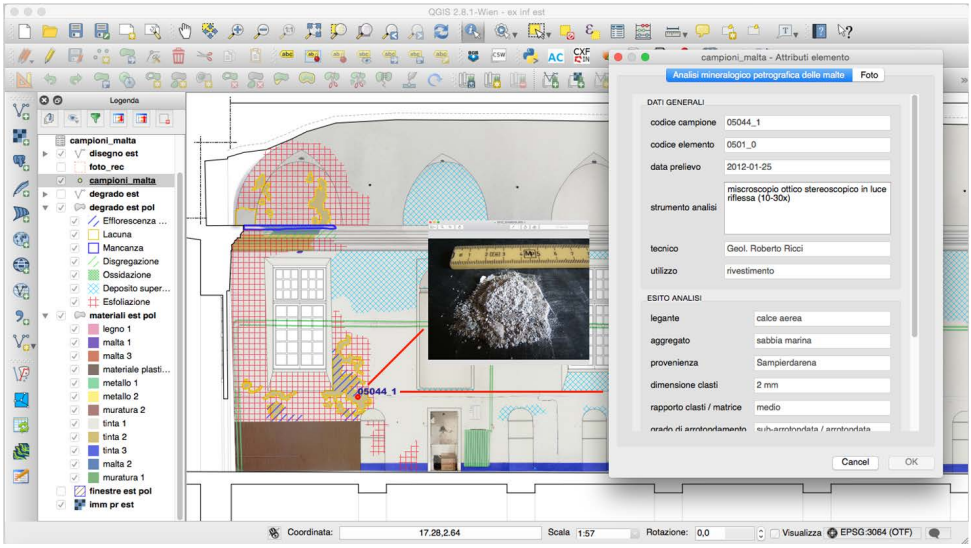


Fig. 7. View of the project of the room called ex-infermeria.
Maps of materials and decay phenomena
Source: authors' elaboration.

In the section of the room called ex-infermeria (Fig. 7) we can see the overlap of the maps of materials and decay phenomena directly realized in GIS using a digital photogrammetric straightening of the wall as a basis. The pick point of the samples of mortar has been recorded in a shapefile and linked with the .dbf file containing the data resulting from the analysis.

The photo of the sample can be opened by a predefined action.

Through actions we can open not only images, texts or .pdf files but other QGIS projects too; so we created layers which contain links to projects related to the façades or investigations about specific parts or elements of the building.

Conclusions

Publishing the QGIS project on the Albergo dei Poveri will allow all the interested parts to easily access and consult the documentation recorded inside and use these information to make well-informed decisions about the conservation of built heritage.

Moreover, a good documentation ensures knowledge to pass on to future generations; an accessible documentation ensures that the dynamic process of knowledge goes on, providing the basis in order to control the information flow and the management of the conservation process.

THE PRESTIGE AND THE MONEY – THE MAIN GOAL AND THE MAIN TOOL IN PLANNING OF THE CITY IMAGE IN THE 21ST CENTURY?

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Introduction

All over the world one can see a tendency to build the most extravagant, enormous giant and astounding buildings. Sometimes constructions of such a building affect the existing historical parts of the city. Struck by the observations of changes going on in the beautiful and full of history city of Baku in Azerbaijan author started to analyze what had happened. This paper will discuss the process of changing in the historical town – Baku in Azerbaijan in comparison with the achievements of European urban planners and architects.

The transformations of the image of the historical cities could have diverse forms. They may concern the changing of public spaces, constructing contemporary buildings and urban revitalization of historical districts. All of them are present in Baku. A great amount of public spaces were refurbished, some new were added; for example the boulevards over the sea bay were enlarged. New buildings are being permanently built all over the city, some of them really extravagant, extremely modern and with complex structure; in some of them one can find an echo of the historical, Azeri architecture. The buildings in the Old Town are systematically renewed. The conversion of the city image is really great, but is it a prestige, what should be the main aim of changing?

Baku

Azerbaijan arose from the previous Socialistic Soviet Republic of Azerbaijan. The main natural resource and the main source of wealth of the country is the oil. Baku is the biggest town in Azerbaijan and the capital city; moreover, it is one of the biggest towns of the region. Furthermore from almost 9.5 million citizens of the country more than 2 million live in Baku[1].

[1] http://www.stat.gov.az/map/indexen.php (access 04.03.2015).

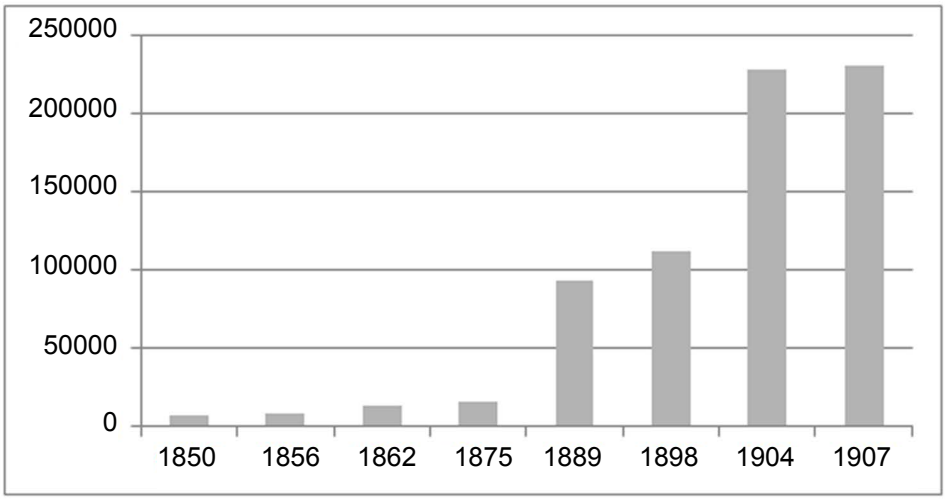

Fig. 1. The Baku population growth in 19th century
Source: Fatullayev SH.S., Gradostroitel'stvo Baku XIX - nachala XX vekov, Leningrad 1978, p. 75.

Baku is situated on the South banks of Absheron Peninsula, located picturesquely on the hills around of Baku Bay, by the Caspian Sea.

As the capital city of the one of the Soviet Republic Baku had all important functions of the city – seat of the government and state offices, universities, theatres and philharmonic, museums etc. As a historic town Baku has it Old Town (Içeri Sheher) and it has its history which dates back to the ancient times. It is told that town origin is in the 3rd century.

The long history of town is represented by a wide range of monuments. The oldest one comes from the 6th century. However, the settlements developed in that area even earlier, though the austere landscape is rather not tempting. Nonetheless, the mild climate, drinking water, salty lakes (source of such worthy salt) and of course petroleum (which occurs even on the surface of the ground) attract people to live there.

Until the half of 19th century Baku was the fortress (surrounded by medieval fortifications) with suburbs – port town with custom offices. The first great impact to the transformation of the town in the 19th century was the transfer of provincial authorities from Shamakhi to Baku. After an enormous earthquake in 1859 Shamakhi was almost completely destroyed. Then by the decision of Tsar Alexander II Baku became a seat of government of the governorate with the great opportunities to development as a port town connected by the railway with other parts of Russian Empire[2].

The second impact to growth of the town was the development of the petroleum industry. Of course the oil was used for centuries, but invention of an easy way of obtaining the kerosene from the rock oil caused increase of demanding

[2] Fatullayev S.H.S. *Gradostroitel'stvo Baku XIX – nachala XX vekov* (Фатуллаев Ш.С., *Градостройтиельство Баку XIX – начала XX веков*), Leningrad 1978, p. 23.

for petroleum in fifties of 19th century. Consequently, the town became the big industrial city during several dozen years. Number of citizens increased more than thirty times from 1850 till 1907 and of the same time area of the town grew more than twenty times. (See the bar chart Fig. 1) New habitat and industrial districts were built.

During Soviet times[3] the city was still developing and changing. The Baku's underground was built; new settlements of blocks of flats appeared all around the town, some new buildings in the inner space as well. Network of public transport was maintained in the town. But in the same time there was a lot of neglected areas as well as in the living quarters as in the industrial parts of the city. Though, the city growth was still outstanding many quarters remained like they had been in the past – in the first years of 20th century. These areas were filled by one or two stories buildings with the small courtyards, without proper living conditions.

Baku – values of the city

It is obviously impossible to bullets all the advantages of the Baku, so only these with the biggest meaning and importance for this paper (topic of conference) are going to be described.

The first one – the Old Town (Içeri Şəhər) which is located on the hill sloped down to the bay of the Caspian Sea. A network of the narrow streets creates a labyrinth of alleys sometime blind, often turning surprisingly, sometimes with stairs, sometimes just sloped, and giving unexpected and stunning views and openings. The loggias and balconies – one of the main features of Baku's architecture, overhang above the streets. Everywhere the limestone is used, as the best local building material but sometimes the walls of buildings are clad of plaster and painted. Some of balconies are unclosed with light walls of different materials and colours. Besides, the Old Town is fulfilled with great monuments such as the Shirvanshah Palace, Maiden Tower, mosques, baths, caravanserais and of course living houses. Everything gives great opportunities to preserve, to emphasize, to enjoy the unique character - genius loci of the place. The Old Town was inscribed on the World Heritage List in 2000 as a "Walled City of Baku with the Shirvanshah's Palace and Maiden Tower"[4].

The second one is the quarters with 19th and early 20th century architecture. At the turn of 19th and 20th century new quarters, streets and a great number of new buildings were built all around the core (Old Town), among them some really unusual, gorgeous, showing the wealth, strength and the modern image of the city. Some of them might be representative for European architecture from that period. However, mostly they are in historical styles with references to the local tradition, the streets and avenues with buildings from that phase resemble the streets of European cities.

[3] Soviet times: from 1920 to 1991.

[4] UNESCO WHC Convention Concerning the Protection of the World Cultural and Natural Heritage Twenty-sixth session Budapest, Hungary 2002 WHC-02/CONF.202/17 (http://whc.unesco.org/en/sessions/26COM/documents/ (access 02.04.2015)), p. 33.

And the third one – there are the public spaces especially Philharmonic Park (before called Gubernator's Park), square adjacent to the Old Town walls and the boulevard on the Caspian Sea banks. In the hot and dry climate and the hostile soil conditions the greenery is kept only by the watering and grounds care, but it alleviates/soothes the climate of the high density inner space, giving shadow and adding moister and by the way it has a big impact on the image of the town.

All mentioned areas create the historical districts and date back to 19th century or earlier. They are characteristic for Baku and "tell us about its history", so the individuality should be preserved.

Baku in 21st century

The crucial fact for the present time growth was the independence of the country, which began in 1991. It took some years to establish constant and predictable political situation – the conditions for uninterrupted development. Systematically an amount of money spent on construction and in the same time number of constructed buildings rose in the whole Azerbaijan (as we can see on the graphs Fig. 2 and 3) and of course thereby in Baku (though one can guess, that the percentage of expenditure was higher in Baku as a capital city compared with other parts of country). The reason for the fast growth is that Azerbaijan has started to administrate the funds which come from selling the petroleum.

Fig. 2. Picturesque "streets" of the Old Town
Source: drawing by Maria Agajew.

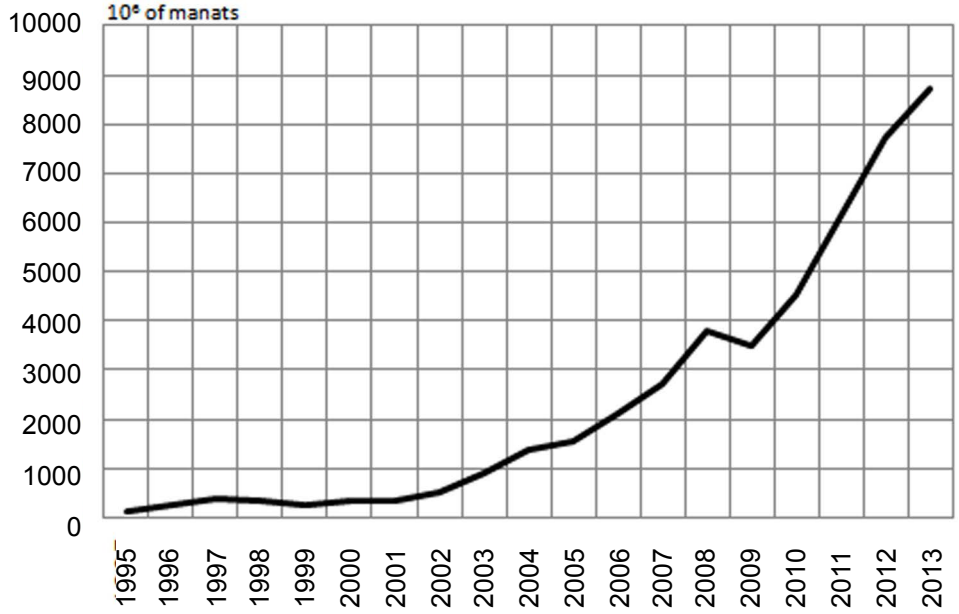

Fig. 3. Volume of construction works carried out own forces

Source: http://www.azstat.org/MESearch/search?departament=4&lang=en (access 05.03.2015).

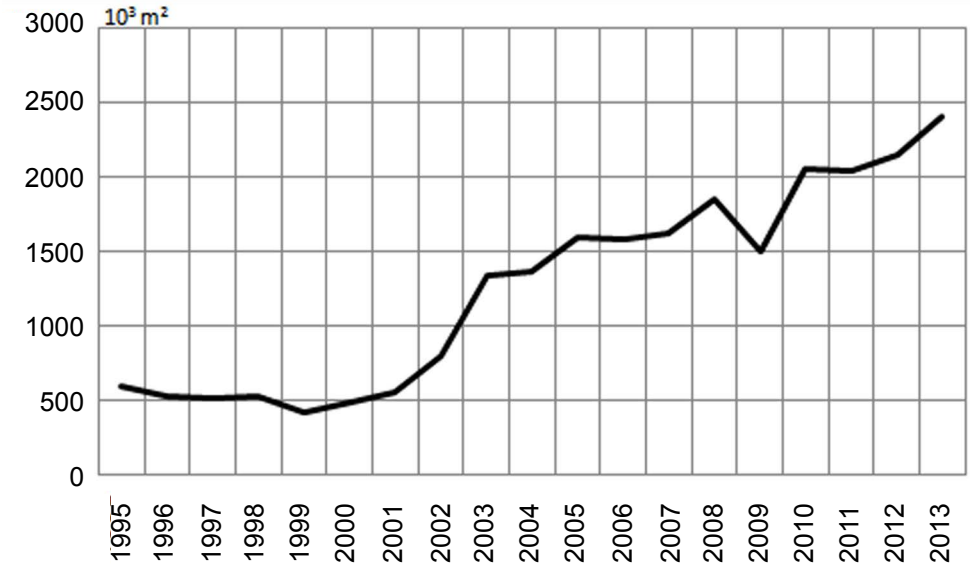

Fig. 4. Submitting into use of residential building by all sources of finance total square meter

Source: http://www.azstat.org/MESearch/search?departament=4&lang=en (access 05.03.2015).

Nowadays the city develops and flourishes. Each year brings new buildings, roads, investments, plans or ideas. As richness increased, at the same time, the image of the city has started to change. Once again the rising of prosperity is visible and citizens are proud of their city.

A lot of money is spent on revitalisation, development, refurbishments and conversions. Unfortunately in Baku, in many cases the chosen methods of conduct cause the loss of characteristic features of the city.

Examples of noticeable disadvantages of changes:

- Losing the uniqueness, diversity, identity

In the searching of beauty some public gardens were changed. The example – a Philharmonic Park was renovated. It was a little bit neglected park, without perfectly manicured lawns. But truly the park was well maintained. Different species of shrubs and flowers naturally filled the spaces between low walls, which created the terraces essential for using sloped area of the park. In the park there were some interesting objects, among others a fountain (of the plain, modest form, integrated with the slope of the hill), the watering place with drinking water and the bust of famous Azeri poet. After renovation everything is changed. Smooth lawns, walls of stone (keeping the terraces), new pavements and the stones with copies of famous drawings from Qobustan[5] are in the park. The bust of the poet is no longer in the park, watering place disappeared and the fountain was completely transformed. Assessing all the changes one can say that everything could be approved (though not without any regrets) but not a new fountain. It is sandwiched between philharmonic building (from 1910-1912) and the medieval old town walls. In decoration and design of the fountain and its surrounding a lot of historical forms, details are used. Moreover it is built of white and black stone with gilded elements. The forms and details are not modest and unpretentious. They are historical, but they are not from "the tradition of the place". Furthermore, the richness of forms, contrasting colours and abundance of gilding is striking, odd and curious, especially in the place near such important monuments. During renovation other strange thing was done: a big clock was put on the town walls – the modern clock which light at the night.

Some changes were also made on boulevard, among others new exotic species of trees and new sculptures appeared along wide sidewalk. The biggest astonishment is caused by the group of Mexicana people with sombreros and guitars.

An addition of the new, extraneous forms, elements and details to the historical places cause enormous changes in the perception of the space, disappearing of special character of the place. Moreover lack in the overall view in the character of the city induces disorder in forms of decoration.

- Unification of historical buildings (in case of schematic renovation)

In the Old Town the renovation is preceded and some results may be a little bit confusing because all buildings are unified. The plaster is removed from the stone wall of the buildings, the overhanging balconies get cladding of dark wood

[5] The drawings in the Qobustan are made by ancient men. More at http://gobustan.si.edu/introduction (access 13.04.2015).

(everyone in the identical shade). There is the misgiving that soon all old town becomes dull and uninteresting. It would lose its unique character, local colour and differentness. Moreover "a number of the Old City's heritage buildings and houses have recently been demolished and replaced by new structures"[6]

- Reducing possibility of recognition of the important elements of the historical layout on the panoramas of the city

During the first years of 21st century the changes were not visible, the town lived the slowly life. Old Town was mysterious labyrinth with Shirvanshah Palace on the top and the Maiden Tower at the foot of hill, near boulevards (as it at the previous time was just at the sea bank). From the top of the contiguous hill (on which we can get with funicular) the vista of the town was impressive. The Old town was easily readable in the view. Maiden Tower – one of the kind, one of the greatest monuments of Baku, its most recognizable symbol constitute the accent in the frontage of boulevard, though some high-rise buildings were visible.

Gradually more and more new/modern high buildings (tower blocks) appeared in the landscape of the city. Nowadays the "forest" of the high-rise buildings is visible on the vista, creating a disorder and completely destroying the previous beauty. Nowadays the Maiden Tower disappears in view between new structures.

Moreover a new hotel was built on the border of the Old Town (2012). Exactly some historical building (of local importance) were demolished to build luxury Four Season Hotel. It is a part of the frontage of the Neftchilar Street, but it is more than two times higher than existing buildings. Additionally, the footprint of the hotel covered footprints of three demolished buildings with yards and alleys. So it destroyed layout of historical location and it dominates over existing structures and of course it competes with the Maiden Tower especially in the vista of town.

Juxtaposition

Knowing the images of the other towns and processes going on there one can compare the consequences of different way of proceeding. Vienna and Paris with their Donaucity and La Défense, Dublin with its revitalisation of Temple Bar, Berlin with its Careful Urban Renewal will be taking in the consideration.

Temple Bar and Berlin

Temple Bar in Dublin is a well-known and widely disseminated case. Though the Temple Bar, the part of Dublin dates back to medieval times, in generally it comes from the 18th century. In eighties of 20th century this historical part of the town became a little bit neglected, unkempt, improperly maintained, it was caused by plans of demolishing the existing buildings and converting the area to the transport facilities – bus station. At the same time due to conditions of the unrepaired buildings the rent cost in the area was really low and it attracted

[6] UNESCO WHC Convention Concerning the Protection of the World Cultural and Natural Heritage Twenty-sixth session Budapest, Hungary 2002 WHC-02/CONF.202/17 (http://whc.unesco.org/en/sessions/26COM/documents/ (access 02.04.2015)), p. 33.

different artistic activities, sole traders, small businesses, eccentric, second-hand shops to locate there. At the news about planned changes the local community started to fight against demolishing but for revitalization. After some consultations the new, innovative method of revitalisation was carried out. The method respected desires of users, tended not to raise the rental fees, preserved existing enterprises and introduced more vitality and more liveliness to the built environment by enhancement and development of cultural functions. The method was named cultural revitalisation[7].

The matrix of the district was characteristic – narrow streets small quarters – as in the old part of the town, not high buildings, different materials of cladding, different functions. The revitalisation has been proceeding according to the plan, which developed rather than changed existing urban layout. New functions were intended to bring life to the neglected district, not to dominate. The process has not change the image of the quarters; existing street network has been preserved; the diversity of materials, colours and size remain the same; new buildings appeared (new buildings were added to feel the gaps), but buildings in the same scale like existing structures repeating the grid of the ambient quarters[8].

Now, we can see the living town maybe not perfect but true full of colours, the uniqueness of the area was kept and the character remain like it was before. All improvements have been made with small impact and careful touch.

Another example of way of proceeding is the Careful Urban Renewal in Berlin, during International Building Exhibition so called IBA. In eighties of 20th century great action was conduct to improve the life conditions and situation in the West Berlin. A great amount of funds was use for conduct Exhibition (total cost of spending reached approximately one thousand of millions of German marks)[9]. However, the goals were not to amaze, not to astonish, but to focus on the preservations, improvements and participation of the wide range of collaborators and users (e.g. tenants). So, nowadays one can observe part of the city kept in the human scale with facilities suitable for denizens.

Vienna and Paris

The historic centre of Vienna was inscribed on the World Heritage List by the World Heritage Committee of UNESCO in 2001[10]. The core zone was established and the buffer zone was constituted to protect the views. The historical centre of Vienna has been preserved as wonderful, precious gem. Very clear, easy to read urban layout has been protected and emphasized by the generations of planners. Among the documents which induced the good conditions of the historic townscape of Vienna there are: Preservation of Monuments Act from 1923 with later

[7] John Montgomery. "The Story of Temple Bar: creating Dublin's cultural quarter". *Planning Practice and Research*, Vol. 10. No. 2, 1995. passim.

[8] Catherine Slessor. *"Dublin Renaissance". The Architectural Review.* Vol. 192. No. 1151, 1993, pp. 42-45.

[9] Vittorio Magnano Lampugnani. "How to put contradiction into effect". *The Architectural Review*. Vol. 176. No. 1051, 1984, pp. 26-27.

[10] http://whc.unesco.org/en/news/143/ (access 15.03.2015).

amendments, the Vienna Building Code from 1930 (with the later amendments). The Vienna Building Code includes inter alia The Vienna Old Town Conservation Act, The City of Vienna Land Use and Development Plan and The Vienna Nature Conservation Act[11].

A modern office centre with contemporary high skyscrapers, up-to-date and magnificent architecture (and of course with straight fast connection by underground) was located on the other bank of The Danube. So, nowadays one can admire a beautiful vista of the town from the hills located to the North-West. Due to the preserved layout of town and strict rules connected with new creations in the built environment of historical town it is easy to find out and recognized particular buildings of the town.

Of course there is pressure to build higher especially in the surrounding of buffer zone of protected core, but all attempts are assessed by the authorities and moreover by the committee[12]. A complex of new structures around main railway station is the example. Proposed height of the building was lowered according not to destroy the views from the Belvedere Park.

La Défense – the business district in Paris origins in sixties of 20th century. It was established according to the demands written in the Athens Charter from 1933. The outlines have changed a little from that time, but results visible in panoramas of the town are valuable. High rise buildings are located on the one area. In the centre of city Eiffle Tower dominates over quarters of similar height cut by alleys designed by George Haussmann. In the view delicate accents appear: domes and spires of the churches or public buildings.

Conclusions

The decision makers (policymakers), investors like to emphasize their prestige by the extravagant, exaggerated, ostentatious investments. The goals are to strengthen the prestige and rank of the country or the enterprise and to manifest the richness. The tendency to build higher could be visible in every country and every town and the city, but in many cases some legal limits exist and they help to prevent mistakes in development. Sometimes constraints could be annoying but overall they work for all citizens of the town, denizens and enjoyers. The reasonable law rules conditions of building new structures which could have affected existing historical development. The obeying of the rules results in conservation and creation spaces of human scale with a good way of displaying historical structures and monuments, preservation genius loci of places, closed in inter alia: details, functions, existing layouts of streets and quarters, sizes of buildings, materials and citizens who live there and use it. The methods of proceeding in Baku (described above) in many cases denied the good practices.

[11] *Reports on the Requests and Recommendations Made By the World Heritage Committee Regarding the World Heritage Site "Historic Centre of Vienna (Austria)*. September 2002, pp. 18-19.

[12] Mission Report Thirty-seventh session Convention Concerning the Protection of the World Cultural and Natural Heritage of UNESCO. Phnom Penh, Cambodia. 2013, p. 15.

It is obvious that Baku is a rich city with great opportunities to build new, modern and outstanding buildings, but when it is done without proper attention to the past, to the history of the town and its monuments could cause the loss of all the virtues. The goal of creating a beautiful city with a high prestige could be missed. City must live and must change but the advantages and disadvantages should be calculated and estimated, considering not only the nearest neighbourhood but also the townscape and vistas of the town. Baku is dominated by the new buildings. The old Baku is disappearing, it seems like the place with no worth, with no value, which one can be ashamed of.

Observing the changing in Baku conclusion might be one: money rules, but results could be unexpected, like the loss of the identity, the unique physical character of the city, its 'genius loci'. As far as Baku is concerned the fast and unlimited development and many investments in the public spaces have caused a lot of transformation not always to the better vision of the image of the city. At the same time, the development in some European city is proceeding in other ways preserving existing historical built environment.

THEMATIC VISUALISATION STUDIES: THE AA VARIATIONS

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Introduction

If we wish to reach a deeper, more objective understanding of the phenomena of architectural and environmental design, we need to identify the kinds of conditions that are characteristic of architectural form-giving and to develop and apply working methods that allow us to imaginatively analyse, elucidate and visually demonstrate the workings of the compositional issues which are at interplay.

In order to systematically consider and study architectural artefacts, it is essential for academics to reach a level of clarity – and potentially even consensus – concerning the domains of architectural design that may be considered relevant and to question - often implicitly – shared conceptions.

This paper on Thematic Visualization Studies intends to communicate the results and findings of an in-depth case-based exploration on the basis of ten design artefacts, using a specially developed conceptual framework.

The Research Initiative

In the course of this research project, focusing on historic as well as contemporary precedents, 3D digital modelling methods were developed and applied, with the aim of evolving insights concerning spatial, structural and formal composition.

The idea: that modelling initiatives of this sort may offer pedagogical potentials in the context of design education as well as towards imaginative, design-based (and potentially: design-*driven*) academic contributing research. The AA Variations project involved the designerly interpretation – via an iterative cycle of model construction and de-construction – of a collection of representative dwellings, all located within one municipality and built over a period of roughly a century.

The design-based research methods and instruments developed in the AA Variations project may be of benefit when attempting to interpret built artefacts, which can then be described and analysed on the basis of physical ‘evidence’ or by considering data concerning specific design processes. Thereby insights might be generated concerning what a design has become and why or indeed: *might* have become.

The underlying thesis is that imaginative, model-based explorations may help us better understand iconic architectural artefacts, such as cultural heritage projects. These may or may not have been actually built, they may have been altered to such an extent that the original qualities have been lost, or indeed may have disappeared altogether.

An example of an earlier thematic analysis study focusing upon heritage issues was the so-called Umgebinde Variations study: a comparative visual analysis on the basis of an historical, vernacular building type, which is specific to the borderland regions of eastern Germany, Poland and the Czech republic[1].

The Research Method

Case-based research needs to be structured methodically, introducing an underlying order, for example by identifying certain binding themes and conceptual definitions, which should facilitate the systematic description, comparison and evaluation of results and findings. In such a 'designerly' process, concerned with envisioning various aspects of design in combination, modelling may play a meaningful role.

Creating models, digital as well as physical, conceptual as well as tangible, is a way of focusing one's mental capacities by *doing*, by becoming actively engaged and creating and communicating visual information that may 'speak to the imagination'. By working out different attributes of the overall composition in separate layers, thematic representations can be generated which demonstrate the workings of a design on different, identifiable levels. For this study, an interactive 3D modelling approach was developed.

In order to carry out such model-based explorations, with the aim of unravelling the expressive qualities of the architectural object as an integral 'whole', it is necessary to identify recurring themes on the level of design composition and perception. In this context, traditional typologies tend to have serious drawbacks, as they essentially stress those qualities that are the *same*, rather than offering insights into the kinds of patterns and variations that contribute to shaping a building's unique identity. In order to reach a more objective understanding of architectural form it might then be necessary to develop a kind of typology of *variety*…

For the benefit of this study, a thematic framework of architectural Domains was developed, intended to distinguish relevant formal issues within the overall composition as variables rather than as 'fixed' items. This involved a process of thematic, formal Categorization through Analogy, rather than Classification, which tends to lead to the perception of 'things fixed into rigid mental boxes' as Hofstaedter and Sander stress[2].

[1] Jack Breen and Bram van Borselen. „Unravelling the Umgebinde, Exploring Compositional Patterns and Variations in a Vernacular Building Type", in: Jack Breen and Martijn Stellingwerff (eds.), *Envisioning Architecture, Proceedings of the 10th international conference of the EAEA*, Delft: Faculty of Architecture, Delft University of Technology, 2011, pp. 101-114.

[2] Douglas Hofstadter and Emmanuel Sander. *Surfaces and Essences, Analogy as the fuel and fire of thinking*, Philadelphia: Basic Books, 2013.

Perceptions and Conceptions

It may be clear that the kinds of spatial and material compositions that are characteristic of architecture are hardly ever simple. For designers it is seldom a matter of making 'hard' choices, but rather of determining the right combination (mix, dosage, balance, tension) of attributes, which exist by the grace of 'linked' themes within the project as an orchestrated whole. Similarly, there are aesthetic considerations at play, whereby it is frequently a matter of determining the relationship between less 'concrete' compositional aspects. In the context of design, such 'opposites that attract' may be considered as coupled conceptions. In the words of architect and humanist thinker Aldo van Eyck: Twin Phenomena[3]. Considered in such a way, designing involves finding the appropriate *balance* between phenomena such as Openness and Closure, Lightness and Darkness, Mass and Space, Inside and Outside, etc. etc..

Inspired by van Eyck's phenomenological approach and the visual model of designing as an iterative, cyclic process, presented in John Zeisel's influential book 'Inquiry by Design'[4], an attempt was made to construct a thematic cycle of design concepts, with the intention of creating a framework for the systematic evaluation and comparison of design artefacts. In the extensive development search, various configurations were considered, evaluated, discarded or subsequently developed further and fine-tuned. Gradually, a concise scheme was drawn up, which forms the basis for a thematic framework of design 'Perceptions'.

The elementary thematic model proposal, as it stands, tries to combine a number of characteristic aspects, considered as 'segments' of design cycles, following the iterative principle of design as a process. The model identifies four essential categories, which are more or less indicative of the 'rough to fine' sequences of designing processes.

The four core 'Perceptions':
A. Formation;
B. Organisation;
C. Articulation;
D. Expression.

Each of these four main categories is 'connected' with three sub-categories, with a domain title plus indicative 'twinned' design conceptions, which as it were interact within the integral composition as a whole.

The twelve sub-categories have subsequently been used as structuring devices for the study of ten selected projects in the AA Variations initiative. Each of these projects has been studied and modelled systematically and evocatively, using the layered 3D modelling techniques, which were developed in the course of the study.

[3] Aldo van Eyck. „The Child, The City, The Artist", in: *Byggekunst*, No. 1, 1969.
[4] John Zeisel. *Inquiry by Design: Tools for Environment – Behaviour Research*: Cambridge University Press, 1984.

The conceptual structure brings together thematic Perceptions and Conceptions that have been under development for some time, whereby intermediate arrangements of compositional Domains have been tested in the context of the evolving AA Variations project and more recently, in an academic experiment in an educational environment.

The opportunity came about through the participation as a kind of 'researcher in residence' in in a third year Bachelor phase Academic Study initiative (Module AC3), in which students were asked to monitor and document the development of their final BSc design project in a Thematic Image Dossier, making use of the same conceptual framework[5].

The AA Case Study Collection

Over a number of years, data was gathered concerning projects, which might serve as the subject matter for a comparative study initiative. Eventually, a collection of paradigmatic artefacts was formed, spanning roughly a century and all located within the confines of the Dutch municipality of Aalsmeer.

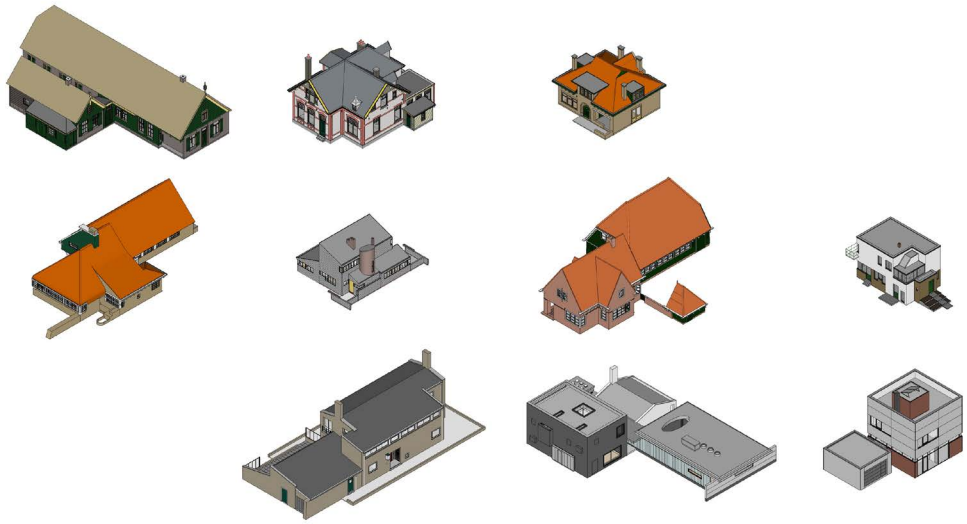

Fig. 1. The ten projects of the AA Variations case study project: top row: AA1-3; middle row: AA4-7; bottom row: AA8-10

Source: Jack Breen, The AA Variations Project.

The ten AA case study projects in a historical context:

1. Traditional Vernacular (1825)
2. Regional Eclecticism (1903)

[5] Jack Breen. „Towards Evocative, Thematic Design Dossiers; Learning from an Experimental, Domain-based Design Visualization Study", in: Saleh Uddin et al. (eds.), *Proceedings of the 2014 DCA conference*, Atlanta, 2014.

3. Early Rationalism (1912)
4. Expressionism (1923)
5. Early Modernism (1924)
6. Early Neo-vernacular (1926)
7. Pre-war Modernism (1930)
8. Late Neo-vernacular (1957)
9. Expressive Neo-modernism (1990-2006)
10. Rational Neo-modernism (2012)

The first three projects may be considered as being emblematic of the period of development before the First World War. The central group of four projects is particularly interesting because they mark a number of aesthetic paradigm *shifts* in the dynamic period of the interbellum. The last group of three gives an indication of post-war developments, up to the present day.

The AA Case Study

The AA Variations project was set up - and has steadily evolved - as a testing ground for the identification of compositional themes in architectural composition and the demonstration of their effects in perception. The testing and fine-tuning of the conceptual framework is one of the study's primary fields of interest. The other, intrinsically linked, issue has been the development of *instruments* for the imaginative exploration and visualisation of research information.

Central to the development of the working method has been the advancement of - layered - 3D modelling applications, whereby the same project model can be used to show different thematic aspects in combinations, generating schematic interpretations in 3D and 2D. The methods and outcomes have been developed in close collaboration with ir. Bram van Borselen.

Fig. 2. Documentation drawings of case study project AA1
on the basis of observations and photographs of the existing artefact
Source: Jack Breen, The AA Variations Project.

In the coming sections, an indication will be given of study's approach and the kinds of results it has brought about so far.

Project AA1: Traditional Vernacular

The first project in the series may be considered as a precursor for the nine projects that follow. It represents an articulate modulation of a traditional Dutch farmhouse type, which was typical in this area in the nineteenth century, and of which a number still remain within the municipality.

Essentially, this vernacular type consists of an integral, rectilinear volume encapsulating both farmhouse and stables, which was well suited for the long and relatively narrow, island plots. This particular exemplar is somewhat special because it consists of two joined volumes. The vernacular type formed a reference point for later projects, notably AA4 and AA6.

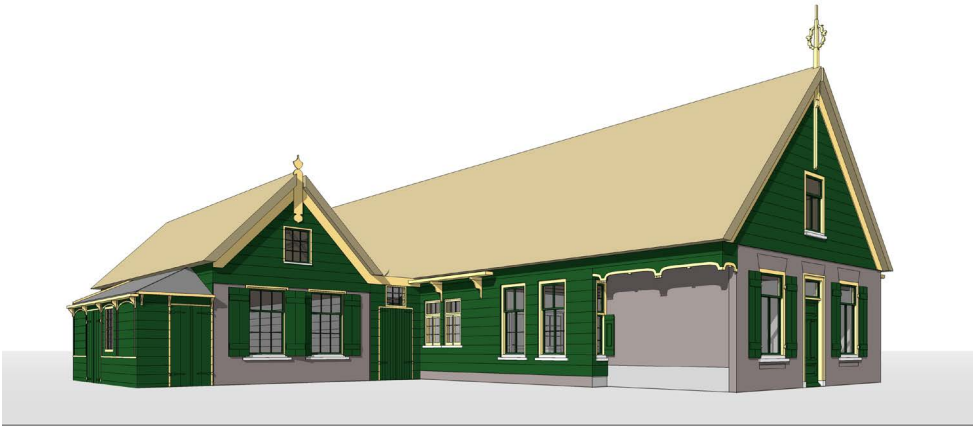

Fig. 3. Eyelevel perspective rendering of the AA1 historic farmhouse, on the basis of a 3D SketchUp model
Source: Jack Breen, The AA Variations Project.

Project AA4: Expressionism

The fourth project to be considered is a market gardeners' home with integrated flower shed, built in 1923 after a design by Michel de Klerk[6]. The project is a late exemplar of the expressionist Amsterdam School, which was highly influential in the Netherlands from around 1910 to 1930, particularly in and around Amsterdam.

The architecture of the Amsterdam School movement was informed by Art Nouveau and Gothic Revival architecture as well as by the work of H.P. Berlage and Frank Lloyd Wright. Recurring formal themes are sculptural massing, rhythmic

[6] In several publications on de Klerk and the Amsterdam School the project in Aalsmeer is overlooked. It is however documented concisely in the monograph of his life and work: Manfred Bock (ed.), *Michel de Klerk; architect and artist of the Amsterdam School 1884-1923*, Rotterdam: NAi Publishers, 1997.

sequencing, plastic modulation, expressive detailing and the use of exotic, decorative motifs. From early 1923, de Klerk drew up a series of preliminary designs, after which façade elevations were worked out in detail. The house was completed, on the basis of these drawings, after his death.

Considering its relatively modest size, the ensemble is surprisingly complex, demonstrating a variety of compositional components, which can be experienced on different perceptual levels. As such, the project has been of particular interest in the context of the AA Variations initiative and has served as a 'laboratory' on conceptual as well as instrumental levels.

The explorative study has been carried out on the basis of historical drawings and documents, as well as photographs made during repeated visits. Making use of this data, layered 3D models have been created, intended to give insights into the workings of different architectonic and architectural themes. To highlight features on a textural level, detailed 'segment' models have been worked out, which can be viewed from outside as well as inside.

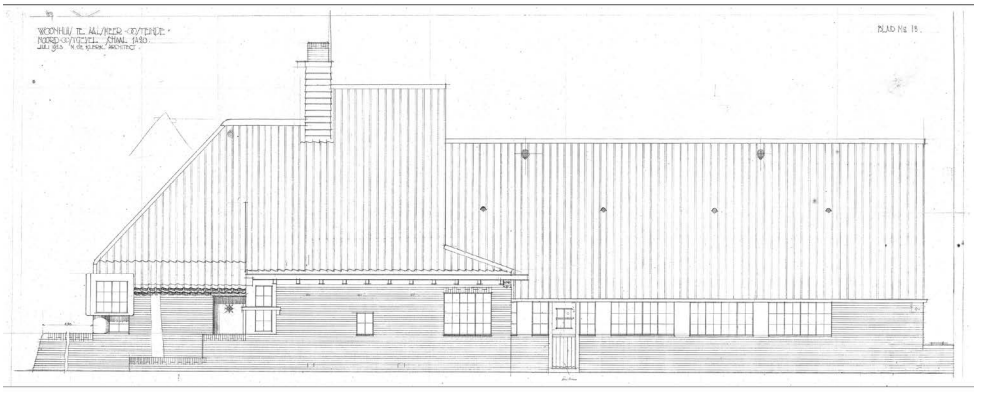

Fig. 4. Detailed side elevation drawing scale 1 : 20 on the basis of which the AA4 project was actually built in 1923
Source: Jack Breen, The AA Variations Project.

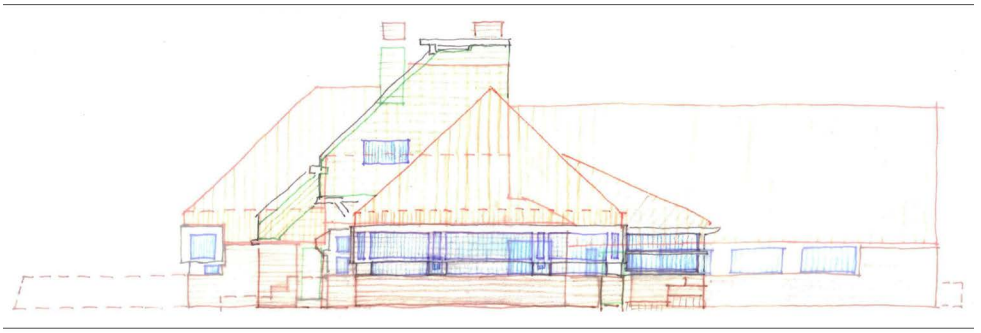

Fig. 5. Combination of two, overlaid, explorative analytical hand-sketches on transparent paper, simultaneously showing the front and side facade of the AA4 project
Source: Jack Breen, The AA Variations Project.

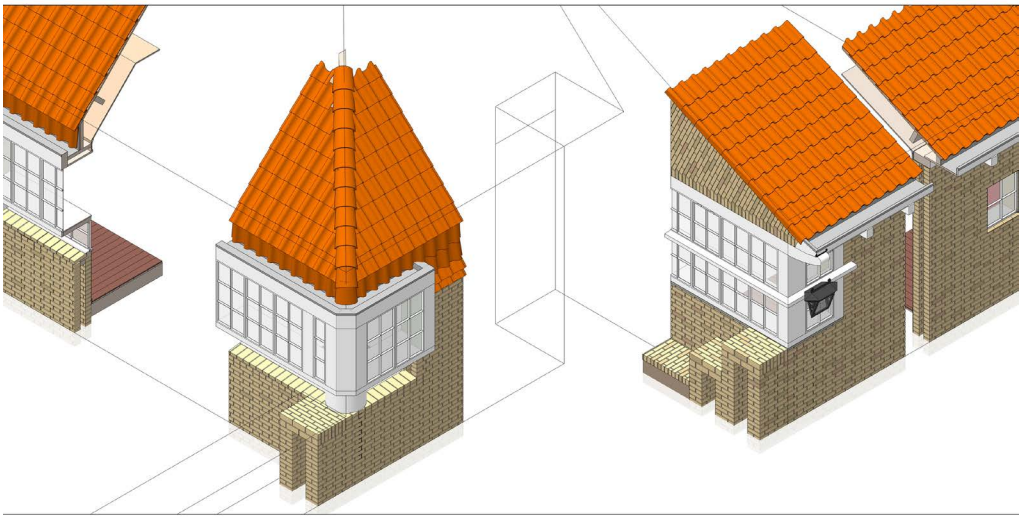

Fig. 6. Combination of sectional 3D models, showing critical details and features of the AA4 project's expressive front and side facades

Fig. 7. Four facades of the AA10 project, generated on the basis of a 3D model
Source: Jack Breen, The AA Variations Project.

Project AA10: Rational Neo-modernism

The last project to have been included in the collection of projects is of a relatively recent date. It was designed by Engel architects, Amsterdam and realised in 2012. The building can be considered as an exemplar of the 'financial crisis' era of the early twenty-first century. To be able to realise the dwelling within the required, strict financial framework, a choice was made to use a rational prefabricated concrete building system, usually applied in larger scale utilitarian projects, with standardised building products.

The realised project is eye-catchingly stark and rationally neo-modernist in expression, contrasting considerably with the surrounding, more neo-traditional dwellings, characterised by pitched roofs and a diversity of surface materials and colours. The basic house volume consists of a 'perfect' cube of 9 x 9 x 9 meters, which is compositionally manipulated on the levels of massing and plasticity, closure and transparency, colour and texture…

On the basis of the conceptual framework, twelve 'essential' images have been developed, each accompanied by a brief exploratory text. These thematic variations have been generated within the 3D SketchUp model, whereby particular layers were either activated or deactivated. The resulting 2D images were then worked out further using Illustrator software. On the basis of this experiment, a format has been developed that is also used in the study of the other AA projects.

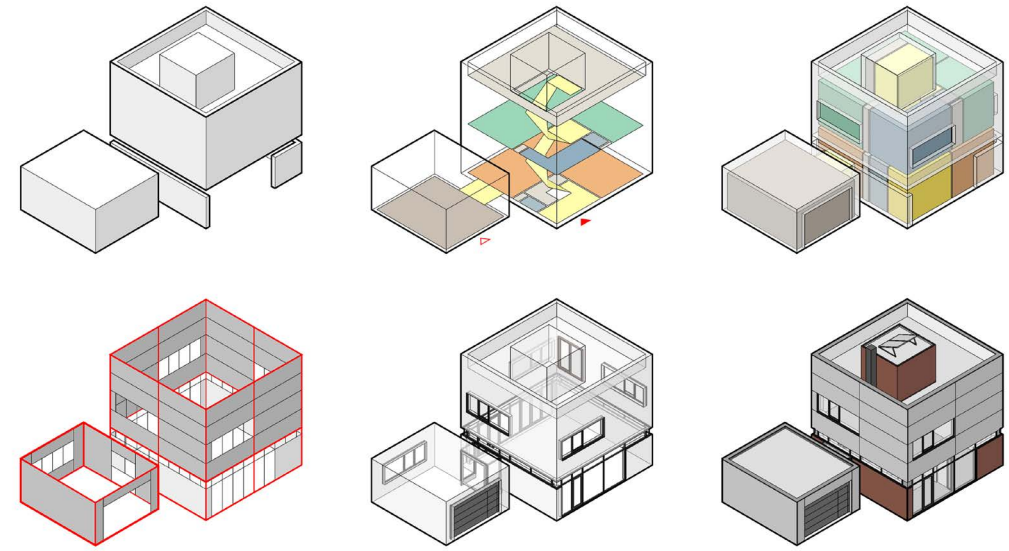

Fig. 8. Six of twelve thematic models identifying the elementary formal 'Patterns' developed for case-study project AA10, AA Variations, 2015

Source: Jack Breen, The AA Variations Project.Source: Jack Breen, The AA Variations Project.

AA Variations Findings and Perspectives

This Paper was intended to offer insights into the explorative case study's working methods, the application of the conceptual framework of formal domains and the resulting collection of thematic modelling results on the basis of the AA Variations experiment. Furthermore, the aim was to draw conclusions concerning the benefits and potentials of this approach in the context of heritage-based architectural research in an academic environment.

Essentially, the as yet on-going study can be considered as an explorative research project involving iterative study procedures of inquisitive search, methodical scrutiny, thematic analysis and creative visualisation. The material that is included in this Paper should be considered as a sample of the overall content and as an indication of the outcomes.

An important aspect of the approach is the systematic examination of thematic domains within an integral project. An approach that may be of benefit in the designerly exploration of *existing* architectural artefacts, such as cultural heritage projects, but that may potentially also contribute to furthering understandings in design-driven, education-based study initiatives.

GLOBAL PERSPECTIVES ON CRITICAL PRACTICE: ENVISIONING HERITAGE IN NEW LANDSCAPES

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Introduction

This paper discusses current design and communication techniques through three contemporary projects designed by the author - the first, a new conceptual hotel in Sardinia, Italy; the second, a conceptual urban park in Mumbai, India; and the third, a new housing community being built in La Prusia, Nicaragua. Starting with an overview that problematizes the current state of envisioning heritage, the paper first questions its common oversimplification as a strictly aesthetic or stylistic act. Building on their analysis and critiques, this paper explores this revisioning of heritage in built and speculative form by blending cultural and ecological heritages in urban landscapes. Next the paper explores the interplay between the design and communication methods in each of the three case study projects and situates each in a global context of critical practice. From there, the paper concludes with an expanded discussion of imaging as it relates to design thinking and communication through an examination of the techniques that were employed to graphically communicate each individual project.

Scholarship and practice concerned with envisioning heritage has primarily concentrated on the aesthetic understanding of heritage as historical preservation. This field of work has emphasized the visual perception of heritage – such as the stylistic elements of architectural beauty and image – rather than a systematic approach that centers how heritage operates within ecologies and complex social and cultural landscapes. Humanity is understandably interested in image as it relates to our visual and foundational past. Born of Western thinking dating back to the fifteenth century, historic preservation has provided a mirror for humanity. That image reflects our values, but should not be oversimplified. Francoise Choay asserts in her book *The Invention of the Historic Monument* (1992) that concepts of historic preservation were a responsive invention to humanity becoming visually blunted with buildings and objects to the point that they became a neutral background to our daily lives[1].

[1] Choay, Francoise. *The Invention of the Historic Monument*, Cambridge: Cambridge University Press 2001, pp. 138-163.

Sharon Zukin in *The Naked City* (2013) argues that stylistic architectural elements commonly celebrated in envisioning heritage are ultimately superfluous[2]. As end users adapt architecture and physical environments through changing historical, social, and cultural contexts, styles are reinterpreted, floor plates reconfigured, all in an effort to make new what was latent. These ubiquitous forms of adaptive reuse find value in the search for authenticity. However, when we seek to romanticize through historical forms, we seek a utopian ideal that does not exist. Kevin Lynch in *The Image of the City*[3] (1960) and Fran Tonkiss in *Cities by Design*[4] (2013) argue that utopia is not found in a faraway place, but rather in what Lynch argues in a "recalibration of placelessness." Furthermore, extending Alfred Crosby's ecological analysis of trans-Atlantic imperialism in his seminal text *The Columbian Exchange* (1973), a holistic understanding of heritage requires an ecological framework[5].

Building on their analysis and critiques, this paper explores this revisioning of heritage in built and speculative form by blending cultural and ecological heritages in urban landscapes. This paper uses three case studies of global contemporary design to problematize the over-simplification of architectural traditions while elucidating diverse forms of envisioning heritage in urban and peri-urban areas to help provoke future discourse in the field.

Case Studies

Sardinia

The first case study, Hotel Santo Stefano in Sardinia, Italy, fuses archaeological ruins with eco-tourism and the slow food movement by investigating sites and connections between ancient structures and farmlands. The area in La Maddalena, a small archipelago on the northern coast of Sardinia in the Mediterranean Sea, remains home to countless fortifications created by armies stationed in the area over the course of its long history (Fig. 1). Defensible bunkers built into the hillside that have been rendered dormant, dating back to pre-history and as recently as World War II, in addition to the closure of the NATO naval base which terminated more than five thousand jobs, have left behind vestiges of robust historical impacts.

The agricultural significance of the archipelago aligns with a belief that new development can bring together disparate pieces of the area's history into a productive cohesion of heritage, activity, and socio-economic advancement. With a law that allows for a 25% volumetric bonus for "hotel specific" developments within or directly connected to the historical sites, the project was able to propose

[2] Zukin, Sharon. *The Naked City: The Death and Life of Authentic Urban Places.* Oxford: Oxford University Press. 2013.
[3] Lynch, Kevin. *The Image of the City*. Cambridge: MIT Press. 1960.
[4] Tonkiss, Fran. Cities by Design: The Social Life of Urban Form. Cambridge: Polity. 2013.
[5] Crosby, Alfred. *The Columbian Exchange: Biological and Cultural Consequences of 1492*. Westport: Greenwood. 1973.

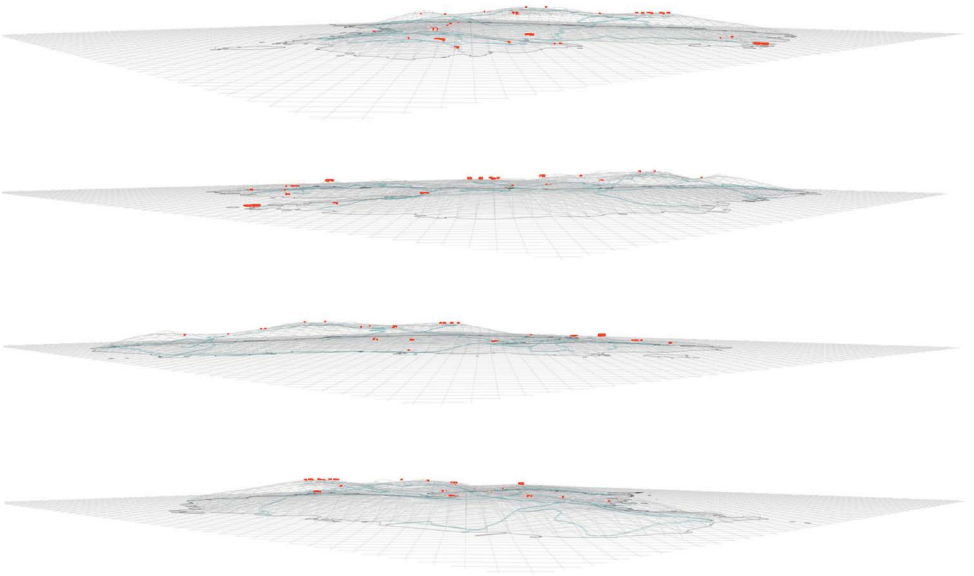

Fig. 1. Views of Santo Stefano island with vacant fortifications highlighted in red
Source: Image by Alesandro Preda, Jennifer Myers and Simon Bussiere.

contemporary updates to the existing structures. A basic 35 m^2 unit was conceived as a building block for the hotel rooms themselves, and units were inserted in the landscape where appropriate to closely hug the hillside, capture the best views and remain somewhat hidden from the surrounding pristine view shed. Observed footprints of the existing structures was used to impose a scaffolding of desire lines that would frame the units on the landscape and in direct relation to the structures (Fig. 2) – ensuring a direct physical connection to the site's heritage. While technical in nature, the images used to communicate the heritage of the islands is meant to serve more as a graphic overview – a map to be used by adventurers in their search to find new modalities in the old places being identified by the hotel program.

Once-fallow land has been adapted for reuse through the recent expansion of the slow food and eco-tourist movements that capitalize on the influx of foreign investment. The project, therefore, is framed by both the fortifications and a renewed restoration of an authentic food culture and ecology. Designed for America's Cup, the world's premiere sailing event, as well as the G8 summit of 2009, the "Hotel" capitalized on the site's breath-taking views and beach vistas. The project metaphorically exploded a typical hotel's program across the island rather than concentrating development into a single structure in order minimize visual impact from the water. Hotel Santo Stefano converted underground armory batteries that once held nuclear armaments into spas and hot springs. Old NATO docks and structures serve as the hotel lobby, while the fortifications themselves serve as restaurants, nightclubs, community spaces, and lodging which offered an ideal footprint for the hotel's programs while showcasing the site's unique ecological and architectural heritage (Fig. 3).

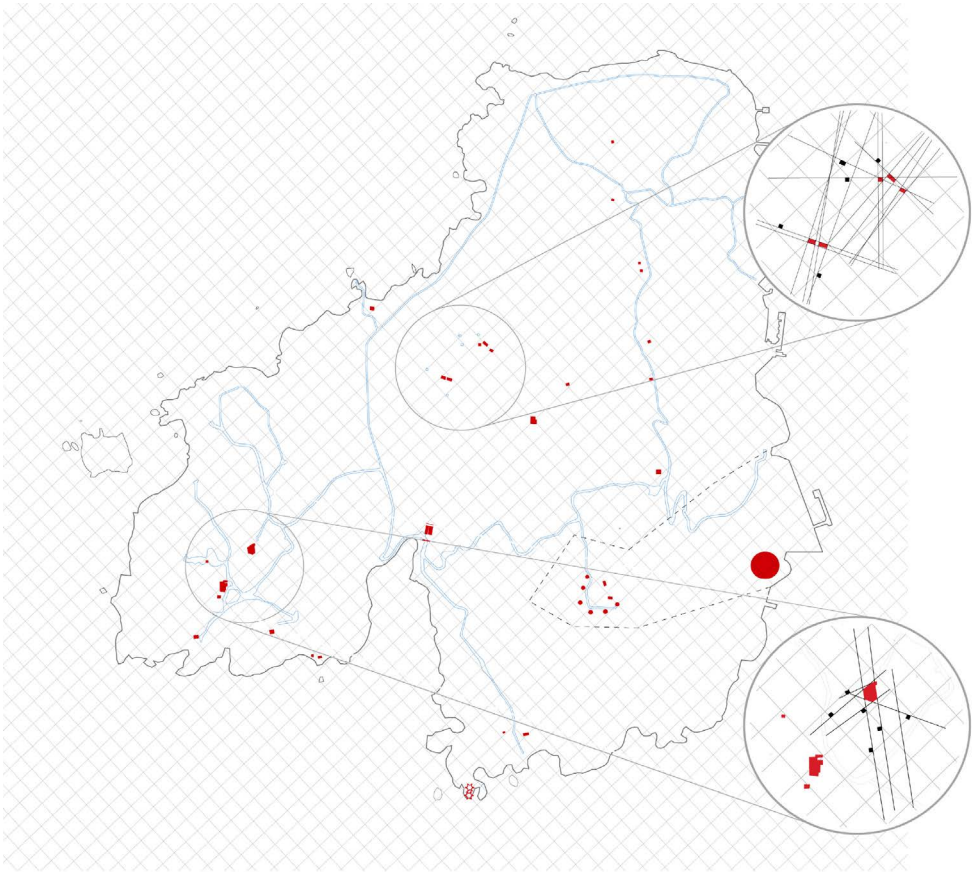

Fig. 2. Framework map of Santo Stefano. Vacant fortifications are highlighted in red with two zoom-in lenses illustrating design guidelines at typical site scales

Source: Image by Alesandro Preda, Jennifer Myers and Simon Bussiere.

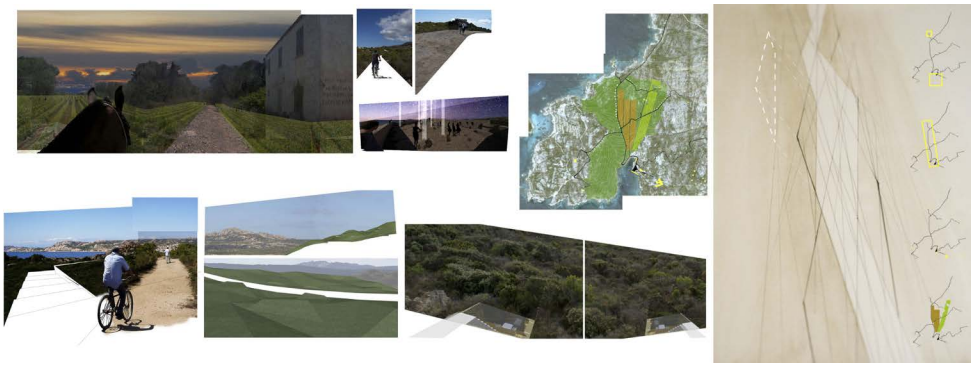

Fig. 3. Conceptual collages of key design features

Source: Images by Simon Bussiere.

The intention is to re-activate and showcase the context for what it truly is. Santo Stefano: whose terrain and structures represent the broader context of the Maddalena archipelago, is the gateway to Maddalena National Park, and thus to an understanding of the history and ecology of the greater archipelago. This history and ecology should not however be viewed as something that's captured in a post card, or fossilized in time, but rather, it must be engaged through active recreation and educational programs that espouse the greater mission of the region. The project was conceptual in nature, and the proposal was intended to offer a set of speculations about the landscape and possible futures.

Mumbai

The second case study, Bandra Park, in Mumbai, India unites disparate social classes through elevated urban green space in order to visually rethink colonial heritage, representing a model for a new means of population distribution and social interaction within the city. Mumbai is a former British colony where more than 19 million people currently inhabit a 4 x 14 kilometre island – a hub of one of the world's greatest human densities to which rural migrants and rich entrepreneurs alike flock to seek fortunes. Remnants of colonial rule reinforce significant class disparities in which some of the richest and poorest live on the same street separated by artificial structural boundaries. Nearly all development exists in enclaves that extract local resources from the poor while continuing to marginalize lower castes – tower housing developments rise from the slums below further distancing two socioeconomic worlds. The project critiques that artificial caste separation as stemming from colonial heritage and embedded within the urban landscape. Combined with virtually no green space or respite from the sweltering density of the city, the project adds needed open space while bridging the poor and rich through the construction of an urban park that, instead of demolishing urban slums, uses air rights to build above key sections poorer neighbourhoods, generating a path to ownership, increased property values and equity in the poorer settlements below, by using the following strategies.

Implementation and Design Strategies:

1. Map public social infrastructure (hospitals, schools, rail stations, etc.)
2. Employ a Property Use Plan (PUP) to yield maximum benefit to the local community by incentivizing mergers of surface rights.
3. Invest in upgraded water channels and right of ways for utility, circulation, and transportation.
4. Create "Bundle of rights" agreements through early negotiations with constituencies regarding joint use and the extent of infrastructure.

Uniting an upper-class tower development on the west with an affordable housing development to the east, the green bridge with flowing epiphyte mesh roof results in a pronounced decrease in temperature while cleansing the air of harmful pollutants (Fig. 4).

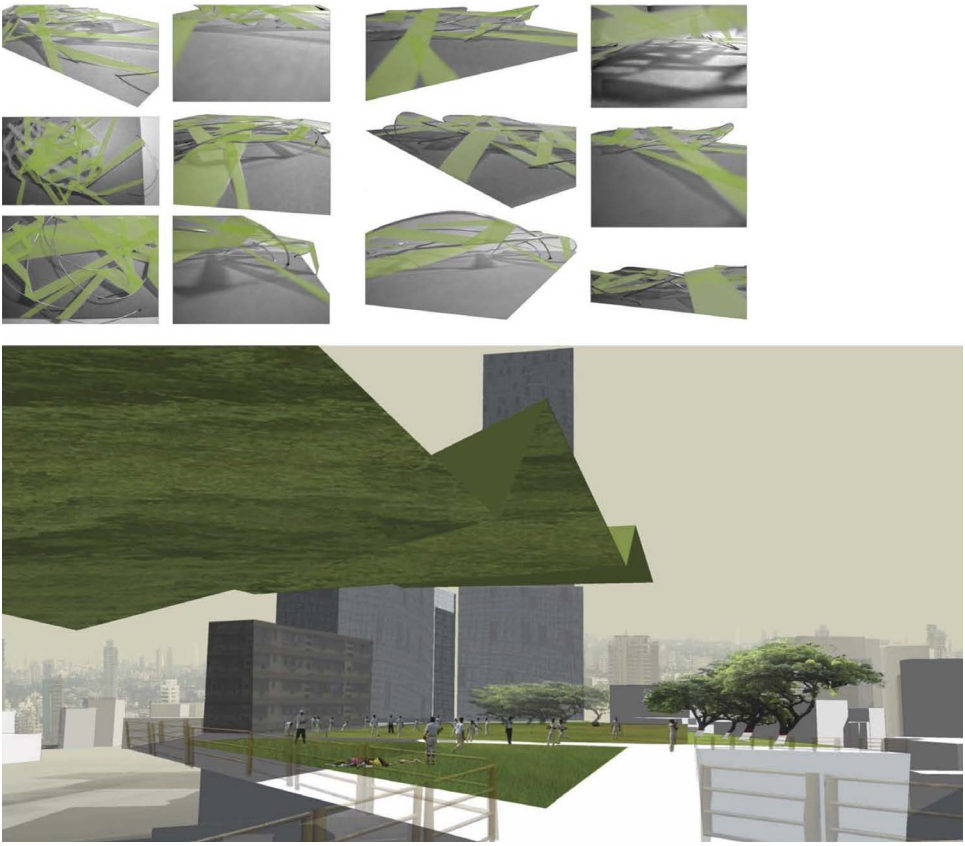

Fig. 4. Above: Conceptual study models of epiphytic mesh. Below: Photomontage rendering of Bandra Park
Source: Images by Simon Bussiere.

Paid for with the funds earned from the towers development, Bandra Park provides a place for all social classes to come together by embracing the postcolonial heritage of a unified India (Fig. 5). At a higher level, the urban design framework encourages inevitable and increasing densification of the city to happen along key zones (which already exists as a composite of iterative micro-connections but lacks a higher cohesion) enhancing equity, growth capacity and upward mobility through Air Rights developments. (Fig. 6). To begin assessing air rights potential, site constraints were determined at the neighbourhood scale by existing social infrastructure, pedestrian circulation networks and microclimate. Income valuation was next considered to establish what was to be built in the air rights as well as what types of income would be derived from such improvements. With Bandra Park's total new land parcel (8,000 m^2) worth approximately 24 million USD, and nearly a half billion dollars from new commercial and residential space, the development is able to subsidize affordable housing and mitigate a long held heritage of socioeconomic disparity. The city benefits directly from development in increased property and sales taxes, new jobs, and global attention from the high profile projects that would follow.

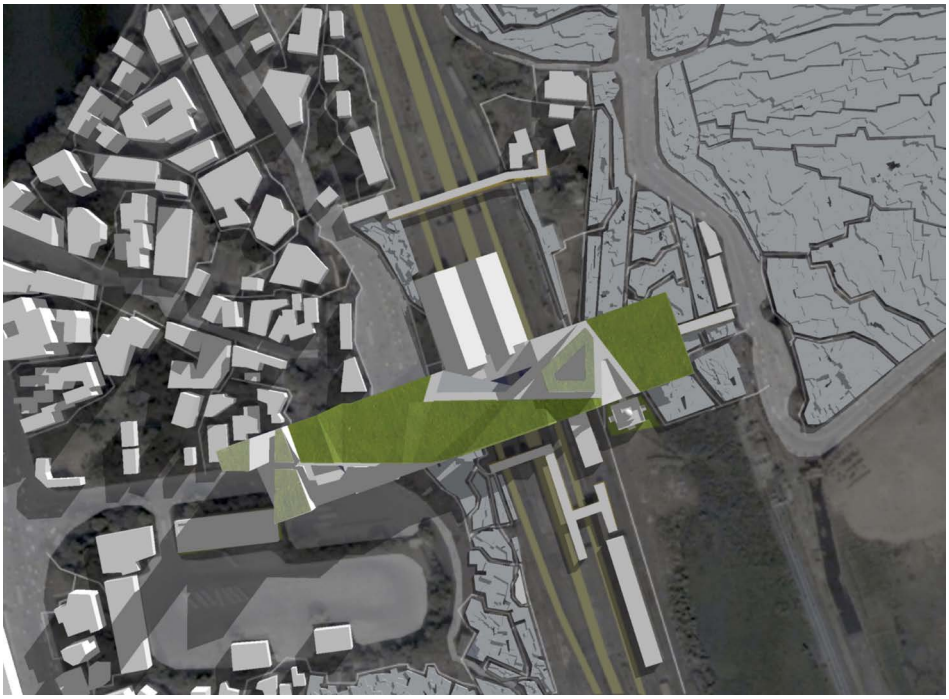

Fig. 5. Illustrative Masterplan of Bandra Park
Source: Image by Simon Bussiere.

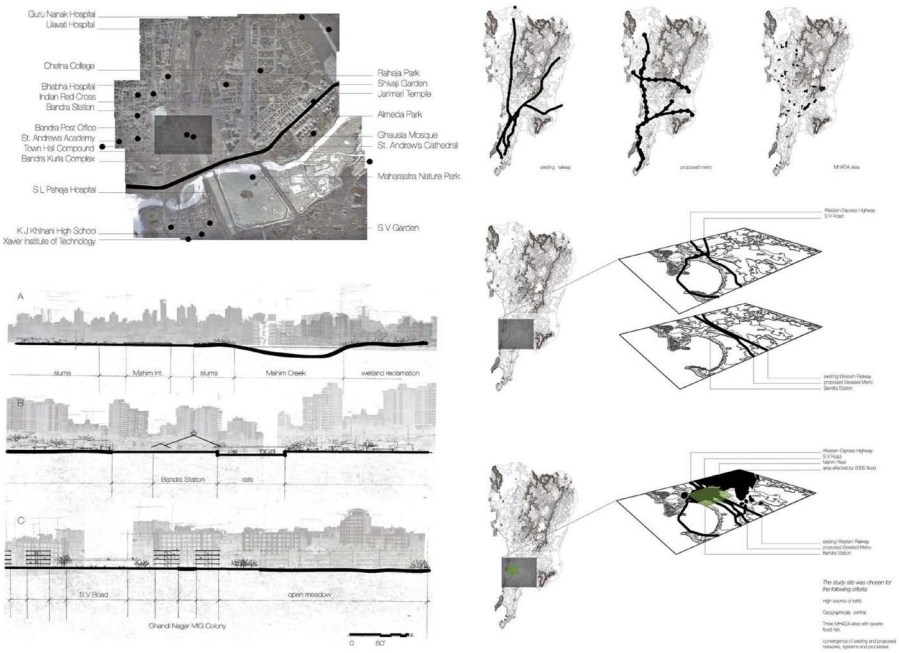

Fig. 6. Analytical maps, sections and diagrams of existing conditions in Bandra
Source: Images by Simon Bussiere.

Nicaragua

The third case study, Servicios La Prusia in Nicaragua, excavates an invaluable ecological heritage from the grip of impending development pressure. La Prusia, a small community inhabited by 1000 people is centered within a triangle of three critical sites: Mombacho the volcano, Granada the city, and Laguna Apoyo the lake. The impoverished peri-urban area has witnessed a long history of political instability as a result of military conflicts in the 1980s between the Nicaraguan Sandanistas and the Contras, funded by the US CIA. This political instability has created systemic difficulties in funding infrastructure, education, and food security that have limited the mobility and independence of local farmers while degrading the environment. While the area witnessed a train of charities, which inadvertently deprived the area of self-sufficiency, new non-profits like Casas de la Esperanza are rethinking housing development by centering the area's rich ecological heritage. The area's rich volcanic soil, pristine sweetwater lake, and dense rainy season provide conditions for diverse agriculture now in danger of being rendered obsolete by the encroaching eco-tourist industry from neighboring Granada.

The housing development funded by Casas de la Esperanza began by strategically mapping the existing canopy of trees (Fig. 7). This existing vegetation and protected critical root zones became the basis for a working-class housing development project that infused production, storefronts, and community space (Fig. 8). While a conventional development would demolish invaluable vegetation, this project threaded all new infrastructure into existing vegetation without disturbing soils critical to the health of the trees. The papayas, guavas, pineapples, bananas, and other fruits and vegetables produced within the development enable traditional types of commerce, exchange, and social interaction deeply rooted within the ecological heritage of the site (Fig. 9)

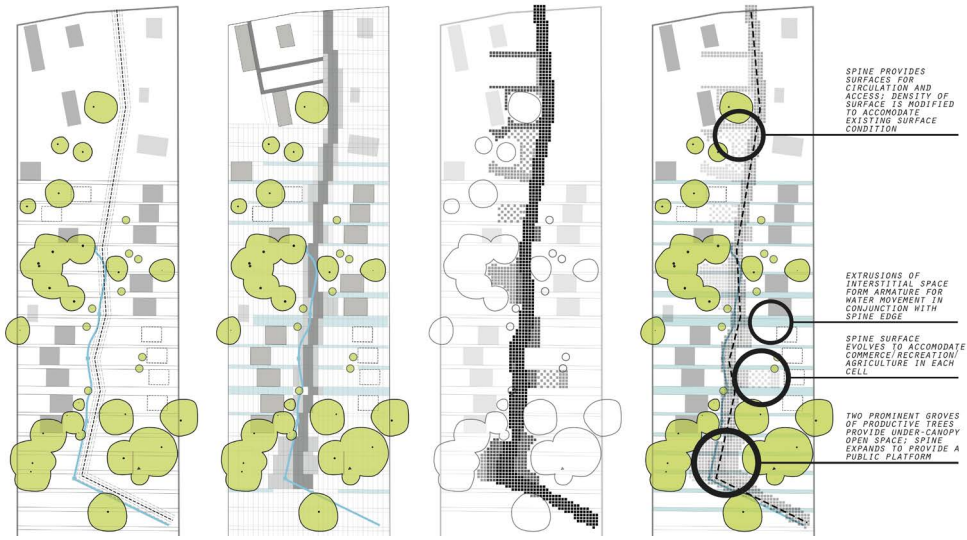

Fig. 7. Infrastructural diagrams showing systems threaded into existing tree canopies
Source: Images by Dane Carlson and Simon Bussiere.

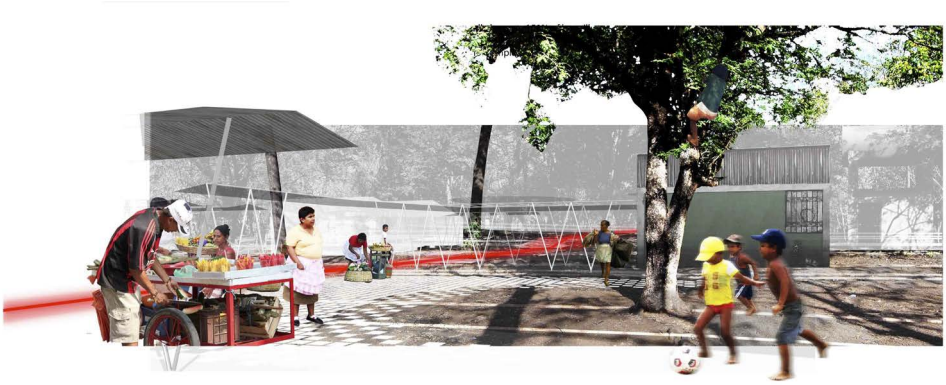

Fig. 8. Photomontage Perspective: Social space, production and commerce beneath the canopy of an existing mango tree
Source: Image by Dane Carlson and Simon Bussiere.

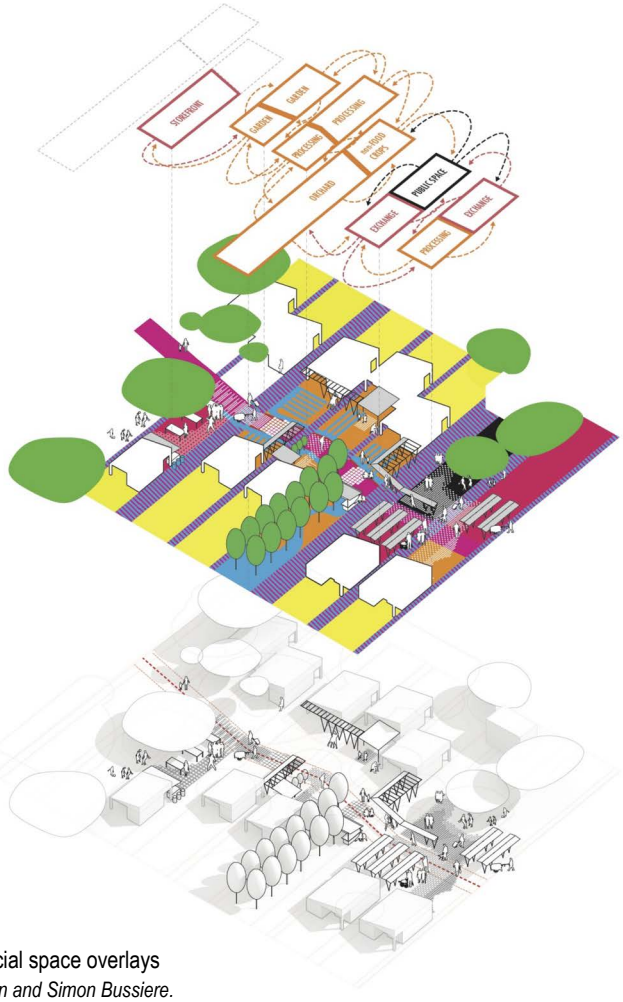

Fig. 9. Commerce, productive and social space overlays
Source: Image by Dane Carlson and Simon Bussiere.

Conclusion

These three projects reflect the connection of disparate historical, landscape, and cultural pieces into a productive cohesion of heritage, activity, and socio-economic advancement. Taken together, they challenge the notion that image and aesthetics are the dominant factors to consider in the identity of each project, and collectively they provide a glimpse into a set of hybrid contemporary landscape and architecture modalities. Hotel Santo Stefano in Sardinia may never be realized; certainly Bandra Park in Mumbai is an unlikely proposal as well. However, the continued research, design and ambitious construction work in La Prusia may help illustrate that scholarship and practice concerned with envisioning heritage may be well served to place less emphasis on the strictly visual perception of heritage - such as the stylistic elements of architectural beauty and image – rather than a systematic approach that centers how heritage operates within ecologies and complex social and cultural landscapes.

THE CAVE REVEALED. THE MONASTERY OF AYNALI AND THE REPRESENTATION OF RUPESTRIAN ARCHITECTURE

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Introduction

Architectural survey and representation have changed remarkably in recent years, and this is particularly evident in the field of rock-cut architecture. In the context of an Italian National Research on the Rock-cut Architecture of Cappadocia[1], we are charged of surveying a number of carved monuments in the area of Göreme Open Air Museum and its surroundings. The specific spatial characteristics of rupestrian architectures suggested us a light laser-scanner to be easily carried and used both in the difficult orographic conditions and in the dark and narrow caves. The advent of laser scanning technology improved the precision during the acquisition of dimensional data, reducing costs and time of taking. At the same time the procedures of computer representation enabled surveyors to refine the traditional representations and offered them a wide range of innovative envisioning and navigation three-dimensional models.

The Monastery of Aynali

The monastic settlement of Aynali is about 1 km distant from the large semi-circular rock *cavea* constituting the heart of that singular confederation of monastic communities today known as Göreme Open Air Museum. Possibly the whole area was ruled by a common social structure, in which each core was constantly in touch with the other ones, sharing the need for subsistence and contemplation.

[1] Arte e habitat rupestre in Cappadocia (Turchia) e nell'Italia centromeridionale. Roccia, architettura scavata, pittura: fra conoscenza, conservazione, valorizzazione. National coordinator: Maria Crocifissa Andaloro; scientific director of Sapienza University unity: Marco Carpiceci. The research involves three scientific areas: L-ART/01 – History of Medieval Art; ICAR/17 – Drawing; GEO/07 - Petrology and Petrography. This paper is the result of the synergistic collaboration between the three authors. In particular Carlo Inglese has edited *Introduction* and *The Monanstery of Aynalı*; Fabio Colonnese has edited *Standard representation of Cappadocia rock-cut architecture* and *A critical approach to rock-cut architecture survey through laser-scanning*; Marco Carpiceci has edited *Representing the Monanstery of Aynalı* and *Conclusions*.

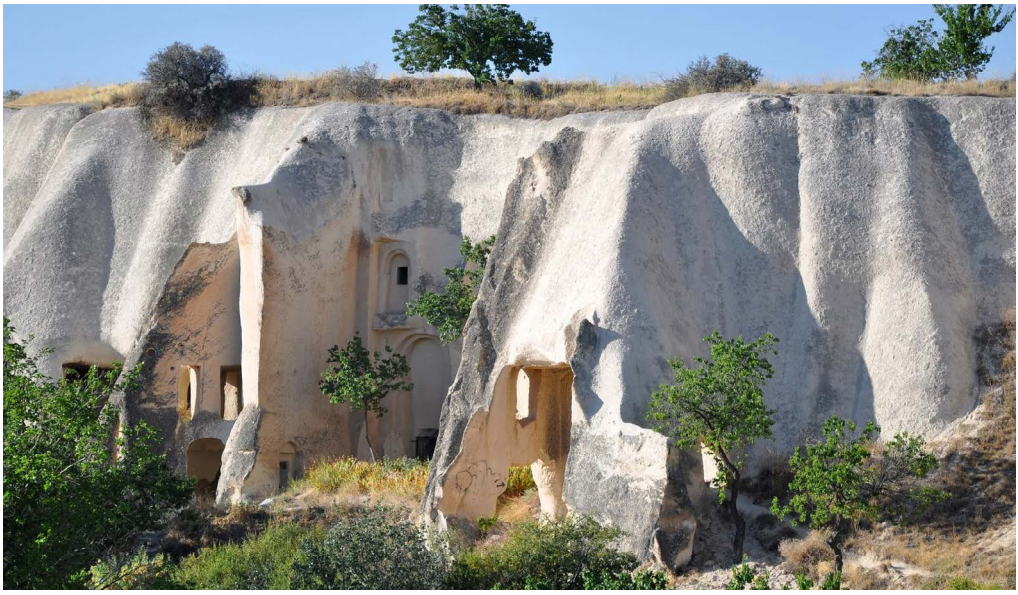

Fig. 1. Göreme, Aynalı Monastery hill
Source: Photo by C. Inglese.

Fig. 2. Göreme, Aynalı Church
Source: Photo by C. Inglese.

The church and the rooms of the monastery are on two main levels and surround a rectangular courtyard whose southern façade is articulated in three levels of openings and arches. Two of the three doors in the exterior wall open into the largest room of the complex, the Sala Maior: its walls are articulated by pilasters, support a barrel vault with arches and are barely decorated with red geometric patterns[2]. An opening in the same wall leads to a smaller barrel-vaulted room that can be entered from the courtyard, too. Another room lies near this one: it is accessible from outside, but most of it is lost after the cliff partially collapsed. An opening in the internal wall of the main room leads into a cave with a curved stair leading to the upper floor, while an opening in the western wall leads to the church.

The third opening in the south face of courtyard is the main entrance to the Firkatan Kilise. A small square narthex with cross-arms welcomes believers and tourists: a dome covers it, just above four primitive pendentives in the corners. A side opening leads into a side square tomb room, with a niche and benches on two sides, while the front opening leads into the approximately square church. Four large columns (with one partially collapsed) divide church space into three naves covered by barrel vaults and decorated with red symbols: a large central horseshoe-shaped apse and two smaller ones at its sides opens in the east wall with their floor as high as the continuous bench running at the base of walls[3].

Smaller irregular rooms characterize the upper floor. The stairs leads into a large storey carved over the main room, with niches and shelves on every wall and two more openings. A small tunnel leads into a circular cave in the north-west corner while a latter zigzagging one in the east wall leads to a cave protected by a rolling door. A narrow oblique pit connects the latter cave with the lower room, where a second rolling door used to protect the passage from the rectangular room with a flat ceiling behind the courtyard east face. The missing parts of the ceiling reveal another room above, which is part of a linked rooms system with stables and a vinery extending along north-east cliff and accessible through many openings in the partially fallen cliff.

Standard representation of Cappadocia rock-cut architecture

The church and the other parts of the monastery follow approximated geometrical rules and are only occasionally comparable to simple geometric shapes. This would suggest they are the result of an extemporaneous and uncoordinated program of excavation that probably lasted many generations. Conversely, ground floor rooms crowning the rectangular court seem to share a geometrical attempt to imitate the forms of traditional *additive* architecture. The *traditional form* of such environments, however, is only apparent: in fact even the main hall, although to a lesser degree than the church, is suffering from a sensitive deformation that alters the alleged rectangle of the plant. Yet until a few years ago these deformations were completely absent from the documents elaborated and used for studying Cappadocian heritage.

[2] A virtual tour of this room is available at: https://www.360cities.net/image/aynali-firkatan-church-goereme-cappadocia-turkey-3 (accessed 15.03.2015).

[3] A virtual tour of the church is available at: https://www.360cities.net/image/aynali-firkatan-church-goereme-cappadocia-turkey-2 (accessed 15.03.2015).

Not too different from idealistic images of the *Edifices de Rome Moderne* made by Paul-Marie Letarouilly[4], rupestrian habitat representations seem to be generally influenced by the quest for the idea behind the form. The drawings of many of the churches and monastery of Cappadocia that were obtained only a few decades ago with traditional procedures show plans and sections with rectangular rooms, definitely regularized if not invented. It is enough to see the drawings in the book of Lyn Rodley[5] and widely used by historians and archaeologists to speculate and conjecture on builders' procedures and targets. As following the historical model of Père de Jerphanion's plans[6], they actually show more than a problem. For example, caves look systematically extracted out of their physical environment. Walls and openings appear as if they were built in masonry, with a constant thickness and orthogonal mutual T-junctions. Some of the rooms either of the examined settlements or near to them are generally either ignored or censored; vertical sections are partial or missing; generally no altimetry information is reported in drawings and this appear a serious omission in the case of Cappadocian morphology. Opposite than traditional architecture, in such a rock-cut architecture neither a wall can be assumed as a vertical surface nor a floor as an horizontal plane and this strongly influences its experience as well as oriented the choices of its ancient builders.

Eventually some of Rodley's book drawings seem to suffer also from the occasional stretching for – we suppose – editing opportunities due to the book format that even deprive them of metric properties. In general Rodley, like most of Cappadocia scholars, aimed to offer an idealized imagine of rock-cut settlements and the abstraction of the graphic code he adopted contributes to the intention to assimilate their image to that of traditional architectures.

How can such a *fictional* result be explained? Of course the difficulties involved in surveying rock-cut spaces are not to be underestimated but both methodological and psychological reasons must be considered. Such a representing practice would strongly echo scholars' perceptual and formal prejudices acquired with the experience of additive architecture forms as well as disciplinary specificities[7]. It bases on the diffuse hypothesis that Cappadocian builders just intended to reproduce traditional architecture forms in negative which consequently offers the opportunity to analyse those spaces through traditional mental and operative instruments. Yet today that position seems only partially sharable, as we cannot exclude that a specific sensibility to specific qualities of carved space inspired the latter generations of builders towards something different and original. Moreover as both their form and destiny are strongly tied to the rock morphology status,

[4] Letarouilly, Paul-Marie. *Edifices de Rome moderne*. Novara: Istituto geografico De Agostini. 1992.
[5] Rodley, Lyn. *Cave monasteries of Byzantine Cappadocia*. Cambridge: Cambridge University Press. 1985, p. 58.
[6] Jerphanion, Guillaume. *Les Églises Rupestres De Cappadoce: Une Nouvelle Province De L'art Byzantin*. Paris: Geuthner. 1925, plate 27.
[7] On the contrary, speleologists' approaches to survey and representations of cavities often produce drawings with a rich and accurate endowment of spatial and environmental information. See, for example, Roberto Bixio's studies on Cappadocia.

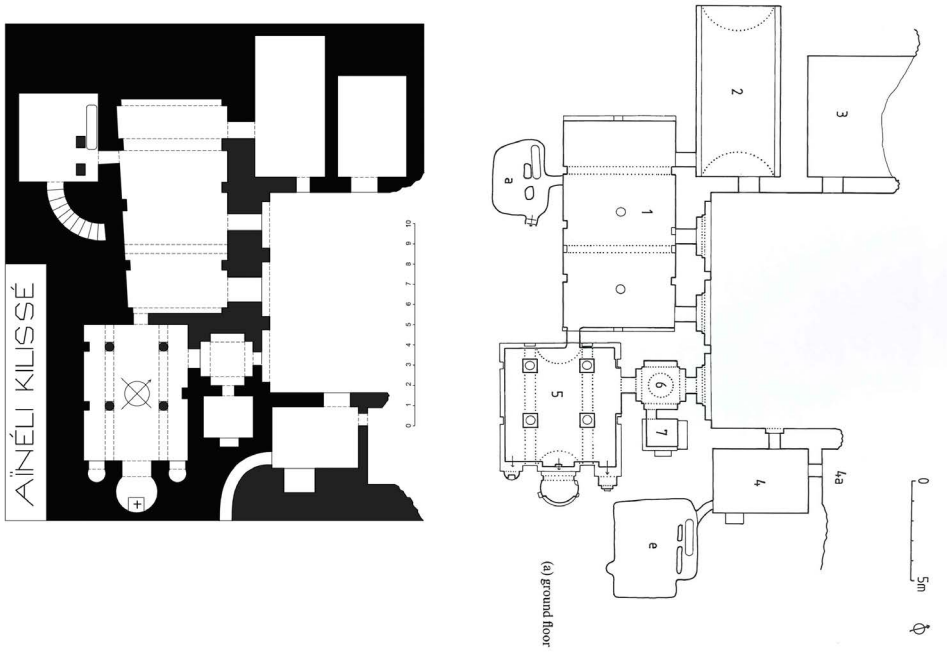

Fig. 3. Göreme, Aynali Monastery, Comparing first floor plans
Sources: Rodley Lyn (right); drawing after Guillaume Jerphanion by F. Colonnese (left).

it should be evident in every drawing. These are some of the reasons for elaborating a different way of representing rock-cut habitat rock-cut, with selection criteria and graphic codes able to take in account all their specific qualities.

A critical approach to rock-cut architecture survey through laser-scanning

Till few decades ago, scholars observed those caves expecting to find the efforts of people pursuing the spatial conditions similar to those of brick-and-wood constructions. But it was not, and latest surveys offer today a profoundly different perception of that people and their habitat. Indeed rupestrian habitat seems one of the application fields in which the "objective eye" of laser technology, beyond the ordinary savings in time and resources, can actually lead to a significant knowledge increase. We could cite the evidence that ceilings often considered flat revealed to be convex *a corda molla*: a feature that suggests a formal intentionality possibly inspired by static principles[8]. Only a representation after a laser scan can envision this feature, generally ignored by traditional surveys.

[8] Carpiceci, Marco et al. "Dalla roccia alla città. Il rilievo del villaggio rupestre di Sahinefendi/ From the rock to the city. The survey of the rupestrian village of Sahinefendi", in: *Italian Survey and International Experience*. Roma: Gangemi. 2014, p. 606.

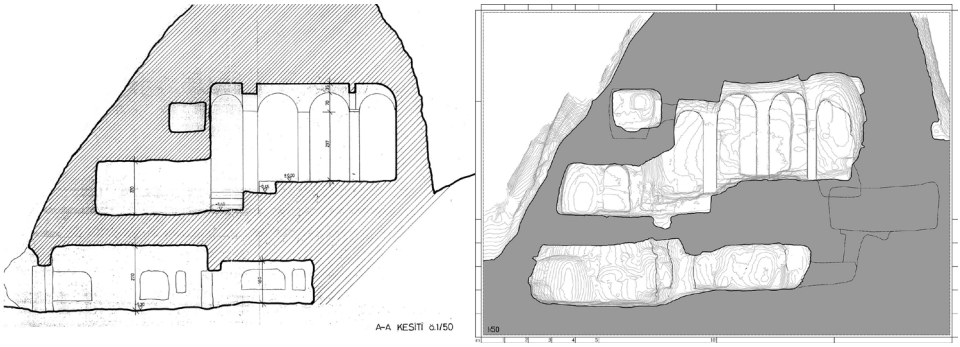

Fig. 4. Sahinefendi, Church of the Forty Martyrs, Comparing vertical sections
Sources: Turkey Superintendence (left); image by M. Carpiceci (right).

On the other hand the comparison between old and current surveys, highlights how the tools are subtly leading scholars towards an approach that is totally antithetical to the traditional one. Today, laser scanner operators have a tendency to simply accept uncritically the metric outcomes provided by the machine, without determining directly the nature of those surfaces: they are satisfied by simply launching the scan without experiencing and studying the environment. The result is that they may not have the critical tools to evaluate and possibly adjust and finalize the representations from the numerical model.

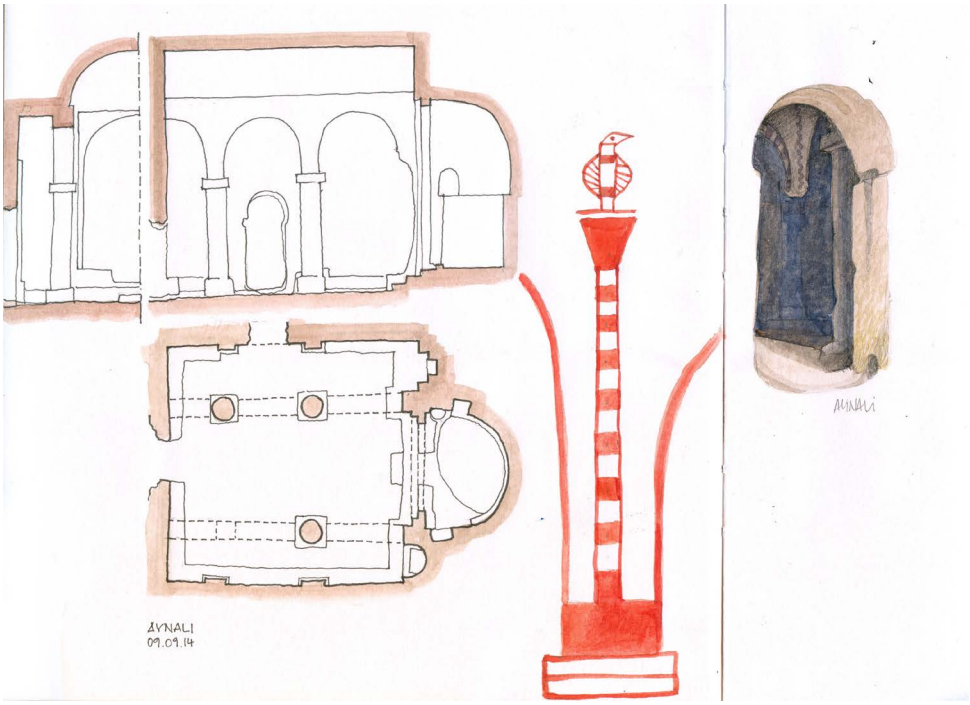

Fig. 5. Göreme, Aynalı Church, Sketches *in situ*
Source: Watercolour by F.Colonnese.

While scanning the rooms of the Monastery of Aynalı, instead of just waiting in the caves for the scans to complete, we have been walking around taking pictures and sketching hypothetical plans and sections of carved rooms, like in the old-school survey procedure. These activities offered us both a direct memory of our body measuring those spaces and a graphic trace to be used as an enquiry tool for an active exploration. Moreover they contributed to form a critical idea of the monastery architecture that constitutes a fundamental ingredient during the data elaboration e representation.

Anyway, despite the mental model we had constructed, results have been often surprising. For example, the scanner revealed the existence of a narrow channel of aeration we had missed during our inspection. After downloading and assembling the clouds of points on the computer, the different levels of rooms revealed their actual shape as well as their unpredictable formal autonomy. Even if they are correlated with a pit and a stairs, the rooms seem to ignore each other: not only each room seems to have been developed on its own but corridors and vertical connections are generally curved preventing people from both knowing what lies on their way and gathering information about the general spatial organization: like in a classic labyrinth, the only way to know is to walk all the way.

Yet perhaps the most significant moment of such a reproductive and knowledge process, is the assemblage of the clouds of points relative to the interior rooms with those describing outside surfaces. The opportunity to measure and envision the changing relationship between extrados of the cones and intrados of the caves, gives the carved space the value of an effective architecture that can be finally compared with other traditional examples.

It seems that the proper attitude towards rock-cut architectures should find its equilibrium halfway between the intellectual approach of the traditional method, which tends to identify the irregular surfaces of the environments with elementary geometric solids according to hypothetical *architectural intents*, and the laser-scanner *chrono-visibilism*, determining all its information by the time response of the laser beam on heterogeneous surfaces and visible.

Representing the Monastery of Aynali

The process of representation requires the critical interpretation of the scholar. He is requested to translate the model point patterns into drawings to display the metric data, meeting the specific demands of customers and communities without removing the collected spatial information.

Not too different from a photogrammetry model, the cloud of points offers the enviable opportunity to study the spatial properties of a physical envelope in the calm of an office. But the vision of an eye-catching coloured cloud of points or its virtual navigation *are not* the survey but only the proper registration of a certain amount of points describing the surfaces that form the image of a skin.

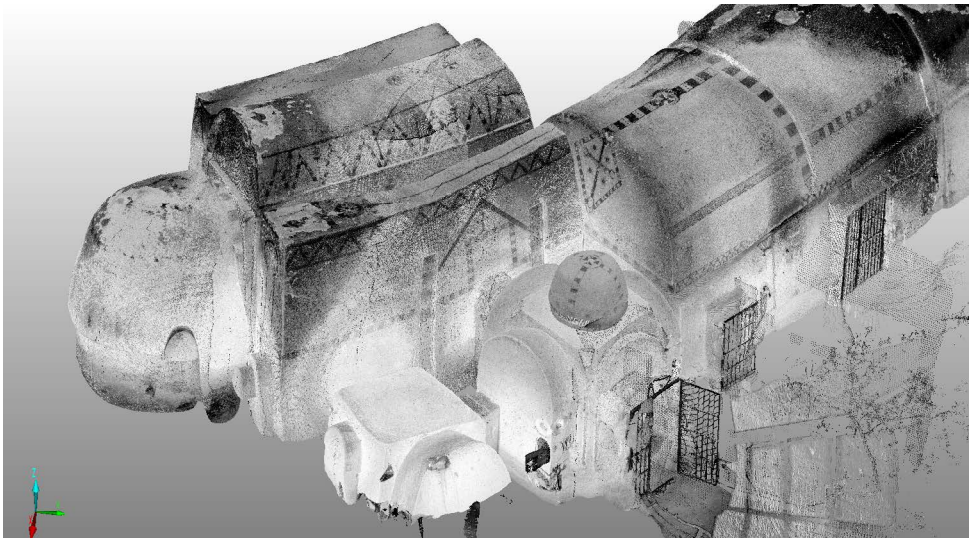

Fig. 6. Göreme, Aynali Monastery, Assembling clouds of points
Source: Image by M. Carpiceci.

The representation in terms of a scientific document to be queried for the purposes of knowledge and heritage preservation is instead the result of a critical processing of such data through scholars' experience.

The drawings elaborated after the cloud of points should be intended to give information to a number of subjects and disciplines as wide as possible, even if thematic graphics are to be taken in account to respond to specific requests.

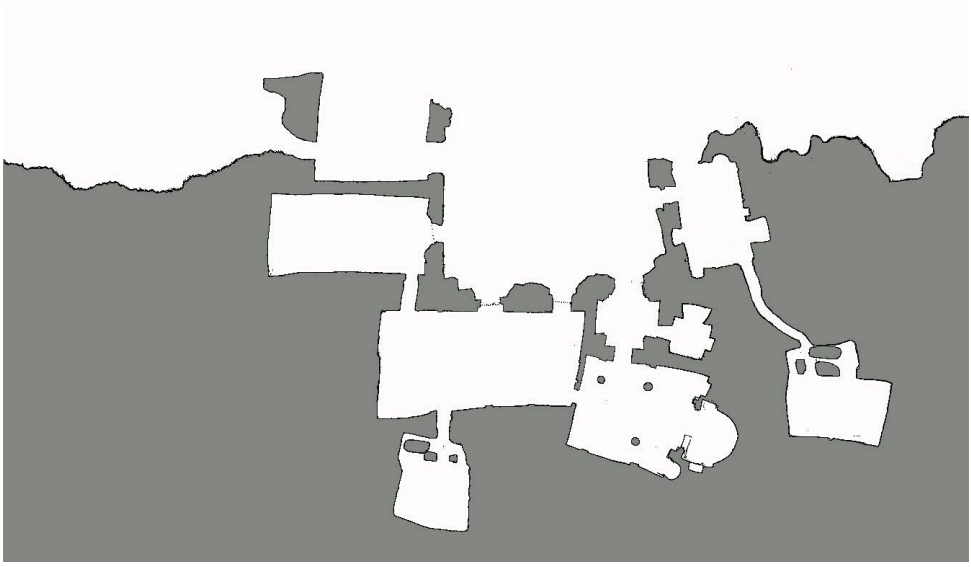

Fig. 7. Göreme, Aynali Church, Plan of First floor
Source: Image by M. Carpiceci.

After the decimation of the points of the cloud and their coverage with triangular meshes, the resulting surfaces model is the geometrical base for every projective representation. At this moment, the eye of the surveyor must decide what is to be translated into lines and what is to be excluded from the final image. Our experience suggests the use of contour lines is to be favoured as the priority form of description of the rock-cut architectures in the graphic rendering phase. A description through both horizontal sections at different heights and vertical sections according to different unparalleled planes is necessary for understanding the relationship between exterior surface and interior spaces. In particular a contour interval of 10 cm at 1:50 scale representation provides the best compromise between metric-descriptive density and readability of morphology as contour lines are effective in giving the three-dimensional effect in every orthogonal projection. Sectioned parts are filled with light grey to show also the silhouette of parts that are not directly visible.

Conclusions

The assemblage of the 50 scans reveals the relationship between the carved architectural volumes excavated and allows to individuate the initial core of monastery as formed by the red-decorated environments on the ground floor overlooking the courtyard. Moreover the curvilinear nature of the ground plan stands out as a peculiar feature. All longitudinal developments, whose direct experience and memory would suggest to be more or less regular and straight, instead reveal to follow systematically a curved geometry. The barrel vaults themselves are forms that correspond neither to cylindrical geometry nor to conical one, but to a trend that the longitudinal carving action changes and deform step by step.

It seems hardly acceptable that despite of such a clear organization of the general scheme and a typological identity of single rooms, a careful and aware physical execution of space is missing. We think the mismatch to a regular geometry is due to a precise choice, possibly a coexistence of structural and aesthetic reasons. Empirical knowledge possibly convinced those ancient architects that formal resistance of curved shapes contributes to a better structural behaviour both in walls and ceilings. Moreover curved shape is the most suitable and natural for carved architecture: the process of excavation tends to move on placing the operators at the center of a theoretical sphere and the movement of their arms follows an arch, too, as can be seen in the furrows on the walls.

THE PERSISTENCE OF THE SENSES: MATERIALITY, PRECEDENT AND NARRATIVE IN COMMUNICATING HERITAGE

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Introduction

Heritage implies a rootedness, a connection to past people and ideas, and a foundational understanding of the long threads of culture in a place. Because of this implication, heritage thinking is often difficult for students to achieve in a contemporary culture focused so heavily on the popular, the transitory, and the disposable. To anchor their design work in a larger context of heritage, designers must make a connection with the heritage of a place and communicate that heritage through the narrative that drives their design work. Designers must generate deep understanding of heritage through observation and analysis of the characteristics that make an object, place, building, or landscape unique, as well as the particular context that surrounds the designed element and infuses it with meaning. It would be a mistake, however, to assume that communicating heritage through narrative implies that designers must be firmly and literally reliant on the forms and structure of the past, as in the manner of the academic classicism of the Beaux Arts. Rather, connecting to heritage and communicating heritage through narrative in a contemporary design idiom relies on a different set of processes and outcomes.

While heritage begins with understanding the cultural past, designers must also be able to translate that understanding into original forms that nevertheless remain rooted in heritage and to communicate an understanding of heritage through the meaning created by spatial narrative. In design education, form and narrative are often joined through the understanding of materiality. The materiality of creative work is fundamental to how environmental design students experience, analyze, and interpret designed space and its meaning, whether framing the concept and potential of designed landscapes, buildings, or communities.

In its best incarnation, however, the ways in which we experience and connect with the heritage of designed objects and spaces involves all of the senses in direct

experience. An authentic experience of a designed environment is not achieved solely by visual elements, as it is a dialogue between user and the environment through bodily interaction, identification, and memory[1]. For many designers, the choice and use of materials tells this story by engaging the senses through the tactile and intangible poetic statements inherent in the materials themselves. As part of the process of creating sensory experiences in designed objects and spaces, students find the act of touching, crafting, and making a valuable and necessary cognitive link to the experience of natural and constructed spaces. Material understanding and imagination are required for a student to begin to interpret the narratives contained in painting, philosophy, history, and biography; when applied to design projects, they provide opportunities for the student to engage in rigorous design thinking, connecting concept to matter. This thinking also contributes to the cognitive connection between the representation of human occupied spaces, surfaces, and phenomena in two dimensions. This is a well-accepted continuum in the education of the designer, whether it is on the surface of paper, a tablet, or a personal computer screen. Students are tasked with designing space through media that spends most of its life in two dimensions.

Sensory information as a means to design within the context of cultural heritage

The great cultural achievements of landscapes, buildings, cities, and sculptures engage the senses in multiple ways. It would be wrong to think that two-dimensional art is a poorer experience for the senses. Rather, the experience of a painting or drawing is usually much more than mere sight. Paintings engage the other senses through their materials and through the spatial context of their gallery settings. While research in the field of visual perception suggests little difference between representation and reality for assessment purposes[2], the authors hypothesize that cognitive and emotional engagement with completed artwork leads to the creation of meaningful content in constructed works, either as a generative force, or in reinforcing a narrative. The temperature or smell of an art gallery can be arguably as endemic to the learning experience as information in a book or article. Inversely, in a design process, these sensory experiences instill powerful memories in the act of making. Students apply critical thinking skills in the interpretation of the constructed environment and subsequent design projects within it. The curiosity and awareness students gain from the study of cultural heritage in the form of paintings, literature, narrative, and others create three outcomes:

- A broader cultural context for students' design processes to exist.
- A design process fueled by inquiry, analysis, and rigor, not formed in a vacuum.
- An expectation for spatial narrative in the constructed environment, whether it be in the form of a great building, a vibrant landscape, or a stimulating urban district.

[1] Juhani Pallasmaa. *The Eyes of the Skin, Architecture and the Senses* (Chichester UK: John Wiley & Sons. 2013), pp. 68-69.

[2] Bruce R., Hull IV and William Stewart. „Validity of photo-based scenic beauty judgments" in: *Journal of Environmental Psychology*, (College Station TX: College of Architecture at Texas A&M University. Vol. 12. Issue 2, 1992), pp. 101-114.

Cultural and historic narratives as a context for design

Narration is a powerful form of discourse that offers possibilities and devices for students in the field of environmental design to teach a story of a relationship or interpretation of an artifact through the form, sequencing, and materiality of a designed environment. Research indicates that a narrative is comprised of four basic elements: situated-ness, event sequencing, world-making/world disruption, and the subjective awareness associated with conscious experiences[3]. These procedural conditions can be utilized to construct a story-world that structures and communicates aspects of an experience.

A story-world, as a concept of narratology, is a reconstructed world evoked by narration that offers a suggestive mindset with implied properties of a place, or setting, for the recipient. Research in the field of narratology prevalently suggests that either factual or fictional stories may serve as the foundation of a story-world. Opposition to this belief argues that the assumption of a recreation of true facts through narration devalues the interpretive ability of the narrator. As such, it is important to qualify a story-world as a created world non-inclusive of factual reality and distinguish the real world of exclusive absolute truths as a referential world.[4] In the separation of these domains, a story-world may potentially offer flexibility of expression, creativity, and personality to the narrator and an escape from the referential world to the recipient.

For literary narration, text and language are distinctive, yet dependent, devices. Text assumes the primary role of defining the intended message of a story-world; whereas, language is the delivery vessel for communicating the message and may be influenced by other various strategies such as typographical formats, the presence and positioning of space on various pages, and graphic illustrations. Combined, these devices offer a recreated virtual world to the reader with explicit messages and implicit interpretations of the story.

These fundamental principles of world making derived from literary narration can be employed by architects and planners to narrate a story of cultural heritage through the designed environment. Heritage serves as the medium through which identity is created, nurtured, and preserved and the identities of individuals and societies are continually in a dialogue with the built and shaped environment. This exchange, while staged in the referential world, becomes the language to create an authentic and personal story-world throughout the continuum of life. Aarati Kanekar describes that in the creation of architectural meaning,

> […] syntactic devices contribute towards the constitution of social or cultural relationships, the accommodation of activities and programmatic requirements, and the delivery of functional performance[5].

[3] David Herman. "Narrative Ways of Worldmaking", in: *Narratology in the Age of Cross-Disciplinary Narrative Research. Inaugural Symposium of the Center for Narrative Research.* ed. Sandra Heinen, & Roy Sommer (Berlin Germany: W. de Gruyter. 2009), pp. 71-87.

[4] Marie-Laure Ryan. "Story/Worlds/Media", in: *Storyworlds Across Media: Toward a Media Conscious Narratology,* ed. Marie-Laure Ryan, Jan-Noël Thon (Lincoln, NE: University of Nebraska Press. 2014), pp. 25-49.

[5] Aarati Kanekar. *Architecture's Pretexts, Spaces of Translation* (New York NY: Routledge. 2015), pp. 1-13.

Kanekar continues to explain that architecture's representation of meaning is influenced by symbolic forms, as well as through perceptions of syntactic relationships that are generated as one moves through a space.[6] The narrative elements of situated-ness as a relationship between context and circumstance, event sequencing, world-making/world disruption activated by unexpected events, and the subjective awareness of conscious experiences are presented, discovered, and interpreted by means of ephemeral messages within this dialogue.

The cultural narratives inherent in the form and materials of great buildings, neighborhoods, and landscapes influence thinking for emerging designers as well. For example, the Staatsgalerie of Stuttgart by Stirling and Wilford works as a narrative timeline of heritage (Fig. 1) as it connects two neighborhoods along a hill with a public pedestrian promenade.

Fig. 1. (Clockwise, from upper left). The Staastgalerie Stuttgart by Stirling and Wilford makes clear historic and material references to ancient ruins, promenades, cornices, the allegory of the hut, and Le Corbusier's Five Points in the form of a linear narrative as it connects two urban districts

Source: photos by first author.

[6] ibidem.

Metaphors for several built works throughout western history communicate the elements of the timeline, with references to ancient ruins, travertine marble cladding, the allegory of the primordial hut, an open-air rotunda court, exaggerated cornices, brightly colored steel-tube railings and mechanical details of the Pompidou Center, and Le Corbusier's Five Points. These references are featured in a sequence of exterior spaces knitting two urban districts together along a slope. These ideas speak to the ability of constructed examples to reinforce an implied narrative, and the value of storytelling in the design process. The project exhibits a timeless quality because of its references to several periods of time, and serves as an interdisciplinary precedent for landscape architecture, urban planning, and architecture in its formation of public space, promenade, and urbanism.

Analysis, synthesis, and application by Students

In the first group of example projects, students investigated a painting located at a university- managed museum of art. The museum houses artifacts from a number of local philanthropic sources and is connected with the industrial heritage of the city and region in which it resides and thus contributes to the narrative of place. Methods of inquiry included a literature review, drawing a chosen painting from observation, and a diagram / overlay method using tracing paper. Students were able to investigate several objective aspects of the work, including line, shape, value, and color temperature (Fig. 2).

Fig. 2. Student Elena M'Bouroukounda interpreted Kurt Seligmann's painting *Migrants* by methods of observational drawing and a series of overlays, each extracting a layer of compositional information from the work

Source: photos by first author.

Students then studied the compositional relationships in the work, focusing on hierarchy, rhythm, repetition, symmetry, and balance. Finally, students analyzed the subjective elements of the painting, including, mood, gravity, tension, and others, as they designed a hypothetical architectural space influenced by the painting. Student Elena M'Bourokounda remarked,

> In the analysis of the 1955 painting *Migrants*, I noted that the painting explored issues associated with conflict, loss of identity, and belonging. […] There came a recognition that similar emotions [can potentially] reside in all individuals. […] In a way, a translation of another's piece is the creation of one's own fiction, with a basis in one's own emotional reality [via] the imagination[7].

To discern the clarity and learning that students are experiencing here, the authors have observed that direct experience is vital in addressing the range of learning modes that students in environmental design possess, including visual, kinesthetic, auditory, and others. In its early incarnation, this project relied on reproductions of renowned paintings. In these reproductions, scale, details, textures, and subtleties may be lost or changed, which often affected the students' perception. Recently, the list of paintings for this project was altered to consist entirely of paintings that hang locally to facilitate the deep understanding that comes through extended access and direct experience. This decision also allowed the students to appreciate the scale of a painting, as well as fine details of brushwork, luminosity, chroma, and other details typically lost in reproduction. An awareness and understanding of a painting's materiality and emotive qualities also became crucial to the students' translations. As student Julia Voigt remarked,

> The thing I most tried to capture in the design was the tension, harshness, and uncomfortable-ness of the painting. I attempted this by utilizing harsh angles. […] The areas of release in the painting were translated into translucent panels that allowed the viewer to look into the model[8].

Ms. Voigt's design intentions were informed by both her literature review and graphic analysis of the assigned painting and were reflected in her project with analytical diagrams and scale models (Fig. 3).

[7] Elena M'Bourokounda. e-mail message to first author, March 4th, 2015.
[8] Julia Voight. e-mail message to first author, March 2nd, 2015.

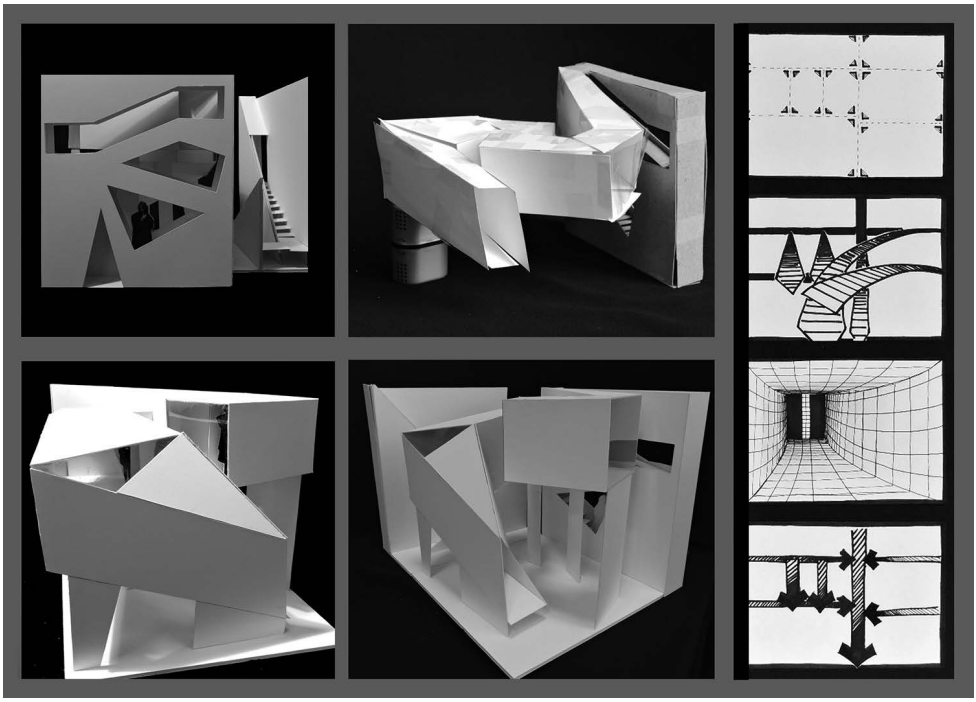

Fig. 3. Student Julia Voigt interpreted Alfred Leslie's painting *Pythoness* into architectural space by methods of overlay diagramming and scale models
Source: photos by Chidochase Moyo.

Bridging cultural narratives with design expression

In a second group of example projects, graduate students read the biographies of two notable historic figures and then expressed the story arc through the design of a narrative pedestrian bridge. The project encouraged students to translate their research of a documented, or implied, relationship using character personification techniques as a means of world-making. While the bridge was designed to explain a chosen message of intangible heritage from the designer to the user, it still carried the responsibility of functioning as a bridge. Therefore, students assigned meaning to a designed landscape that served as the setting for the bridge and provided a common element that related to each of the historical characters. The manipulation of materials at select instances as well as the means by which the embodied forms of the bridge engage, neglect, or react to one another and the landscape speaks to the translation of the documented and implied relationships of the characters. This narrative pedestrian bridge provided a vehicle for students to represent the heritage of historical characters and their relationship through the user experience of the design element.

The career-change graduate-level architecture students assigned this project came from a variety of undergraduate majors, and each brought unique knowledge to the assignment.

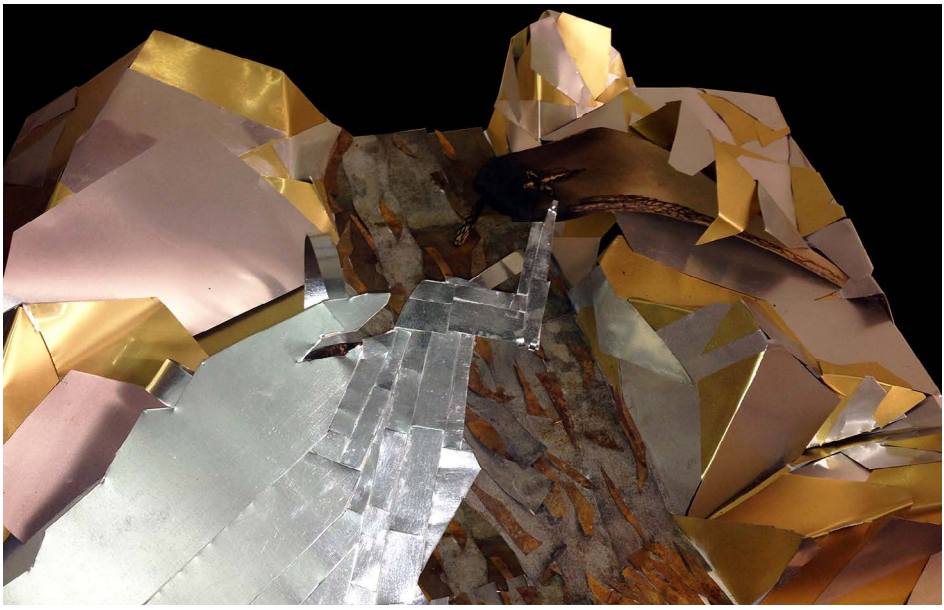

Fig. 4. Student Justin Martin utilized strategies of material selection and manipulation to translate an interpreted relationship between Joan of Arc and Napoleon Bonaparte in the form of a narrative bridge. Metal is selected by the student to reference the monarchy of France at intervals throughout history and was chemically rusted at select instances to symbolize moments of the monarchy's deterioration, as well as the betrayal of the French monarchy in the case of Joan of Arc

Source: photo by third author.

Students were encouraged to use their previous knowledge to reconsider how a recounted story could be narrated through the design of an object within a created field. Using this knowledge, each student considered the bridge as a methodical journey, by which narrative cues were embedded wordlessly and expressed spatially within the performance of the bridge and landscape. Ultimately, these suggestive links to the story's intended meaning were proposed for discovery to the bridge's users as a means to encourage investigation and engagement along a recreated story-world.

Student Justin Martin, whose design of a bridge featured a story of an implied and interpreted relationship between Joan of Arc and Napoleon Bonaparte (Fig. 4), spoke of the challenges and learned outcomes of the project.

> As I began to learn more and come to understand the people in my story, it was interesting to see each character develop into a material, and ultimately into a bridge that began to truly embody the characters. I feel that this method of research and representation helps to give strength and meaning to the design in a rewarding way. Along the process, I found it a personal challenge to achieve a representation of the characters as a material and form in a manner that would support the intended narrative expression honestly[9].

[9] Justin Martin. e-mail message to third author, February 25th, 2015.

Case Study: A narrative bridge of Denis and Margaret Thatcher

Student Kirstin Baum designed a pedestrian bridge for Denis and Margaret Thatcher to convey a message of the various obstacles and choices made by the figures throughout their interwoven lives (Fig. 5). To express the story of two modern-day figures so influential in the cultural heritage of England, the student chose to conceptualize the bridge as a timeline with a pairing of personified forms, representing each historical figure respectively, progressing in the same linear direction. As such, event sequencing became a critical procedural condition for the designed narrative of the story. References were made to specific events along the timeline and expressed through the behavior of the forms and the engagement, or neglect, of the bridge within this undulating landscape setting.

As the story of Denis and Margaret Thatcher unfolds, the focus of the narrative is negotiated between the individual figures along the path. The two characters begin as contrasting elements at unequal elevations amidst the landscape to reference each individual's associative relationship in society during their youth; Margaret emerges from the earth as a daughter of little wealth and notoriety, while Denis originates above the ground as a more prominent and established figure. As Margaret's political status and prowess rises, the personified forms engage

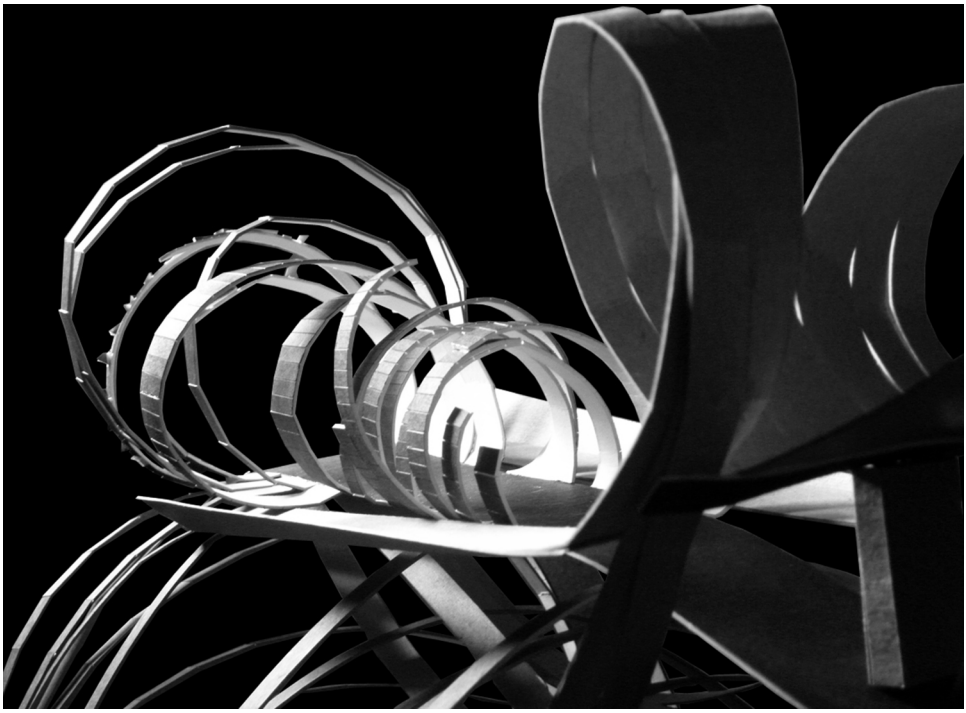

Fig. 5. Student Kirstin Baum translated a literature review of the lives of Margaret and Denis Thatcher through the personification of embodied forms

Source: Photo by third author.

and become interwoven. Shortly after this union of forms, the student designed a volatile sequence of events to suggest the internal emotions of the couple associated with a documented breakdown in Denis' life. Here, each of the paths are obstructed as the users are presented with a choice to continue through the turmoil or withdraw from the linear journey forward. These events signify a moment of transformation of the characters, after which the roles of Denis and Margaret are redefined; Denis' path continues as a supporting element to cradle Margaret's path, which begins to increase in mass and protective enclosure. Student Kirstin Baum reflected upon the value of experiential design to convey a message of cultural heritage:

> The narrative bridge project was a great way to learn about how we, as future architects, can use the experience of space to communicate a story. Translating how a character's life journey can be embodied by form through manipulated elements and principles was a meaningful way to understand what designing space is all about. In my project, the character's life together involved one person's rise to success being dependent on the other's support and was very much a linear progression. However, the project's divergences occurred vertically along the bridge to allow for the introduction of separate experiences of space, representing different life events, while still moving forward along parallel paths[10].

Conclusion

Design projects that address the context of cultural heritage through materiality and narrative are perhaps more necessary in our time than in any other. In an age of rapid access to countless images stored in an ethereal, global, technical landscape such as the World Wide Web, the ability for students to engage narrative and materiality through direct sensory experience is vital. An active dialogue within and through a design process can and should address these phenomena.

Referential and narrative design processes allow an insight and connectivity into an author's interpretation of a culture's heritage. A story is created, retold, extended, and expressed as spatial experiences to encourage an audience's comprehension through participation that is governed by the engagement of all five perceptual senses. It is important to note that these processes of design are not intended to suggest that past traditions, legacies, and customs are a "life" to be narrated as part of an "afterlife". Instead, an appreciation and understanding of the events, peoples, and places specific to a time are nurtured to allow the lineage of a cultural heritage to be continued through the present and into the future, without a break from the past.

[10] Kirstin Baum. e-mail message to third author, February 25th, 2015.

INNOVATIVE TOOLS FOR KNOWLEDGE AND MANAGEMENT OF THE ITALIAN CULTURAL HERITAGE: SICAR/WEB AND SIGEC/WEB

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Introduction

The first step in a valorisation project as well as in a management plan is developing a knowledge scheme. Many efforts are usually spent in collecting data in order to reconstruct the history of a site and its transformations, in studying traditional techniques, in investigating materials and methods used in previous restoration works. One of the most common problems is storing and manipulating the huge amount of these heterogeneous data: historical information from documents and bibliography; all data influenced by previous restoration projects; physical and chemical analysis; legal measures regarding the cultural property; financial and administrative aspects of the restoration project. Unfortunately, all this enormous data usually remains fragmented, therefore historical, technical and legal data, and diagnostics do not really contribute to an integrated and multidisciplinary approach to the definition of design choices. Even if common to all types of cultural heritage, this set of problems is particularly pronounced in architectural patrimony specifically investigated in this paper. The results are based on the research conducted from 2010 onwards by the Department of Civil-Environmental Engineering and Architecture of the University of Cagliari (DICAAR) and the Superintendency for the Architectural and Landscape Heritage of Cagliari and Oristano (SBAPSAE), on two Italian information systems, both provided by the Italian Ministry for Cultural Heritage and Tourism (MiBACT): SIGeCweb and SICaRweb[1].

The main purpose was to identify strengths and weakness of these important tools by testing their functionalities on different typologies of monuments and contributing to the implementation of specific vocabularies.

[1] The present paper is the result of the study carried out by the authors in a very strict collaboration. However, Donatella R. Fiorino is the author of the paragraphs signed with (DRF) and Marzia Loddo is the author of the paragraphs signed with (ML). The titles that are not signed have to be referred to both the authors.

This work has highlights the necessity of a close collaboration between the two systems in order to improve and enhance the functionalities, which would allow a wider sharing and dissemination of knowledge on Italian monuments. In fact, SIGeCweb and SICaRweb can be considered as complimentary, since the first one is dedicated to the identification, description and cataloguing of the national heritage, while the second stores information on the sites and allows their monitoring.

Italian information systems for cultural heritage

In Italy, over the past 30 years, many open source and internet-based information system were been designed. The first purpose was the cataloguing of national monuments, but quickly the problem shifted to the management of information relating not only to cataloguing but also to management of cultural heritage in general – environmental, architectural, historical, artistic, library, archival, and so on – and to document restoration sites.

However, each system was realised by different cabinets with specific field of application, never been able to neatly connect complex and heterogeneous information necessary to the complete knowledge of a historical architecture[2].

Also the SIGeCweb and SICaRweb were conceived for precise purposes, but their use, much more than the others suggested the chance of their interoperability as an opportunity for sharing data each other and with the other systems.

SIGeCweb (ML)

The Central Institute for Catalogue and Documentation (ICCD) was created in 1975 alongside the institution of the Italian Ministry for Cultural Heritage and Environmental Activities – today's Italian Ministry for Cultural Heritage and Tourism (MiBACT). The ICCD's goal is to manage the general Catalogue of the archaeological, architectural, historical, artistic and ethno-anthropological national heritage.

Around the 1980s the first software was used for translating the traditional cataloguing information (that was on paper) into a new computerized standard. From these experiences, SIGeCweb (General information system for cataloguing) was constituted in 2004, with the intention of reforming, modernising and updating the previous system.

The system was designed with the aim of optimizing the processes connected to the cataloguing of cultural heritage, guaranteeing, through specific procedures, data quality and their conformity with national standards. By this means, the homogeneity of information, which is a prerequisite for their proper use and

[2] In particular, the MiBACT has developed several Information Systems related to specific needs of safeguard and monitoring. For instance, the SITAP (Environmental Landscape Geographic Information System) has been developed for the management of environmental and landscape safeguard; the Risk Chart allows the consultation of restrictive decrees on immovable properties issued as per Italian laws and evaluates the vulnerability degree depending on geographic location and specific environmental and human aggression; the SIUSA, unifies information system for the public and private archival heritage.

sharing, is guaranteed. The SIGeCweb provides a system with specific components for the management of different types of alphanumeric, multimedia and geographic information, needed for the identification of the cultural heritage and its correct documentation.

The access to SIGeCweb services is through a browser and it is not influenced by any hardware or software configuration. The system is designed to allow users to associate functions to the profiles and roles for each organization/body or user, by differentiating the actions that each will have at his or her disposal to carry out their specific activities in the management of catalogued data.

All data pass through a scientific and formal control procedures that guarantees the intellectual rights, privacy and the necessary measures for the property safety in order to meet the needs of different users: more general or specialized.

SICaRweb (DRF)

SICaRweb, Information System for the Cataloguing of Restoration Sites, was first created in 2003 within the larger Optocantieri project and was the natural evolution of another GIS, named Akira GIS server, created in 2002 within the context of the Pisa Leaning Tower restoration and then further developed by ARTPAST and Re.Arte (Restoration work on the net projects) supervised by some Superintendencies[3].

SICaRweb is an open source and internet-based system designed to integrate, manage, manipulate, store, analyse, edit, share and display all types of data gathered during restoration analysis and intervention, otherwise scattered and difficult to be found. All this data can be mapped, since the system is able to merge cartography, statistical analysis and database technology. It can be integrated with the artwork iconometry representation and a group of different information can be organized into reserved documents, which facilitate the process of data acquisition during every restoration process[4].

The SICaRweb can support, as a reference system, both bitmap graphic images and vectorial ones; it can import and export using a standard format all the vectorial and alphanumerical data; it can read hypertexts from the desktop and from any other network database.

Also, the system works and elaborates on line all the data (for instance deterioration maps or diagnostic analyses). All the inserted data can be immediately shared by lecturers and restorers involved in a restoration process. It has been developed to be completely accessible via web, either for data-entry or displaying. In this way, it also permits to implement the system directly through the net.

Each site/monument is considered as a work group. To join the group it is necessary to have an account and is possible to enter using a username and a password provided by the administrator.

[3] The description of the quoted projects can be found at www.artpast.iccd.beniculturali.it.
[4] Baracchini C. "SICAR: A web-based 2D/3D GIS…". 2003.

Analysis and implementation test of the systems: the case study of Cagliari

Since 2012 SICaRweb and SIGeCweb web was tested within the university teaching methods, thanks to the quoted agreement between the DICAAR and the SBAPSAE of Cagliari and Oristano. Two restoration workshops and some thesis were carried out within this agreement.

The experimental activity consisted in using two systems for cataloguing and monitoring different types of architectural heritage: from monuments to common and serial assets in order to highlight their potential and possible problems. For this experiment the city of Cagliari was chosen, the capital of Sardinia, with particular accent to the northern the northern area, which includes the ancient urban door of San Pancrazio.

In fact, the San Pancrazio area has always been a vibrant part of Cagliari. Main entrance to the northern quarter, it was modified and enlarged over the centuries and today is still a vital area (Fig. 1). It welcomes the medieval tower of San Pancrazio and also, the Citadel's museum complex one of the most important places for the city that preserve essential pieces of the Mediterranean culture.

The existence of a fortified nucleus in the city of Cagliari was first mentioned in 1217, with reference to today's quarter of *Castello,* founded by the Pisans on the hill, which had probably housed the castrum of the Roman Carales.

In 1323, the Aragonese started to modernise the primitive Pisan curtain walls, characterised in the northern part by the imposing towers of San Pancrazio (1305). However, the real changes took place in the first half of the 16th century, when in order to strengthen the northern sector of the city – which could be easily attacked because of the land morphology – viceroy Joan Dusay created a new bastion. This was widely criticised from a technical-operational point of view so, later on was filled with soil and fell into disuse until 1824. Under the Savoy Reign (1720-1861) a second floor was built onto the pre-existing perimeter bastion walls, in order to house a prison hospital.

Fig. 1. San Pancrazio area
Source: Google maps, 2011.

The area was subsequently expanded and modified over the years until 2005 when the former bastion and the prison hospital became the San Pancrazio Space, currently used as one of the exhibition sites of the Superintendency of Cagliari (BAPSAE).

Strengths and weaknesses in the application to monuments and minor architecture (DRF)

The first activity involved the digitization of the traditional paper sheets related to the monuments heritage, which are listed sites according to Italian law, through the SIGeCweb. This activity was conducted by the collaboration of professionals in the field appointed by the Superintendence (arch, p. Laconi). Besides some problems inherent to the system, the main difficulties encountered were the management of vocabularies that needed to be integrated with terms related to local features (materials, places, techniques, authors).

Once implemented SIGeCweb, as general register of monuments, some samples for testing the SICaRweb were chosen.

The first two tests conducted on monuments were on the Byzantine basilica of San Saturnino and the medieval architectural complex of San Domenico in Cagliari. Those tests were important for obtaining, through the implementation of the system, an efficient synthesis of knowledge. Also, it returned excellent results as the use of connection tools, which enables establishing virtual connections between sheets and graphics polygon. It allowed to order the historical archival documents, contextualize it in relation to the monument's plan and in respect of its restorations history. The cross reading of the data, allows users to access and consult the iconographic and photographic material online: filtered by location, date and connected with materials, diagnostic and stratigraphic analysis, if any. The coordinated reading ensures a high level of accessibility to assets. Not only for the data quality, but also for the ability to find the information according to an individual research criterion.

Therefore, the experiment conducted on the documentation of serial assets it was important for testing the ability of the system to deal with more assets belonging to the same category, which is scientifically useful to cross thematic data through selective information queries.

Again, we identified two case studies: the historic walls of the city of Cagliari and a portion of the system of coastal towers in Sardinia. In the first case the Cagliari-Walls group was created, on example of the existing Pisa-Walls group [5], with the goal of creating a single system to collect the many ongoing projects, divided by origin and field of research.

A similar application was experienced on coastal towers. The data came from the restoration project of nine coastal towers. The data store in SICaRweb demonstrated the importance of data availability on the system in order to facilitate the monitoring of construction site.

[5] The testing for computerize the Pisan walls heritage – conducted by the Superintendency of Pisa – will allow to compare data and structures related to the same cultural context. In fact, the walled system of Cagliari comes from the Pisan domination period.

The positive results of these tests suggested using SICaRweb also in analysis, planning and management of city centres. For this field has been particularly useful the research already conducted on other geographic information systems. We transfer on SICaRweb many vocabularies related to the description of artefacts and their decay, for instance, or the parameters for the risk management (inspired by vulnerability sheets contained in Risk Chart).

The information system was adapted to represent also data coming from the urban stratigraphy. The ability to govern the information of built environment leads to the management of complex urban systems and, therefore, to a tool for planning and programming the interventions in view of the Management Plan of the sites included in the UNESCO Word Heritage List.

Therefore, SICaRweb is not a rigid container of information to be filled through a rigid compilation. It differs substantially from other databases aimed at cataloguing monuments. In fact, the administrator can compose the mosaic of knowledge according to themes and routes fully customizable, depending on the focus of analysed assets and investigation fields. For this reason, the accurate use requires a technical training on the system.

Results on San Pancrazio area (ML)

a. The catalogue of buildings: application of SIGeCweb

Starting with the use of SIGeCweb tools, some buildings in the quarter of *Castello* were chosen and catalogue sheets were filled out using the A-Architecture 3.0 sheet available on the information system. In fact, it provides specific forms structured for each typology of cultural assets (A-Architecture, D-Design, F-Photography and so on). Every sheet has different record based on different kind of items. Within the structure records and topics are named with acronyms (CD-Codes, OG-Subject, ect.) so that it is very important to accurately know them in order to fill out the forms and read them properly[6].

An example of A-Architecture 3.0 sheet is given in Fig. 2 of San Pancrazio Space where, next to each acronym, data regarding some aspects of the building was compiled.

b. The documentation and management of restoration sites: application of SICaRweb

As stated before, SICaRweb consists of two parts: alphanumeric and geometric data. The first step was to create the geometric data by inserting a plan of Cagliari, called Union (Quadro d'unione), where buildings of interest were pinpointed.

[6] Some of the most important abbreviations in SIGeCweb are: CD-Codes, which indentify assets; Og-Subject, that indicate both terminology and typology; LC-Localization Geographical and Administrative, that pinpoint geographical and administrative information on assets located in the Italian territory or in foreign countries (e.g. cultural assets pertaining to Italian embassies abroad). Also, GP Georeferencing, through which the cultural asset is geographically located; RE-Historical News, that is a chronological list of all relevant information about the catalogued asset; FTA-Photographic Documentation; CO-Conservation, which focuses on the state of preservation; RS-Restoring, that indicates dates and types of restorations; DO-Document source, Bibliography.

CD - CODICI	
TSK - Tipo scheda	A
NCT - CODICE UNIVOCO	
NCTR - Codice regione	20
NCTN - Numero catalogo generale	00000111
ESC - Ente schedatore	S10
ECP - Ente competente	S10
OG - OGGETTO	
OGT - OGGETTO	
OGTD - Definizione tipologica	Spazio espositivo
OGTN - Denominazione	Spazio San Pancrazio
OGA - ALTRA DENOMINAZIONE	
OGAG - Genere denominazione	storica
OGAD - Denominazione	Baluardo del Vicerè Dusay
LC - LOCALIZZAZIONE GEOGRAFICO-AMMINISTRATIVA	
PVC - LOCALIZZAZIONE GEOGRAFICO-AMMINISTRATIVA	
PVCS - Stato	ITALIA
PVCR - Regione	Sardegna
PVCP - Provincia	CA
PVCC - Comune	Cagliari

Fig. 2. A-Architecture 3.0 sheet of San Pancrazio Space
Source: SIGeCweb .

The second step was to create alphanumeric data by filling different sheets. Every time a user did that procedure, a connection was created between geometric data – the Union – and alphanumeric data – conservation/diagnostic, material, historical, photographic sheets. In this way all the information about the buildings of interest were organized through different types of sheets and linked to the geometric 2D map. An example is given in Fig. 3.

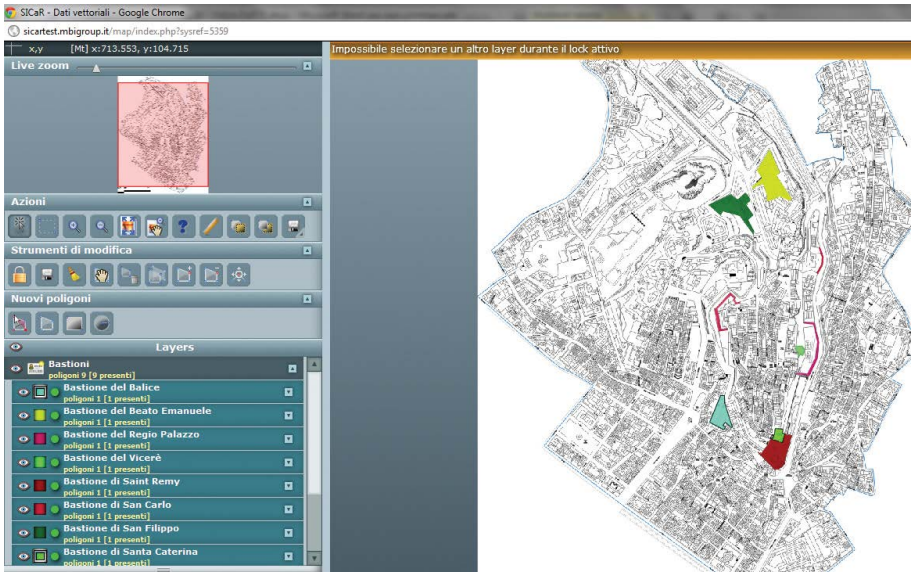

Fig. 3. Union – Map of the historical quarter of Cagliari
Source: SICaRweb – Cagliari Wall.

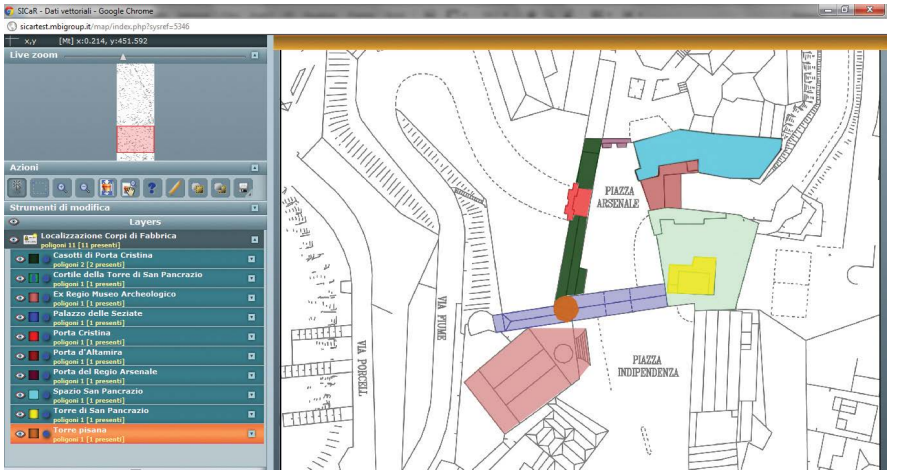

Fig. 4. San Pancrazio Space highlight, in light blue, in the Union
Source: SICaRweb – Cagliari-Walls.

The geometric and alphanumeric data can be infinite. For historical building of San Pancrazio Space, for instance, researchers started with its geographic location in the Union (Fig. 4), then different geometric data with all floor plans of the building were created.

In this way, it was much easier to highlight the restoration phases for each floor. As the Fig. 5 shows, it was possible to draw the conservation intervention on the wall and link it to the conservation sheet were it was fully described. Since they were more interventions than one, to each layer, a different colour was associated with a proper sheet (an example in Fig. 6).

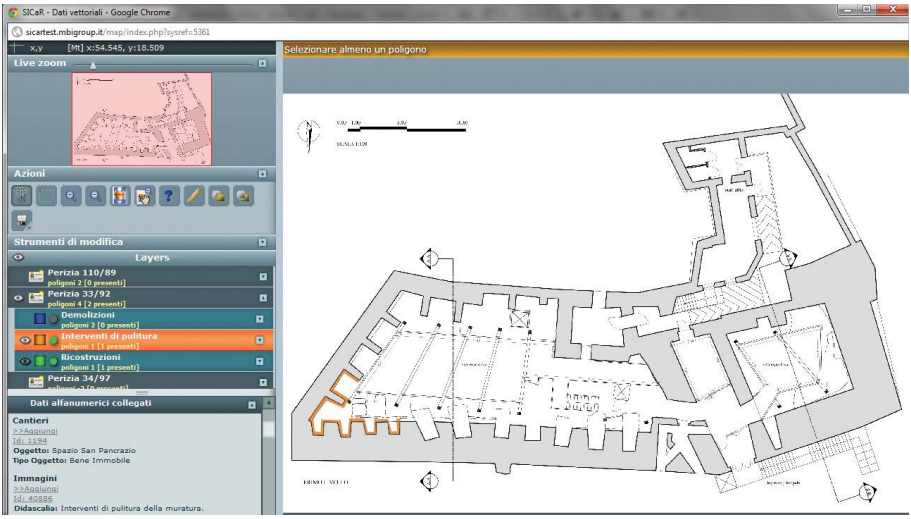

Fig. 5. San Pancrazio Space plan
Source: SICaRweb – Cagliari-Walls.

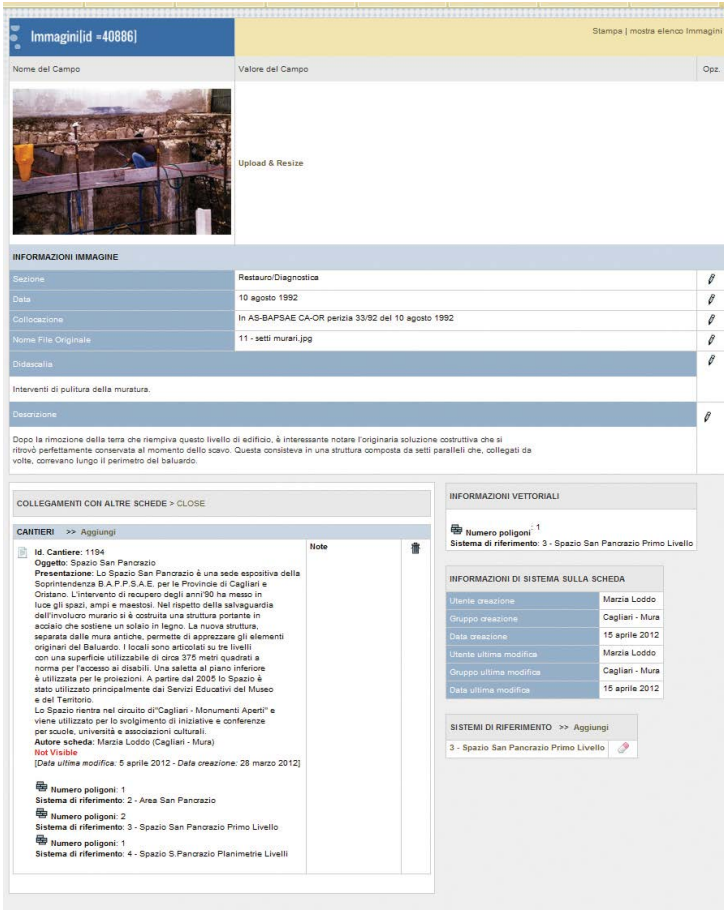

Fig. 6. San Pancrazio Space conservation sheet of the intervention
Source: SICaRweb – Cagliari-Walls.

Analysis and comparison between SICaRweb and SIGeCweb

As the previous chapters showed, these two systems proved their usefulness for the management of cultural heritage.

On the one hand there is SIGeCweb, with specific regulations and terminology, rules and requirements to follow in order to acquire the necessary knowledge about assets and manage their documentation. The aim is to register data according to standardized and homogenous criteria, in order to exchange them more efficiently among different cultural institutions.

On the other hand there is SICaRweb, with the intent to document as precisely as possible the different phases that characterise restoration projects.

Both are collecting data in order to reconstruct the history of each site and its transformations over the years. However, if they could cooperate, they would be much more valuable and able to give complete information on cultural assets.

SIGeCweb, problems and future enhancements (ML)

The national catalogue information system, SIGeCweb, should be constantly updated, but unfortunately, that is not the case, due to slow data recording of the huge amount of Italian cultural assets. Before being visible, information are collected by the regional Superintendencies, that often possess the traditional cataloguing paper sheets data, not always consistent with the new SIGeCweb data. This causes problems like the doubling of the same asset in two or more entries. Time is needed to solve this kind of problems, but the adequate technology, too. In doing so, for instance, SIGeCweb has been improving its geolocalisation system. Visitors can insert the geographical coordinates X and Y (latitude/longitude) of a certain location and pinpoint it on a map. This makes is less probable to mistake and confuse the different assets.

Also, the information available on SIGeCweb is not sufficient to fully understand the situation of each analysed element. Often more specific references are needed, such as photographs, connections, or a more detailed description in order to have a clearer and more in-depth view.

SICaRweb , problems and future enhancements (DRF)

SICaRweb has its own method of asset recognition, which is not linked to SIGeCweb and its cataloguing standards. In other words SICaRweb creates one code for each asset, which does not correspond to the code provided by SIGeCweb, creating certain confusion. On the other hand, a structural deficiency was detected in the formulation of thematic maps related by specifics cases: the data summary is provided through a list of values, but it is not possible to see automatically the selected items on the map. In addition, much work needs to be done for a further optimization of the unique keys query and more flexible vocabularies. Finally, the data validation is possible simply through the systematic control of the inserted data, without any control tool, and is therefore potentially much faster.

Towards interoperability: the VIR interface (ML)

Starting in 2012, the Italian Ministry for Public Administration and Innovation has promoted a programme of digital innovation in the cultural sector. Within this project "Vincoli in Rete (VIR)" was created by the Superior Institute for Conservation and Restoration (Istituto Superiore per la Conservazione ed il Restauro). This tool allows, through one interface, to log into data contained in the following databases: "Carta del Rischio" (Risk Chart) information system at ISCR; "Beni Tutelati" information system, that manages the verification process concerning the "cultural value" of the considered assets, and SITAP, at the General Direction for Landscape, Arts, Architecture and Contemporary Arts (DGPBAAC); SIGeCweb information system (at ICCD).

Thanks to VIR it is now possible to manage one comprehensive and updated cultural asset database, using as the core of this interoperability the univocal code provided by the ICCD. In order to do that, a careful alignment of all assets available on the databases was needed, especially with regards to the different adopted terminology. The VIR system is currently being implemented, the focus is particularly on data accuracy: in order to facilitate the recognition of similar or identical assets found on different databases, some specific algorithms have been developed that consider both descriptive information (for example type and name of the assets) and the position on the map (for instance considering assets that overlap).

Conclusion

The invention and development of cataloguing systems and monitoring tools for the protection of cultural heritage led to the creation of many Information Systems. The specificity of each of them justified their existence, so much so that it would have not be possible to have a single tool that fulfils all their functions.

From what stated so far and from past and present experiences what emerges is that, while it cannot be possible give the multiplication of tools up – not copy – it is necessary that the applications working together become more and more integrated and interoperable. In fact, a high level of technological synergy makes information exchange and sharing possible.

The aim is to configure systems that have a global shared management. They should not be mere applications, but instead more complex networks that act as gateways to access information.

The Italian Ministry is operating to transform these databases (cataloguing our cultural assets) into useful and active tools, to encourage not only the diffusion of knowledge about our heritage – that is considered the moment that precedes all other actions – but also their management. Therefore, it is desirable that in the future SICaRweb, as well as other Italian information systems, are included on the VIR platform. In fact, on the one hand the ease access to data – otherwise scattered

among various platforms – would allow a more effective management and control of data, and therefore cultural heritage. On the other hand, it will incline experts from different backgrouds towards unexplored fields and people who are not expert to understand better understanding of the cultural heritage.

STUDY OF LANDSCAPE COMPOSITION BASED ON PSYCHOLOGICAL EVALUATION AND SPACE RECOGNITION PROPERTIES IN JAPANESE ZAKANSHIKI GARDEN

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Introduction

In the traditional Japanese garden, the techniques to let the viewer experience it through the opening framed by pillars or the beam of the building. In addition, there is the method to adopt natural environments outside of the garden including mountains and the sky as an integral part of the garden. This paper clarifies the characteristics of such outside space intentionally designed to constitute "the garden and the landscape". It is useful to clarify their characteristics for future building and the landscape design including outside space.

The purpose of this paper is to obtain the basic knowledge to contribute to the placement of the windows for the architecture, and the design of approach space and landscape.

In this study, I analyze the psychological evaluation of the landscape spaces, their constitutions, and the space recognition properties for Japanese gardens. I analyze the constitution of the landscape from the photographed image, the psychological evaluation from the experiment operated as the viewers sitting and looking at the gardens and the space recognition properties from the sketches of the gardens at the gardens. In addition, I clarify the relations between the constitutions of the landscape and the psychological evaluations, and between the constitutions and the space recognition properties of the landscape for the correlation analysis.

Fig. 1. Photograph of Japanese Zakanshiki garden
Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

Method

For this study, collects gardens with the characteristic constitution reflecting various local climates and collected from add over Japan. The Japanese gardens can be categorized into Zakanshiki garden[1] and circuit-style. In this study, 14 Zakanshiki gardens are examined. 6 gardens are KARESANSUI[2] and 8 gardens are the ornamental-pond style garden[3] (Tab. 1).

Table 1. Subjects of survey place

Name	Kind of garden
KISENAN, Jyomyo-ji	KARESANSUI
SANSONGOSO garden, Komyo-ji	
TSURUKAME garden, Raikyu-ji	
MUSENNIWA, Shido-ji	
Enyu-ji garden	
ITTEKIKAI gerden, Komyozen-ji	
Zuisen-ji garden	The ornamental-pond style garden
HOJYO-TEIEN,Kencho-ji	
North direction, Raikyu-ji	
Kameishibo garden	
Kenyobo garden	
GYORAKUEN, Fujieshi	
Yamamoto-tei garden	
Shibamata-taisyakuten garden	

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

[1] A type of garden designed to be experienced by sitting inside of building.
[2] KARESANAUI is a Japanese garden consisted of rocks and white sand without the water element.
[3] A style is a Japanese garden consisted of trees and bridges around a pond.

Grid analytical method

I check which position each landscape element is distributed by grid analytical method to clarify constitution of the landscape (view from the opening) based on a photograph taken under set conditions at the site (Fig. 2). Specifically, I divide the photographic image into 4×6 grids since they can capture the overall compositions of the elements.(Fig. 3).

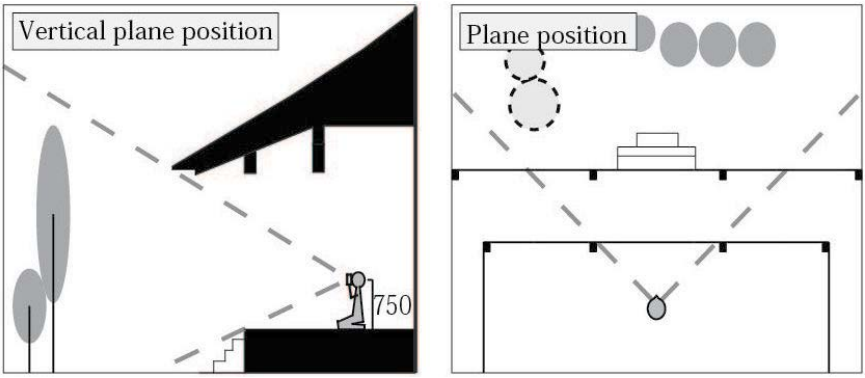

Fig. 2. Photography condition
Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

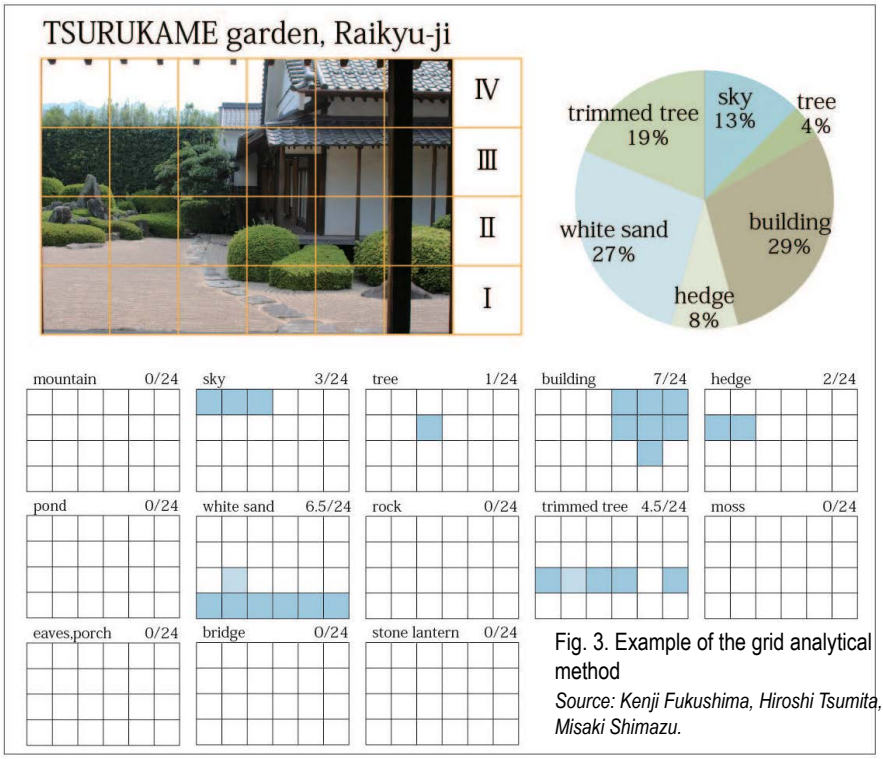

Fig. 3. Example of the grid analytical method
Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

An element accounting for more than 50% of a cell[4] is counted. I plot the ratio of the number of cells with the elements for each garden in a graph and express the distribution of the elements for all gardens with the gradation of the color.

The Psychological experiment based the SD method

The SD method[5] is used to measure the quantity of psychology for each garden. Several viewers sat in the building and looked at the garden for the experiment. They rated the evaluation scales of 23 bi-polar adjective phrases at 5 grades. I analyze them according to KARESANSUI type and ornamental-pond style garden type. Furthermore, I perform a correlation analysis to grasp relations of "composition of view from opening by the grid analytical method" and "psychological evaluation by the SD method".

Sketching experiment

The space recognition properties to express how people grasped a garden view were studied through the experiment by the sketching. The size of the sketch is 80*120mm. The viewers were to make sketches in five minutes. The sketches are analyzed by the grid analytical method. Furthermore, I compare the results with "the composition of view from opening by the grid analytical method" and "composition of the sketching by the grid analytical method" (Fig. 4).

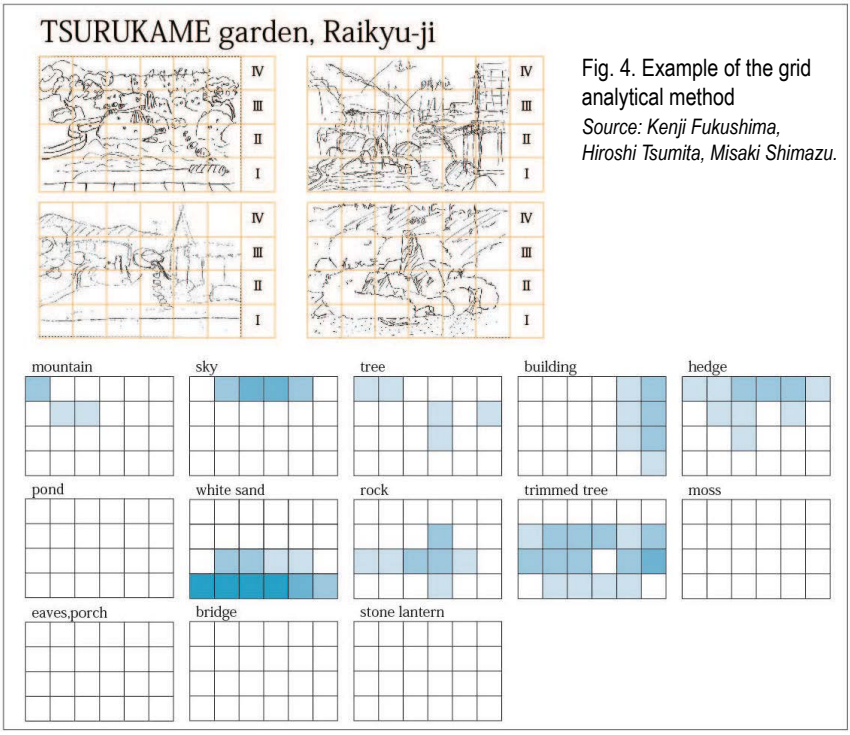

Fig. 4. Example of the grid analytical method
Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

[4] I call one divided with 4×6 grid 'cell'.
[5] Abbreviation of Semantic Differential, kind of the psychological assay.

Result

Composition of view from opening

I added up the distribution of each element for every KARESANSUI and the ornamental-pond style garden. In addition, I maked a landscape model for every KARESANSUI and the ornamental-pond style garden (Fig. 5).

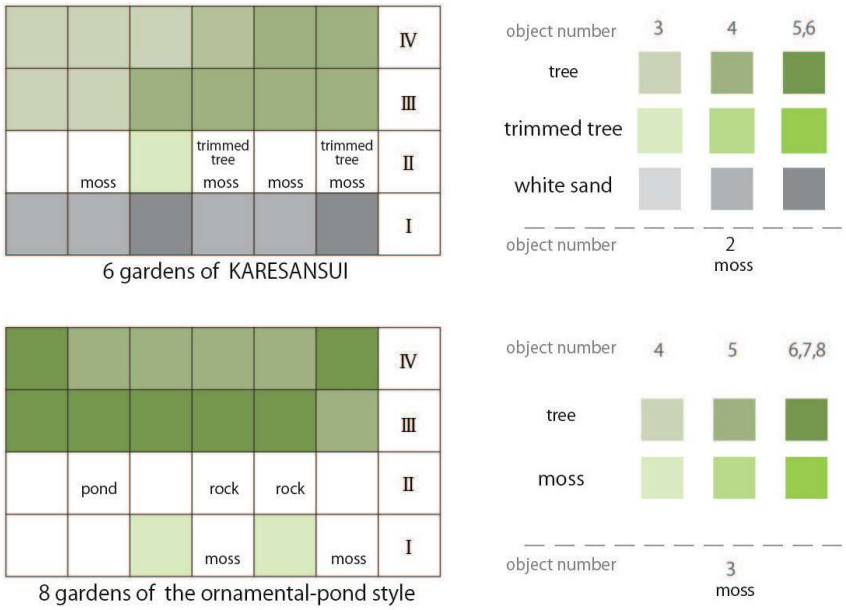

Fig. 5. Landscape model

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

In KARESANSUI, [tree] was counted most at 30.6% and it existed almost all in rows of Ⅲ, Ⅳ of the grid. In addition, [white sand] was counted second most at 19.4% and followed by [trimmed tree], [moss], [rock]. For the landscape model of 6 KARESANSUI gardens, I expressed the elements appeared in more than 3 gardens with the color gradation. In Ⅲ and Ⅳ rows the cells were comprised of trees and they tend to be located at the right to the center. All the cells at Ⅰ row were comprised of [white sand]. [trimmed tree] appeared at the row of Ⅱ in only one case, but it did not appear in the other. [trimmed tree], [rock], [moss] all appeared in the row of Ⅱ, and it may be said that Ⅱ cell location is a key position to express the identity of the KARESANSUI.

In the ornamental-pond style garden, a tree was predominantly counted at 45.8%, and they existed in all cells. In addition, [rock] was counted second most at 18.0% followed by [moss], [rock], [trimmed tree]. For 8 landscape model of the ornamental-pond style gardens, I expressed an element appeared in more than 4 gardens with the color gradation. All Ⅲ and Ⅳ the cells are comprised of [tree]. The cell of Ⅱ had no element, and [moss] appeared two cases in the cell of Ⅰ.

Psychological evaluation analysis

Data on 12 gardens which the experiment was performed are used for the psychological evaluation analysis. The results of the SD method experiment was added up by the evaluation scales of 23 bi-polar adjective phrases.

In addition, I calculated the mean valves of the psychological evaluations for every KARESANSUI and the ornamental-pond style garden (Fig. 6).

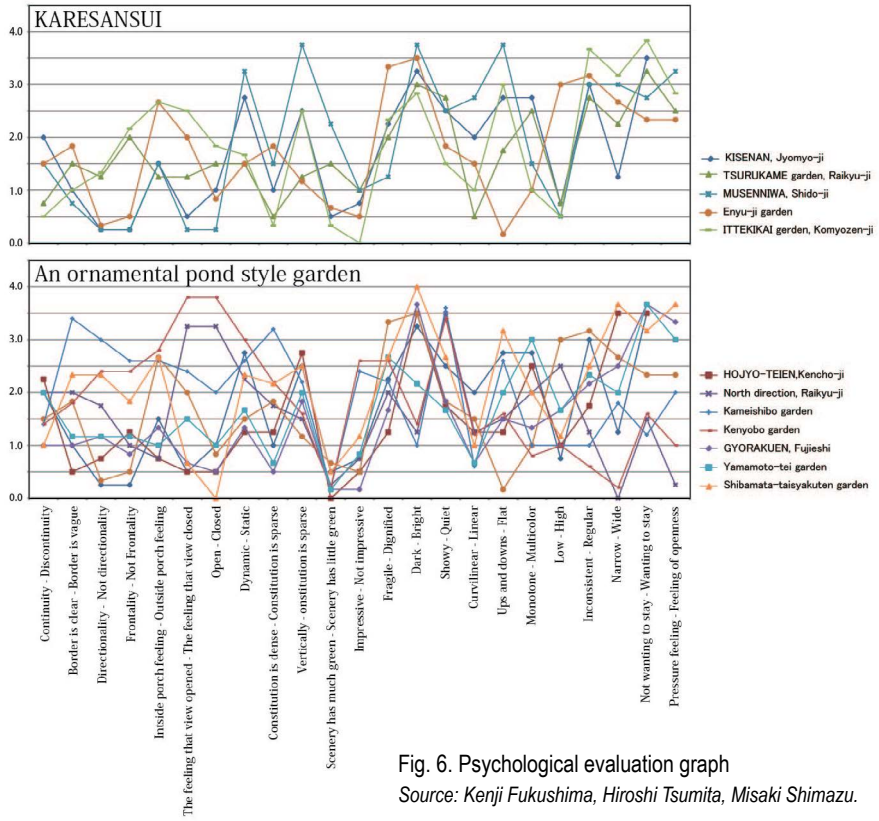

Fig. 6. Psychological evaluation graph

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

As for KARESANSUI, a high evaluation was provided in <Border is clear>, <Directionality>, <Constitution is dense>, <Impressive >, <Low>, <Regular>, <Wanting to stay>, <Feeling of openness>. As for the ornamental-pond style garden, a high evaluation was provided in <Scenery has much green> and <Curvilinear>.

Correlation analysis of 'Composition of view from opening' and 'Psychological evaluation'

The grid analysis is of the constitution of the landscape for each garden was compared with the psychology evaluation obtained from the SD method to understand theirs correlation (Fig. 6). Three psychological scales of adjective pairs in the figure 7 show a part of the relations observed.

For the psychological scale, <Open – Closed>, a tendency to feel <Closed> was seen in the garden where the bottom cell had many elements of [pond] like "North direction, Raikyu-ji" and "Kenyobo garden". Conversely, a tendency to feel <Open> was seen in the gardens where [moss] appear in Ⅰ and Ⅱ [sky] in Ⅳ like "Shibamata-taisyakuten garden" and "HOJYO-TEIEN, Kencho-ji". Between <Scenery has much green – Scenery has little green> in the ornamental-pond style gardens <Scenery to be that there much green> was generally rated high than KARESANSUI. Even in the gardens which have high ratio of [tree] and [hedge] as in "MUSENNIWA, Shido-ji", the influence of a strong [white sand] would not let the viewer feel that there was much green. Between <Low – High>, a tendency was seen to feel that it was <Low> in the gardens where [white sand] is in Ⅰ like "MUSENNIWA, Shido-ji" and "ITTEKIKAI garden, Komyozen-ji".

Thus, It is understood that the elements of the ground(as in figure-ground) in the bottom cell greatly influenced the psychological evaluation of the gardens.

Correlation analysis of 'Composition of view from opening' and 'Space recognition properties'

The sketches drawn at the sites are studied by the grid analytical method. In addition, they are indicated by the different shades for every KARESANSUI and the ornament-pond style garden. Furthermore, they are compared with the composition of view from the opening (Fig. 7, 8).

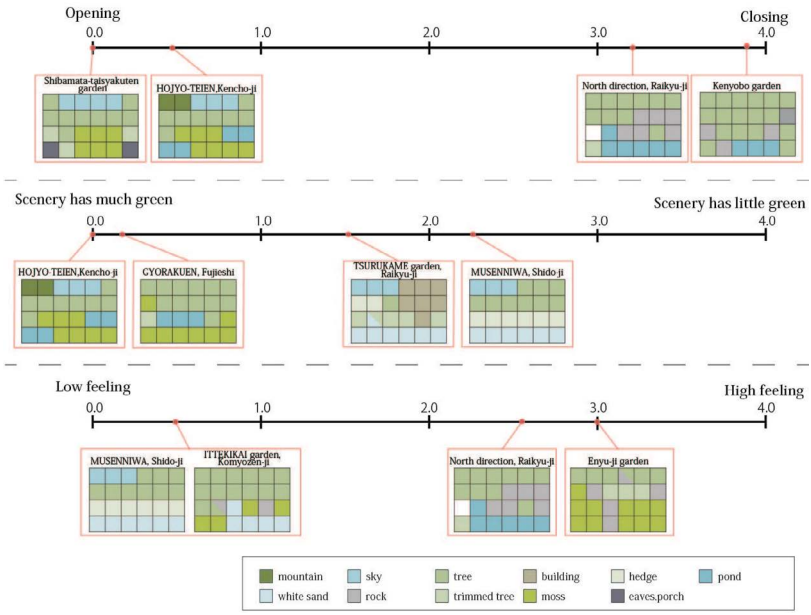

Fig. 7. Psychological evaluation judging from the constitution of the garden

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

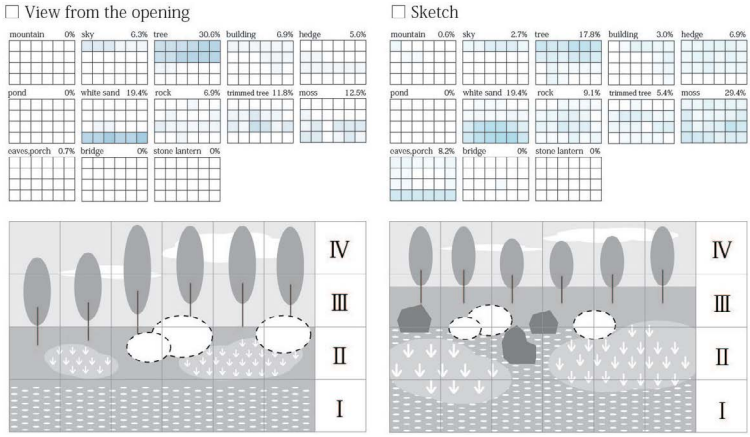

Fig. 8. Image composition of KARESANSUI

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

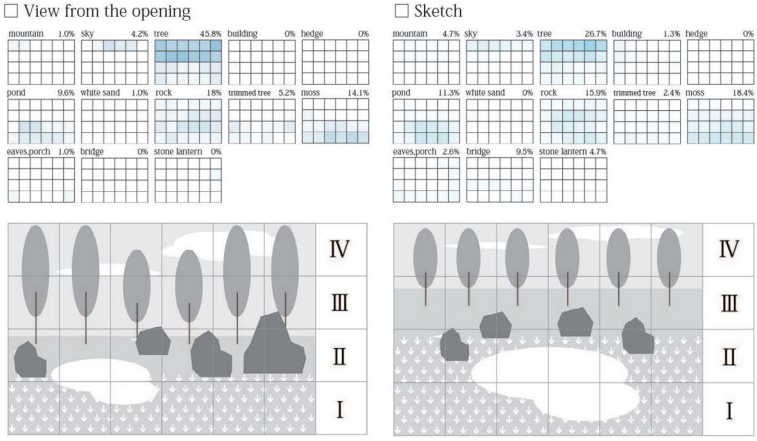

Fig. 9. Image composition of the ornamental-pond style garden

Source: Kenji Fukushima, Hiroshi Tsumita, Misaki Shimazu.

1. Comparison of KARESANSUI

The elements which were perceived larger than the composition of view from the opening were [mountain], [hedge], [rock], [bridge], [moss] and [eaves]. The elements which were perceived smaller were [sky], [tree], [building] and [trimmed tree]. [white sand] did not differ very much. [tree] elements in the view from the opening(30.6%) were mainly distributed over Ⅲ and Ⅳ, but in the sketches (17.8%) their center of gravity was in Ⅳ. [white sand] elements in the view from opening (19.4%) were in Ⅰ, but in the sketches (19.4%) they are drawn in the rows of in the rows of **Ⅰ** and Ⅱ. [moss] elements in the view from the opening (12.5%) were in Ⅰ and Ⅱ, but in the sketches (24.4%) they were distributed widely over Ⅰ and Ⅳ. [mountain] and [bridge] elements in the view from the opening were small and hardly existed but in the sketches they were greatly drawn. In KARESANSUI, the man-made "figure", such as [bridge], as well as [rock] which is the symbol of KARESANSUI were greatly recognized.

2. Comparison of the ornamental-pond style garden

The elements which were perceived larger than the composition of view from the opening were [mountain], [building], [pond], [stone lantern], [bridge] and [eaves]. The elements perceived smaller were [sky], [tree], [rock], [trimmed tree] and [moss]. [tree] elements in the view from the opening (45.8%) had a center of gravity in Ⅲ, but in the sketches (26.7%) their center of gravity was in Ⅳ. [pond] elements in the view from the opening (9.6%) had a center of gravity in left side of Ⅱ, but in the sketches (14.7%) they had a center of gravity in right side of I. They were recognized to be larger than view from the opening. [moss] elements in the view from the opening (14.1%) were mainly distributed over **I** and Ⅱ, but in the sketches (18.4%) they were distributed over -Ⅲ. [building], [stone lantern] and [bridge] were hardly recognized small in view from the opening, but they were large and well recognized in sketches. From the above, the man-made figures(as in figure-ground) such as [bridge] and [stone lantern] perceived to be larger, and the natural figures such as [trimmed tree] and [rock] were recognized as small in the ornamental-pond style garden.

[sky] and [tree] elements which mainly occupy Ⅲ and Ⅳ were recognized to be smaller than the view from the opening. In addition, [trimmed tree] was the element which expressed unique character, but was recognized to be small. [moss] elements which spread widely over the same ground were recognized to be small in the ornamental-pond style garden but were greatly recognized in KARESANSUI.

It can be explained that [moss] elements are perceived with [white sand] as a background in KARESANSUI, while the elements are perceived with [pond] as look the center in the ornamental-pond style garden. When people view the scenery in front of them, they do not look horizontally but look a little low to grasp scenery. From this, I understood that there was a difference in perception in comparison with view from the opening.

Conclusions

1. Landscape models for KARESANSUI and an ornamental pond style garden were made based on the previous studies.
2. The characteristics of the psychological evaluations were clarified for KARESANSUI and an ornamental pond style garden.
3. The psychological evaluations were prone to be influenced by the elements in the position of Ⅰ, Ⅳ in the view from the opening.
4. From the comparison between the view from opening and sketches scenery that the viewer perceives and the constitutions of the landscape showed discrepancies.

When a designer makes the landscape design for the modern architecture, the unique characters can be brought effectively placing modern elements in Ⅱ location framed by the window. In addition, the choices of [pond], [white sand] and [moss] and the placement of [tree] become important since they influence the psychological evaluation depending on the elements in the rows of Ⅰ and Ⅳ. For these two points, it is important to consider discrepancies between the view from the opening and the scenery which the viewer actually perceives.

From the above, I was able to clarify the constitution of the landscape in Japanese Zakanshiki garden.

NON-MATERIAL HERITAGE POTENTIALS IN INTEGRAL DEVELOPMENT PLANNING – CASE STUDIES OF BUJE IN ISTRIA, CROATIA[1]

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Introduction

The methodology of mapping and programming spatial potentials are in need of a new platform – a kind of programming agenda – in order to achieve maximal result which would facilitate developmental goals. Namely, both: official physical and/or master plans, and strategic economic studies, lack holistic approach. While the former are not fruitful in terms of economic growth, the latter are not greatly concerned with the specificities of space. The fore mentioned disadvantages could be overcome by interdisciplinary on-site cooperation, which would result in a "Programming agenda" a substitute for the lack of a strategic physical planning document. It presents a synthesis of development goals and planning principles centred primarily on those spatial and economic qualities which define a unique identity of a place, city or area[2]. It is therefore a package of spatial and programmatic functions, measures and activities aimed at being data entries for integral physical planning. The realization of common development goals implies the application of interdisciplinary knowledge and skills in a joined effort to solve problems and respond to challenges which the traditional disciplines are largely unable to cope with individually. It is therefore necessary to encourage an on-site cooperation in order to identify the character of the space, take into consideration its potential and turn it into development advantages and possibilities.

What this method differs from standard procedures in physical planning is the selective approach to those supports – locally specific, unique and unrepeatable – which underpin the development. Methodology does not neglect general objectives (investments in facilities which aim to develop and raise municipal standards), but simply they are not the subject.

In the scope of expected results when applying the „programming agenda" any concrete spatial investigation should provide a clear and stimulating long-term vision of development which would serve for the selecting development projects and measures supported by citizens and local governments.

[1] This research is a part of the scientific project *Heritage Urbanism* (2032), financed by Croatian Science Foundation, which is being carried out at the Faculty of Architecture, University of Zagreb, under the project leadership of prof. dr. sc. Mladen Obad Šćitaroci.

[2] Ellin, Nan. "Practising Integral Urbanism in Metropolitan Phoenix", *Canalscape*, 15 (4), 2010, p. 604.

Mapping and programming spatial potentials of Buje in Istria

This paper deals specifically with such implications and with interactions between physical planning and strategic economic development related to the potentials of non-material values of a particular region. Those values are fluid, yet universal – situated nowhere and occurring anywhere. They are not strictly linked to tangible heritage remains and that is the fact which complicates their proper preservation. Economic heritage as a non-material form of heritage, encompass a vast array of forms (homestead in a broad sense of the word, including activities such as feedstock production, traditional cuisine, handcraft and personal services, manufacture and industry), which may be deeply rooted in a local environment.

The planning process in Croatia is often reduced to a custom-made production of plans,[3] particularly in small municipalities. Due to professional insufficiencies[4] the planning decisions are arbitrary and palliative, and therefore pose a threat to space-code changes. The code is in jeopardy not only in historic cities but also in those cities which have recently managed to establish it. However, the code is not just a physical, spatial and perceptive phenomenon, but also a cultural category whose protection is entrusted to all who are involved in planning[5].

The codification of those values is motivated as a group of *contextual regimes: issues depending on the immediate context and its preservation, economics and social regimes, traditions, etc*[6].

Our planning team made out of architects, an economist and a town planner, has been working in situ in various small towns in Croatia during a four year period. Previously mentioned methodological approach aims to develope strategic goals by invoking new programs which should be implemented into urban plans, in order to set ideas in motion through the architectural design proposals. The project as such presents a synthesis of development goals and planning principles centred primarily on those spatial, economic and heritage qualities which define a unique identity of a place, city or area[7].

The Municipality of Buje in Istria, a coastal region of Croatia, has recognized our vision of revitalization in the proposed project "Mapping Space Potential and

[3] „ ... physical plans have not been paralleled by the expected economic results in the last twenty years of Croatian history. The cause lies partly in an insufficient coordination between physical planning and development programming and partly in monopolizing the decision-making process regarding physical planning by the political establishment invoking the will of the electorate to entrust them with the upcoming four-year mandate." Horvat, Jesenko, Pavković Marina. "Physical planning and Programming Agenda", *Prostor*, 21 (2), 2013, p. 301.

[4] „ ... local authorities and their professional departments cannot articulate their own space strategy, and conduct the integral development politics according to it." The authors name this phenomena – a lack of vision. Horvat, Jesenko, Pavković Marina. "Physical planning and Programming Agenda", *Prostor*, 21 (2), 2013, p. 295.

[5] Jivén, Gunila; J. Larkham, Peter. "Sense of Place, Authenticity and Character: A Commentary", *Journal of Urban Design,* 8 (1), 2003, p. 76.

[6] Explaining the key for systematization of role categories, Alex Lehnerer perceives the specifics of phenomena which we recognize as intangible value. Lehnerer, Alex. *Grand Urban Rules*, Rotterdam: 010 Publishers, 2009, p. 12.

[7] Kranjčević, Jasenka. "Territorial approach as a starting point for rural development planning", *Central European Agriculture Journal*, 7 (3), 2006, p. 549.

Programming Economic and Tourist Offerings", and has given our team the opportunity to make inquiries on benchmarks (existing, but never recognized potentials) which could induce and improve sustainable development. Not only does the town of Buje, as the capital of the municipality, require special attention but the micro region as a whole possesses an inspiring potential to develop further projects, mostly in inactive areas such as historical ruins, queries, muddy and shallow bays, as well as abandoned paths. The project provides the local community with ways in which to develop their programs of primary interest[8]. Many of these programs in the realm of both public, as well as private investments, would be ideal candidates for European funds, and the municipality would be willing to help finance the prospective projects.

The methodology has been tested on several settlements and sites in the area of the Municipality of Buje (see Fig. 2). The analyses have been publicly presented as the first stage in the preparation of the platform for the codification of development, i.e. physical planning. The procedure was going on in two stages. The first stage was concerned with the analysis of the situation, as well as some possibilities and limitations. All interested public bodies (the local government, citizens, prospective investors) have been involved as consultants, in order to be informed and have their needs and wishes considered. Priorities were set and possible solutions proposed in the second stage. Further implementation of the accepted physical planning solutions and recommendations is within the competence of the local government, which is, by selecting measures and resources, working out a plan with the aim of transforming the proposed solutions into actual physical plans, projects and interventions through a legislative process.

This talk will focus on three of the multitude of programs proposed in the Project. The cases have been chosen on the account of the fact that in all three situations the preservation of cultural heritage does not focus on the subject of material culture, but rather on the existence of non-material traditional activities or historic traces:

The "Digitron" factory brand

The first case in question refers to the historical significance of „Digitron", the factory in the industrial zone close to the town of Buje[9], that produced the first (!) commercial calculator in Europe, which is an example of the image of industrial

[8] Kordej De Villa, Željka, Sumpor, Marijana, Stubbs, Paul. *Participating management for sustainable development*, Zagreb: Ekonomski institut*,* 2009, p. 52.

[9] "In 1971, soon after the company was established, it threw on the open market the first European electronic pocket calculator, immediately after the Americans and the Japanese. Ime te tvrtke, Digitron, u bivšoj je Jugoslaviji postalo eponim za "džepna računala", baš kao što je to bio slučaj s Kalodontom kod pasta za zube. Name of the company, in former Yugoslavia became the eponym for "Pocket PCs". In that time the city had only partially resolved status, being a part of former Free Zone of Trieste, which in 1954 fell under Zone B and thus belonged to Yugoslavia. However, the issue of the final borders of Italy and Yugoslavia will be resolved until 1975 Osimo Treaty. Visionary opted for electronics, the growing sector in the Yugoslav market practically had no competition".
http://www.jutarnji.hr/40-rodendan-digitrona-u-bujama-je-izraden-prvi-europski-dzepni-kalkulator-te-1971-kostao-je-koliko-i-fico /954368/ Stanovništvo se rasipalo, bježeći iz Buja i okolice glavom bez obzira u borbi za golu egzistenciju.Vizionarski su se opredijelili za elektroniku, rastući sektor u kojemu na jugoslavenskom tržištu praktički i nije bilo konkuren.

heritage of relatively new origin. The company has not only become a synonym of the valuable brand, but still sends out a powerful message of innovation and success, even years after the factory was shut down.

This case shows the potential of intangible heritage in local surroundings and certain inhabitants' identification with their recent history, while prospectivness were relied on the initial period of IT technology development, which made their municipality widely noticeable by the prosperity that lasted for some decades and invoked the respect of the rivals, as well as self-appreciation. The community is now willing to mark that period and to pose a „hommage to Digitron". The proceeding actions are focused on finding the proper form of designation.

The intelligent way would be to promote all space potentials, especially the old protected city-core and its pedestrian street network. Precisely that was the study proposal for the next city investment. In this sense the main street ascending from the foothill suburb to the historic topos, carries the image of the site. Its initial widening is recognized in our vision as the new square – the starting point to the tourist sight-seeing trace and the location for the mentioned installation. The project of urban arrangement of the pedestrian street is currently in the process of getting the building permit.

The other question and a most delicate one, is the character of the memorabilia. Contrary to the conventional solutions, which would not be adequate, we believe that the virtual dimension of such an artifact should be highlighted – projecting the past of the IT brand „Digitron". It should be structured in multi-medial art language form, but tangible in sense of its physical presence. An excellent reference to this are the well known installations in Zadar[10] which communicate by sound and/or by light (see Fig. 1).

The Digitron brand and its heritage potentials in terms of any space intervention inside the local municipality area, need to be supported in three possible ways:

- by establishing an adequate start-up employment model for local people, based on IT heritage of the old factory (the cooperation with economist authorities is inevitable in space programming);

Fig. 1. Sea Organon and Sun Salute in Zadar

Source: http://hr.wikipedia.org/wiki/Pozdrav_Suncu; http://www.apartmanimanda.com/pics/zadar6.jpg (accessed 27.03.2015).

[10] The Installations: *Sea Organon*, constructed in 2005 and *Sun Salute*, raised in 2008 are authorized by the architect Nikola Bašić, becoming emblematic landmark icons of Zadar.

- by reconstructing and modernizing the industrial architecture for aforementioned purpose, and by putting its surrounding in urban function. The area in front of the east-facing facade should by all means become a new public city park-square that way the building of this powerful brand would be unveiled to its business potential and to the city itself;
- by labelling the brand of Digitron, on any convenient place. The importance of intangible heritage of Digitron lies not only in the fact that it marks the location of its origin, but also that it metaphorically designates the wider influential territory.

The possibility of Digitron's revitalization depends on the creativity and capability of the management and employees: with a powerful brand as their asset, they might reinforce their market presence.

The Revitalization of the "Parenzana" Railroad Trace

The second case deals with to the preservation and redefinition of the old „Parenzana": the railway[11] trace out of use since 1935, which still remains the corridor for green traffic facilities. The trace has already been recognized as a valuable asset by bikers, properly furnished and incorporated within lucrative touristic itineraries, but it reveals potential for a much wider use.

The path is interrupted at several points, where the new road network has crossed over it. Certain interventions on the cross-sections would easily create capacities for the implementation of a public transport system which would connect the hinterland with the coastal zone, and thus allow commuting between regions by sophisticated means of transport. Possible programmatic interventions by the side of the road, such as (but not limited to) restaurants, accommodation and resorts would be a collateral benefit to the project. That would also be a considerable improvement for seasonal touristic accessibility, since the old railroad is a trans-border connection with Slovenija and the local airport is situated nearby the trace. Another benefit of such established communicating would come from better touristic use of the inactive littoral zone (wellness resorts and/or camping sites) and adequate public use of it (deficit of beaches for the inhabitants of interior).

In the nowadays sustainable paradigm, old railroads are commonly recognized as good communicators with the past. In some places the preserved infrastructure enables complete reconstruction of the railway network, regardless of how convenient and fast it is, but most frequently that approach is not possible because the path has been interrupted. The idea to put to use the broken sections which make up bike-route would be a pragmatic solution, ant this is the most common way local decision-makers in Croatia think. However, that is not the proper way to emphasize the intangible heritage of local commuting tradition, largely based on the vanished public transport system. Bikers make up limited and profiled cluster of the population and only a small part of space consumers. Such a solution would therefore little by little cause conversion of public railroads into recreation paths and produce a complete distortion of the communication heritage.

[11] Parenzana is the narrow-gauge railway that connected the town of Poreč in Istria with railroad network in Slovenia and Italy (Trieste). The part of it passing Croatia is 64 km long. It was abolished due to unprofitability.

Planned investments often possess potentials to invoke other projects with developing results which were not in the primary focus. This collateral benefit is practically invisible in strategic plans and therefore unpredictable. Moreover, its full value is never absorbed within the cost-benefit estimate[12]. Our opinion is that preserved corridors are an irretrievable capital for a better conjunction of the vital nodes in inhabited area. The autonomy of such a developed system provides safety, fluidity and comfort, despite the fact that it cannot provide a fast drive. In terms of design, motor vehicles must account for the compatibility with hikers or bikers, on a rather narrow trace and in modest capacity. The perception of the past would in this way be preserved, and the purpose of the communication channel restored, despite the altered specific function brought by requirements of modernity.

The Rural Environment of Momjan and its Rota Castle

The third case-study focuses on the historic place of Momjan[13]. In terms of widening the base for development, several intangible heritage values of the local area might be highlighted and put to use as highly compatible in the programming approach. The schedule of programs come from the trans-national and trans-lingual tradition of the region, as well as on rich tradition of Istrian gastronomy and oenology. Those programs continue a rather sporadic but rooted manifestations (*Vizura Aperta* is one of them). Hence the touristic profile of Momjan should be developed by encouraging individual family accommodation, but at the same time strongly supporting educative and cultural programs[14] - creating logistic base for it by means of public and individual cooperation. The spatial availance for it is highly potential: two abandoned ruins are adequate for that purpose in capacity, property and their position in the very centre of the place.

Most of all, this programmatic approach has the importance of material appearance and in the lies the prospective status of the abandoned Castel Rota. This valuable registered historical monument is the icon of Momjan and its visual dominance – the ruins – now stand on the ridge nearby the settlement. There was once a stone bridge over the chasm leading into the castle but it collapsed. Now the Rota Castel stands as a protected, but inaccessible monument of the past, threatening to cave in. A reinterpretation of the vanished stone bridge, which once connected Castel with the settlement is considered to be a starting point for the programmatic enrichment in terms of cultural and touristic promotion of the place, and in terms of communication of heritage (see Fig. 2).

[12] „… the amount of the 'extra-value' is barely appreciable indeed, but predictable in qualitative, if not in quantitative scopes." Horvat, Jesenko, Pavković Marina, op. cit., p. 295.

[13] Momjan is a rural settlement (283 inhabitants in 2011, 1075 inhabitants in 1021) 5 km away from Buje. Attraction base consists of compactly formed city core with streets directing views on typical hill landscape of Istria. There is a significant amount of valuable traditional architecture, but unfortunately in very bad condition. The place is known for its cuisine and *muškat* – unique product of small series but high quality vine.

[14] The authors proposed: language courses (Italian, Slovenian, Croatian), culinary and oenology courses, art and craft workshops (painting, architecture, theatre, dance and music, art craft and musical instruments manufacturing) seminars, educative camps, competitions and festivals (poetry, journalism) and so on.

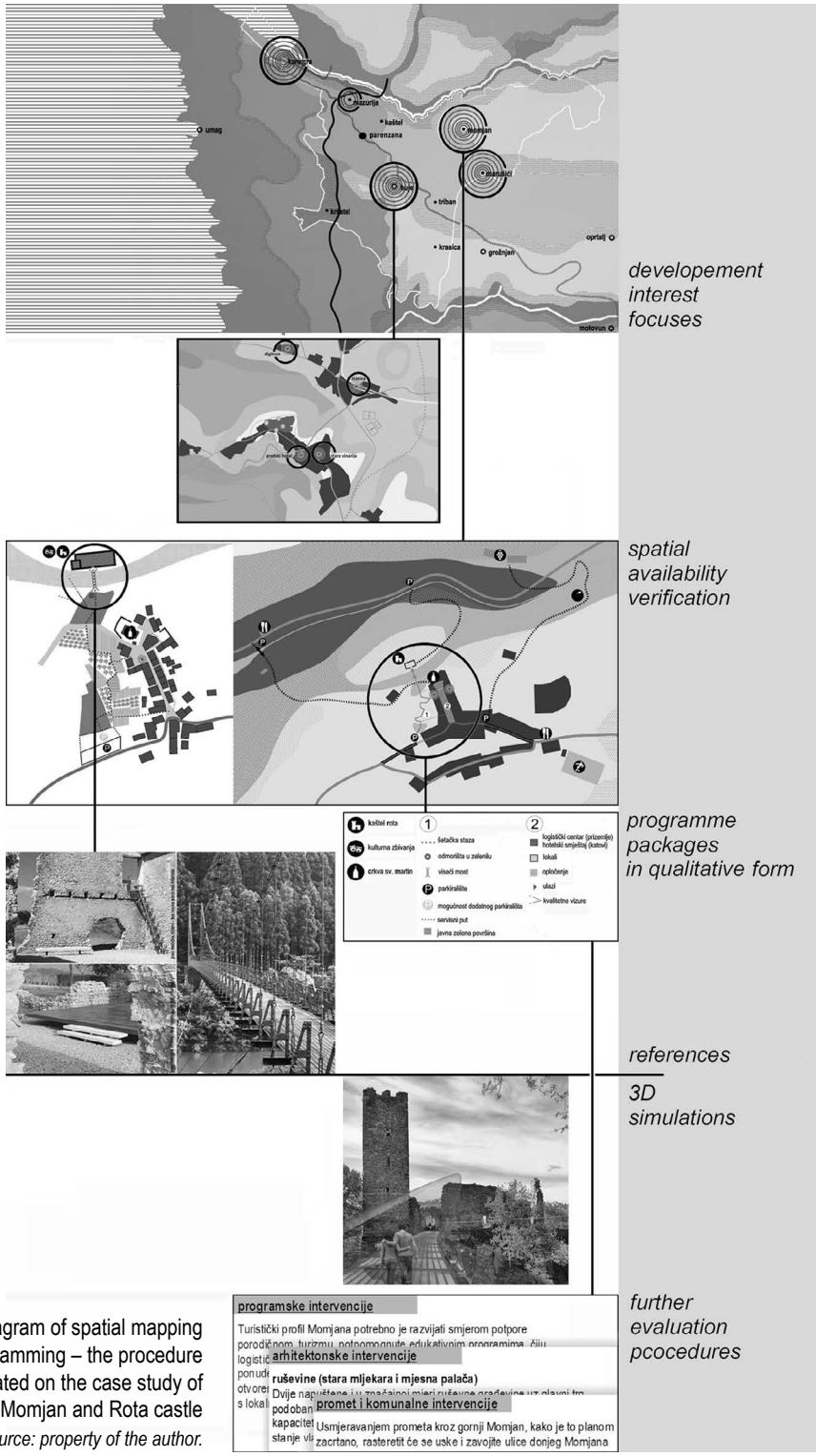

Fig. 2. Diagram of spatial mapping and programming – the procedure illustrated on the case study of Momjan and Rota castle

Source: property of the author.

The inner courtyard of the Castel is an acceptable scope for an open-air stage for various performing purposes. This way the monument would open up as a multipurpose arena, rather than an endpoint for hikers.

The culture of hiking is strongly rooted into the everydays inhabitants' habits. This fact alone supports the importance of investments proposed by the programmers. One of the aims is to activate and furnish the hiking path beneath the settlement edge, as a parallel *peripatetic* approach to the Castel which enriches the agrarian value of cultivated landscapes of Istria.

All these case-studies illustrate the strategy (and methodology) in which the common approach results with new values, and new object-forms constructed with "fluid material" of intangible heritage.

Conclusion

The recognition of one's own development potential is a key factor behind the success of any environment. Spatial potential of an area in terms of its geographical location, or its cultural and historic heritage may provide the same similar development basis. Even if heritage perishes, as is often the case in transition processes, or loses its material form, it still remains in the memory of space as a form of economic heritage – the brand of a place. This becomes particularly important in the context of an increasing space-consumption trend which, due to a tendency to serve only profits' interests, as well as a lack of proper space strategy, achieves a short term economic growth, but brings about long-term social deficit if the initial investment effect is not followed by strategic development results. A badly planned intervention in space remains an unfortunate intrusion into the social community, thus hindering long-term development.

Yet the achieved level of development can, in some areas, show considerable differences. This is the result of a different attitude to space use; a particular program which makes the development resources fully functional. Successful environments manage to recognize and activate those heritage resources which contribute to the competitiveness and productivity of the local economy. Others tend to copy development strategies and at the same time fulfil their economic needs by stereotype measures. Thus the result is precisely the opposite since the documents which only formally provide universal measures across the board aggravate the condition further by pushing the commissioner into an activity which might possibly result in an unwise investment.

Intangible heritage values function as ordinances of lifestyle, impregnated into the material form of an environment, and have to be codified within the set of rules for their proper maintenance[15]. In cases where a heritage form is not linked to the material remains, but rises up from cultural and behavioural background, there is no need to replicate, no need to reconstruct, no need for restore. It allows, against all generally accepted models of active protection of heritage, the appearance of completely new architecture forms fulfilled with the heritage *spleen*.

[15] As Alex Lehnerer says: „Their implementation [of the rule] enables the precise formulation of degrees of freedom for specified area and for the protagonist of the planning process." Lehnerer, Alex. op. cit., p. 58.

VISUALIZATION OF HERITAGE-RELATED KNOWLEDGE – CASE STUDY OF GRAPHIC REPRESENTATION OF POLISH NATIONAL INVENTORY OF MONUMENTS IN SPATIAL INFORMATION SYSTEMS

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Introduction

Awareness of the heritage constitutes self-consciousness of the contemporary society. In this way, preservation of historical monuments concerns not only the past, but also our future. Awareness of how important heritage is strongly depends on common knowledge about its aspects. Rendering such information visible to all is one of the basic tasks for contemporary preservation-related bodies and organizations, and, generally speaking, for contemporary societies. This can be realized by effectively introducing a digital cultural heritage concept, with its emphasis on information aspects[1].

Project Origins

The work presented in the following article fits this context. It was originally aimed to fulfill requirements of the INSPIRE EU Directive, which (among other requirements) obliges the EU member states to render visible all basic information concerning protected sites, including historical monuments and sites. This should be done using of a coherent spatial information system. National Heritage Board of Poland decided to broaden this task and publish a more extensive information set using spatial information system tools. As result, map-based reference of knowledge about Polish built heritage has been created[2]. It includes 69974 immovable (mainly architectural) monuments and 7705 archaeological monuments, giving a total of 77679 (as of March 12, 2015) listed in National Inventory.

[1] See: Bianchi, Cristiano. „Making online monuments more accessible through interface design", in: MacDonald, Lindsay (ed.), *Digital heritage: applying digital imaging to cultural heritage*. Amsterdam: Elsevier. 2006, pp. 445-466.
[2] Beta version of this map is available at http:// http://mapy.zabytek.gov.pl/nid/ (accessed 15.03.2015).

Project characteristics

Because the project was aimed at both common users and experts, it required a very careful visual communication design. The author‘s task, which is presented here, concerned the fragment of a larger work referred to the whole map service[3]. This included symbolization of monuments groups and types (preceded by categorization) represented by icons and visualization of their basic features, represented by icons‘ variations. Another task was to develop clear and legible color schemes for maps.

Since the project’s main task was to develop a map which would serve as an interface for information about historical monuments, studies on previous approaches to heritage maps (especially in Poland) were required. Among these examples the most significant and comprehensive was „Atlas zabytków architektury w Polsce“ (Atlas of Architectural Monuments in Poland) by A. Miłobędzki and J. Łoziński, released in 1967[4]. Its graphical representation of monuments – 50 icons referring to monuments‘ types – is characterized by a detailed distinction between various sacral building types, a consistent differentiation between single objects and building complexes, and by representation of main material of buildings through an icon variation. There was only one symbol for an archaeological monument (settlement). These icons, however, were based on two different semiotic regimes: on one hand referring to the meaning or idea of the building – its immaterial connotation (like cross for a church), on the other hand to the actual or archetypal, material shape of the monument itself (like a palace or a manor house). This is a result of a cartographic tradition; however, the original attempt while creating the new set of icons for heritage maps in this project was to avoid such duality.

While studying printed, analog atlases as comparative material for digital maps one should be aware of the basic difference between them: the dynamic nature of the latter. In case of maps this concerns one of their basic features: scale. Designing a representation of monuments on a dynamic-scale map reveals new set of problems. One of them refers to displaying dense information sets in relatively small map scales. Such situation takes place in cities, where a lot of monuments are placed on a relatively small area. Displaying their representations (icons) in a small scale would result in a massive overlapping, thus making information illegible. In printed atlases this problem was solved by referring monuments (or rather their symbolizations) in such areas to the whole city rather than to their actual position. This idea was transferred to digital maps as so called „cartographical matrix“ which is an original development of the project team[5].

[3] The whole project included a much broader set of actions associated with developing working solution for presenting monuments in spatial information systems and was realized for the National Heritage Board of Poland by a team from Warsaw University of Technology: Anna Fiedukowicz, Andrzej Głażewski, Krzysztof Koszewski, Paweł J. Kowalski, Kamil Latuszek, Robert Olszewski, Leszek Włochyński in 2013 and 2014 with Robert Olszewski (Faculty of Geodesy and Cartography) and Krzysztof Koszewski (Faculty of Architecture) as project leaders.

[4] Łoziński, Jerzy; Miłobędzki, Adam. *Atlas zabytków architektury w Polsce*. Warszawa: Polonia. 1967.

[5] However, this item is not covered by the article since its scope goes beyond graphical representation referring to icons, which was the main task of the author.

Visual information environment

Visual information environment for a system for spatial information about heritage consists of several elements:

- System of signs-icons representing monuments or their classes,
- Map compositions – in terms of coherent and legible visual communiqué together with icons,
- Elements of map interface facilitating efficient discovery of information
- Organization of icon sets in relation to a dynamic map scale.

The scope of this article refers mainly to the first of the above as was the author's task within the whole project; other problems will be mentioned briefly.

Several presumptions were made prior to designing icons for monuments:

- Icons had to follow the rule of formal simplicity as a characteristic feature for all graphic elements which serve as signs
- Icons had to be diverse enough to facilitate clear distinction between them
- They had to be graphically coherent to create a sense of visual system
- Strong semantic link between the signifier (icon) and signified (monument) was to be provided
- Uniform representation criteria had to be adopted – icons had to follow one semiotics regime (pertaining monuments as objects rather than carriers of ideas)
- Icons set had to conform technical requirements for effective displaying on a map in a spatial information environment

Bearing in mind the technical requirements[6] and conditions for visual coherency, all icons were designed using graphic modules. All of them are placed on 16x16 square grid with no elements thinner than a single module.

Fig. 1. Basic icon on 16x16 grid background

Source: authors' own work.

[6] Icons have to be displayed on the computer screen against a map background correctly, which means that no lines should be thinner than one pixel and there are no fractions of modules.

Signage semiotics

All of the designed icons have to fulfill semiotic requirements for signs. Mieczysław Wallis accurately defines a sign as 'a physical object shaped by its creator with a purpose to induce in the recipient (thanks to some object's properties) specific thoughts about the subject other than himself'[7]. In this case *the created object* refers to an icon, *the other subject* refers to signified building/site and *specific thoughts* concerns special features of the original object that constitute its historical value as a monument. This interpretation unveils rooting of Wallis's definition in Peircean semiotics system based on the triad of sign-object-interpretant. The latter one is of great importance in our case, since the aim of developing a sign system is for it to be clearly interpreted by a wide audience.

According to Peirce, we can name a specific element of a sign, which we call 'a sign-vehicle' – the carrier of specific features of a signified object – i.e. these which we consider distinguishing in terms of the categorization applied. In the sign system described here, the constituting features were those that refer to the archetypic shape of the objects – architectural monuments (or rather their formal-functional types). The sign-vehicle for them (also called the signifying element) was the shape of the icon. As it was mentioned before on the example of the Atlas of Architectural Monuments in Poland, a traditional icon system with cartographic traditions had to be thought through, This aspiration of semiotic coherence resulted in some design dilemmas, described hereafter.

Icons design

The number of icons to be designed corresponds to the mapping of formal/functional attributes assigned internally by the National Heritage Board of Poland to monuments in the database of the National Inventory. There are three levels of categorization in a database: categories, classes and functions[8], with more than 200 specific types on the latter, lowest and the most detailed level. This large number had to be significantly reduced, and finally, the visual system consists of 64 designed and 3 adopted (previously existing and known) icons, referring to all three levels of categorization.

The first problem was to signify archetypical shapes for object (monument) classes, starting from very general, like division between immovable (architectural) and archaeological objects. Because of the high level of generalization, the basic references had to be taken into account.

[7] Wallis, Mieczysław. *Sztuki i znaki: pisma semiotyczne.* Warszawa: Państwowy Instytut Wydawniczy. 1983, p. 7.

[8] Categories refer to a general division into immovable (architectural) and archaeological monuments, historical spatial layouts, UNESCO World Heritage List Monuments, National Monuments of History; classes refer to formal/functional general typology, like buildings, spatial layouts, cemeteries, greenery; functions refer to detailed typology like: churches, bridges, single- and multi-family houses etc. (and sometimes are divided even further, but this is of second importance here).

Symbols for smallest map scales, where large groups of monuments have to be aggregated, consist of five elements: a general icon for all monuments as a Blue Shield sign adopted by the 1954 Hague Convention (original design by Jan Zachwatowicz, Fig. 4, no. 1)[9] – shown in the scale of the whole country, the UNESCO World Heritage list sign (Fig. 4, no 2)[10] and the National Historic Monument sign (Fig. 04, no. 3)[11]. Remaining two were designed as part of the system and refer to general classification of immovable (Fig. 4, no. 4) and archaeological (Fig. 04, no. 5) monuments (while for the purpose of generalization, historic spatial layouts are considered as immovable monuments). All icons, when referring to aggregated monuments, are pictured with a suffix showing the number of aggregated monuments represented by a single sign (see Fig 2-4). Further nine icons represent object classes (as defined in National Inventory database): building (Fig. 5, No. 1, following numbers refer to the same illustration), structure (construction) (2), communication layout (3), greenery (4), cemetery (5), cultural landscape (6), urban layout (7), small architecture forms (8), building complex (9). These, as still general types, are represented by icons referring to commonly recognized shapes as sign-vehicles. In case of spatial layouts these shapes do not resemble the physical look of them, since this was not possible, but a widely recognized convention of plans.

Fig. 2. General icons for aggregated monuments, scale of the whole country
Source: http:// http://mapy.zabytek.gov.pl/nid/.

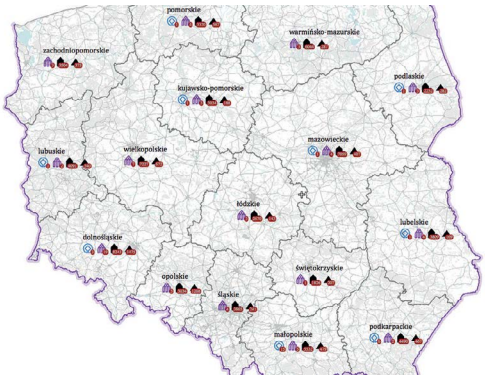

Fig. 3. More detailed (but still aggregated) division of monuments shown in regional scale
Source: http:// http://mapy.zabytek.gov.pl/nid/.

[9] See Covention text: http://portal.unesco.org/en/ev.php-URL_ID=13637&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed 13.03.2015). This sign is also introduced as official symbol of historical monument in Poland as Regulation of Ministry of Culture dated 9.02.2004.

[10] According to: http://whc.unesco.org/archive/opguide13-en.pdf p. 69-76. (accessed 13.03.2015).

[11] National Historic Monument is one of the degrees of protection defined by law in Poland, granted by President of Republic of Poland, its signage was developed by National Heritage Board: http://www.nid.pl/pl/Dla_wlascicieli_i_zarzadcow/opieka-nad-zabytkami/pomniki-historii/identyfikacja-wizualna/manual_pomnik_historii.pdf (accessed 13.30.2015).

Fig. 4. Basic five icons for aggregated monuments in small map scales, see text for description
Source: authors' own work, exemplary map background is used in all following illustrations.

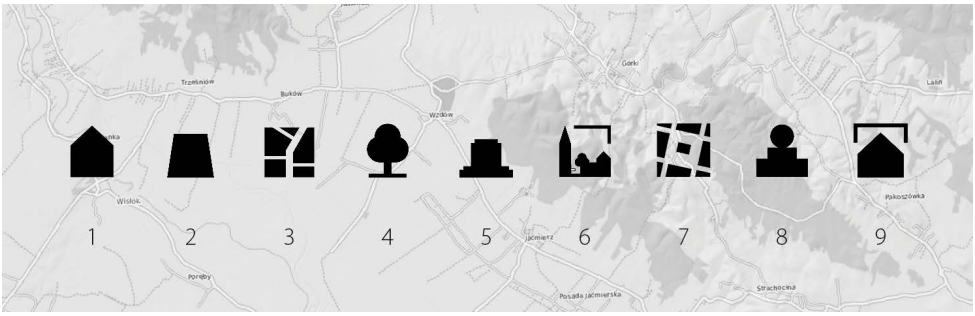

Fig. 5. Icons for monuments - object classes, see text for description
Source: authors' own work

Next set of icons refers to immovable monuments (most of them being architectural monuments) symbolizing more detailed formal/functional types (like a castle, a manor house, a catholic church, a bridge etc., see Fig. 6). They represent the most characteristic types, but only about 1/5 of all the detailed third level categorization. The rule for the rest is to be represented by a relevant icon of a more general class level. Since the rule of shape relevancy (shape of the icon as sign-vehicle referring to a shape of building/archetype) was adopted on semiotics level, sometimes special icons have to be designed for very characteristic building types which hardly fit into the higer level categorization in terms of graphic representation. The example of this approach is a windmill icon (Fig. 6, No. 29) designed to avoid picturing this kind of building with its general signifier – industrial building icon, even if there is a relatively small number of historic windmills under protection[12].

However, sometimes abstract symbolization has to be used, and it is the case of various building complexes listed as National Heritage represented by a single building icon with a stylized bracket over it. In fact this abstract symbolization does not refer to the building itself, but to the idea of a building complex as a functional and formal ensemble (Fig. 7).

[12] There are 1363 industrial buildings listed and shown on the map (about 2% of all immovable monuments shown), among them we find 224 windmills (0,3% respectively). All data as for 15.03.2015.

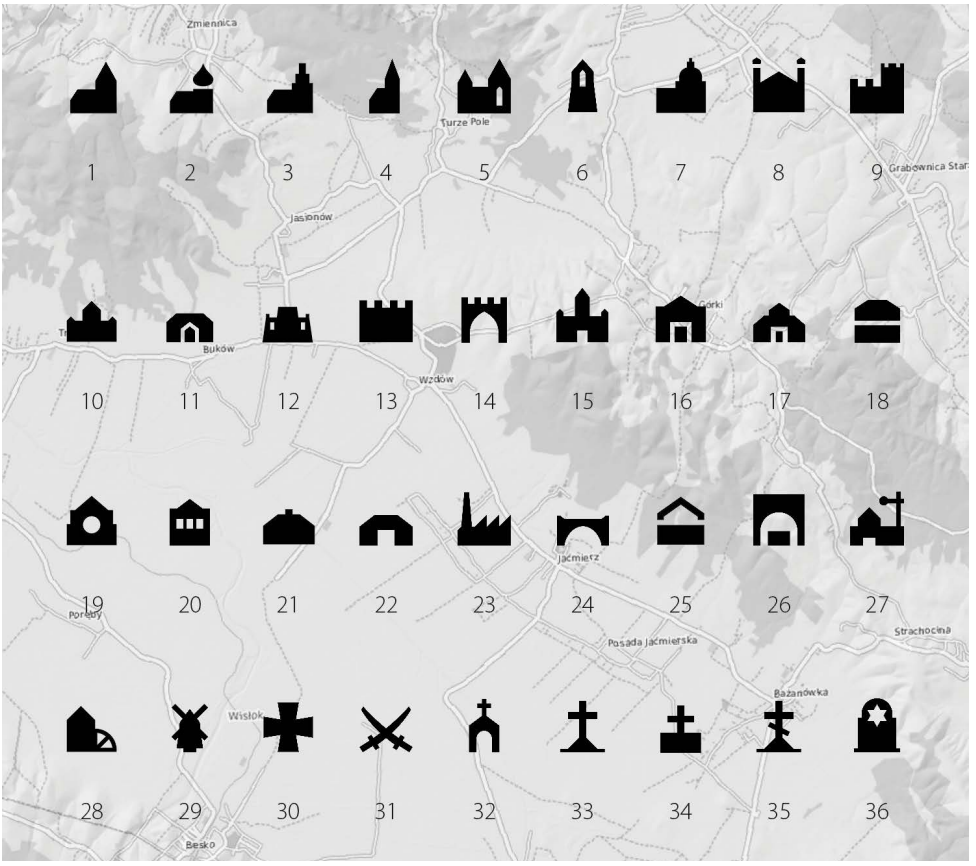

Fig. 6. Icons for monuments - object formal/functional types:
1 – catholic church, 2 – orthodox church, 3 – protestant church, 4 – chapel, 5 – cloister, 6 – belfry, 7 – synagogue, 8 – mosque, 9 – castle, 10 – palace, 11 – manor house, 12 – fortress, 13 – ramparts, 14 – gatehouse, 15 – town hall, 16 – public building, 17 – inn, 18 – other residential building, 19 – sacral building, 20 – tenement house, 21 – single-family house, 22 – outbuilding, 23 – industrial building, 24 – bridge, 25 – garden pavilion, 26 – mine, 27 – railway building, 28 – mill, 29 - windmill, 30 – memorial, 31 – battlefield, 32 – wayside chapel, 33 – catholic cemetery, 34 – protestant cemetery, 35 – orthodox cemetery, 36 – Jewish cemetery
Source: authors' own work.

There are also some cases when no shape analogy could be found as a sign-vehicle (like a battlefield or a memorial (see Fig. 6, No. 31, 30).

There is the group of icons which use abstract symbolization extensively and they refer to archaeological monuments. There are mainly two reasons for such approach here: archaeological monuments hardly fit the category of objects with a 'shape' recognized visually, and there is a strong tradition of signage for archaeology. This group consists of 8 icons referring to archaeological sites and relics (plus 5 versions of immovable monuments where they meet the case of both classifications, Fig. 8).

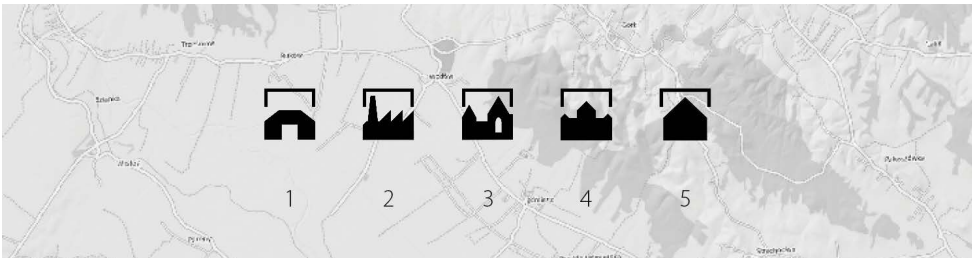

Fig. 7. Icons for monument complexes:
1 – agricultural, 2 – industrial, 3 – sacral, cloister, 4 – palace, 5 – general icon for building complexes as object class
Source: authors' own work.

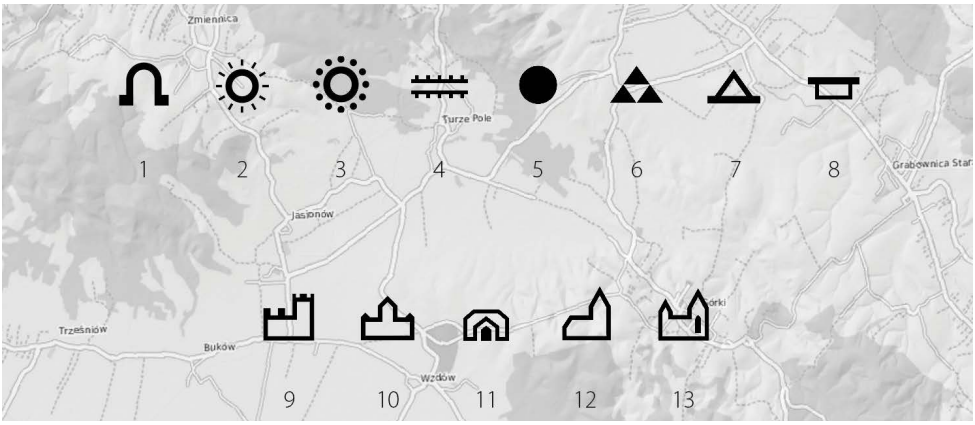

Fig. 8. Icons for archaeological monuments:
1 – cave, 2 – mound, 3 – fortified town, 4 – bulwark, 5 – other monuments, 6 – tumulus, 7 – settlement, 8 – burial, 9 – castle, 10 – palace, 11 – manor house, 12 – church, 13 – cloister
Source: authors' own work.

Color codes for dating

Dating of monuments is represented by a color icon. This information is shown only in larger scales, since in smaller scales icons are aggregated. The choice of palette is based on the color-code used in professional works related to architectural surveys[13], where red usually refers to medieval origin, and newer parts are marked by cooler colors, respectively. The color palette (Fig. 9) also has to be adjusted according to how frequently monuments representing specified period occur. Warmer part of the spectrum is in minority on the map since there are much less medieval monuments than those from the 19th and 20th centuries.

[13] The color coding rules were widely used and adopted as best practices, see example, in: Brykowska, Maria, *Metody pomiarów i badań zabytków architektury*, Warszawa 2003, p. 88.

Fig. 9. Color codes for monument dating:
1 – early medieval 901-1250, 2 – medieval 1251-1500, 3 – modern times 1501-1800,
4 – XIX century 1801-1900, 5 – contemporary 1901 – now, 6 – not dated
Source: authors' own work.

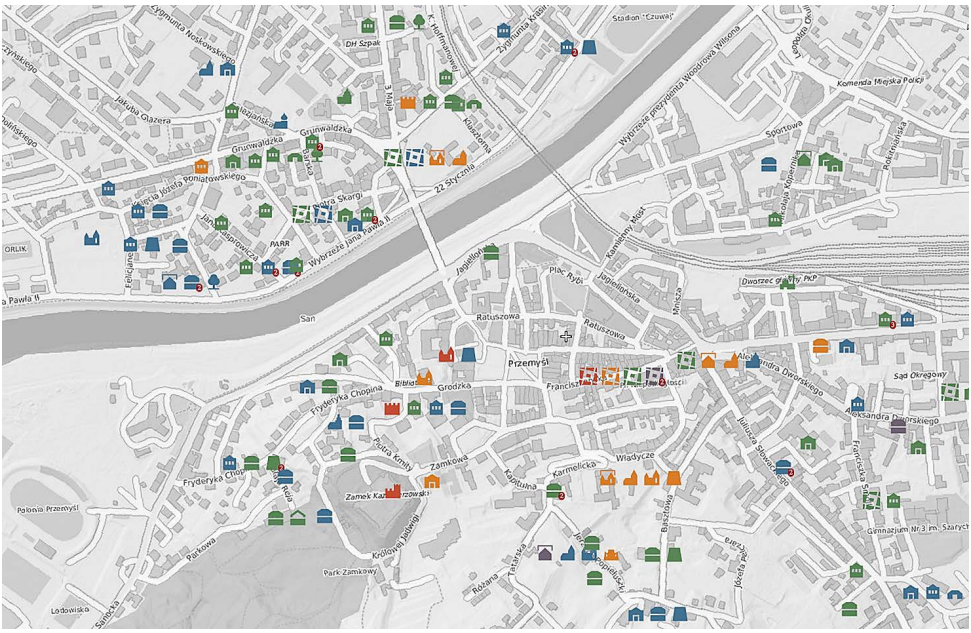

Fig. 10. Monuments shown on the map in the geoportal service, case of Przemyśl
(some buildings aggregated)
Source: http://mapy.zabytek.gov.pl/nid/.

Fig. 11. Monument properties: material:
1 – masonry, 2 – wooden, 3 – other; 4 – uncertain localization (semi-transparent icon),
5 – non-existing, 6 – threatened monument
Source: authors' own work.

Another icon variant is the result of an evident difficulty in unequivocal dating of historic buildings or sites, which are structures stratified in time. To solve this problem, a multi-period icon with dominant dating was prepared with a presumption that it should be used in most ambiguous situations[14].

Color codes for icons work best provided that they are presented against a monochrome background. The whole signage system was designed with this presumption, ensuring legibility of the visual communiqué. Map compositions were prepared as grayscale to fulfill this guideline (Fig. 10).

Visualization of other monument properties

The formal-functional type, represented by the shape of the icon, and dating, represented by the color of the icon were not the only characteristic features to be represented by the signage system. The others are: monument's material, in some cases a general monument classification (immovable/archaeological referring to the same object class or function), standing independently vs. part of a complex, condition of the monument, certainty in the location or even – in some cases – existence[15]. Monument's material is shown using color code with the assumption, that this classification is disjunctive from dating in terms of presenting on a map. The color codes used are also different (Fig. 11).

Future plans for the system

The spatial information system for the Polish National Monuments Inventory is working in its beta version[16]. Not all features described in this article are implemented, but the core functionality is available. Monuments are presented with a visualization of their location, types and dating. If there is an area occupied by a particular monument, it is displayed using the relevant color code.

What is yet to be done is the implementation of profiles for different user groups, the visualization of building material and other features of the monuments, providing extensive information on shown monuments. Additionally, the system needs to be connected with other functionalities available in portals run by National Heritage Board of Poland.

[14] This solution, however, requires that a significant amounts of data is modified in the database, so it is not implemented in the current version of the system.

[15] The last two features seem not to be relevant to information system reflecting reality; however, the primary task was to report legal status and use it as one of verification tools for it, hence, rare instances of non-existing monuments being inscribed on the National Heritage list may occur and have to be shown.

[16] As for 15.03.2015.

Conclusions

The Signage scheme for spatial information system described here offers a wide range of detailed information, thus constituting a unique resource for various kinds of purposes. Complex information sets become readable thanks to the use of visual means which are easily decoded by users. However, the system needs constant development and verification. Representation of such a large amount of data, referring to a fragile matter of heritage protection demands careful approach and – sometimes – individual treatment in particular cases. On the other hand, due to the scale effect, some generalizations are necessary. Proper relation between these attitudes is crucial to achieve balance between efficiency and accuracy.

REDUCE TO UNDERSTAND: A CHALLENGE FOR ANALYSIS AND THREE-DIMENSIONAL DOCUMENTATION OF ARCHITECTURE

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[b] *UMR 3495 MAP Gamsau, CNRS / MCC, Marseille, France*

Introduction

For nearly thirty years, the digital phenomenon has integrated many disciplines. Those involved in the image processing and analysis took advantage of this major technological breakthrough to revisit the tools and methods of their discipline. In this context, the architectural field, and more specifically the one of heritage analysis and documentation, have greatly benefited from the development of acquisition and visualization techniques. Today, it is no longer unusual to document a building with millions of three-dimensional spatial coordinates. Whether in the context of archeology, history of art or architecture, digital documentation of built heritage is becoming a major contemporary challenge[1]. AlICe laboratory (Computer Laboratory for Image and Conception in Architecture) from the Faculty of Architecture of the Université libre de Bruxelles (ULB) investigates this field for many years through a research and education program. In terms of architectural design, the practice of graphic representation firstly involves the definition of an idea by drawing exclusively relevant information. The architect draws only the lines he considers necessary for the transmission of the idea of its project. This "graphical economy" is therefore for the benefit of didactic quality. But what does this issue become when the matter of representation is not the prescription but the description of an architectural object? Until the last century, documentation by drawing corresponded to a work of reverse engineering in which it belonged to the architect to understand the object and to represent its key feature. Today, 3D data acquisition technology promotes an increasingly "figurative" representation of architecture. In this paper, we will try to consider some epistemological avenues for the integration of those new approaches to the requirements of architectural representation through the lens of student's works.

[1] Marinos Ioannides and Ewald Quak, (eds.). *3D Research Challenges in Cultural Heritage*, Vol. 8355, Lecture Notes in Computer Science, Berlin, Heidelberg: Springer, 2014.

Figurative information vs. architectural representation

At the level of the three-dimensional documentation of built heritage, the visual fidelity of perceptual features is more promoted than a representation where the graphic figure is considered as mediator of architectural knowledge. The democratization of photogrammetry and other acquisition techniques permits the creation of digitization composed of several millions of data having a great visual and metrical coherence with the observed artefact[2]. However, these techniques constitute, for the field of the architectural study, new arguments in favor of an essentially figurative documentation at the expense of a representation integrating the codes and the language of architecture. This architectural representation paradigm shift raises the question of cultural and cognitive issues of architectural representation.

Whether it is digital acquisition of an existing architectural building or restitution hypothesis of a disappeared state of a building, the three-dimensional documentation requires a critical and reflexive attitude. The management and the processing of big data (such as point clouds, polychromatic data or alteration data, ...) compel reduction of these data to retain only those likely to be used in the construction of a graphic discourse about the object. The graphic transmission of an intelligible knowledge presupposes taking a stance downstream of the acquisition work. Until the last century, the architectural survey was based on onsite observation work during which the architect represented, through drawing, the information he regarded as most relevant to make explicit knowledge about an object. Contemporary acquisition devices require us to take a contrary attitude. The act of architectural representation no longer resides at the drafting level of a specific selection of information, but in the ability of the architect to sort, set aside and / or to connect large amounts of digital data. Its ability to handle (sometimes heterogeneous) data is decisive for the knowledge enhancement at the level of the representation.

Although architectural representation is essentially seen as a cultural vector, we will firstly try to consider it through its heuristic function[3]. This involves understanding how digitization efforts (understood as a process passing through the acquisition, the processing and graphic representation of produced information) allow to build an analytical discourse embodied in the representation of the object under study. However, to justify our judgment on the discursive value of graphic documents, it is essential to understand how the information on geometry, dimension, color, etc. is consolidated. In this paper, we will to consider how information workflow culture of architectural representation establish a critical and opposable discourse in two Master student's works.

[2] Marc Pierrot-Deseilligny, Livio De Luca and Fabio Remondino. "Automated Image-Based Procedures for Accurate Artifacts 3D Modeling and Orthoimage,", in: *XXIIIth International CIPA Symposium*, 2011.

[3] Robin Evans. "Translations from Drawing to Building", in: *Translations from Drawing to Building and Other Essays,* London: Architectural Association Publications, 1997, pp. 153-93.

Observed criteria

If we cannot speak of an observation method in the strict sense of the term, we estimate the informative value of the student's works following three different criteria: reduction, absence and extrapolation. They are established in order to evaluate each step of the reconstruction process, passing through the reduction of digitization data acquired on site, the reconstruction of architectural elements with few or devoid from historical sources, and the extrapolation of fragmented information to the whole composition.

Reduction – Starting from big data, the criterion of reduction is intended to highlight the manipulations (discrimination, linking, ranking, etc.) performed on the original data (photogrammetric acquisition or other.) so as to keep only the information able to refer to a specific architectural knowledge.

Absence – In the case of three-dimensional reconstructions of disappeared or altered objects, it is not uncommon to have to rely mainly on textual or graphic material. However, these sources offer piecemeal information about the building. The geometric restitution work (in other words, the formulation of hypotheses) requires a high degree of interpretation. In this context, it is necessary to make clear the nature of information at the level of representation. From this criterion, graphic contrivances are set up and evaluated in order to account for the level of knowledge or certainty present in the representation.

Extrapolation – Finally this criterion implicitly refers to the two previous ones. Architectural documentation (produced by a survey of an existing state or a restitution hypothesis) includes by nature a vacuum of information. The research of a visual consistency imposes to complete the digital instance with information arising nor from the "real" (data acquisition work), nor from specific documentary sources (textual or image archives). The part of interpretation to complete these "gaps" can be decisive. Indeed, whatever the reconstruction methods mobilized, the level of interpretation, and thus the value of the representation, are mainly determined by the degree of architectural knowledge of the student.

Restitution hypothesis of the cloister of the Villers-la-Ville Abbaye

The Villers-la-Ville Abbey is a Cistercian abbey dating from the 12th century and located in the Walloon region of Belgium. The building was partially destroyed during the French Revolution, only ruins remained. The cloister is one of the major elements of the site. Only five vaults along the southern gallery of the cloister are still in place today. The aim of this work was to propose a hypothetical modeling of the cloister during the 15th century starting form remaining architectural fragments, the doctoral research of art historian Thomas Coomans[4].

[4] Thomas Coomans. *Abbaye de Villers-en-Brabant: Construction, configuration et signification d'une abbaye cistercienne gothique*, Bruxelles; Brecht: Éditions Racine & Cîteaux, 2000.

Within that context, student Vanessa Lardinois conducted a photogrammetric digitization of walls and remaining spaces of the cloister. In such a process, millions of three-dimensional coordinates were extracted from photos, creating an accurate geometric shape associated with color values of the photos (Fig. 1). The mass of data of the imprint describes well the physical complexity of an architectural object but fails to build a model of knowledge, or to consider the object through its architectural features. Digitization should not be considered as an end in itself but as a starting point of an architectural study. A point cloud – where every points have the same value – does not evoke the intersection of two cylinders forming a rib vault when architectural drawing does. Therefore, the process that turns digitization into restitution hypothesis can not only rely on mixing digital 3D imprint and documentary sources. It has to be founded upon a reduction process based on a cognitive analysis of the building in order to bring out its characteristic lines.

Examination of the work of reduction, extrapolation or production of information is essential to understand the degree of cognitive involvement of an author in a modeling process. Cognitive involvement is made explicit by a layer of graphic schemes that extends graphic representation of the building, and accounts for relative levels of knowledge. For Villers-la-Ville Abbaye, the work of reduction, extrapolation or production of information (absence) developed as follow:

Reduction: The student has undertaken a simplified polygonal reconstruction based on the point cloud of the cloister (Fig. 2). This involves to reduce the amount of data to the characteristic lines of the building, or in other words: to establish a reverse design process based on the analysis of generic elements (vaults, pilasters, bays, etc.).

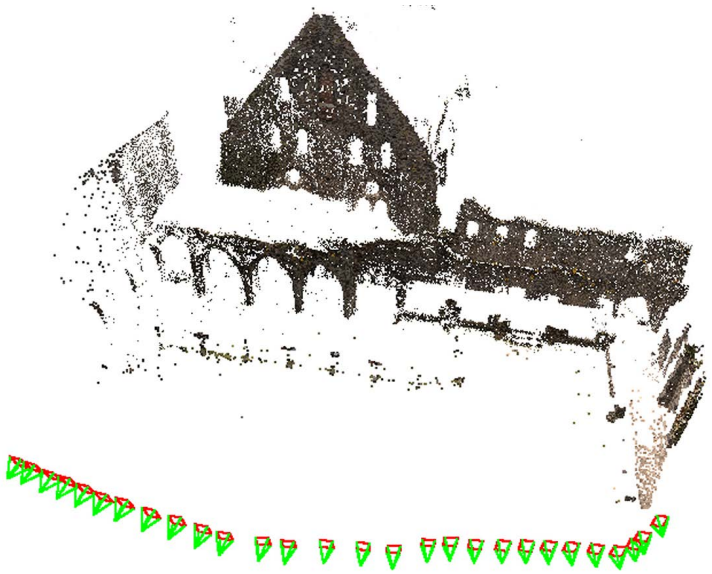

Fig. 1. Photogrammetric acquisition of the south wing of the cloister. Preview of the point cloud
Source: Vanessa Lardinois, AIICe laboratory, 2012.

This implies to deliberately deviate from the complexity of the cloud to establish a geometric representation consistent with the formal vocabulary of architecture. The use of a worm's-eye axonometric projection is part of that very analytical approach. The axonometric view creates a distance to the object that helps to mobilize the codes of architectural representation for analytical purposes. In rejecting the embodied viewpoint out of the graphical space, the student redefines a new space that opens opportunities for comparison between the studied objects (Fig. 2).

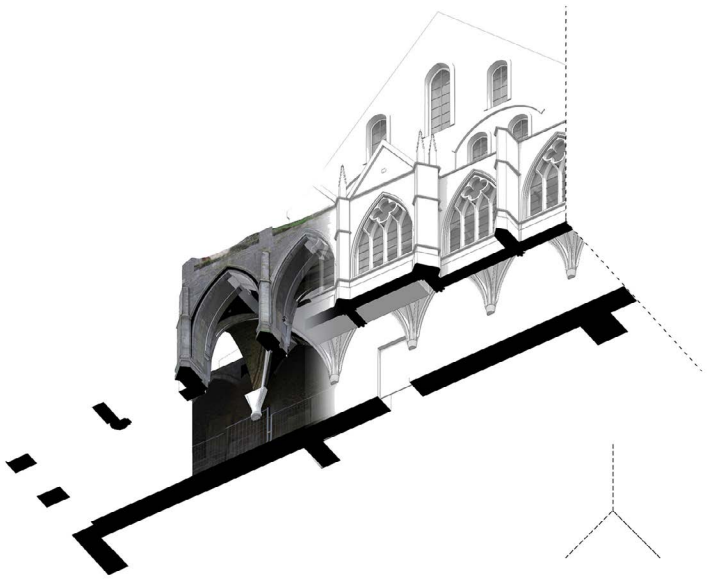

Fig. 2. Digitization confronted to the restitution hypothesis (Axonometric worm's eye view)
Source: Vanessa Lardinois, AIICe laboratory, 2012.

Extrapolation: The few architectural elements still in place (vaults, transverse arches, etc.) as well as the fragments and the primers visible on some walls offer an unquestionable support for the digital reconstruction of the building. The study of composition rules, proportions and bay rhythms provides a set of indices from which one can extrapolate the entire site (Fig. 2). However, extrapolation unavoidably leads to take positions from which distance to historical reality is difficult to estimate. But a restitution process is considered reversible: graphic codification identifies parts related to the existing state and parts related to extrapolation. Based on the *informative modeling*[5] concept, the student has developed a color chart to visualize the distance between 3D modeled geometries and data coming from the digital acquisition.

Absence: The only traces of architecture still visible on the site are not always sufficient to consider a complete restitution hypothesis. Thus, historical researches on the abbey, literature on Cistercian architecture and student's own knowledge were added to the digital sources acquired on site. Yet, if knowledge about a place

[5] Jean-Yves Blaise and Iwona Dudek. "Informative Modelling", *MIA Journal*, No. 1. 2006, pp. 143-54.

will always be fragmentary, restitution hypothesis integrates absence with great difficulty. Gaps have to be filled with extrapolated parts based on external sources. The expression of a historical reality by graphic means is then illusive or misleading The expression of a relative state of knowledge seems more appropriate[6]. For this reason, the student has proposed a hypothesis integrating missing parts, where the degree of certainty is represented by three separate criteria (shape, location and dimensions). Each architectural element is associated to a color indicating its proximity to those criteria (Fig. 3).

Whether it is about filling the lack of information by generic architectural knowledge or discriminating big data to get only main lines, the author's involvement in the restitution hypothesis guides the quality of the result. But, is the result opposable? In a quest for scientific objectification, digital survey tools provide a fragmentary answer to an essentially cognitive analytical process. In that context, the intersection between data visualization devices and the paradigm of architectural representation outlines a first response to that epistemological problem.

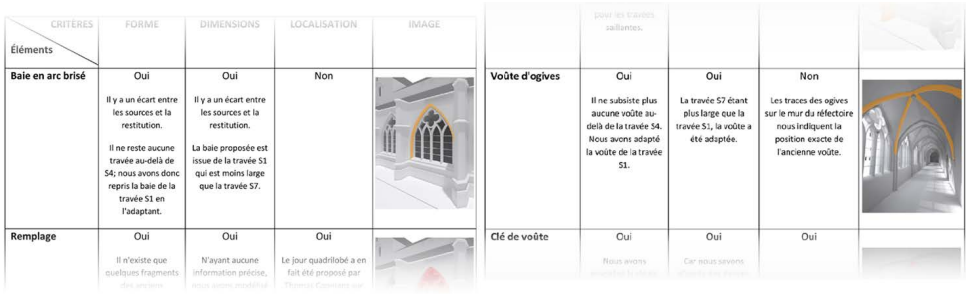

Fig. 3. Characterization of the restitution hypothesis. Graphic codification of geometries according their proximity to the documentary sources in terms of shape, location and dimensions
Source: Vanessa Lardinois, AllCe laboratory, 2012.

The Bessonneau building in Casablanca – 1918 restitution hypothesis

Built in Casablanca, Morocco in 1918, the "Bessonneau" (also called "Lincoln Hotel") is a valuable witness of architecture dating from the French protectorate. Its facade presents exceptional characteristics mixing neo-Moorish ornaments and European modern composition that led the city to list the building. But the Bessonneau sits on a land with an increasing worth, and listing the building did not prevent its deterioration. Since 1990, it is abandoned and caught up in a conflict between worth of land and worth of cultural heritage. Nowadays, the building is a ruin surrounded by scaffoldings, with no possibility to access it for security reasons. Adding the fact that it exists no well-organized archives about the Bessonneau, this architecture and its historical and cultural knowledge are about to permanently disappear.

[6] Aurélie Favre-Brun. "Architecture virtuelle et représentation de l'incertitude", Aix-Marseille, 2013.

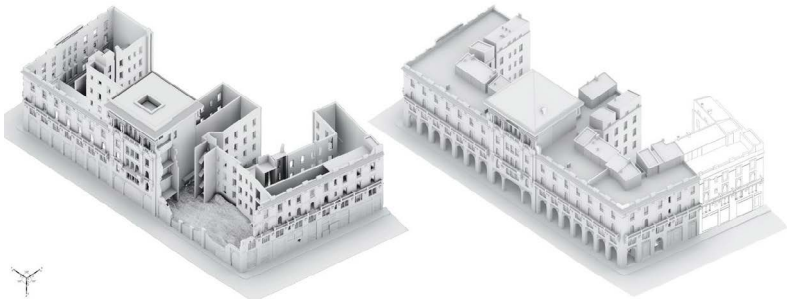

Fig. 4. Bessonneau building: actual state vs. 1918 restitution hypothesis
Source: Youssef Oueld El Hachemi and Omar Essaadouni, AllCe laboratory, 2014.

Supported by the local association Casamémoire, students Youssef Oueld El Hachemi and Omar Essaadouni undertook to document the building and to survey its existing sate. The objective was twofold: to propose a restitution hypothesis of the Bessonneau as it was in 1918, and to create a file for its protection and a possible restoration (Fig. 4).

Students proceeded to an investigation on the field so as to discover the very few historical documents related to the building: plans on microfilm, pictures, old postcards, newspaper articles, official city reports, oral testimony, etc. Simultaneously, they collected geometrical and colorimetric information of the current state of the building by mean of two different digital sources: a laser survey of the facades[7] carried out in 2009 before the placement of scaffoldings, and serval on-site photogrammetric surveys of interior spaces and courtyards. The core of the work becomes then gathering information of these manifold sources in a common 3D space, and extracting meaningful graphic representation that acknowledges different analytical understandings of the architectural object under study. This procedure necessarily complies with the 3 previously identified steps, and develops as follow:

Reduction. Lasergrammetry and photogrammetry produce point clouds that are very rich in terms of figurative information but unsubstantial in terms of intrinsic architectural meaning. Those big amount of information have to be reduced to a set of relevant architectural information. Such a reduction is about understanding specificities of neo-Moorish and European styles so as to extract from the point cloud only main lines of generic architectonic elements (pilasters, arches, bays, lintels, moldings, etc.). Those elements are organized in a 3D polygonal model that conveys cognitive knowledge. The cognitive approach globally prevails in a point cloud reduction process, but the shift between architectural scale and ornament scale must be taken into account. Sculpted or highly complex artifacts that cannot be easily synthesized in a set of lines must be identified. For those artifacts, a direct transfer from the point cloud information to the 3D model is needed for reporting their complexity. This results in a multi-scale 3D model that accommodates with the level of detail required by various architectonic elements, from structure to ornament (Fig. 5).

[7] This laser survey was completed by ETAFAT, an engineering and topography company based in Casablanca.

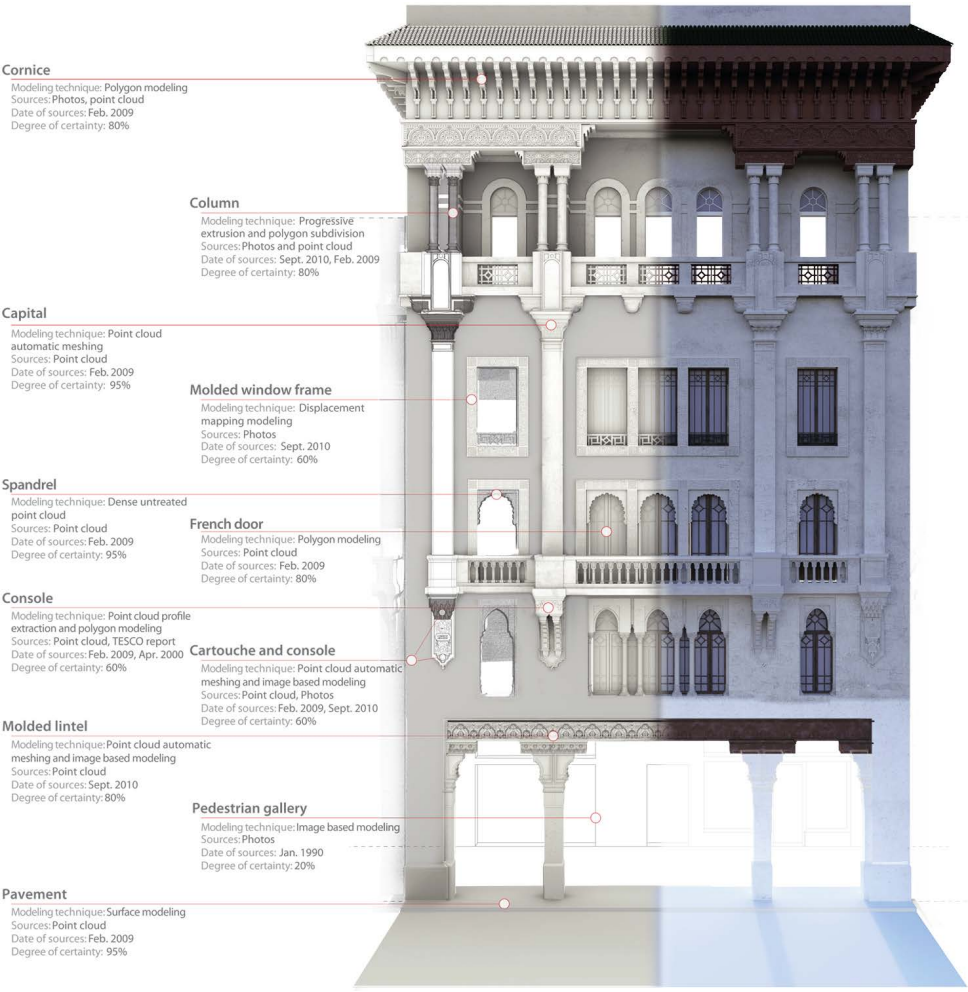

Fig. 5. Central part of the Bessonneau building: 1918 restitution hypothesis stating sources, modeling techniques and degree of certainty for several architectonic elements
Source: Youssef Oueld El Hachemi and Omar Essaadouni, AIICe laboratory, 2014.

Absence. Mixing information sources and media types into a single 3D graphic space necessarily prompts interpretation. As we have seen, an overload of information must be filtered, but some *gaps* have to be filled as well if one aims at continuity and visual coherence.

Some parts of a restitution hypothesis are highly speculative. For the Bessonneau, geometrical information extracted from the point cloud and matching with pictures dating from 1920s is considered as the most reliable, a unique oral testimony as the less reliable. Degrees of certainty are attributed to the parts of the building according to the richness and accuracy of their documentation. To become a valuable source of knowledge, it is paramount that the 3D model specifies interpreted parts and their degree of certainty (Fig. 5). A color code was also used in several instances of the 3D model for acknowledging degrees of certainty.

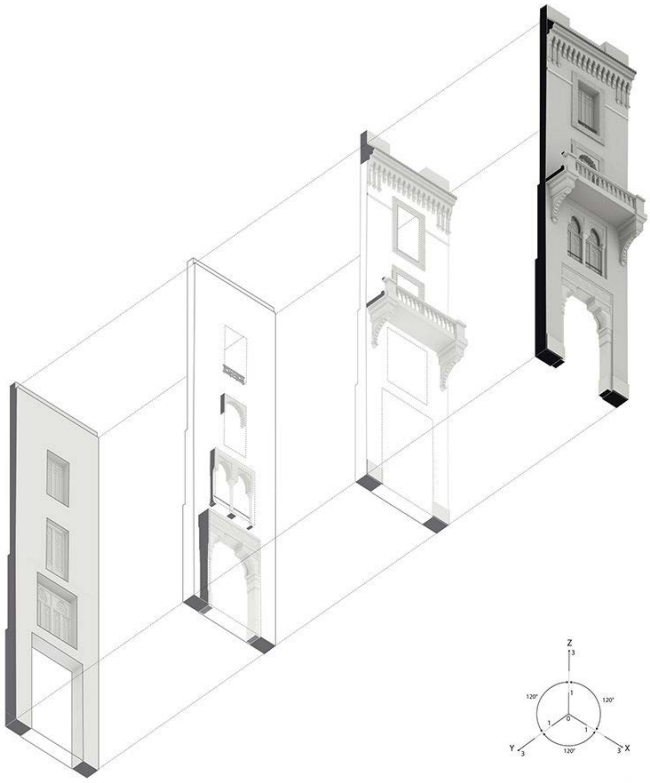

Fig. 6. Main bay of the Bessonneau building: exploded axonometric worm's eye view
Source: Youssef Oueld El Hachemi and Omar Essaadouni, AllCe laboratory, 2014.

Extrapolation. The facades of the Bessonneau are made of repetitive bays. Therefore, the analysis and digital reconstruction of one bay can extrapolate to the others that are similar. The less deteriorated bay was isolated and served as a base in the restitution hypothesis for the transformation of raw information of the point cloud into a cognitive 3D model. This model deploys in the building, and serves as a base for the reconstruction of the most altered bays. This process points out an interesting swing between raw information reduction and architectural knowledge expansion that takes advantage of graphic representation. The building was reduced to its very basic architectonic entity: the bay. The complexity of the point cloud of this bay was reduced to a few meaningful lines. These lines were represented by one single paradigmatic figure combining plan, section and elevation: the *axonometric worm's eye view.* The bay, now represented in the homogeneous infinite of axonometric space (Fig. 6), includes inherently its potential duplication[8].

[8] We refer here to the work of Auguste Choisy, whose architecture understanding as a system of repetitive structure for lowering loads led him to systematically synthesized historical buildings into a single bay represented by an axonometric worm's eye view. See Mandoul, Thierry. *Entre raison et utopie. L'Histoire de l'Architecture d'Auguste Choisy*. Wavre: Mardaga Editions, 2008, p.112.Thierry Mandoul, *Entre Raison et Utopie. L'Histoire de l'Architecture d'Auguste Choisy*, Wavre: Mardaga Editions, 2008.

Conclusion

This paper has exposed the result of discussions held at both levels of education and research. Those results relate to the digital documentation considered through the prism of the architectural representation paradigm. Within a context where the heritage documentation increasingly complies with information technology, the main issue of this paper was to suggest an epistemological response to a discipline that is undergoing profound changes.

Firstly, it is necessary to distinguish architectural representation from data visualization. This implies on the one hand to understand the cultural and cognitive value of architectural representation and on the other hand to determine the nature and quantity of information produced during the digitization phases. Through the observation of those two digitization projects, we tried to understand how information is processed, manipulated and often reduced to construct representations able to refer to a realm of architectural knowledge.

In continuation of this first issue, the second was to discuss different positions about architectural documentation. Considering built heritage documentation through the lens of analysis and communication, the idea was to observe several students approaches about the representation of existing buildings, the representation of hypothetical states, the representation of certainty and the representation of temporal information. Beyond communication and cognitive issues, our purpose also attempted to understand how the digital representation of architecture could become a scientific tool for knowledge sharing.

EFFECT OF PEDESTRIAN OBSERVATION MODE ON PERCEPTUAL CONTINUITY OF THE STREETSCAPE

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Introduction

Over recent years, municipal governments and developers in Japan have compiled a range of design guidelines regulating the physical features of buildings so as to maintain and/or create an aesthetically desirable streetscape. Of these guidelines, the "preservation type" aims to preserve existing historical and cultural landscapes, while the "development type" aims to ensure that a newly built streetscape will be attractive and harmonious. The second type was the topic of our previous study (Ohno, Soeda and Nakajima[1]); here, we focus on the first.

Design guidelines typically attempt to control the streetscape by specifying such physical architectural features as façade color and height to fall within a certain acceptable range. These variables and ranges, however, are all too often decided arbitrarily without basis in scientific and empirical research. Moreover, assessments of streetscapes usually only consider the building façade (elevation) as viewed from a single stationary point on the street (e.g., Sanoff[2]). Yet this is hardly the only mode in which we view our surroundings in actual daily life, and it follows that the extent to which different physical features influence our appreciation of a streetscape will depend on how we come to look at it. In examining how pedestrians judge a streetscape, it is therefore necessary to identify the most influential variables separately for each given observation mode.

The present study compares how physical features of buildings and their layout affect pedestrians' evaluation of the perceptual continuity of a streetscape in different observation modes.

[1] Ohno, Ryuzo, Soeda, Masashi, and Nakajima, Kohhei. The Effectiveness of design guideline regulations for improving streetscape, *Proceedings of 6th Conference of the European Architectural Endoscopy Association*, Bratislava. 2003, pp. 21-27.
[2] Sanoff, Henry. *Design Games*: Playing for keeps with personal and environmental design decisions, William Kaufmann, Inc. 1979.

Method

Experimental settings

The experiment employed a set of virtual streetscapes each composed of a different imaginary building inserted into the same basic row of 15 buildings taken from an existing street.

A visual simulation system tested the effects of the building features of 1) height, 2) width, 3) fenestration, and 4) recess from the street on subjects' impressions of perceptual continuity. We excluded color and building material as variables because they have already been treated extensively in previous research and also because their effects do not seem as likely to be influenced by variations in observation mode.

Two observation modes were studied (Fig. 1): looking 1) while moving perpendicularly toward the building façade (*orthogonal view*) and 2) while moving parallel with it (*parallel view*).

Experimental stimuli: virtual streetscapes

1. Basic street

We photographed building façades along several streets in the Tokyo-Yokohama area, selecting three sites with widely varying physical characteristics for use in the experiment (Fig. 2). Three-dimensional computer line drawings of the streets were generated from the photographs while also removing the colors and material textures. This resulted in three basic streetscapes consisting of 15 buildings each: Ginza (G street), Motomachi (M street), and O-okayama (O street).

2. Inserted building

Streetscapes are always gradually changing through the construction of new buildings. The more unified the original streetscape is perceived to be, the more likely it is to be affected by a new building (Oku, Kamino, Funahashi, Koura and Kita[3]). To test the effect of a new addition to the basic streetscape, we created an imaginary building based on the already-existing structures: the frequency distributions of three variables (height, width, recess from the street) were calculated for the 15 buildings in each row, and the corresponding values for the building to be inserted in that row were systematically fixed to be 2σ apart from the mean (Tab. 1).

Table 1. Physical characteristics of the inserted building

Street	Building height (m)			Building width (m)			Recess from the street (m)		
	-2σ	Mean	+2σ	-2σ	Mean	+2σ	-2σ	Mean	+2σ
G street	36.3	47.8	59.4	6.6*	19.6	43.5	-2.1	3	8.1
M street	7.3	12.3	17.3	2.8	9.1	15.4	-0.2	0.63	1.5
O street	4.3	8.5	12.6	2.4*	5.5	15.2	-1.4	0.27	0.9

** Narrowest width of the existing buildings, since the -2σ value was minus.*

[3] Oku, Toshinobu, Kamino, Keijin, Funahashi Kunio, Koura Hisako and Kita, Michihiro. The effect of one building transformation on the estimation of continuity of townscape-The stereogram simulation experiment. City planning review. Special issue, Papers on city planning 30. 1995, pp. 295-300.

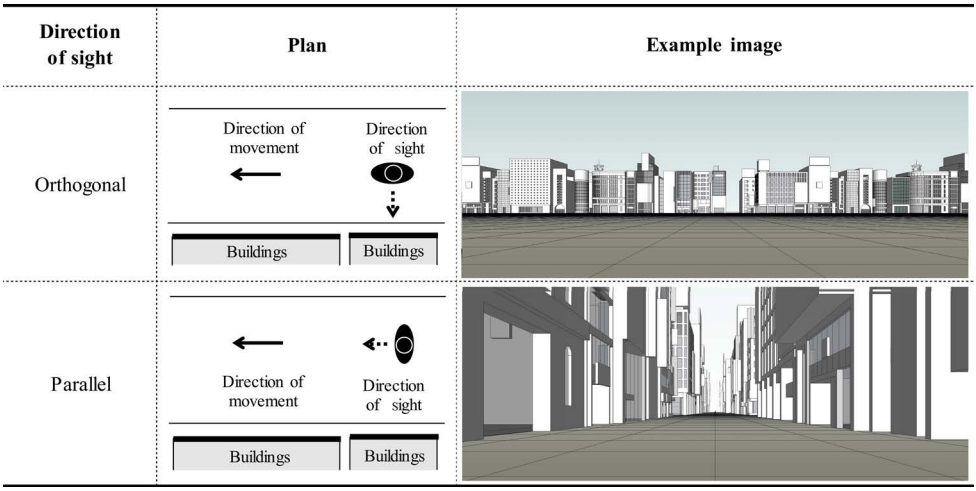

Fig. 1. Experimental observation modes

Source: Ryuzo Ohno, Yang Yu.

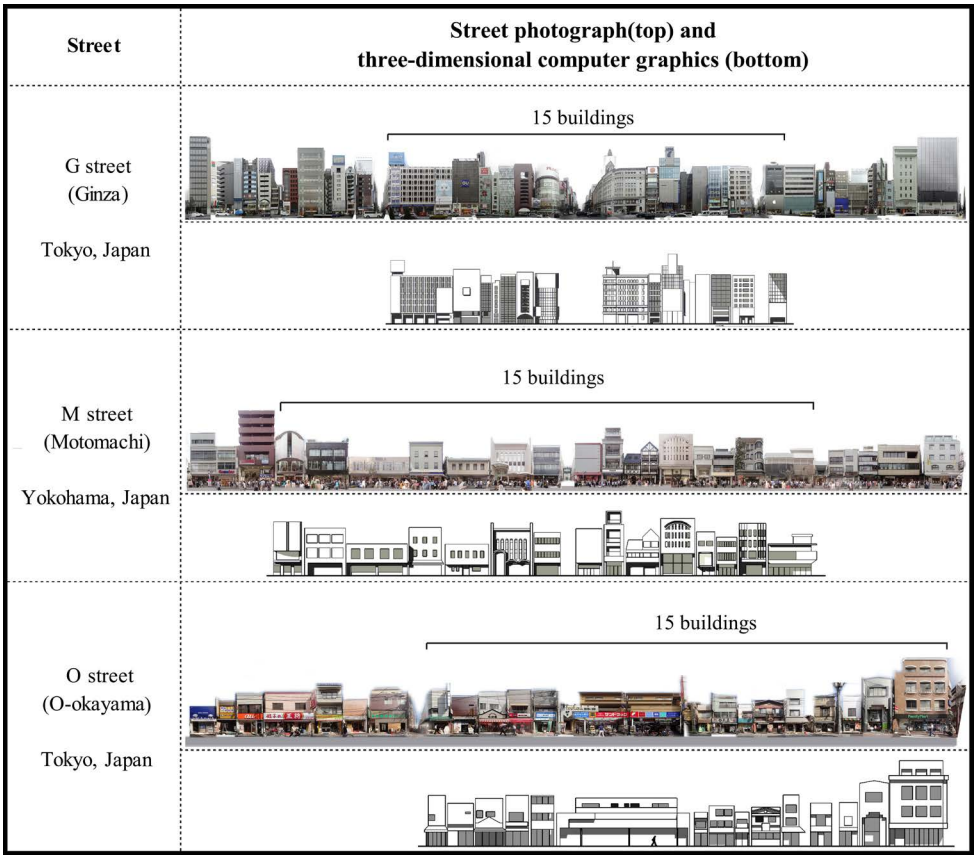

Fig. 2. Street photographs and resulting three-dimensional computer graphics

Source: Ryuzo Ohno, Yang Yu.

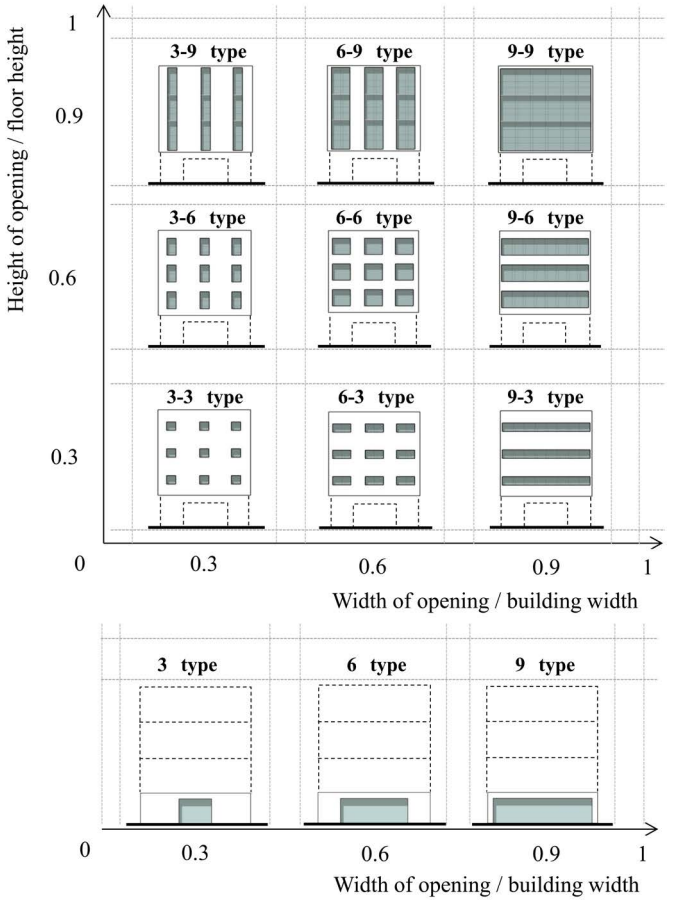

Fig. 3. Fenestration types

Source: Ryuzo Ohno, Yang Yu.

The fenestration of the inserted building was likewise determined through an analysis of the existing architecture; in doing so we considered the openings on the ground floor and those above it separately, given their large differences in design. We began by calculating the ratio of horizontal opening width to building width and of vertical opening height to floor height for all 15 buildings on each street. For the floors above the first, we divided the horizontal and vertical ratios into three categories each to give nine combined fenestration types (Fig. 3, top); each building was then classified into the closest type.

The effect of fenestration type was tested only on the G street, which was the single setting out of the three with building façades large enough for the differences in apertures to be clearly noticeable. Here, we created inserted buildings with the upper floors in four extreme fenestration types (3-3, 9-3, 3-9, 9-9). The experimental buildings for the other two streets, by contrast, were all given the fenestration pattern occurring most frequently in each (6-6 for the O-street, 9-6 for the M street).

For the ground floor, the largest opening type (9-3), which appears most frequently in all three streets, was adopted throughout (Fig. 3., bottom).

3. Virtual streetscape

The above procedures yielded eight inserted buildings of varying height, width, and recess for each of the three streets, plus six more (three additional fenestration types in two recess placements) for the G street. One building at a time was randomly placed between the fifth and tenth buildings of the basic 15-structure row, and this row repeated four times to form a single virtual streetscape (Fig. 4). Video images of each streetscape were then prepared in the two different modes of view, resulting in a total of 60 different versions for use in the experiment.

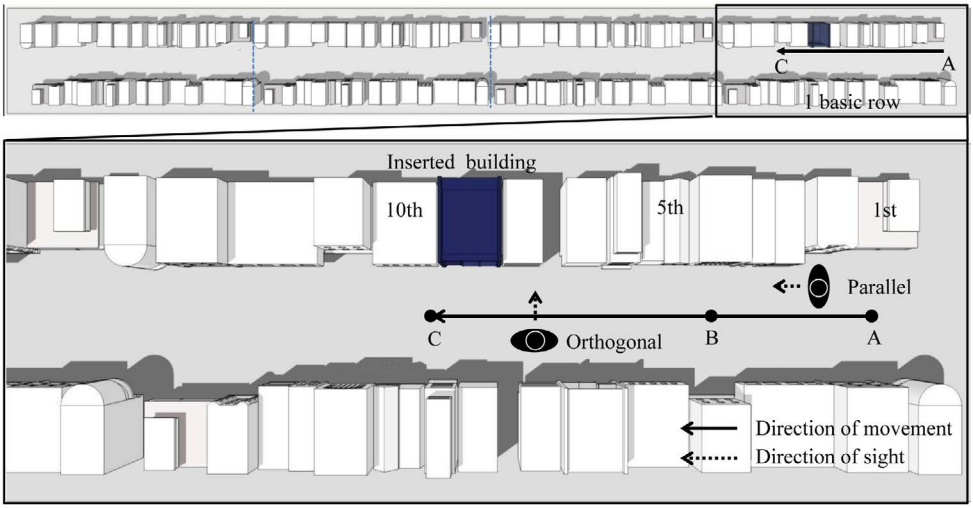

Fig. 4. Overview of virtual streetscape (top) and pedestrian route (bottom)
Source: Ryuzo Ohno, Yang Yu.

Experimental procedure

The virtual streetscapes were shown to each of 20 participants using a video projector on three front screens (each 2.0 m × 1.8 m) together covering a wide visual field (Fig. 5). While watching the video, the participant was asked to indicate with a laser pointer any building that he/she thought disturbed the continuity of streetscape and to also rate the degree of disturbance on a 3-grade scale (somewhat disturbing, disturbing, strongly disturbing). After each presentation, the participant was moreover asked to rate his/her overall impression of streetscape continuity on a 5-grade scale (very low, somewhat low, neutral, somewhat high, very high). Each participant required about 90 minutes for the experiment.

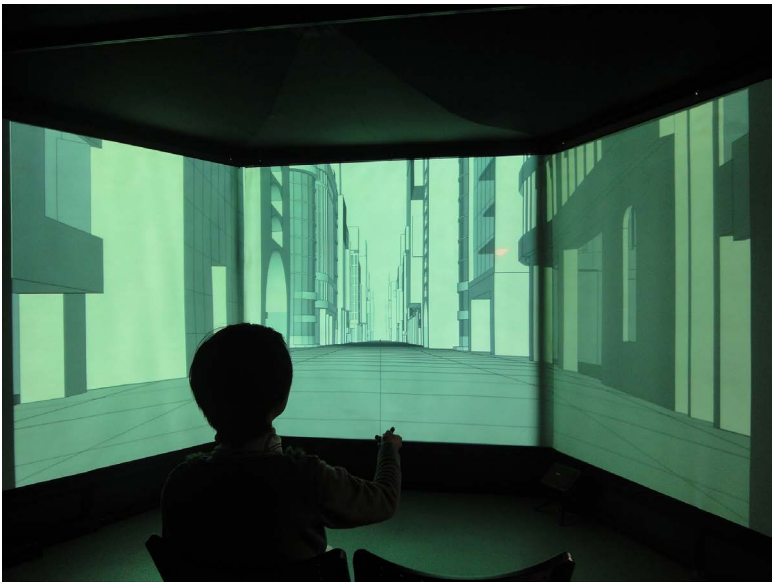

Fig. 5. Experimental setting
Source: Ryuzo Ohno, Yang Yu.

Results and discussion

Perception of overall streetscape continuity by observation mode

As Fig. 6 shows, for the M street the overall impression of perceptual continuity was higher in *parallel view* (vertical axis) than in *orthogonal view* (horizontal axis). No such trend was observed for the G and O streets.

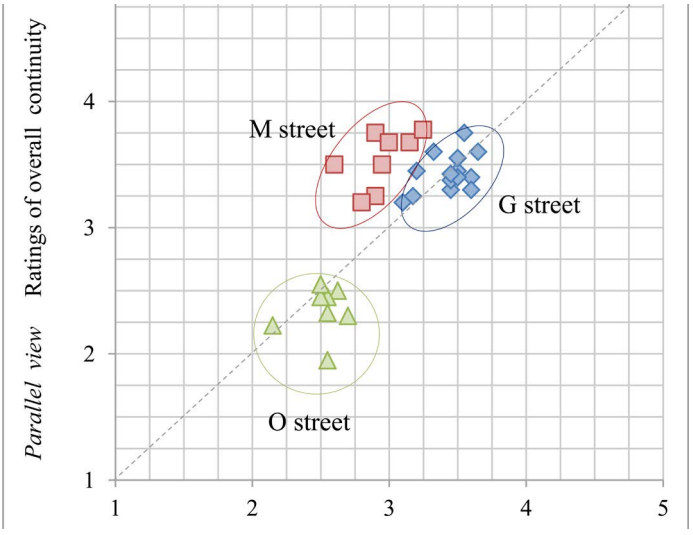

Fig. 6.
Source: Ryuzo Ohno, Yang Yu.

Impact of specific buildings on streetscape continuity

Fig. 7 plots individual buildings according to how viewers rated their disturbance of the streetscape in *orthogonal view* (horizontal axis) and in *parallel view* (vertical axis). Although ratings for the same building were largely similar in both modes, this was not always the case. To further clarify these differences, we chose those buildings whose ratings in the two modes diverged by more than 1.5 and calculated the relative variation $X_s X_s$ for each given physical feature using the following equation:

$$X_s = \frac{|X - X_{avg}|}{\sigma_X}, \qquad X_s \in \{H_s, W_s, S_s, WW_s, WH_s\}$$

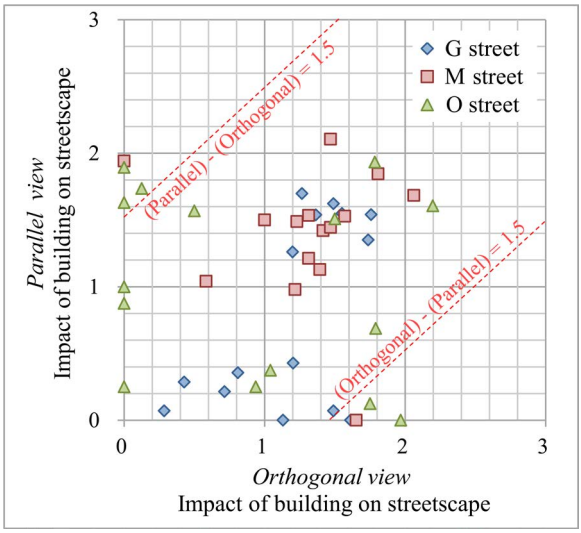

Fig. 7. Ratings of continuity disturbance by building
Source: Ryuzo Ohno, Yang Yu.

The results, shown in Tab. 2, clearly indicate that the relative variation of recess from (or projection into) the street is much higher for those buildings rated as more disturbing in *parallel view* than in *orthogonal view*, while the relative variation of building height is higher for buildings considered to have greater impact in *orthogonal view* than in *parallel view*. Notably, the two variables regarding fenestration varied significantly in both categories.

To identify the cause of these differences, we compared the images subjects saw of the relevant buildings in the two modes. Variations in the height of buildings are more easily perceived in *orthogonal view* than in *parallel view*, where the difference is hard to notice even close-up (Fig. 8).

Table 2. Relative variation for each given physical feature

Observation mode	Physical feature				
	H_s (Building height)	W_s (Building width)	S_s (Recess from the street)	WW_s (Opening width/building width)	WH_S (Opening height/floor height)
(Parallel) >> (orthogonal)	0.26	0.39	**0.92**	**1.13**	**1.03**
(Orthogonal) >> (parallel)	**1.18**	0.52	0.57	**0.81**	**0.85**

Source: Ryuzo Ohno, Yang Yu.

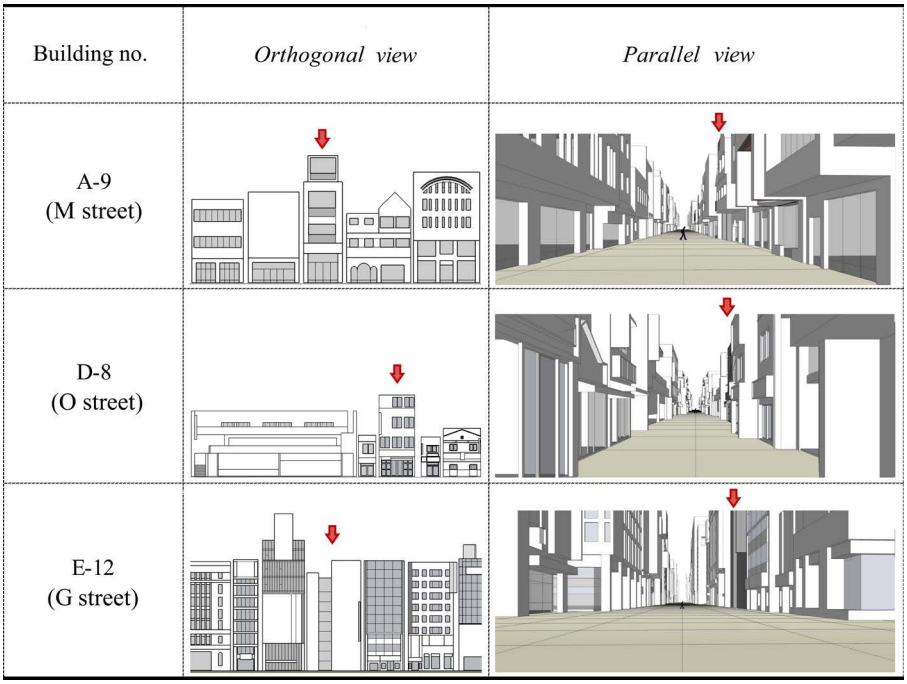

Fig. 8. Examples where disturbance ratings were higher in orthogonal view

Source: Ryuzo Ohno, Yang Yu.

Thus, for buildings of markedly different height, the disturbance rating tended to be higher in *orthogonal view*. On the other hand, the impact of a building tended to be thought higher in *parallel view* when it had a negative recess from (i.e., projected into) the street, something not very easy to see in *orthogonal view* (Fig. 9).

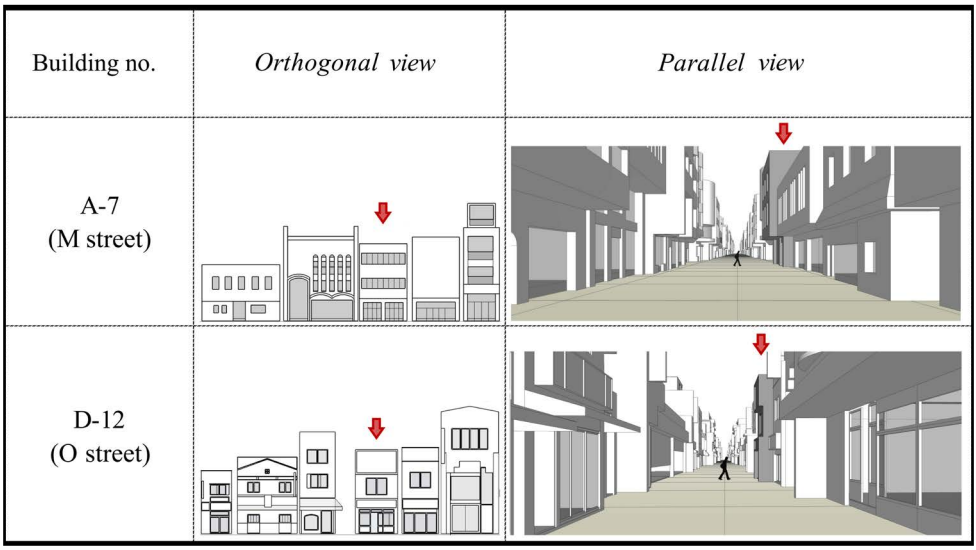

Fig. 9. Examples where disturbance ratings were higher in parallel view
Source: Ryuzo Ohno, Yang Yu.

The effects of the two variables regarding fenestration are harder to explain using static images. As Gibson[4] has suggested, motion is required for humans to perceive the layout of surfaces and objects in space, and so the impact of fenestration, too, will necessarily depend on the optic flow of its patterns as the viewer moves through space.

Influence of difference from adjacent buildings

The degree to which a building is considered to impact the streetscape will likely be affected by its location or context. To examine the influence of adjacent structures on the disturbance rating of a building, we quantitatively defined the difference between a given physical feature of the building and those of both its neighbors using the following equation:

$$X_d = \frac{|X_b - X| + |X_f - X|}{\frac{X_b + X + X_f}{3}} \quad X_d \in \{H_d, W_d, S_d, WW_d, WH_d\}$$

Where X_d: Relative physical difference of the central building
X, X_b, X_f: Values of physical features

[4] Gibson, J. James. *The ecological approach to visual perception*, Houghton Mifflin, Boston, 1979.

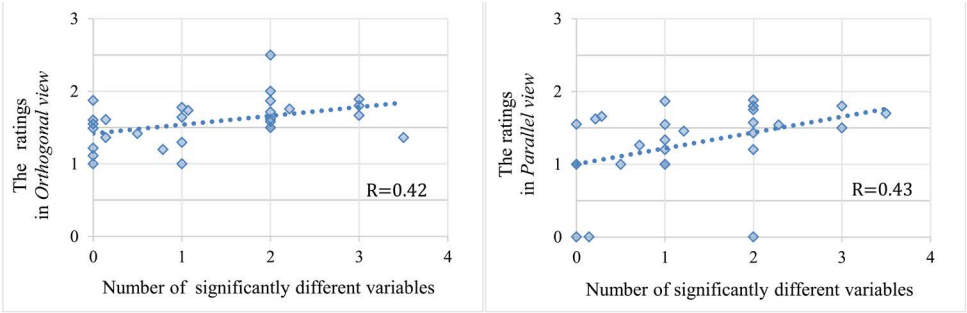

Fig. 10. Correlation between disturbance ratings and level of redundancy of different physical features
Source: Ryuzo Ohno, Yang Yu.

Since an analysis of X_d for individual variables failed to yield clear results, we counted how many variables were significantly apart from the mean value (larger than the standard deviation); in other words, we examined the level of redundancy of different physical features between adjacent buildings. Analysis for the G street revealed disturbance ratings to be correlated with redundancy (number of significantly different variables), as shown on Fig. 10.

Conclusion

The study demonstrates pedestrian perceptions of streetscape continuity to be affected by observation mode. The observation mode influences which specific physical features will prove relevant in ratings of continuity. In *orthogonal view*, differences in building height are more important to perceptual continuity, whereas the degree to which a building projects into the street has greater impact in *parallel view*. Variables regarding fenestration significantly affect moving pedestrians in both views. Ratings of a building's disturbance of streetscape continuity, moreover, can be explained by the redundancy of different physical features from adjacent buildings.

Since the impact of a building's design and layout differs depending on observation mode, it follows that regulation of building elements should not be tied to rigid standards but be conducted more flexibly, according to each individual situation. More reasonable and reliable design guidelines that take the observation mode into account will help to renew traditional neighborhoods while preserving the same original streetscape that people have cherished over the years.

ADAPTING GAME ENGINE TECHNOLOGY TO PERFORM COMPLEX PROCESS OF ARCHITECTURAL HERITAGE RECONSTRUCTIONS

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Introduction

'Technology is the answer… but what was the question?'[1] Cedric Price famously chose this provocative title for a lecture he gave in 1966, almost fifty years ago. His provocation remains valid to this day. It challenges us not only to critically assess the questions we expect technology to answer but also to explore whether a technology couldn't also be applied to uses it was never intended for.

It is in this spirit that this paper discusses and presents the possible integration and wider implementation of Game Engine Technology in the digital reconstruction of building processes in Architectural Heritage. While there are numerous examples of Game Engines being used to enable walk-throughs of architectural projects – built or un-built, including in Architectural Heritage – the focus of this project is not just the real-time visualization and immersive experience of a historically relevant building. Rather it demonstrates how the same technology can be used to document the entire development of a historically relevant ensemble of buildings through different stages of construction and adaptation over two centuries. Thus the project presented in this paper, which was developed as part of the primary author's Master Thesis, uses Game Engine Technology in order to document and visualize change over time.

Advances in Real Time Visualization

It is a well-known fact that computing power has been increasing exponentially since the late 1960ies[2]. Each year the computer industry is surprising users with novel possibilities, opening exciting perspectives and new horizons. The growing

[1] 'Technology is the answer… but what was the question?', Cedric Price, Lecture title, 1966.

[2] According to 'Moore's law': over the history of computing hardware, the number of transistors in a dense integrated circuit doubles approximately every two years.

speed of information technology also impacts the field of architecture. Computing has tightly woven itself into the fabric of what traditionally used to be a matter of craft. CAD and BIM systems have long become standard in practice, currently more specialized applications such as Augmented Reality are receiving broader attention. As a consequence, the field of architectural design is significantly expanding beyond its traditional borders.

A relevant part of this shift is driven by advances in real-time visualization. The graphics performance of standard computers is currently starting to blur the boundaries between reality and virtuality, not only for still images, where we have become accustomed to photorealistic renderings, but more and more also in real-time 3D applications. The main driver behind these advances is the gaming industry. The production of video games is now the biggest entertainment industry – ahead of movie or music[3]. The production of blockbuster games requires huge budgets and the sophisticated games that are produced in this high-powered fashion are gaining greater influence and recognition. Growing user expectations, especially related to the immersive quality of the real-time graphics, are constantly forcing the gaming industry to accelerate its development, setting the goals exceedingly high.

This constant "arms race" has led to the development of a variety of game engines. Among the most powerful engines currently available are: CryEngine (4th generation), Unreal Engine 4, Frostbite 3, Unity 5, Dunia Engine (2nd generation) and AnvilNext Engine. On the basis of these engines visually stunning games such as Crysis 3, Battlefield 4, FarCry 4 or Assassin's Creed Unity, are produced.

The latter, the latest installment of the Assassin's Creed saga, set a new standard for the visual quality and detail of its architectural and urban environments. The plot of the game is embedded within historic urban environments – cities like Jerusalem, Damascus, Constantinople, Venice, Florence, Rome or Paris – in different epochs and times. The level of detail achieved by those reconstructions – they can indeed be called thus – is captivating. Of course, even though a considerable amount of research went into their production[4] they are clearly not meant to be taken as proper scientific reconstructions. They are games, after all. Nevertheless, at this point we might well ask: why not make an effort and apply something so almost perfect for detailed real-time visualizations to the needs of a complex scientific reconstruction? Maybe these impressive game engines can not only be used to entertain us, but also to confront us with the complexities and uncertainties of scientific fact-finding? Maybe they could even make these scientific findings more entertaining? These are the question we are trying to answer with this paper.

Making scientific reconstructions more appealing not only to professionals but also to the broader public, who might well have an appetite for more than just stunning visuals, certainly seems to be a worthwhile goal.

[3] http://www.fastcompany.com/3021008/why-video-games-succeed-where-the-movie-and-music-industries-fail

[4] http://edugamesresearch.com/blog/tag/assassins-creed-2-educational/

Game Engines in Heritage Reconstruction

The idea of implementation and utilization of Game Engine Technology in the process of visualizing cultural (architectural) heritage is not new. It has been addressed and discussed by numerous conferences and research projects. [e.g. Bertuzzi and Zreik[5], Hoon and Kehoe[6], Boeykens, Himpe and Martens[7], etc.] However, even though it is commonly known and acclaimed, somehow its potential isn't investigated more in depth. The use of computer game functionality seems to be considered as an add-on, but not as the main focus of any research. The reason for this might be its complexity, as stated by Boeykens[8]. Game Engines (GE) are not only powerful, they are also highly evolved specialist tools that require a long and often steep learning curve. This makes them intimidating, if not discouraging to the scientists in heritage reconstruction who are rarely familiar with gaming technology. Whether the project is a real-time adventure game or a cultural heritage reconstruction – proper work with GE typically requires an interdisciplinary team of specialists.

The most important piece of any GE lies in its programmability. This is what lets the bestselling games be so much more than just virtual models we can experience. The flexibility inherent in their programmability is also what makes it possible to apply GE to other uses than gaming. Though for many, their lack of programming skills may have been the first and sometimes definite obstacle that results in reducing the application of GE to its most basic functions. Therefore to produce appealing and foremost valid – from the scientific point of view – reconstructions, emphasis should be placed on creating interdisciplinary teams of experts with various backgrounds and abilities: architects, architectural historians and theorists, experts in urban theory and history, researchers, computer graphic artists, artists, programmers, IT specialists as well as others according to the needs and size of the project. It takes such an interdisciplinary team to get the most out of working on/at the intersection of physical and virtual reality.

[5] Bertuzzi, Juan, Zreik, Khaldoun. "Mixed Reality Games – Augmented Cultural Heritage", in: *SIGraDi 2011* [Proceedings of the 15th Iberoamerican Congress of Digital Graphics]. Santa Fe. 2011, pp. 304-307.

[6] Hoon, Michael and Kehoe, Michael. "Enhancing Architectural Communication with Gaming Engines", in: *Connecting >> Crossroads of Digital Discourse* [Proceedings of the 2003 Annual Conference of the Association for Computer Aided Design In Architecture]. Indianapolis (Indiana). 2003, pp. 349-355.

[7] Boeykens, Stefan; Himpe, Caroline; Martens, Bob. "A Case Study of Using BIM in Historical Reconstruction: The Vinohrady synagogue in Prague", in: Achten, Henri; Pavlicek, Jiri; Hulin, Jaroslav; Matejovska, Dana (eds.), *Digital Physicality* – Proceedings of the 30th eCAADe Conference – Volume 1. Prague: Czech Technical University in Prague. 2012, pp. 729-737.

[8] Boeykens, Stefan. "Using 3D Design Software, BIM and Game Engines for Architectural Historical Reconstruction", in: *Computer Aided Architectural Design Futures 2011*. Liege. 2011, pp. 493-509.

Reconstructing the Franz Ramisch Textile Factory in Lodz

The project described here is not the work of a large team. It was developed by the primary author of this paper as part of his Master Thesis project. The thesis concerns the reconstruction of the spatial and architectural development of one of the textile factories in Lodz – Franz Ramisch Textile Factory.

The city of Lodz was founded in the 15th century but it was not until the beginning of 19th century that its economic potential was noticed and real development started. By decision of the state authorities Lodz was included into the group of industrial cities with the main scope focused on textile production. The city's natural conditions such as the land ownership status, which belonged to state, surrounding forests – availability of building material, and a lot of small rivers with steep drops which were ideal energy source for the machines , were favorable to this kind of activity. The first textile manufactures started to emerge as early as in 1823. This year is also known as the beginning of a period of rapid growth that led to the industrialization of the city. The first textile factory was erected in 1825 by the Saxon entrepreneur F. Wendisch, followed by L. Geyer (1828), K. Scheibler (1839), T. Grohmann (1845), I. Poznański (1852) and others. In a short period Lodz became the most important textile center in the Polish Kingdom and the industry itself became the beating heart of the city. In the second half of the 19th century Lodz was a thriving borough, maintaining mercantile contacts with Western and Eastern Europe, as well as with Asia, and constantly attracting entrepreneurs and ordinary people from all around Europe. The constant growth of its industrial importance resulted in an enormous growth in population. The city's' rate of population growth in the second half of 19th century was exceeding those of quickly growing Western European industrial cities such as Lyon or Manchester. Back then, due to its rapid development, Lodz was also known with as the "Polish Manchester". Initially, the development of the city was regular and planned: zoning laws had been adopted, separating parts of different usage. Everything changed in the mid '60ies of the 19h century, when due to the lack of further administrative regulations, political crisis, as well as economic and social boom, the development reversed its direction from outwards of the city center to inwards. Industrial and civic tissues were mixed, intersected. Factories were built on practically every scrap of free land, even next to the main representative street – Piotrkowska. The Franz Ramisch Textile Factory portrayed in the thesis, is one of those erected in the very center of the city.

Rather than just focusing on the reconstruction of the factory at one point in time, the thesis focuses on its development through time – from when the very first dwellings were erected on the factories' plot of land in 1828 till the present times – 2014. This time mapping of the development is meant to enable a better understanding of the changes that have occurred in the factory as well as in the part of the city where it is located, and give deeper insight into the historic structure of the area. The 3D representation of reconstructed buildings is combined with information about relevant economic, social and political changes that have

occurred within the given time period in the city itself, the country and the world. This information is crucial for creating an understanding of Architecture as not being an isolated discipline, but rather one depending on and being constantly shaped, changed, and complemented by factors and incidents in its context. The term 'context' here is not just referring to the physical surroundings, but rather to the entanglement of consequential factors influencing the decision making process of subjects that eventually led to the architectural creation.

The documentation of the development of mentioned factory was primarily made with the Unity game engine. Unity's functionality has been extended with the C# scripting language. This was used to create a 4th dimension in the interface: a timeline that allows users to experience the factory in both space and time. Highly detailed 3D models representing existing and non – existing pieces of architecture of the Factory were modelled with Autodesk 3dsMax. Emphasis was also put on the proper reconstruction of the construction elements. While modeling the entire city was outside the scope of a one-person project, the closest surroundings of the factory were modeled (also changing over time) to create a spatial reference of the urban context.

The resulting scene offers many of the viewing functions of the Game Engine, but on top of that it also offers a timeline, which enables the user to travel through time from the very beginning to the end of researched time span, observing all the changes occurring in the buildup of the factory. Users can orbit around emerging objects, zoom into the model and pan the camera to change the point of view and better inspect an individual area of interest. One of the core features includes historical analysis and dating of the plots' objects. It is achieved by coloring buildings, or parts, respectively to the year of creation.

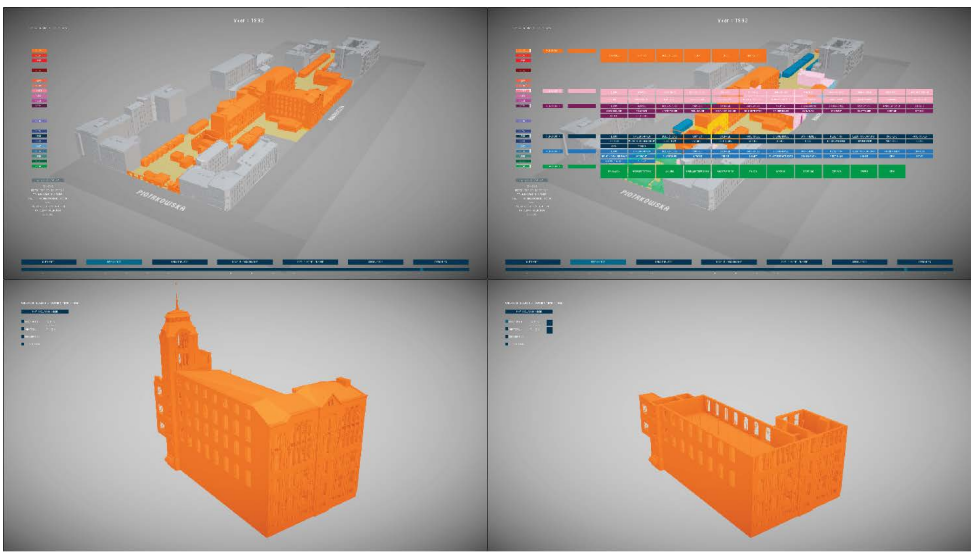

Fig. 1. Thesis program functionality depiction

Source: Work of the Author.

A similar principle was adopted for the analysis of the changing state of ownership of the factory's plot of land. Tracking of function change is also embedded enabling inspection of the changes occurring in the uses of the factory objects. The second crucial feature empowers to isolate selected building for better inspection, including 3D horizontal and vertical sections as well as detailed description of development phases including construction details. The program also includes links to historic data references in the form of a gallery. This enables users to relate the 3D data to archived plans, photos and other available documentation. Furthermore, the interface includes some minor functions such as camera matrix switch, disabling/enabling of surroundings, etc. for better representation of the whole on slower hardware. (Fig. 1).

Further Possibilities - Extension

The scope of this project is limited, but it documents an approach and a philosophy that can be extended. In order to truly capture the *genius loci* of an architectural form or place, a broader and more complex view is needed. For digital heritage reconstruction to come close to this ideal, open, extensible documentations are needed which can contain not only high quality 3D models that can be rendered and experienced immersively in real-time. They should also support the travel through time and through different historical – and perhaps only conjectured – versions of a historical ensemble as well as links to pictures, plans, photographs, texts that form its context. To be of relevance and to faithfully respect existing research this approach requires enormous effort. It cannot be achieved by a one-man-operation, but instead should involve, as mentioned earlier, interdisciplinary teams. In this way, truly valid and valuable reconstructions of architectural heritage could be created that could also be shared with a broader public. If these models are open, that is extensible, then such an effort would produce lasting results. New research could be added to it, so that its documentation would not become outdated, but grow to become more refined over time. With enough people working on it, such a project could well tackle not only single architectural objects, but whole cities.

The use of GE for such ambitious scientific purposes goes outside the commonly adopted boundaries, schemes and conventions. But it is actually rather straight-forward. The level of development of today's GE is very high and they have been tested with millions of users. Therefore, investing in the development of comprehensive and historically correct city models in game environments is not as outlandish as it might appear. In the following paragraphs we will describe some basic principles that we derived from the textile factory model, which could guide the development of much larger, comprehensive, open models for architectural heritage.

The main principle is that such models should be four dimensional (4D). The 4D representation supports the mapping of architectural and urban growth and development through time. Users can access data and embedded information on different levels of detail, likewise to narrow or expand the scope of interest,

remaining, at the same time, aware of the ensemble. It is possible to move from general to specific cases and back. The basic units of such 4D models for urban and architectural reconstruction are single buildings, respectively architectural forms. Out of these units, groups could be formed as meaningful collections – districts, neighborhoods, etc. – they have an important role in creating an understanding of the changes occurring during development (as seen in the Ramisch factory example). The whole 4D model is then comprised of Units and Groups – the reconstructed city itself.

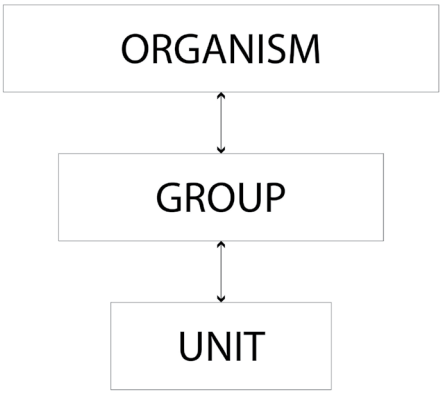

Fig. 2. Grand structure of the application
Source: Work of the author.

The general structure of the reconstruction would look much like the one presented at the picture below (Fig. 2).

Further, each level is equipped with unique features that take care of high quality analysis possibilities adequate for selected standard. Such a gradation is required for better readability of the complex data structures, as well as for creating clear and transparent navigation and UI/UX[9] elements. We will present this additional data embodiment on the example of the simple Unit case – isolated building. Digital reconstruction of the single building is itself a challenge as for numerous aspect that could have been analyzed and included in the representation. What matters most at a very first glimpse, and what is exceedingly developed and important in computer games – what makes them so appealing and magnificent – is naturally the graphics. The visual attractiveness of an object marked by its fine details and high resolution textures and materials. Therefore the materiality of the building's exterior (and the interior) should be a matter of high priority. Not only because of the visual attractiveness, but mainly due to the requirement of creating valid and scientific representation of the reconstructed object. There are, of course, known problems with acceptable representation of materials during the visualization process, as already mentioned by Kępczyńska-Walczak[10]. Current GE though, as far as lighting and materials are considered, are equipped with up-to-date tools enabling real time execution of different light conditions for material testing. Nevertheless, as game engines were created in order to support formation of hyper realistic worlds in the first place, there is a temptation of using provided features to boost up and correct the reality. This should be avoided, as it would produce inaccurate and false interpretations and reconstructions. The 4D model should respect historical facts more than looks and rely on collected data in order to depict the past (which was

[9] UI/UX – User Interface/User Experience.

[10] Kępczyńska-Walczak, Anetta. "Performing the Past and the Present for the Knowledge of the Future", in: Stouffs, Rudi and Sariyildiz, Sevil (eds.), *Computation and Performance*. Delft: Delft University of Technology. 2013, pp. 453-462.

not always as picturesque and aesthetically pleasing as presumed) as faithfully as possible. Other issues to consider on the Unit level are the structure and construction of the building. The possibility of analyzing the sections of the building is very advantageous for architectural research. Each building undergoes changes in terms of structure, construction, used materials, functionality (functions served by it), is rebuilt, partially demolished, reconstructed, etc. From the historic and reconstruction point of view all those things are very relevant and important to present.

Of course our knowledge of the past is never complete and often it is impossible to fulfill all the expectations with valid, or any data. The problem is trivial – there just is not enough information available in the archives or sources we are working with. This lack of data has to be dealt with in a consistent fashion. Sometimes it will be acceptable to "improvise" in the sense of providing probable, though not scientifically assured, replacements. Such hypothesis resulting from research and consultations on the missing matter, should be involved as valid pieces of the reconstruction, however they should also be visibly marked in the model. The proper marking separating obvious from hypothesis would prevent the uncontrolled spread of probable truth as a definite truth according to the common rule of the visual society: "seeing is believing".

Already at this point the Unit level itself is extremely complex and encapsulates a lot of intersecting layers and information. As we aim at creating the application that would also provide educational value for a general public that is not necessarily familiar with the topic, there is an urgent need to introduce different levels of abstraction to present all this information in an approachable and understandable way (London Charter[11]). The levels of abstraction should consider visual appearance that corresponds with the exhibited topic. The versatility of the presentation layouts, though unified and kept together as a system, positively enforces the user and clarifies what may have been unclear.

After adding the new functionality to each of the application grand levels, supposed diagram may look like the one presented on Fig. 3.

To fully take advantage of the power of GE for projects in digital heritage reconstruction geared towards a wider audience, there is a need to create appropriate navigation and exploration system that would intuitively lead the users through the vast maze of included data. The ideal system we are outlining here should refer to, exploit and utilize existing and tested systems implemented in various computer games, as they have mastered this particular challenge very well. It should also, obviously, implement original ways of navigation appropriate for presented pieces of information. Furthermore switching from first person camera control – providing cognition of the environment in human scale, walkthrough modes, city or building

[11] London Charter, Principle 2: Aims and Methods, "2.3 While it is recognized that, particularly in innovative or complex activities, it may not always be possible to determine, a priori, the most appropriate method, the choice of computer-based visualization method (e.g. more or less photo-realistic, impressionistic or schematic; representation of hypotheses or of the available evidence; dynamic or static) or the decision to develop a new method, should be based on an evaluation of the likely success of each approach in addressing each aim."

exploration on regular, natural basis – to perspective/isometric 3D aerial views allowing perception of the Units, Groups and Organisms as a whole with additional features, should be considered and effectively implemented.

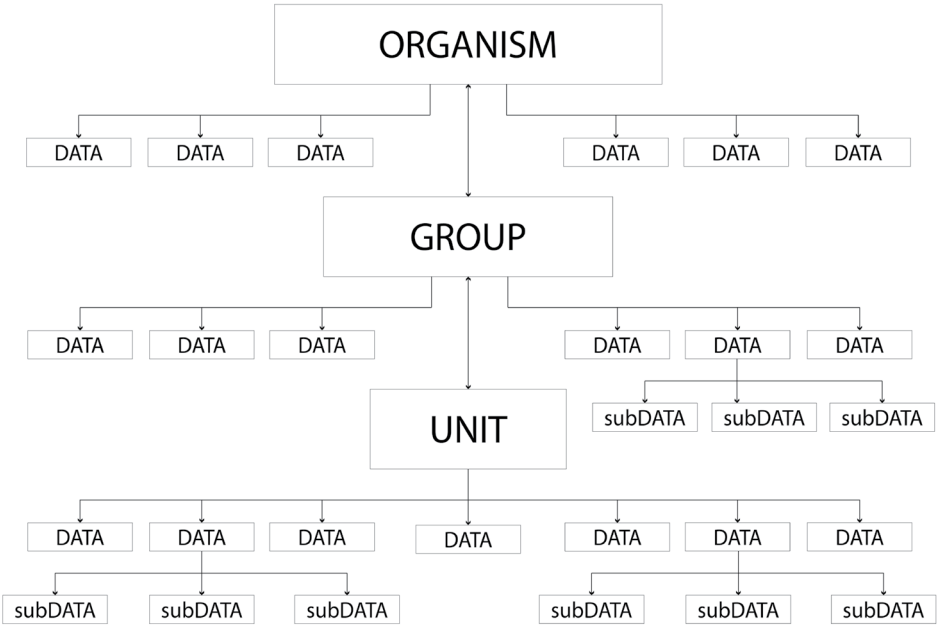

Fig. 3. Expanding the grand structure of the application
Source: Work of the author.

As our brief ideal outline makes clear, such a comprehensive system would entail challenges beyond those of a traditional computer game. Therefore the most important aspect of such a system cannot be stressed enough: it should be open to future improvements! The ideal 4D system we are envisioning should allow the contributions of many contributors, would allow the introduction of new features and elements and could be expanded – rather like a Wiki. Ideally it should also be developed in an open source fashion.

Summary

Dynamic advancement in the field of computer graphics, particularly in game engines technology creates great potential of its implementation in the scope of architecture, especially in reconstruction of Architectural Heritage. Integrating and taking advantage of the full potential those disciplines represent, would enable us to enter the next level of interdisciplinary work and integration between digital and non-digital worlds. As the prototype example presented in the paper, the Franz

Ramisch Textile Factory in Lodz, makes clear, this would enable us to perform procedural reconstructions not limited to the static depictions of Architecture at one particular point in time, but rather to embrace the change of and in Architecture throughout time dynamically. Taking the ideas presented in this prototype further, we can envision the dynamic reconstruction of urban complexes and eventually whole cities based on today's Game Engine technology and thereby acquainting a broader public with scientific knowledge about our past. While this would necessitate the collaboration of large interdisciplinary teams of specialists and would open up many questions regarding existing, as well as establishing new standards for scientific reconstruction of Architectural/Urban Heritage, such comprehensive digital 4D systems could become powerful means of educating our society about our past and empower us with new perspectives on our future. In this way, Game Engines can be used to produce much more than just games.

A TOOLKIT FOR COLLABORATIVE DESIGN: ENVISIONING AND SHARING THE IDENTITY OF PLACE THROUGH TRADITIONAL AND EMERGENT TECHNIQUES OF SIMULATION

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Introduction

Objective

The aim of this study is to develop a novel toolkit for co-design that is heavily based on the use of digital simulations during the process. The occasion for setting up a novel co-design methodology and testing different work modalities was possible because of a real case-study application: a collaborative collaborative design experience launched with community stakeholders within the sustainable campus initiative at our university. The methodology was implemented according to a 'learning by doing' approach, i.e. during the co-design process, and focused in particular on how and when to use visual simulations during the different types of activities and in relation to the different stakeholders.

The research context: traditional and emerging tools and place-making

The toolkit is composed of a variety of tools, ranging from traditional representations of design projects (hand-drawn sketches and perspective views, top and front views, plans, orthophotos and pictures) and digital simulations (both photo-realistic and more artistic interpretations of places).

Moreover, we wanted to study new opportunities offered by the employment of emergent technologies[1], traditionally applied in disciplines outside the domain of architecture and urban design. Techniques taken from the movie industry, the gaming industry or even the military sector have been incrementally adopted in architectural practice over the years. Some outcomes of this shift have had a positive

[1] Danahy, John W. "Technology for dynamic viewing and peripheral vision in landscape visualization". Landscape and Urban Planning, No. 54. 2001, pp. 127-138.

influence in public involvement processes, since the architectural representations have become more readable by the lay public[2]. We argue that the same tools, especially interactive ones, can be efficiently applied to enabling citizen engagement and supporting place-making processes. In particular, outdoor Augmented Reality (AR) represents a powerful medium for engaging people in co-design activities, because it enables a sense of immersivity and immediate understanding of design schemes in place.

The case-study application: a car oriented and inhospitable street

The occasion for testing a co-design process and simulation techniques was the redesign of a shared public space, an initiative promoted by the project 'Città Studi Campus Sostenibile', a sustainable campus program supported by the Politecnico di Milano and the Università degli Studi di Milano[3]. In particular, the ongoing object of redesign is via Celoria in Milan, a street that lies in-between two universities at the heart of the university district of Città Studi[4]. This street represents a symbolic place for the entire city, but it was neglected over time. In fact, when the university area was built, at the beginning of the 20th century, the street had its own sound identity. Despite the fact that at that time, this was a location at the margins of the town, the street was designed as a tree-lined boulevard, with a dignified section, and green parterres. With the coming and increasingly extensive use of cars, the street suffered the consequences of traffic and parking: from a pleasant street for people it became a jungle of disordered cars parked everywhere, where students struggle to safely reach the university.

Methodology

The reasons for a collaborative design approach for re-thinking a public space

The urgent challenge to turn the street into a safe path for pedestrians was a good occasion for re-thinking the entire street design and offered a tremendous opportunity for studying and applying new ways for an effective collaborative design based on a wide use of visuals and digital simulations of future transformations. In particular, we wanted to understand the modalities and the timing for applying

[2] Kwartler, Michael, & Longo, Gianni. Visioning and visualization: people, pixels, and plans. Lincoln Institute of Land Policy. 2008; Bishop, Ian D., Lange, Eckart. Visualization in Landscape and Environmental Planning: Technology and Applications. London, New York: Taylor & Francis. 2005.

[3] Morello, Eugenio, Piga, Barbara E.A. "Envisioning the sustainable campus: the urban model as the hub that supports the transformation", in: Morello, Eugenio; Piga, Barbara E.A. (eds.), Envisioning Architecture: Design, Evaluation, Communication. Milan: EAEA. 2013, p. V–XI.

[4] Piga, Barbara E.A., Morello, Eugenio, Signorelli, Valerio. "The Combined Use of Urban Models to Support a Collaborative Approach to Design Towards the Sustainable University Campus: Participation, Design, Transformation", in: Saleh M. Uddin; Chis Welty (eds.), Design & Graphic Palimpsest: Dialogue, Discourse, Discussion. Atlanta (Georgia –USA): Design Communication Conference. 2014, pp. 53-58.

different collaborative design tools. Once the project is concluded, a co-design toolkit will be proposed by the authors in order to replicate the experience in other projects.

Not only the physical and utilitarian transformation has to be taken into account, but also a radical change of identity for a public space that should be able to promote social integration. People are simultaneously part of the environment and perceivers that interpret and give value to it: the sense of belonging (identity) and the atmosphere of places are the outcomes of the interaction between people and space. This is the reason why collaborative design is necessary to promote the environmental and social quality of places.

The challenge: the temporal dimensions of co-creation and design techniques

In order to promote an effective co-design process, the temporal dimension of the activities and the reference to specific design tools and products has to be carefully considered. We argue that a detailed programming of a calendar of activities and deliverables to guide the process is not possible at the beginning of a bottom-up collaborative design process, because the steps are defined over time and highly dependent on informal unexpected events that can stop or accelerate the planned activities. In particular, our research interest lies in the understanding of the use of design visualizations and simulations (mainly drawings, digital representations and physical models) throughout the process. In fact, the crucial questions we face while we develop the activities refer to the legitimacy of using representations for envisioning future scenarios. Visuals can be used in several ways, but can highly manipulate the process if not properly used. In fact, representations can serve as media for interacting with the actors of the process (citizens and public officers), in particular for: (i) informing them, (ii) helping them select and create their own suggestions and ideas about possible future conditions, (iii) convincing them to sustain a specific design solution or on the contrary to discard bad options. In short, the use of images is very powerful, especially when we deal with digital photo-realistic simulations, which are easily readable by laypeople.

Setting up a process for enabling co-creation: the application

The process has developed over a series of events, and is still ongoing. There are five main steps listed below and summarized in Table 1. Initially, the work was carried out by the urban simulation laboratory (*Laboratorio di Simulazione Urbana 'Fausto Curti'*) in collaboration with student interns and the Laboratorio Modelli, and later with the contributions of the students of the architectural and urban simulation course[5].

[5] POLIMI – Architecture M.Sc. class named *Architectural and Urban Simulation*, main instructors R., Salerno & B., Piga. Politecnico di Milano, Social web-page: www.facebook.com/IcArchitecturalAndUrbanSimulation.

Table 1. The collaborative design process and the types of design supports used

		EVENT 1	EVENT 2	EVENT 3	EVENT 4	EVENT 5
TYPE OF EVENT	FORM OF PARTICIPATION	STAND AT PUBLIC EVENT	STAND AT PUBLIC EVENT	MEETING	RESEARCH SEMINAR	WORKSHOP
	FOR WHOM	CITIZENS, STUDENTS	STUDENTS	PUBLIC OFFICERS	RESEARCHERS, STUDENTS	CITIZENS
	SCOPE	COMMUNCATION AND COLLECTION OF OBSERVATIONS	COMMUNICATION AND COLLECTION OF OBSERVATIONS	COMMUNICATION, COLLECTION OF OBSERVATIONS, ORGANIZATION OF ACTIVITIES	TESTING OF AR TOOLS IN OUTDOOR SPACES	COMMUNICATION, COLLECTION OF OBSERVATIONS AND CO-DESIGN
TYPES OF DESIGN SUPPORTS	FACILITATORS (STUDENTS AND RESEARCHERS)	NO	YES	YES	NO	YES
	TOP VIEWS AND MAPS	YES	YES	YES	NO	YES
	PICTURES OF THE PLACE	YES	YES	YES	NO	YES
	PHYSICAL MAQUETTE	YES	YES	YES	NO	YES
	DIAGRAMMATIC TRANSFORMATION SCENARIOS	YES, THREE	YES, THREE	YES, THREE	NO	YES
	SITE ANALYSIS INTERPRETATIONS	NO	YES	YES	NO	YES
	PROJECT SCHEMES	NO	NO	YES, MULTIPLE	NO	YES, MULTIPLE
	RENDERS (SUBJECTIVE VIEW)	NO	YES	YES	NO	YES
	IMMERSIVE SIMULATIONS (AR)	NO	NO	NO	YES	YES
	INTERACTIVE SIMULATIONS	NO	NO	NO	NO	YES

Source: elaboration by the authors.

In order to reflect the complexity of the current condition of the street, a number of products were proposed and aimed at: (i) representing the ambiance of the place (ii) communicating alternative scenarios of transformation with the intention of opening the discussion without presenting design solutions. The representations developed by students[6], together with interactive simulations, a physical model and other technical representations constituted the basic materials for involving the local community in the co-design process. The types of representations increased in terms of quantity and complexity over time. In fact, we started using the physical model and a simple map of the street, then we added subjective images and representations, and in the near future, we will move to more immersive and interactive simulations.

Four public events took place, and one is planned as the natural progression of the process. In parallel, we opened a webpage on a social media site aiming to keep actors updated about the ongoing process[7].

The first public launch of the initiative (Fig. 1) happened during the seminar *Giornate della Sostenibilità: Focus Ambiente*. Two big posters, a physical model and a questionnaire with three different car-accessibility scenarios compose the

[6] Eight students' works were displayed, three of which were photo-based, two were sketches of which one included an abstract watercolor interpretation of the street; last, was a work that included maps and sections of the street.

[7] Social web-page: www.facebook.com/pages/Via-Celoria-Milano-Città-Studi-Campus-Sostenibile/433083053490339

package of materials presented to citizens. No design proposals were produced in this phase, only three diagrammatic scenarios displaying one with the most relevant topic, i.e. car accessibility. The simple schemes explain the possibilities at hand. The scenarios are described with attention to the specific changes each option proposes: (1) removing all street parking, (2) creating a 30km zone to slow traffic, or (3) fully pedestrianizing. People were asked to indicate their preferred scenario, and to share their comments and ideas. The next step was to reach a shared vision and the new identity of the area that will inform the final design solution. In fact, we argue that by comparing the current situation to a number of alternative solutions, the audience has the elements to start a dialogue on the basis of different visions. People were asked to indicate their preferred scenario, and to share their comments and ideas. Actually, the initial activities were not intended to define design solutions, but to help people to envision the change. We assume that architects are able to coherently interpret and address emergent explicit and implicit needs.

After, the same materials have been presented to an audience composed mainly by students but opened to the public, at a popular university event, known as the Spring festival or the *Festa della Primavera* (Fig. 2). The main difference with the previous event was the presence of students as facilitators to introduce the concept and ask students for contributions (via questionnaires and annotations on maps). On this day, nearly 100 votes were collected.

The first occasion to meet with local representatives happened a few months later and could benefit from the outcomes of students' place interpretations and design schemes produced during the teaching activities (Fig. 3a). Students' works helped reveal new topics and enlarge the number of points of view and interpretations of the street condition. Moreover, the projects served as suggestions to orient the discussion on relevant points (accessibility, activities, safety, green connectivity). Discussing eight different design solutions enabled a balanced conversation because no influence by way of any single project was possible.

Later, we held a seminar on the role of ICT for design[8], where we briefly tested AR solutions[9] (Fig. 3b) with a small number of users. AR on a tablet enables people to experience the design solution freely in a more immediate and natural way, i.e. in a partially immersive way and in motion. This solution is apparently very effective for the communication of design schemes, even if some technical problems do not yet allow for fluid observation; AR solutions will be further tested during the next co-design events.

Finally, the planning of a workshop with citizens of the local community, hosted and organized by the local municipality, will constitute the next step to be held soon. On that occasion the same materials will be introduced as the basis for discussion.

[8] International Research Seminar: Walk-scape: ongoing research on Augmented Reality solutions for the built environment (10.3.2015) https://plus.google.com/photos/108828272419148333503/albums/6140200860534177649

[9] The AR tool was develop by Chiara Calabrese, an engineer student of POLIMI, under the supervision of prof. Luciano Baresi (DEIB) and co-supervisor Luca Lamorte, with the support of the Laboratorio di Simulazione Urbana 'Fausto Curti' (Calabrese, 2015).

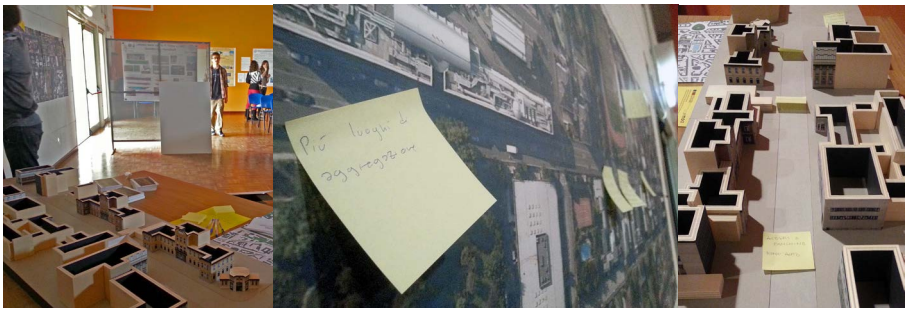

Fig. 1. Pictures taken during the first public event to launch the co-design process: the physical model and a questionnaire we proposed to participants, the board with participants comments, the physical model with participants comments

Source: pictures taken by the authors.

Fig. 2. Pictures of the second public event aimed at involving the student community in the process: the physical model, the questionnaire, the boards and the visuals by students

Source: picture taken by the authors.

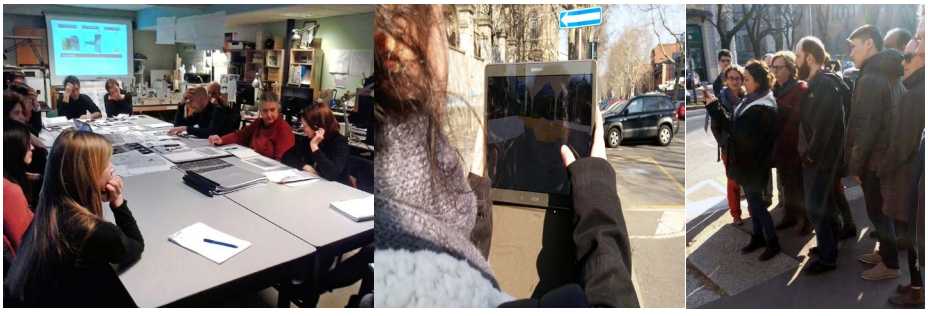

Fig. 3. (a) Pictures of the third public event aimed at involving the student community in the process. (b) Testing of outdoor AR techniques to validate design schemes on site

Source: pictures taken by the authors.

Design activities carried out by students to support the co-design process

The work carried out by students was developed in parallel and was used to provide additional material in support of the co-design activities. It is important to note that the site analysis interpretations and final design schemes are not the product of co-design activities but originated from students' team work.

During the M.Sc. course, we asked students to develop urban design projects on the basis of an experiential design approach[10]. This was mainly anchored on the following arguments: the interpretation of the place has to be grounded on experience, with specific reference to multi-sensory perception; the subjective perspective of the designer is crucial to guaranteeing the environmental and aesthetic quality of places as deeply investigated by traditional urban design scholars; hence, immersivity, in space and time, is here considered as a key component to take into account for developing the urban design project.

The first design task was the interpretation of the place as it currently appears. Students were asked to visit the project site and to describe their feelings concerning the first urban encounter (Fig. 4). No information was given in order to let them freely perceive, interpret and depict the design area. Although the cultural and educational background of the students was various, coming from architectural, planning and social studies, some common trends in the personal experience of the place were recognizable: a sort of collective feeling emerged. For instance, the road was perceived as a merely functional space, serving in particular as an extensive parking lot and a distribution corridor of students' flows to reach the campus pavilions. In order to describe their personal sensory and emotional geographies of the place, students could use different types of media to communicate their experience, according to their sensitivity and technical skills.

Fig. 4. Interpretations of the current condition of the street by students of A&US
Source: elaboration by students. Courtesy of (a) Prap Chaiwattana (b) Julia Gocalek.

[10] Rasmussen, Steen E. Experiencing Architecture. Cambridge MA: MIT Press. 1964 (originally published in 1959).

Interpreting the present, sharing the scenarios and simulating design solutions

So far, the process has worked as a strong attractor of attention, as a way for foreseeing possibilities, as an activator of dialogue among different place users, and, we hope, as a catalyst for a real transformation. We can state definitively that today the process has triggered collaboration among the stakeholders. In fact, the local public authority and the two involved universities are cooperating for improving the quality of the city and its inhabitants.

Understanding the role of the different types of representations and simulations was a crucial operation to properly involve people, and create a common ground for an effective and fruitful dialogue towards the new identity of the street. Moreover, the parallel dissemination of the process and the products on social media were great amplifiers for keeping attention on the topic between one event and the next. All these tools, each one with its own peculiarity, supported the dialogue across a diverse audience. Below, some detailed comments on the experience of using these multiple means during the process are listed.

The *physical model* was the first strong attractor during the public events and a good support for the debate. It also proved useful in orienting participants to the location potential interventions and as a reference when answering questions about how they moved through campus and which areas of the street they used most.

The *display board* with the scenarios was probably the most referenced item in order to give a visual overview of the project possibilities. In fact, it represents the item that asks for interaction.

Representations of the experience of via Celoria developed by students stimulated ideas and invited more interpretive comments (Fig. 4). In fact, the interpretations of the place emerging from a multiplicity of personal visions offered by the students helped bring focus to the intangible effects of the current condition. This approach made it possible to share a common idea of the identity of the current condition, while launching a mechanism that looks into the future.

The *photo-based renderings* were most useful to refer to when describing the scenarios and seemed to more clearly communicate the issues that the schematic scenarios were attempting to address. Some participants reacted to the photos, recognizing their own experience in the visualizations.

Experiential interactive simulations based on outdoor Augmented Reality are essential to virtually place lay-people into the possible future scenarios.

In short, subjective views of the existing condition proved useful to keep in mind the visual perception from specific points of view. On the contrary, physical models and technical drawings, such as top- frontal views and sections, were useful for getting the overall picture of the physical layout of the street. The real-time combination of these different media enabled the observers to correlate experience and city structure, from a more interpretative to a more flat and technical perspective.

Conclusions

The paper has introduced the ongoing experience of a co-design process about the re-design of a public street and has aimed at providing new critical insights on the use of novel digital visual simulations along the path. The experience demonstrates that images are powerful and at the same time that visual materials can highly impact the process both in a positive sense (i.e. improving understanding of future environments, speeding up discussions) and in a negative one (i.e. manipulating audience opinion and affecting decision-making). Moreover, different media present different peculiarities and opportunities. The emerging considerations will be used to implement a dedicated toolkit for co-design with simulations.

Acknowledgments

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ARCHITECTURE EDUCATION AND THE CITY AMID CHANGE

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Introduction

Most recently, while in some countries financial crises and global economic recession caused an average unemployment rate of 25% for architects and an overall significant reduction of the activities in the construction sector[1], Turkey and especially the city of Istanbul have not experienced such negative effects of the crises thanks to the new investments and large-scale urban development. However, reflecting an anonymous fragmentary character, recent implementations - disintegrated new housing blocks and shopping centers, urban regeneration projects and growing transportation network through the city and out of the city – and improper restorations and additions cast a shadow on the historical identity of the city. Architecture, itself, eventually, has become an undesirable practice due to its non-contextualized self-focused beauty, and ignorant and destructive attitude.

Within such a dramatically transforming urban space, architecture education environment experiences certain far-reaching consequences of the local and global changes in architecture and architecture education. It is a very well-known fact that architecture & design education and the city, as a close extension of learning environment, by their very nature, co-exist, inextricably linked and strongly influence each other. How are the key components of an education environment – context, instructors, students, content and learning – affected by the turbulence of dynamic relationships in such a vibrant atmosphere, while struggling with the rapid pace of the change of dynamics of education and education technologies and environment in a globalized world? What are the means to bridge the gap between these two areas both in design education and design practice?

The basic aims of this study are to present objective and subjective findings about the case and their assessment reflecting various points of views of living actors of architecture and urban environment of the city such as education professionals, architects, students, engineers and some other urban dwellers, and to give the audience insights into the changing meaning of the place with its all transforming and interweaving layers.

[1] Sipridonis, C., Voyatzki, M. "Dealing with Change: For an adaptive, responsive, engaging and dynamic architectural education", in: C. Sipridonis & M. Voyatzki (eds.), *Dealing with Change: For an adaptive, responsive, engaging and dynamic architectural education*. Thessaloniki, Greece. 16th Meeting of Heads of European Schools of Architecture. 2014.

This study consists of quantitative and spatial data on architecture and design schools in İstanbul, ongoing activities, projects and implementations, and potential of the urban environment for architecture and design education in order to provide a global perspective. In other words, this paper offers a presentation on the transformation of the city, emerging architectural activities and the panorama of the schools of architecture and their interactions in İstanbul.

From the Capital of Empires to Megapolis: İstanbul amid Change

Since the establishment of the city till the 60s İstanbul has developed particularly in 5 major sections (Fig. 1). (1) The historical peninsula: capital and governmental center of the Byzantium and Ottoman Empires, including multiple monuments such as the Hagia Sophia, Blue Mosque, Süleymaniye Mosque and Topkapı Palace; (2) the Galata district: essentially a Genoese settlement which has developed during the Westernization process of the city. This old financial, trade and recreation center, which used to be the extension of the İstanbul port, included movie theaters, dining facilities, cultural centers and consulates. The most dominant building of the area is the Galata Tower; (3) the Golden Horn district: housing industrial buildings until recently and cosmopolitan small-scale settlements along its shores; (4) the Anatolian part: including Kadıköy (Chalcedon) and Üsküdar (Skutari) settlements; (5) the Bosphorus villages: housing mostly minorities during the Ottoman Empire, and aristocrats during the 17th and 18th centuries, with limited transportation facilities. The Westernization and globalization efforts beginning from the 19th century can be seen in the high-quality neo-classical, art-nouveau, and modernist buildings of the city and its recreational life.

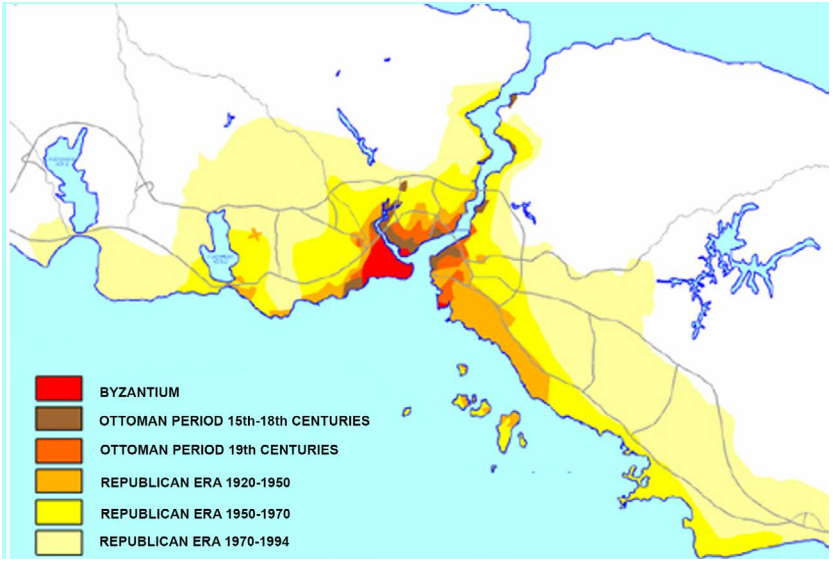

Fig. 1. Expansion of the city

Source: http://www.ibb.gov.tr/tr-TR/kurumsal/Birimler/ulasimPlanlama/Documents/%C4%B0UAP_Ana_Raporu.pdf

Staring from the 50s, as the internal immigration has doubled the population to almost a million, and as new districts have been added to the outskirts, the city, which houses mostly illegal buildings that are generally served by the municipality in terms of infrastructure, has reached an incomprehensive size. Moreover, due to the destructive zoning processes and public works of negative additions/subtractions, urban fabric, exposed to high traffic and pedestrian densities, has gone under major transformations leading to substantial decrease in its value.

The most significant urbanization processes within the city have been the buildings and roads enacted in the 30s based on the Proust plan; opening of boulevards and shoreline roads, the increasing of the road-network due to the increase in motorized transportation demand since the 50s. These changes have transformed İstanbul into a city that is governed from the center, a city no longer manageable.

The rupture between the city's cultural past (representing its symbolic values and accumulation) and its social domain began in the 50s with the heavy destructions and interventions in the historical urban fabric initiated by the time's Prime Minister Menderes. The historical peninsula has experienced a dramatic transformation through the demolishing of over 7000 buildings and some part of the historic city walls along with the opening up of the shoreline and 2 grand boulevards, Vatan and Millet Avenues (Fig. 2). After these years, though İstanbul has experienced multiple re-planning efforts, it became a city with no comprehensive strategic master plan in the midst of a planning-development/growth conflict.

Fig. 2. *An example of the 1950 Menderes period demolitions*
Source: Yücel 1996.

The unchanging locations of the governmental, educational and recreational centers and the addition of new patterns during this growth have accelerated the deterioration of the historical peninsula.

The courthouse, university complexes, hotels and other buildings were built with no consideration of the archeological structures and their identities.

Till the 60s immigrants were enforced for assimilation, yet after the 60s İstanbul became an environment of no-identity where immigrants of the countryside started to interpret the city based on their experiences and backgrounds. The phrase 'There is no other İstanbul', which invites residents to courtesy, good manners and decency, is now vanished. Historian Doğan Kuban states the dominancy of the provincial classes on the city as: "*In the urban vision of a new İstanbul citizen of rural background 'history' has meaning only as a simple accessory. It can be used for ideological purposes but its cultural content is limited. The behavior that eradicates relentlessly the historical identity of the Turkish cities within the last half a century is the result of this cultural abyss. Those who claim of basing their politics on the traditional have not respected even a stone of the traditional environment*"[2].

The internal immigration stating from the 50s and 60s have resulted in the proliferation of the illegal "*gecekondu*"s (shanty dwellings) and the spreading of the 5-6 storey low-profile apartments throughout the city in the 70s. The "background" and "foreground" characteristics of the city and its buildings[3], described by Le Corbusier as "poetic", have deteriorated, and this duality has been completely wiped off around the 2000s, turning the city into an anonymous urban siluette similar to that of Hongkong. Meanwhile, an excessive number of controversial projects and construction of new high-rise buildings including but not limited to 5-star hotels erected in historical palaces' gardens, construction of disintegrated urban blocks, erecting sealed-off mass-housing, the loss of natural contours of the shorelines due to massive coastal fillings, and changes in the rural character of the Bosphorus villages have been realized. İstanbul has now become a chaotic space, which has been invaded with ordinary buildings, motor vehicles and speculators at the turn of the millennium. Built in 1955, the Hilton Hotel, seemingly the modernist building in the city, which had been criticized at the time for damaging the siluette of İstanbul (Fig. 3), is now seen as an innocent venture when compared with the nearby skyscrapers, which were erected after the 90s and were litigated by the Chamber of Architects.

The liberal politics undertaken at the beginning of the mid-80s paved the way for new investments. Small – and medium-scale centennial industrial buildings along the Golden Horn were demolished to create empty and under-used parks. In fact, traditional urban fabric of İstanbul was never in the form of grandeur squares of the west with extensive axes leading up to large buildings dominating these voids. The destructions of Tarlabaşı- an old residential area in Pera district – and the opening of new boulevards have led to loss of historic urban fabric and

[2] Kuban, Doğan. *İstanbul Ansiklopedesi*. İstanbul: Tarih Vakfı. 1995.

[3] Kortan, Enis. *Turkish Architecture and urbanism through the eyes of Le Corbusier.* İstanbul: Boyut Yayıncılık. 2005.

social changes as well. The loss of natural shoreline forms through the extension of roads on piles, the building of 1st and 2nd bridges on the Bosphorus in 1973 and 90s respectively have results in the expansion of the city along east-west axis parallel to the shoreline. Contrarily, with the opening up of new arterials based on the zoning decisions undertaken after 2010, as seen in some cities globally in 1960ies, consequent upon deliberate urban decisions, İstanbul has started growing towards north into the formerly agricultural and forested land that houses city's water basins and forests (Fig. 4). Besides 2 bridges on the Bosphorus, the 3rd bridge, whose construction has already started, along with the new mega-airport project can be considered as a sign of new transformations and development.

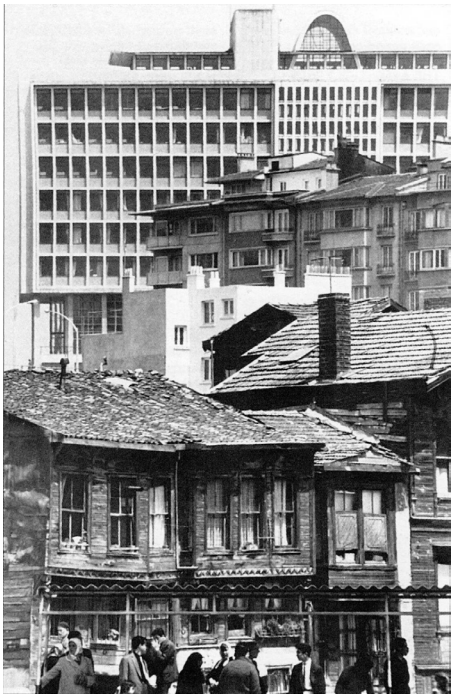

Fig. 3. *Structures of 3 different periods side-by-side-1960s*
Source: Yücel 1996.

Sustainable urban planning allows synergy to be developed between different functions, for example, business, research facilities and higher education establishments on a single site[4]. Besides its negative environmental influences, fast growing urban sprawl has brought about gross inefficiencies and disintegration from public transportation to the improper cultural and physical patterns added to the city.

The second oldest metro of the world was built in the Galata district in 1875. Later İstanbul had to wait over a century for the building of new lines. Lightrail metro, operating partially underground, was built in the 90s, but metro construction has basically speeded up since 2010. The reconfiguration of the city's transportation network after 2000, the operating of the new BLT system (Metrobüs) and new metro lines, the construction of undersea rail tunnel called "Marmaray" connecting the two continents have all accelerated the speed of transportation; however, the growth in population as well as the increase in car ownership and the insufficiency of the public transportation network have altogether turned İstanbul to a city faced with traffic congestion throughout the day. While the sea transportation along the Bosphorus, which lasts for about 15-20 minutes between the continents, includes also a recreational function, this was reduced to 90 seconds by filling up city's squares with metro stations, sacrificing the cultural-archeological remnants of the city. The process of moving between an origin and a destination, which provides the rider with special experiences, has turned to a mundane "transportation" activity, disregarding the spatial, symbolical and humane values of centuries.

[4] Gauzin-Muller, D. *Sustainable Architecture and Urbanism.* Italy: Birkhauser. 2002, p. 41.

Fig. 4. Forest, aqueduct and development of settlements
Source: Yücel 1996.

Current Architectural Activities in the City

> Istanbul, as Turkey's largest city and commercial capital, has for decades been the destination of a continuous national migration process. Istanbul's annual urbanization rates since 1950 have persistently exceeded 3 per cent, with a peak of 5.12 per cent annually during the 1970-1975 period, making Istanbul Europe's most rapidly growing city… The rapid urban growth of Istanbul is mostly spontaneous, without significant control by local or regional authorities, while there is also no serious metropolitan development plan…[5]

At present İstanbul continues to grow in tandem with contemporary dynamics, such as neoliberal policies, global capital and privatization of public spaces, similar to other metropolises that rapidly grow and transform. During this process there has been an extensive increase in the number of almost all building types in the city. Private museums, cultural centers and foundation/private schools – both elementary-secondary-high schools and universities – have increased rapidly. At the same time İstanbul has enjoyed the establishment of its Modern Museum of Art. Yet, it is hard to claim that increased number of events, such as concerts and festivals, have contributed to the embodiment and flourishing of high quality arts and contemporary culture.

[5] Naison Mutizwa-Mangiza & Iouri Moisseev (eds.). *The State of the Worlds Cities 2004/2005: Globalization and Urban Culture Report, United Nations Human Settlements Programme (UN-Habitat)*. London: Earthscan 2004, pp. 98-99.

After the 2000s the city witnessed an explosion in the numbers of housing, in particular mass housing and skyscrapers. During that period, city's new business districts were developed in Levent district between the junctions of 1st and 2nd Bosphorus Bridges. After the earthquake of 1999 and the crisis of 2001, TOKI (Mass Housing Institute), which was re-established to provide housing for low-income population, was directly appointed to the office of the Prime Minister, which resulted in its exemption from local inspections. Hence, the Institute was equipped with extensive authority including the changing of zoning ordinances and expropriations. This paved the way for the erection of numerous expensive skyscrapers and urban transformation. The concept of an urban fabric, which housed individual and fragmented residential buildings with gigantic malls scattered in-between instead of mixed-use boulevards and promenades, was encouraged. TOKI has built more than 500.000 residential buildings between 2001 and 2002. In spite of its initial assertion that its primary aim was to provide housing for low-income population, 30% of residences were geared towards affluent customers while the rest of the building stock were designed for middle-income population[6].

Along with the nomination of Istanbul for the 2020 Olympic games, the mega-projects planned for the city, such as the new mega-airport and the "crazy project", as announced by the Prime Minister, of cloning the Bosphorus to create a second Bosphorus between the Black Sea and the Marmara Sea, can be considered as the precursors of the disintegration of the urban fabric through a decision-making process dominated by the political framework, rather than a shared decision-making. The historic identity of the city is no longer considered a reference, but a generic background that can be bent randomly to create all types of organizations.

With the resources created, in particular the privatization of sectors, a "cleaning" operation was taken up within the city that led the way to the "beautification" of each district. Large complexes, particularly mosques, were restored recklessly. In the end, a "synthetic" environment dominated by real estate, images and prestige, and lacking any architecture and spatial quality. Istanbul, for which many songs and poems have been written in the past[7], no longer has such charming spaces and people.

With the urban regeneration legislation issued in 2012, certain parts of the city were demolished entirely and began to be re-built within a new approach. Much of the city's reality related to its development was erased; new and fragmented patterns were added instead. In this period of legal buildings without any place attachment, the illegal "gecekondu" (shanty dwellings), with its small-scale fabric embedded in its green context, can be considered as a relatively innocent and integrated structure (Fig. 5).

[6] Özbay,C.,Candan, A.B. 2*Yeni İstanbul Çalışmaları.* Metis Yayınları. 2014.

[7] Turgut, Hülya. "Normative Values and Their Cultural Roots in the Traditional Turkish House". *Traditional Dwellings and Settlements Review.* Vol. VI. No. II. Spring, 1995.

Fig. 5. *Which pattern seems illegal?- Building Blocks of TOKI, or Small Houses with Gardens.*
Source: the authors' personal archives.

Architecture Education and Development of Schools in İstanbul

At the 16th ENHSA Conference, Michael Monti, executive director of Association of Collegiates School of Architecture in Washington, stated that the total student enrolment in professional degree programs in the United States is 8% down from 2008 to 2012, and four-year Bachelor of Architecture programmes saw a 53% drop in applications[8]. The situation in Turkey, on the other hand, is just the opposite. Although the unemployment rate among architects is extremely high, as provided by TUIK (Turkish Statistical Institute), and low wages with long working hours, architecture is still one of the most preferred professions along with Law and Medicine. Consequently, there is an enormous increase in the number of schools of architecture and design, and the student enrollments, which is a significant paradox (Fig. 6).

[8] Monti, M. "Dealing with Change: For an adaptive, responsive, engaging and dynamic architectural education", in: C. Sipridonis & M. Voyatzki (eds.), *Dealing with Change: For an adaptive, responsive, engaging and dynamic architectural education*. Thessaloniki, Greece. 16th Meeting of Heads of European Schools of Architecture. 2014.

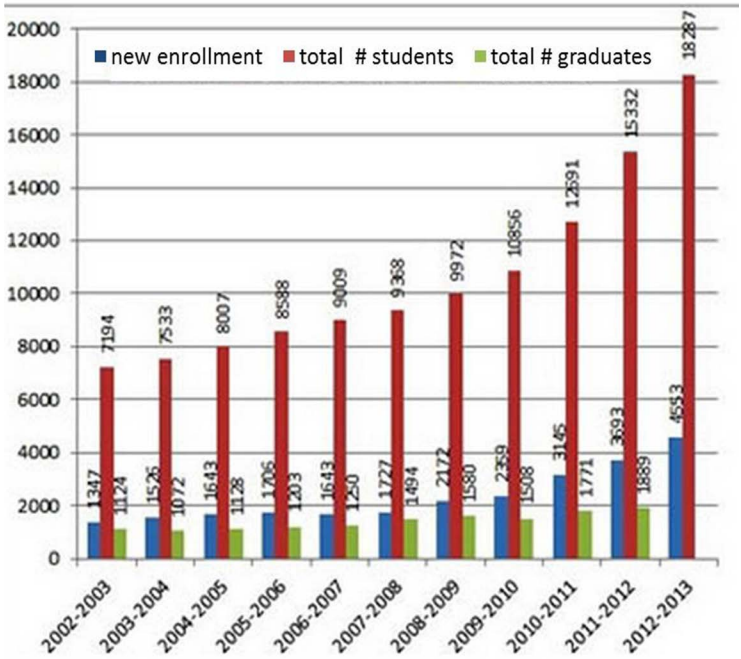

Fig. 6. *Data on student enrollments, total number of students and graduates of architecture schools in Turkey between 2002 and 2013*
Source: Akyüz Levi et. al. 2015.

Historical Development of Architecture Schools of İstanbul

Three Universities having Architecture Schools in Istanbul, which were founded in the first half of the 21st century, led to other architecture schools in Turkey. Following the beaux-art tradition, Sanayi-i NefiseMektebi (Fine Arts School) in İstanbul, which was established at the end of the 19th century, is the first formal school of architecture in Turkey, whose name changed as Academy of Fine Arts in 1927, and *finally as Mimar Sinan Güzel Sanatlar University*. Another school, where architecture was taught, was the Engineering School, named İstanbul Technical University after 1955. While the education in Fine Arts School was based on art, that of Engineering School was scientific and technical. In 1942, another institution, the Technical School, named as Yıldız Technical University in 1980, established an Architecture Program.

Till the mid 90s, there were only six state universities with architecture programs in Turkey, and three of them were located in Istanbul. With the establishment of foundation universities after this date this number started to increase. In 1999 three more foundation universities with architecture programs were founded. In 2005 the schools of architecture in Turkey were 36 in total, 9 of them in Istanbul. Their numbers increased to 44 in 2009, and more dramatically to 83 in 2013. In 2005 while the number of students was approximately 1937, in 2013 there has been an upsurge in enrolments in architecture schools with 5631 students.

Schools of architecture in İstanbul make up 70% of the entire schools of architecture in Turkey[9].

Transformations in Architecture Education

The rapid change in architecture media, tools, mobility, networking, new ways of design thinking (integrated, sustainable, system-based approaches, etc.), and continouos advances in technologies used (cloud-based technologies, new hardware-software and mapping opportunities, etc.) at an unprecedented pace creates another dazzling atmosphere in education and practice. Ted Landsmark, from Boston Architectural College, emphasised this reality in his lecture, in 16th ENHSA conference Dealing with Change: "The pace of change will never be this slow again... We need to figure out how to adapt to the exposure to absorption of, and reflection upon new data much more rapidly than we have been doing up to now. We are still too often followers of our students and clients in utilizing new data and data management resources now available to designers, educators, and planners..."[10]

Due to negative transformations of all cities in Turkey, as a natural reaction, the urban context has become major concern almost in all studios and courses. In order to develop architecture students' awareness and responsibility towards their natural and urban environment, integrating basic sustainable design principles, inclusion of urban into the curriculum widely may not be sufficient. In order to create an effective learning environment there should be a strong alignment between practice and theory.

It is a fact that learning environment is not restricted with the school. The main components of learning, students-professors and course content interact with each other in certain context, that is the environment in its widest sense. Research on environmental psychology or environment-behaviour studies, putting emphasis on the significant role of effect of environment on people and interactions between two, is not new[11]. This effect and interaction has become stronger for people preoccupied with the architecture and urban issues.

Rapoport asserts that the contexts or circumstances play an important role in the effects environment have on people[12]. Dynamic juxtaposition of the sprawled city's extremely disruptive physical- cultural-social/demographical radical patterns of change and growth, as a consequence of current neo-liberal policies, and aforementioned changes in architecture education and practice, increasing number of schools and architecture graduates, who unfortunately entitles to licence

[9] Küçükdoğu, M.Ş. "Mimarlık Bölümü Açılması ve Sürdürülmesinde Aranacak Asgari Koşullar Üzerine Bir Araştırma". *Mimarlık.* Vol. 374. 2013.

[10] Monti, M. op. cit.

[11] Altman, I., Rogoff, B. "World views in psychology: Trait, interactional, organismic and transactional perspectives", in: D. Stokols & I. Altman (eds.), *Handbook of environmental psychology.* Vol. 1. New York: Wiley. 1987, pp. 7-40; Rapoport, Amos. *The Meaning of the Built Environment*. Beverly Hills: Sage. 1982.

[12] Rapoport, Amos. *Culture, Architecture and Design*. Chicago: Locke Science Publishing Company, Inc. 2005.

upon obtaining their diploma in Turkey, technological advances in every field, and other global, political and eceonomic effects creates a dazzling atmosphere and a challenging medium. Such kind of drastic change does not allow for effective alignement and "creative adaptation", which occurs in slower change[13].

Architecture Education and the City

Questionnaires with open-ended questions were conducted with architecture students as well as academicians and experts from other disciplines to understand the perceived image of the city and to identify the extent to which urban transformation affects architectural education. When architecture students were asked about the first thing that comes to mind with regard to the word "Istanbul", the majority of replies focused on the city's historical identity and environmental problems. The findings of questionnaires demonstrated that architecture students were not informed of specific urban regeneration projects and applications except for the general information.70% of architecture students objected to the undersea rail tunnel under the Bosphorus (Marmaray), which is considered by experts as having negative impacts on cultural heritage. While they considered the amount of urban issues undertaken in the program curriculum as satisfactory, they pointed out the insufficiency of public transportation network and poor quality of cultural events as the key reasons for their inadequate degree of attendance to cultural activities in the city.

It is generally believed that crowded metropolises such as İstanbul affect the learning environment of architectural education positively. However, the findings from the questionnaires indicated that students were not able to exploit Istanbul as a learning tool or as an extension of their learning environment due to the current chaotic structure of the city and its transportation problems. The role of a non-inclusive development approach based on "doing", rather than widely discussion and participation, plays a crucial role in this lack of learning process from the urban space. Most academicians complain about their suffering from explaining legitimate concepts among various unsuitable architectural and urban decisions and ongoing destructive implementations in the city.

"*A sustainable city should allow as many voices as possible to be heard and as many values as possible to be represented…Citizens who are proud of the cities in which they live are a precious resource for any city*"[14]. On the contrary, the findings of interviews with İstanbulians of multiple professions show that: the Istanbulians barely get to know the new projects within the city through the real estate advertisements in the news and the ongoing construction projects around them. The increased number of books and publications on Istanbul reflect on the missing values of the city in a nostalgic manner. Prof. Reha Günay, one of the authors of these books, who shares with the views of many intellectuals, argues that İstanbul suffers from uncontrollable densities[15].

[13] ibidem.

[14] Voula, P.M. *Sustainable Cities for the Third Millennium: The Odyssey of Urban Excellence.* London: Springer. 2010, pp. 141-142.

[15] From the interview with Prof.Reha Günay.

Epilogue

It seems essential that, there should be strong alignment with the context and the components of learning environment, supporting each other consistently. The city is transforming constantly in a rapid pace. Meanwhile, in global context the dynamics of architecture education with all its components have undergone transformation dramatically. Changing of students' demands and their profiles, education technologies, learning materials and tools as well as the increase in mobility all create a dynamic environment that is hard to manage. This learning environment, lacking in mutual support of its elements (both in theory and practice), fails to create physical, cultural and economic sustainability.

"As material object,…the building should communicate to the human-as-embodied, to the body that learns about the physical world, and itself, through direct sensory experience of that world. If there is no 'higher' order, there is still, and always will be, this ontological one on which to ground architectural design"[16]. A city can be seen as "a seat of learning and a place for the meeting of minds"[17]. Containing many patterns, the streets and the buildings of the city, bringing people from different backgrounds, naturally, dwells various sensorial experiences, and major lessons about the issues of urban design or architecture. Architecture without any interaction with its context, however aesthetic it may be, turns into an unwelcome and non-didactic object.

[16] Susannah Hagan, Taking Shape. A new contract between architecture and nature Architectural Press, 2001, p. 79.
[17] Cliff Moughtin With Peter Shirley. Urban Design, Green Dimension, Architectural, 2005, p. 95.

RECLAIMING THE PAST: ADAPTIVE REUSE IN THE DESIGN STUDIO

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Introduction

Carlo Scarpa's remarkable *surgical intervention* in the medieval Castelvecchio in Verona (1956-1964) was considered for long the benchmark of contemporary creative conversions of historically valuable structures. Scarpa's meticulous principle of distinguishing his intervention from the existing fabric by applying contrasting materials, sensitively and sensuously, has inspired a generation of architects to this day. As more and more less prominent buildings are emptied from their original functions, however, and their preservation becomes an ethic as well economic and ecological imperative, architects are implementing alternative design strategies to respond to the challenging quest of adapting old structures for new uses. In the case of the conversion of the FIAT Lingotto factory, in Torino, Italy, Renzo Piano, for instance, re-interpreted the 1920s Giacomo Mattè Trucco immense and impressive automotive factory by leaving its exterior nearly untouched if not for the two space-aged accents that hover above its roof. Other architects opted for more visual bold moves while intervening in existing fabrics, such is the case of Günther Domenig in the Nuremberg's old Reichsparteitag building, or Coop Himmelb(l)au's Falkestrasse roof top addition in Vienna where the new additions seem piercing or colliding with the old. In the case of the Caixa Forum in Madrid, Swiss architects Herzog & De Meuron audaciously elected to lift the existing 1899 built power station off the ground by removing its base, giving the old structure a weightless feel and projecting it well into the XXI Century. In other cases, architects have selected to reduce the existing structures to their bare loadbearing skeletons, then wrap them with contemporary envelopes, which hardly, if at all, reveal traces of their past as exemplified by the work of Baumschlager und Eberle in the Münchener Rück insurance building in Munich. Challenged by adding spaces to existing structures, other elected the unusual and difficult path of building underground, such is the case of architect Claudio Lucchin's expansion to the Hannan Arendt high school in Bolzano, Italy.

But no matter the design approach, existing structures have provided architects with new grounds and constrains to stimulate the imagination and produce architectonic solutions that otherwise would have been impossible to invent. Yet, in general, schools of architecture have been reluctant to seriously address

the subject of adaptive reuse in their curriculum. This holds even more true in the United States where, for the most, considerations on existing buildings regardless of their age or historical value, are dwarfed by economic interests which place quick and unconditioned profits over the ethic aspect of conserving our built past as exemplified by the recent demolition of the John Johansen 1970 built Mummers Theater, lately better known as Stage Center, in Oklahoma City, or the razing of Tod Williams Billie Tsien American Folk Art Museum in New York by the insensitive hands of not less than MoMA.

Driven by a personal interest in the subject of adaptive re-use and in the unpredictability of design solutions that unmistakably rise from colliding programs, technologies and architectural languages, in conjunction with the desire to address the lack of interest usually found in schools of architecture on this branch of contemporary architecture, I have recently assigned to a 4th year architectural studio at Oklahoma State University an adaptive re-use project encompassing one of the most dear industrial buildings of Torino, Italy.

Foreword

Rapid changes in economical mindsets, spurred in part by the increase demands of technological innovation, led, in the early 1980's, to a rapid abandonment of existing turn-of-the-century industrial buildings. The migration of manufacturing activities to new landscapes left European cities in particular with an immense wealth of industrial areas emptied from their working forces, but now occupying strategic areas of the cities as these expanded towards the outskirts.

The Italian city of Torino, has been experiencing an urban transformation that has few rivals in Europe. For long the city was associated with its industrious past, which was triggered after moving the capital of the newly formed Kingdom of Italy from Torino to Firenze in 1864 in route to its historical setting of Roma. Emptied from the central government and of its role as a capital city, Torino found in the emerging industry, especially automotive and filmmaking, the grounds to re-invent itself. By the early XX Century Torino succeeded in becoming the Italian capital of such enterprises, of "two vanguard technology businesses symbolizing freedom of movement, traveling and imagination – in one word, modernity"[1].

The industrial *monoculture* infused, even if involuntarily, by the automobile industry in general and by FIAT in particular, meant that Torino's welfare and financial destinies were at the mercy of a sole industrial sector. When, in the early eighties, the automobile industry experienced serious hurdles, the city was in the verge, as in 1864, of loosing its main source of employment, and possibly challenged with social, economical, and political unrest if such withdrawal would take place. To counterattack such scenario, the city administrators embarked on an ambitious program of urban transformation and on initiatives that would diversify the city's economic core.

[1] *Torino at Work. From Post-War Reconstruction to Economic Miracle.* Torino. 2006.

Fig. 1. Interior view of the OGR in 2006
Source: Alessandro Aimo.

Context

One of the catalysts of Torino's transformation was the adoption, in the mid-nineties, of the master plan developed by Milanese firm Gregotti Associati International. Taking inspiration from a proposition dating back to 1887 and known as the Borgata project, the new master plan proposed the interment of that stretch of the Torino-Novara-Milano railroad line which, if on one hand had connected Torino to the Italian east and to the automobile and train factories within the city, it had inexorably divided the city, alienating the historical center from the urban development to the west. The construction of a six plus kilometer long underground bypass, currently on its final stage of completion, was perhaps the most ambitious part of the master plan. Its execution has not only *stitched* the urban wound, but has also supplemented Torino with two million square meters of public land bordered by an immense wealth of once in force industrial buildings, among which is the former Italian State Railway overhaul plant known as the Officine Grandi Riparazioni delle Strade Ferrate, or simply OGR. Built in the mid 1880s, for about a century the OGR conditioned the urban and social development of its surroundings. By the 1980s, however, the repair workshop had become obsolete and closed down. With its two essentially identical 48.68 by 183.06 meters rectangular buildings, parallel to each other and connected by a lower building almost of square proportion, it stands now, dormant, within the core of Torino's urban re-development.

Fig. 2. Interior view of the OGR in 2006
Source: Alessandro Aimo.

With perhaps the exception of the Lingotto, the OGR is the industrial building that the people of Torino love most. If, on one hand, the love affair towards the building has been unmistakably transmitted by those that once worked in those natural light filled spaces to their children and grandchildren, on the other hand, it reached broader followers by means of extensive media coverage due to its location at the heart of one of the most remarkable sites of Torino's rejuvenation program, steps away from Gregotti's expansion of the Politecnico, the 2013 inaugurated high-speed train railroad station of Torino Porta Susa, designed by Paris-based Italian architect Silvio d'Ascia in collaboration with French firm AREP, Renzo Piano's December 2014 completed 166 meter high Intesa Sanpaolo office building, and less than two kilometers from Torino's historical center.

It was in these moving and emotionally charged, but immensely silent spaces of Torino's OGR that the adaptive re-use explorations in the design studio took place.

Process

As I began shaping the studio project, I came to the realization that, unlike the *Torinesi,* my students would have no emotional ties to the OGR. What steps needed then to be taken to transmit the *Torinesi'*s passionate responses to a student body for the most born and raised in the heart of the United States and

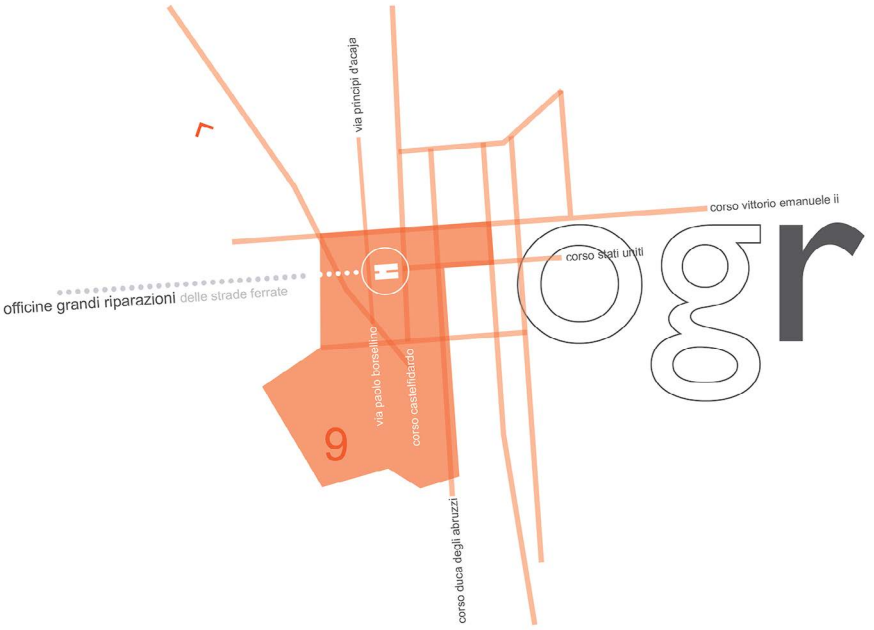

Fig. 3. An example of the slides created to introduce the project
Source: Paolo Sanza.

one that had been barely, if at all, exposed to the complexity of historical and urban fabrics? What pedagogical strategies could be adopted to make the learning journey simultaneously appealing, memorable and provocative? I soon disregarded the idea of a traditional site analysis. The information that the students would have presented would not have differed very much from the one I would furnish with the project brief and my presentation of the OGR, its immediate context and the city of Torino. It was a must, however, that the students would assimilate as much as possible an understanding of Torino, its history, territory, culture, traditions, and people. The answer, thus, could relay only on developing a clever program for the OGR, one that could stimulate deep, yet potentially unexpected, research into the thousand facets of Torino.

In March 2002 the Divisione Settori Culturali (Department of Cultural Services) and the Settori Edifici per la Cultura (Department of Buildings for Culture) of the City of Torino, in collaboration with the Architecture Department of the Torino's Polytechnic issued a *programma di intervento*, or intervention program, for the future use of the OGR. The plan recognized the importance of the OGR within its new urban context. The document recommended the creation within the OGR of a center for training and research on the contemporary city supplemented by new spaces for contemporary art with the aim that if the two structures would operate independently, they would nevertheless "jointly contribute to nurturing new ideas and practices for reflection on design, art, and architecture"[2]. In essence, the plan

[2] *Le Officine Grandi Riparazioni: un polo espositivo per la Città*, 2002.

called to transfer to the OGR those already established bodies of the City of Torino that were directly connected to the development and study of contemporary Torino such as the Urban Center and the OFFICINACITTÀTORINO, the creation of the Archivio d'Architettura or archive of architecture, charged with collecting Torino's contemporary records "connected to the design, construction and management of architecture and the city"[3] (*Le Officine Grandi Riparazioni: un polo espositivo per la Città*, 2002), and to provide for exhibition spaces for the extensive stored collection of renown Torino's Galleria Civica d'Arte Moderna e Contemporanea (GAM), creating at all effects of a section of the OGR a branch of the GAM.

If allocating part of the OGR to the study and dissemination of the contemporary city appealed to me, proposing to the students a(nother) museum did not conform to my strive for enabling students to discover Torino through a journey of meaningful research. In groups of five, for a total of six teams, I thus invited them to propose alternative program propositions to the expansion of the GAM within the OGR with an understanding that the new recommendations must have been rooted and spoke about Torino and/or its territory. In other words, as Torino emerged from a lethargic period thanks to an energetic city administration coupled with hosting the 2006 Winter Olympics, what the OGR could accommodate in its empty halls to assist Torino's aspiration of being considered as a must stop of the international (contemporary) architecture pilgrimage? Each team solution would be judged, I stated, against each other in a formal presentation, and the frontrunner would have shaped the second part of the assignment. I made clear that no potential architecture solutions should have been developed or proposed for this phase, but just strong programmatic ideas well supported by research and studies, and presented in clever and convincing manners. No format for the presentation was suggested, even though digital media was encouraged. Alongside requesting proposals for the future of the OGR, I also instituted a second parallel research to facilitate the students' understanding on how to intervene in existing and historical buildings in a contemporary manner. They were to research two adaptive re-use projects, one of which to be taken from a list I furnished, and present the finding in a second formal presentation to the class using a multimedia software of their choice.

There is no doubt that the competitive character implemented in the assignment shaped positively the outcomes. Notwithstanding a harmonious atmosphere among the students, each group essentially secretly worked towards their propositions and on how best to communicate it. The results were fantastic. With perhaps one exception, the programs presented took indeed inspiration from intense and curious investigations on Torino in particular and on the Piemonte region, of which Torino is its capital, in general. They were supported by superb visual presentations ranging from interactive physical three-dimensional displays to clever and engaging PowerPoint(s), to web media, to video. The following summarizes the six students' infused programs for the future of the OGR:

[3] ibidem.

Sens-o-tory centered on exalting, celebrating and studying the senses and proposed a program that intertwined research and exhibition spaces. **synoptic.dev** focused on exploring how various form of communication define people and cultural societies. The idea rose from observing how in recent years Italy has embraced the new and unprecedented waves of various immigrant ethnicities. The City of Torino website, for instance, is concurrently published in seven languages! The OGR would become a center for (re)capturing the ideals of community and human interaction with the understanding that individuals learn, play, and behave differently as their journey through life projects them on different paths. **tent(to)** fostered, encompassed, encouraged, promoted, and displayed creativity made in Torino. The **centro di design culinario** capitalized on the extraordinary richness of Italian cuisine promoting the local flavors, traditions and inventions. The OGR would mesh experimentation, taste, display, and broadcast. Interesting enough, and without our knowledge, as my students were developing their proposal for a culinary and marketplace center, a similar project, Eataly, was being developed in the city's Lingotto neighborhood. Housed in another reclaimed industrial site, the Carpano Vermouth factory adjacent to the former Fiat Lingotto factory, Eataly aimed to celebrate regional and organic food by providing market places, restaurants, and education facilities. **gaa_galleria arti alternative** proposed galleries and center spaces for alternative art fields and for those art forms that are somehow transitory and emerged as a form of protest and dissent. **cinema_TO** exploited the fact that Torino was the birthplace of Italian cinema. If various historical events led to the migration of such industry to Roma, reclaiming cinema as a vital aspect of Torino and, indirectly, injecting life within the OGR, was the aim of this proposal. Within the OGR would find spaces for production and vision of independent and experimental film (students disregarded including an academic aspect within their program as a new film school had just opened in Torino).

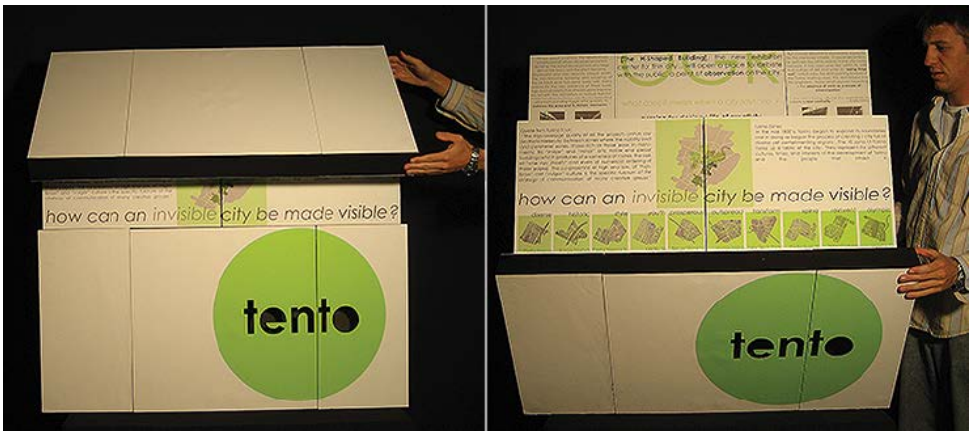

Fig. 4. A moment of the OGR program's presentation by team *O*
(Brad Bailey, Gus Chan, Alex Majkowski, Yoshiyuki Minagawa, Andrea Pratt)
Source: Team O.

Fig. 5. A moment of the OGR program's presentation by team *urban intersection* (Scott Goodner, Cale Lopp, Chris Phillips, Jennifer Robertson, Jarod Thompson)
Source: Team urban intersection.

Having reacted positively by the various program propositions, it was decided to forfeit selecting a sole proposition in favor of giving each student the opportunity to develop architecturally the program developed by their team. To their program, the OGR had to accommodate spaces for the Urban Center, the OFFICINACITTÀTORINO, the Archivio di Architettura, and spaces for a *design farm*, an incubator for newly established or small design firms. Hard, however, was forcing each group to develop a somehow detail spatial program of their propositions, perhaps in part caused by a developed anxiety on the fast approaching deadline for the project.

Notwithstanding the fact that the OGR had been placed in the historical building registry and its restoration had to follow the strict conservation regulations imposed by the Soprintendenza per i Beni Ambientali e Architettonici per il Piemonte, a government agency that responds to the Italian Ministry for Cultural Activities and Environmental Preservation, by no means this project's concern was about restoration. It was an exercise of adaptive re-use, an exercise of addition while retaining the flavor of a different epoch, an exercise in injecting new functions in spaces rich of memories, an exercise of juxtaposition of shapes and materials, and an exercise of immense actuality in the European city context. However, to avoid a possible alienation from the reality of reclaiming existing buildings for new uses, miscommunications about the exercise, and re-emphasize the importance of the existing structure, I implemented few constrains to the intervention. No demolition, for instance, of any of the exterior walls could occur unless needed to respond to safety or code issues. Part, or all, of the roofs and their structural components could be removed for vertical expansion, but the removed parts should have found storage within the OGR site. Zero lot line would govern the site allowing for expansion as needed. Height limitation was set to 100 meters, while no limitations were imposed on underground expansions.

Finally, with the intend to ship the results to Torino for a planned exhibit, paired with a personal obsession on alternative graphic communications and formats, the final presentation had to fit in a container of 62 inches (158 cm) maximum when totaling length plus width plus height, but with a height not to exceed nine inches (23 cm) and a weight of seven pounds (3 kg) maximum.

Avoiding standard presentation format of 20 x 20 inches or 20 x 30 inches boards liberated the students' expressive spirit and induced, at large, presentations more in tandem with the objectives of each propositions. The idea of *packaging* the presentation bore those fruits that I had hoped for: blurring the disciplines of design while promoting design challenges at various scales.

There is no doubt that the project presented various degrees of difficulties. If the students welcomed the novelty of the architecture investigation, they struggled in coming to terms with the OGR's size and the paradigm shift presented by creating architecture within architecture. Yet the almost surreal spaces of the OGR depicted by some of the provided photographs augmented in the students a sense of responsibility, respect, and obsession. Responsibility in maintaining as much as possible the original spatial and light quality of the repair shops, respect for what the OGR had meant for thousand of people who aged within its halls and the OGR role in shaping the social character of its surrounding neighborhoods of Borgo San Paolo and Cenisia, and obsession for creating an architecture that simultaneously expressed personal languages, be contemporary in nature, aggressive perhaps, but delicate on the OGR.

Despite my personal draw on the subject of adaptive reuse and my professional experience on the matter, it was the first time in my academic career that I assigned a project so intertwined with an existing and historical building. The pedagogical structure depicted for the project was untested, and while devising strategies for the students' development of the project, I wondered about the project's repercussions. Would, in the ingenuous minds of the students, the project perceived as bordering interior design and potentially as having limited or no value in their quest for future architecture employment? Would the project be too difficult for a first semester fourth year studio, considering that, at the time of assigning the project, our curriculum lacked a third year spring semester design studio? The quest for academic excellence, I believe, must find its seeds in experimentation and perhaps it needs to be accompanied by a bit of apprehension. The OGR adventure testifies it.

If, and obviously, there were differences in quality offered by the students' various architecture solutions, the class responded positively to the assignment and the talk of the project spread rapidly across the school. More often than not, students from different years would mingled among our studio, asking questions, looking eagerly on how the problem would be solved, and awe at the rustic beauty of the OGR. The OGR indeed touched the students. The project was an eye-opener for our students who are being raised in a society mostly disinterested in preserving buildings that shaped its making. They only lamented, and rightly so, the relatively short time allocated to the assignment.

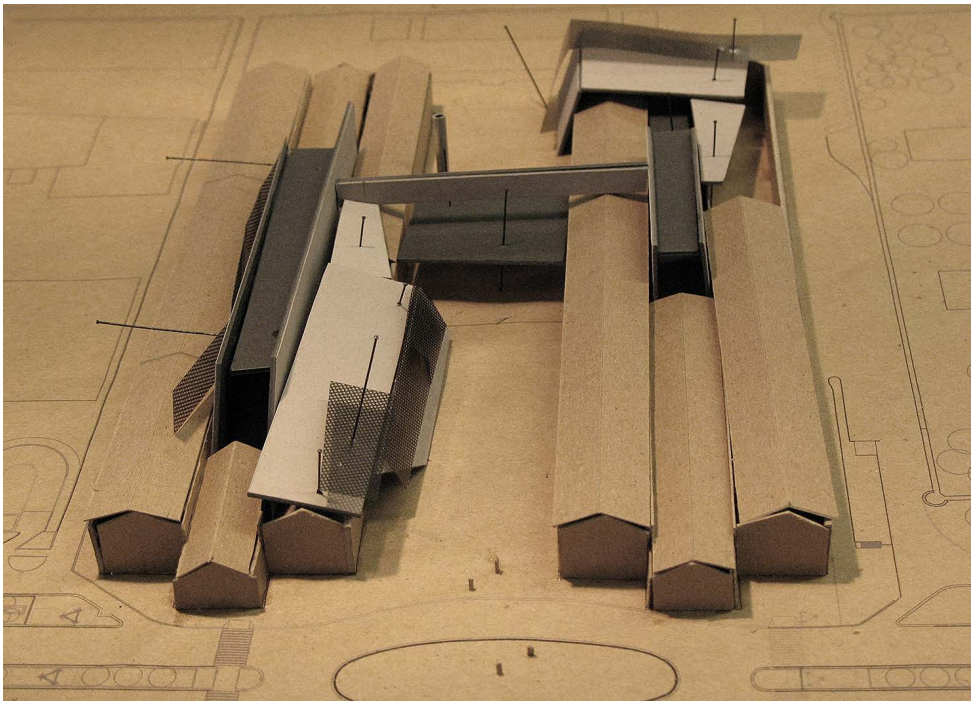

Fig. 6. Adaptive re-use proposition by student Chris Phillips
Source: Chris Phillips.

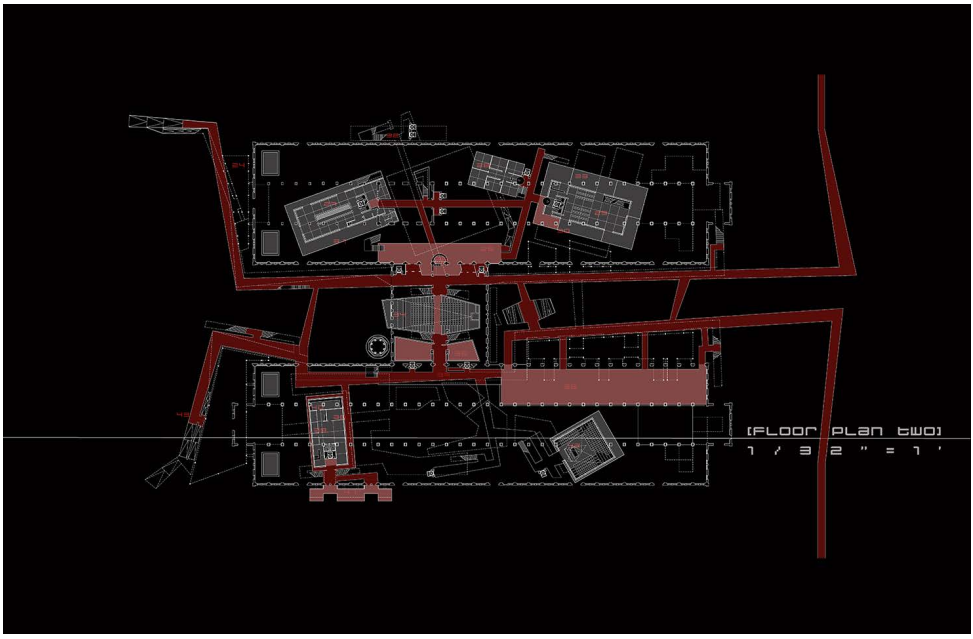

Fig. 7. Adaptive re-use proposition by student Scott Goodner
Source: Scott Goodner.

Conclusion

In our search for innovation in teaching, our concern on producing shocking (visual) results, and our fascination with technology and its ease in creating complex geometries, we have come to ignore the essence of the making of place(s). The history of the city, paraphrasing Philippe Robert's introduction to the book *Ristrutturazioni*, is the history of its successive stratifications, of the restoration of its monuments, and of those additions that still preserve the flavor of different epochs. Since antiquity, buildings have morphed to adapt to political, economical, and cultural changes. "To intervene on an existing building," continues Philippe Robert, "means to compose with it, to play with constrains that are in addition to the ones imposed by the program and regulatory agencies. But these are the constrains that stimulate the imagination and produce architectonic solutions that otherwise would have been impossible to invent."[4] The branch of adaptive reuse in architecture cannot continue to be ignored by the schools of architecture. It must find the deserved space within the design curriculum. Moreover, its own nature promotes meshing unmistakable various branches of humanity, art, and engineering, fostering, therefore, those multidisciplinary engagements that are avidly promoted by university's administrators, but that are sadly rarely entertained. The pedagogic possibilities of adaptive re-use projects are innumerable, and the educational journey memorable and possibly life changing as the time spent in creating possibilities for the Torino's OGR proved for both my students and me.

[4] Robert, Phillipe. *Ristrutturazioni, Nuovi Usi per Vecchi Edifici.* Milano: Tecniche Nuove. 1990. Original Italian text: Intervenire su un edificio esistente significa comporre con esso, giocare con vincoli che si aggiungono a quelli del programma e dei regolamenti. Vincoli che sono anche supporti all'immaginario e che permettono di sviluppare soluzioni architettoniche che altrimenti non sarebbero state inventate.

FIT OR MISFIT IN THE BUILT ENVIRONMENT

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Introduction

Since a discussion at the 2009 EAEA conference, the central theme of the EAEA is rephrased to the study of *Architectural Envisioning*. The subsequent conferences in Delft (2011) and Milan (2013) focussed in general on Envisioning Architecture, and specifically on Design, Evaluation and Communication. Now in Łódź (2015), the conference focus in on Envisioning Heritage. In this paper I will focus on terms and words as different factors in envisioning. The words bring connotations and immediately set a frame that limits and focuses our perception.

To be honest, at first I had great difficulty to match my research activities to this theme. Fortunately, the organiser of this conference, Anetta Kepczynska-Walczak, kindly convinced me that '*the definition of heritage is open and multifaceted, so I believe you will find your area within it or on the boundary or edge with other disciplines'*. This encouragement started my search to define 'heritage' and to come up with a number of comparisons to other approaches.

My working hypothesis for this paper is: the word 'heritage' already implies a way of looking at the subject matter, which is protective, this might hinder the open debate in many different circumstances and keeps alternative conceptions unconsidered. I cannot proof this hypothesis completely, but I pose that using the neutral term 'built environment' and the cultural broad and versatile term 'vernacular architecture' will be more useful in an open discussion regarding fit of elements from the past in a contemporary way, with an eye on the future.

Heritage, its valuation and characterization

Often, the debate on heritage -what it is and how we should deal with it- is larded with anecdotal and subjective qualifications. The World Heritage Centre publishes a list of criteria, such as *'to represent a masterpiece of human creative genius'*, *'to be an outstanding example of a type of building'*, etcetera. To be included on the World Heritage List, sites must be of outstanding universal value and meet at least one out of ten selection criteria[1]. The list deals with the extremes, the best and the exemplary. Being on or off the list is a binary decision with huge repercussions for local politics and related planning decisions.

[1] WHC – UNESCO, 2014, The Criteria for Selection, http://whc.unesco.org/en/criteria/

Visualisations of "Genius Loci"[2] and detailed descriptions about the concerned heritage artefacts let us better understand with what reasons and in what culture the artefacts were made. Such noted particularities are valuable and they valuate heritage in a broader sense and provide crucial insights to make decisions regarding our existing built and natural context.

However, heritage is in my view a quite encumbered word. It gives me connotations to words like protection, preservation, and fixation. Heritage is for a museum. In fact, we can find collections of heritage buildings, for example 'Den Gamle By', an Open-Air museum in Århus, Denmark. Of course it is extremely important to handle with care regarding historic objects and environments, but in my view using and re-using the parts and pieces of our built environment is the most sustainable way to deal with the past, present and future.

Built Environment

At the other side of the word-spectrum is a much more neutral word: *'built environment'*. This includes every built artefact and is open to many interpretations. While the heritage list evokes binary decisions (either on or off list), a neutral view on the built environment allows for rich and weighed modes of development, including destructive, protective, transforming and inclusive approaches towards existing objects.

The built environment is an amalgam of localities and connections, a maze, a jungle and an ecosystem… The built environment can be seen as an almost infinite composite of plans with partial local order, but with even more contextual disorder, breakpoints, borders, themes, exceptions, improvisations, interventions, juxtapositions and decay. The heterogeneity of the built environment is an obvious result from changing conditions over time. Growth, stagnation, war, climate change and innovation are just a few parameters that influence unique local developments. Nevertheless, we can determine structure, dimensions, scale, functions, building materials, ornamentation and e.g. style. Those aspects can be described precisely, they can be compared and they can be applied to areas on a map.

Whether or not a new plan suits (in) a specific (heritage) context is difficult to be determined. The previously mentioned heritage list and descriptions and advanced visualisations of heritage mainly focus inwards, onto the heritage itself, sometimes in a very protective way. Qualifications with an inwards focus onto heritage are difficult to use as criteria for the evaluation of appropriateness of new plans for a heritage site or for a neighbouring plot. Of course, one can determine if a new plan next to e.g. an important heritage site is either harmful or supportive for the qualities of that site. However, with the above mentioned aspects, (structure, dimensions, scale, etc.), a more objective judgement about fit or misfit of a new plan can be assessed.

[2] Kepczynska-Walczak Anetta, Walczak Bartosz. Visualising "Genius Loci" of built heritage, in: Envisioning Architecture: Design, Evaluation, Communication 11th Conference of the European Architectural Envisioning Association, 25-28 September 2013, Politecnico di Milano, Milan, Italy.

Vernacular Architecture

Between the loaded term 'heritage' and the neutral term 'built environment' there is the concept of *'vernacular architecture'* that brings a different precision and more diverse opportunities to discuss fit and misfit regarding built artefacts and their context.

Recently I participated in an edX MOOC (Massive Online Open Course) on Vernacular Architecture (HKU02.1x, The Search for Vernacular Architecture of Asia, Part 1). The developers of that course shed light on definitions of vernacular architecture, people, culture, climate, materials, construction and landscape. They use vernacular architecture to describe the past and the existing, but also threads and chances. My view is that vernacular architecture allows for maintenance of local qualities while formulating future steps, with an open view to re-interpretation, regarding new demands and technical / organisational innovations.

Fit or misfit Examples

From the previous part can be concluded that contextual appropriateness of new plans can be evaluated by using a set of more general and objective aspects, such as maps that show the local dimensions, scale, use, building materials etc. From those maps, conclusions can be drawn about e.g. continuity or differences in scale of the buildings in different adjacent neighbourhoods. Even with such a map of aspects, a 'fit or misfit' in the urban context, regarding a valuable heritage aspect, related to new developments, is difficult to discern.

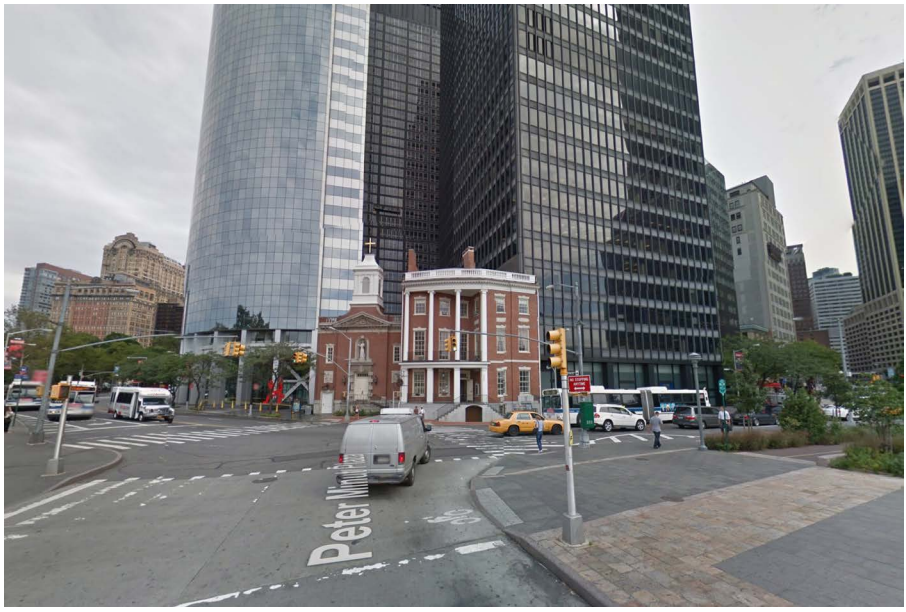

Fig. 1. Fit or misfit [scale, function, material]…: Church of Our Lady of the Rosary, 7 State St, New York
Source: Google Streetview.

No one can objectively tell if it is e.g. appropriate or not to make a huge change in height between an existing and a neighbouring new object. The 'fit or misfit' can however be evaluated regarding a concept or a list of principles. One can judge if e.g. an innovative façade cladding for a new building is in line with specific material requirements within the context of a typical medieval city centre.

In order to illustrate the wide range of possible approaches, I selected three totally different examples. These examples do not cover the whole field, they only slightly indicate a variety of possible mixes that are valued or disgusted by equally totally different people…

Figure 1 shows a confrontation of heritage with new high-rise developments in New York. Although there is a mismatch regarding scale, function and materials, there might be value in the strange juxtaposition of religion and profit (mammon).

Figures 2ABCD show typical Belgian stone-roads (steenweg) with totally unrelated buildings and free expressive individuality. Many more examples were shown and discussed in 'Archibelge, Het Lelijkste Land', a recent documentary film about the Belgian urban context. This spread of buildings is sometimes described with the term 'sprawl'. Local individual utopia's are combined along the straight stone-roads. There is no attempt to connect or adapt to neighbours.

Fig. 2ABCD. Typical Belgian Steenweg with eclectic mesh of residential and commercial buildings
Source: Google Streetview.

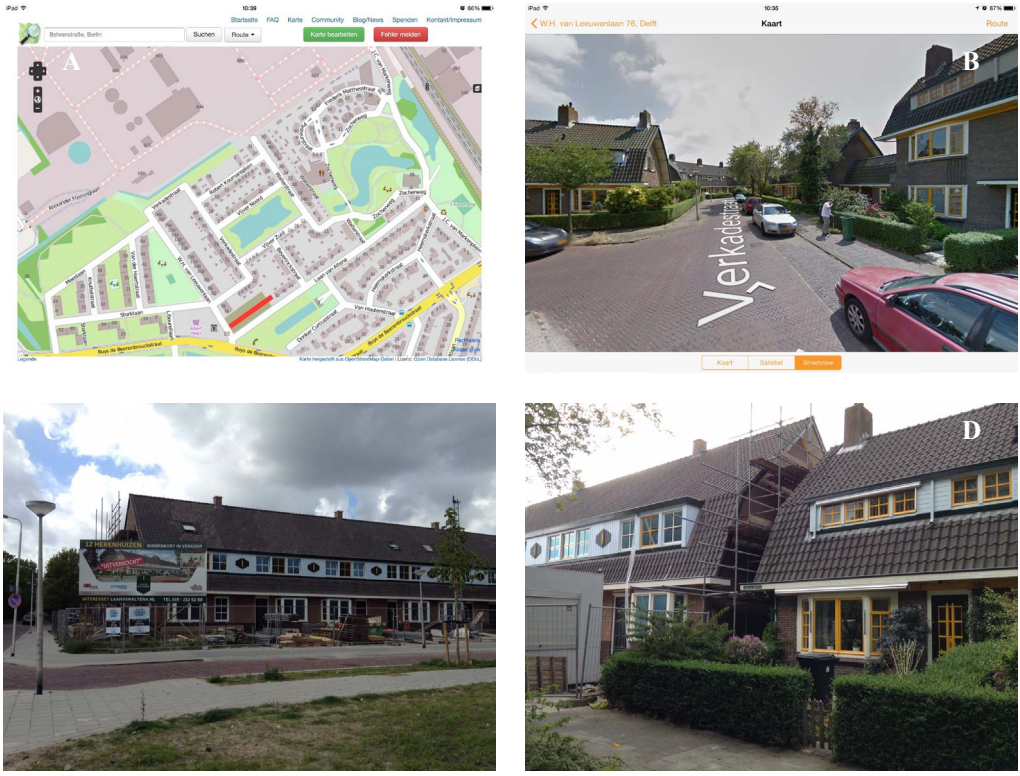

Fig. 3ABCD. Delft Agnetaparkbuurt, Laan van Altena
Sources: 3A: OpenStreetMap, 3B: Google Streetview. 3C&2D: M.Stellingwerff.

What is created is a unique collection of ever changing mismatches. In a way this is consistent and can be described as Belgian Vernacular.

Figures 3ABCD are total opposite. They are from the neighbourhood where I live, in Delft. The strange issue here is the extreme continuity, or to paraphrase Koolhaas, 'pseudo-authenticity…'[3]. We see beautifully ornamented labourer houses from 1924-1926. The whole area is protected via a heritage list and mentioned as valuable by UNESCO. Therefore twelve recent new added row houses were detailed in a similar manner, but everything a bit bigger, as if the building is on steroids. Of course these new houses follow new techniques and demands, but their appearance is from 90 years back. Probably this shows continuity in appreciation of the vernacular type and ornamentation. In my view it is a bit too conservative.

[3] Rem Koolhaas Interview. 'We Shouldn't Tear Down Buildings We Can Still Use' Interview Conducted by Marianne Wellershoff, Spiegel Online International, May 04, 2015 – 06:29 PM, http://www.spiegel.de/international/europe/interview-with-rem-koolhaas-about-the-fondazione-prada-a-1031551.html

Conclusion

The world is full of examples in which people take care for or neglect heritage. Many approaches are possible and many ways of reasoning appear valid in different occasions. Using specific words to describe situations can already direct towards certain connotations and perceptions. Our way of thinking depends on words and concepts. The word ‘heritage’ brings connotations to protection, while built environment brings a much more neutral view. The word ‘vernacular architecture’ opens up the debate about culture and is applicable both for valuation of heritage as well as for future approaches.

HERITAGE FOR THE FUTURE? TOWARDS AN OPERATIONAL DEFINITION OF HERITAGE IN HAY MOHAMMADI, MOROCCO

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Introducing Hay Mohammadi

Hay Mohammadi is an industrial, popular quarter in the periphery of Casablanca, with a rich and unique, but somehow disregarded history. Despite its importance for the development of the city since its early industrialization, the quarter has always been marginalized. Its big working class population made it a much feared hotbed for resistance, where several uprisings against the ruler – be it the French colonizer or the royal regimes – have emerged. Consequently, the main strategy for the quarter has been severe oppression. Almost symbolically, it housed the (in) famous detention center of Derb Moulay Chr'if, where political activists from all over the country have been imprisoned and tortured during the Years of Lead. However, Hay Mohammadi is known for more than its dark histories. At Morocco's independence, the quarter was immortalized as the place where King Mohamed V declared himself 'king of slums'. Ever since, the local youth takes a certain pride in its origins, and a pioneering cultural vibe sprouted from the quarter in the '60s and '70s. Now still, its music – and theatre groups are well known all over Morocco. As an epicentre of Moroccan history at different instants, Hay Mohammadi obtained a particular status in the country's collective memory. Though often perceived as a problematic area, it is equally appraised as a part of national identity – a double imagery that is no less present within the quarter itself. Today, the area is plagued by severe problems with drugs, violence and poverty, leading to its deteriorating image. Yet for many inhabitants, the quarter remains intrinsically warm, with the spirit of previous generations as a source of pride and hope.

While all of this contributes to a unique kind of 'immaterial' legacy for the quarter, Hay Mohammadi also contains a very different kind of heritage: the built patrimony of a complex neighbourhood. Originally home to a massive *bidonville* or slum, the quarter became a testing field for the development of modernist workers' housing during the French occupation. As such, a particular landscape was generated of mainly apartment blocks and a few specific *cités*, social centres and cinemas – modern and European in appearance.

While this was the scene upon which the social and cultural history of the quarter was played out, today there seems to be little physical valorisation of these places, capable of attributing them a certain importance or meaning. Yet this attribution of value is an active process. Jennifer Jordan reminds us that whether a place becomes heritage is largely dependent from the presence of 'memorial entrepreneurs' – "people writing about these places, advocating on their behalf, and envisioning them as instructive and deeply authentic"[1] – and of whether their work will be picked by a broader audience. As Johan Lagae states: "cultural heritage is indeed always a 'social construct'"[2] – and in the case of Hay Mohammadi, it is one still largely in need of being built up.

Current actors and strategies in Hay Mohammadi

Nevertheless, in today's Hay Mohammadi, these 'memorial entrepreneurs' are anything but absent. Throughout the last few years, a couple of individuals and organisations began to actively engage in heritage matters in the quarter. However, if we take a closer look at their current strategies, they seemingly fall apart in two categories, each representing a distinctive approach.

The first one is best represented by Casamémoire; an institution occupied with the protection of the city's modernist patrimony. After doing considerable work in Casablanca's city centre, they recently 'discovered' Hay Mohammadi's architectural heritage from that period. By integrating the quarter in their *journées du patrimoine* and by putting it on their architectural city maps, they seek to raise awareness about the importance of this built legacy. Through their efforts, some sites have acquired the status of protected patrimony, which opened the way (and the financial tap) for their maintenance. However, being new to the quarter and its specific character, the organization ends up without much consultation of the inhabitants, who are often stunned when they find their buildings to be on 'tourist' maps. Also, the lack of support from the quarter itself makes the implementation of concrete local projects especially difficult. Other projects coordinated top-down – the establishment of a museum in Derb Moulay Chr'if or the organisation of cultural events in the quarters' ancient slaughterhouses – then seem to face the same difficulties.

In the quarter itself, initiatives described above are rather unknown. Yet here heritage is dealt with too, be it in a more locally embedded manner. Many inhabitants of 'l'Hay' are eager to tell its history in words – not surprising, as Moroccan culture is largely based on oral tradition. Recently, this storytelling has taken some more 'established' forms. The quarter saw the emergence of a few specialised 'memorialists', documenting its history in books, blogs, and through

[1] Jordan, Jennifer A. *Structures of Memory: Understanding Urban Change in Berlin and Beyond*. Redwood City: Stanford University Press, 2006.

[2] Lagae, Johan. "From "Patrimoine partagé" to "whose heritage"? Critical reflections on colonial built heritage in the city of Lubumbashi, Democratic Republic of the Congo." *Afrika Focus*. Vol. 21. No. 1. 2008, pp. 11-30.

the spoken word. Drawing on these examples, the local NGO Initiatives Urbaines started to experiment with history as a way of educating and mobilising the quarter's youth. As such, they've used the local tradition of *halqa* – best to be understood as a popular and deeply locally rooted street performance – as an open platform for youngsters to express themselves.

Though in fact we see quite some initiatives concerned with heritage and history in Hay Mohammadi, we also trace a certain disruption in how external institutions and local inhabitants treat the matter. While the former are mainly concerned with space, the latter focus on stories. If then, a lot of sites have been re-appropriated and often unrecognizably transformed by the local users, their histories could still linger somewhere inside. Indeed, Hay Mohammadi's spaces have not lost their stories, they just don't explicitly tell them.

Towards a broader definition

This insight then leads to the main question of this paper. While some of the heritage initiatives in the quarter demonstrate a clear search for a new way of dealing with its specific heritage(s), an overarching and powerful strategy is still far off. However, we believe this situation can be read as an opportunity for the future rather than a problem. Unlike Europe, where an established culture of conservation and restoration predominates, the Moroccan context does not offer a pre-set solution. The case of Hay Mohammadi, with its rich colonial (European) patrimony drenched in local stories, offers an exciting testing field for a new understanding of what heritage is and how it could be dealt with.

If heritage in Hay Mohammadi is treated in a very fragmented way, this is not just due to a lack of communication and cooperation between the actors involved, but more fundamentally derives from their different viewpoints to what heritage is and should be. We therefore argue that this story might all together be read as a profound call for an innovatory strategy, one that firstly questions some existing pre-assumptions in defining heritage. As such, the purpose of this paper will be the shifting and broadening of heritage definitions now in use. In Hay Mohammadi, such a strategy could be put forward as a new and collectively carried project in a context where social problems overrule most forms of solidarity and – in this sense – as a potent leverage for the development of a whole quarter. Ultimately, we want to work towards a definition that is not only broader, but also 'operational' in providing a common ground for those concerned with heritage – in Hay Mohammadi and far beyond.

What heritage? Beyond the monument

As mentioned above, a fair bit of different actors is currently engaged with heritage and history in Hay Mohammadi. If Casamémoire comes to the forth as the most prominent one, we then must acknowledge how this not in the least derives from its particularly 'visible' approach. Focusing on a couple of selected buildings – mapping, documenting, and labelling them – the institution inscribes itself in

the urban space, literary *envisioning* the quarter's heritage potential. As such, they also show the clearest attempts for a definition of what heritage is and might be in Hay Mohammadi. Yet their understanding focuses almost exclusively on separated buildings and places as 'potential monuments', as valuable 'objects' to conserve. The danger then, is that sites will be cut off from their surroundings, losing their dynamical character and their once natural and logical connections with an ever-changing context. After all, as planned by the French urbanist Ecochard, the quarter was from the start intended as a "development that starts out as a rural formation and gradually becomes more urban in character."[3] In this organic and dynamic fabric, the selection and classification of separated buildings becomes all the more problematic.

Let's then have a look at the *Nid d'Abeille* and the *Sémiramis*, two French modernist housing blocks that once acquired worldwide fame after their appearance on the cover of the journal *Architecture d'Aujourd'hui*. Today, the profound changes and adaptions by their inhabitants have rendered them almost unrecognizable. As such, they not only form a striking example of local dynamics but equally demonstrate the difficulties in dealing with this heritage. For if a valorisation of these buildings would be interpreted as a classification, and a possible restoration of the building blocks, what would be the reference point? Can one let out the inhabitants' changes or did they become an inherent part of their history, and thus of their heritage potential? Another example could be the re-appropriation of the old *abattoirs* at the edge of the quarter. Here, an ambitious project was carried out to transform an old abandoned structure in a flourishing *fabrique culturelle* – a promising perspective for the largely forgotten Hay Mohammadi. However, whilst the *abattoirs* might have given the quarter some renown in the city, their audience turns out to have little connection with the urban area outside[4]. Local memorialist Mohammed Sakib offers a strong critique: "the *Fabrique Culturelle* has no spirit. While it should express the popular mind, it became a scene imposed from above."[5] Instead of constituting a fruitful leverage for the neighbourhood, the buildings turned out to be disrupted from the urban fabric they are part of.

Looking at Casamémoire's heritage map of Hay Mohammadi – a rather handy tool in understanding what is considered heritage today, and moreover the only one available – we then should remark how it covers only a very small part of the quarter's stories, histories and memories. From our conversations with inhabitants, we found that a 'mental' map of Hay Mohammadi – the places and spaces where people connect to these memories – would probably be much larger (if not covering the whole quarter). Here we recall a walk through the quarter accompanied by an inspiring inhabitant. Born and raised in 'Hay', and clearly proud to be an 'original',

[3] Avermaete, Tom, Casciato Maristella. *Casablanca Chandigarh. A Report on Modernization*. Zürich: Park Books. 2014.

[4] When we visited the *abattoirs*, a masterclass for youth was going on. When asked about Hay Mohammadi, people warned for its 'bad reputation', but knew little about it.

[5] Interview Sakib, Mohammed. 16.10.2014. Translated from French: „La Fabrique Culturelle n'a pas d'esprit. Elle devrait exprimer les avis populaires, mais elle est devenue une programma imposé d'allieurs, d'en haut."

Nabil shows us the streets where members of famous music bands grew up, areas that once where huge *bidonvilles* or sites of big *halqa* performances. When talking to the man, one can hardly question that – at least for Nabil – these spaces, as well as their stories are truly 'heritage'. It is important to notice how he doesn't speak about certain buildings or sites, but about places, streets, neighbourhoods and the stories that unfold upon them.

All together, the context of Hay Mohammadi then gives us the ammunition to express a first and crucial critique on a 'classical' definition on heritage. The examples given show the importance of losing the common focus on separated buildings, or – as noted by Corten in a recent guidebook on heritage and spatial planning – going "from an object-orientated procedure to a spatial approach"[6]. Indeed, these concerns are not at all new, but inscribed in a larger and today almost commonplace understanding of cities as complex entities of ensembles, trajectories and interactions, rather than a compilation of buildings. In his study on colonial patrimony in Lumumbashi, Johan Lagae explicitly links these conceptions of 'urban ensembles' to notions of heritage. "What is needed is not only a documenting of architecture through factual descriptions and visual material" he warns us, instead arguing for an approach "that allows for re-situating buildings in their changing urban and broader political-cultural contexts, while simultaneously linking them to the subsequent urban societies that occupied and experienced these spaces"[7]. One can question if such an approach for, say, the *abattoirs* could not have led to a more integrated project, offering opportunities for a much bigger area.

As such, we want to build further upon the arguments of Lagae and Corten. Though some places in the quarter might clearly have the potential to comprise a long and complex history in one space or building (for instance the old detention centre), others could rather function as 'memory keepers' in a much looser way. Here, also a whole neighbourhood or urban construction can bear meaning without becoming a candidate 'monument'. How then, to understand those spaces and what can be their role? Lagae calls for "alternative ways of documenting the architecture and urban form" […] "ways that seek to establish meaningful but sometimes complex relationships between built fabric, history and memory."[8] However, there is no ready-made answer on how to put this in practice. Corten refers to something similar, pushing his 'urban structures' into 'urban landscapes'. What he means is the transition from a morphological structure to a scape or 'substratum'. This way, connections should be readable between the present and the past, on different levels and not necessarily through objects or 'materialities'. As a "combination of immaterial continuity and spatial change"[9], they could bear historical value ánd strong dynamics. If their practical use is again little explained, they definitely offer an interesting exercise, bringing us at least one step further towards a broader definition.

[6] Corten, Jean-Paul a.o. *Heritage as an Asset for Inner City Development. An Urban Managers' Guidebook*. Rotterdam: Nai010. 2014.
[7] Lagae, Johan. op. cit.
[8] ibidem.
[9] Corten, Jean-Paul a.o., op. cit.

Whose heritage? Implications of a (post)colonial history

In Hay Mohammadi, questions of 'what' heritage do not only regard the scale of the heritage considered. In a quarter built by the French coloniser and meant to house an indigenous population, they should also be asked in relation to 'whose' heritage. With the quarter still inhabited by an overly Moroccan, but ever growing and diversifying population, the issue is still valid and pressing. As the most visible heritage actor in Hay Mohammadi, Casamémoire and their strategies have a big influence on how these matters are dealt with. By paying (growing) attention to the quarter's patrimony, the organisation at first sight escapes Lagae's critique of repeating a colonial discourse by forgetting the immense production of the so-called *cités* in favour of the architecture of the former ville européenne[10]. However, it is their *method* of valorisation itself that still seems to hold some colonialist pre-assumptions. Firstly, on the maps they compose, all the buildings selected are there because of their French origins. But, while these colonial city planners indeed designed the grid on which most of the quarter grew, local history has equally produced narratives to refer to. Surprisingly enough, a building like the old detention centre is not to be found on the map. Though not explicitly linked to the colonial discourse, it nevertheless is a symbol of a major chapter in the quarters' history.

Furthermore, the omnipresence of the French constructions was not as self-evident as it appears from the work of Casamémoire, and by extension from other contributions on Hay Mohammadi in some well-known volumes on Casablanca[11]. Local memorialists and Casamémoire point out how residents often boycotted the new French buildings, by collectively refusing to move into the houses and hence showing that they 'did not need the French'[12]. When local inhabitants eventually relocated into these building blocks, they managed to transform them almost beyond recognition. Consequently, as symbols of the inhabitants' own dynamism rather than of French ideals and design, the old modernist blocks are today very little considered 'heritage' by their dwellers.

Of what then consists the heritage of Hay Mohammadi? From Bernard Toulier, we take up the idea that the colonial patrimony might no longer belong to those who built it, but to those who inhabit it.[13]. Or, it is up to the inhabitants what production should be valorised and transmitted to future generations. Not that French buildings cannot be considered heritage anymore, but they will be for reasons other than - or additional to- their colonial origins. Remarkably, local memorialists repeatedly mentioned the old *bidonville* – the one zone of the quarter not planned by the French- for its heritage value. Historian Najib Taki considers it "the real heart of the quarter, where it once originated and grew" and "an important *bidonville*,

[10] Lagae, Johan. op. cit.

[11] Avermaete, Tom, Casciato, Maristella. op. cit. & Cohen, Jean-Louis; Eleb, Monique. *Casablanca: Colonial Myths and Architectural Ventures*. New York: The Monacelli Press. 2003.

[12] Interview Taki, Najib. 15.10.2014. Translated from French:

[13] Toulier, Bernard, Pabois, Marc (eds.). *L'architecture coloniale. L'expérience française*. Paris: Institut National du Patrimoine. 2005.

where king Mohamed V declared himself king of slums"[14]. As it faces destruction in a national slum sanitation program, it is clear that the formal characteristics of the area cannot provide us many arguments for conserving it as it is. However, if inhabitants put this particular area forward as heritage, they implicitly challenge monumentalising and conservation as the only possible heritage strategy in the quarter. In that sense, the *bidonville* shows the tension between a 'European' and a local discourse. For its users, the *bidonville* does not derive its importance from its spatiality as such, and is thus not a monument in the classical sense. Instead, it matters as an urban space with a unique experiential value and as a carrier of stories and memories – a layer of meaning that lies 'over' the spatiality of urban ensembles.

Where a strategy of monumentalising might (at least partly) be adequate in the Casablancan city centre, the peripheral Hay Mohammadi – in a constant process of adapting to its new needs, pushed by the conditions of a quickly growing, modernizing city- asks for a different approach, yet to be developed. Lagae hints in that direction, when he states "caution should be exercised when establishing the frame of reference used to define the selection criteria of what should be documented in the first place"[15]. Indeed, what inhabitants put forward as worth being valorised, plays at a whole other level than what European or multilateral organisations pick up. Lagae then points at the social sciences and more specifically at the work on urban memory as important inspirational sources. Referring to Hélène Lipstadt, he reminds us at "the need to address not only the tangible but also the intangible aspects of built form"[16].

More specifically, we want to point at the nature of the interrelatedness of tangible and intangible, material and immaterial aspects. The local tradition of *halqa* forms a quite literal example. As an act of performance, it is immaterial but "needs a big space and becomes a fixed spot"[17]. The immaterial needs the space and in turn gives connotation to the place. As such, the main boulevard in Hay Mohammadi is remembered to be transformed every Sunday "into a space of cultural performance and expression […]"[18]. Here, space is merely the background on which the stories are or have been played out. It is not bound to its physical characteristics, but proves itself able to take in urban change and processes. The same comes forth in a conversation with Jamal Nassiri, director of the old youth centre: "Oh yes, this is a very old centre. It is city heritage!". When we state that this is exactly our interest, he rapidly clarifies that "this is not architectural patrimony. It's cultural"[19]. He tells about the athletes, actors and musicians that grew up here and got their

[14] Interview Taki, Najib. 15.10.2014. Translated from French: „Le vrai coeur du quartier, son origine et la place d'où Hay Mohammadi est devenu grand" „Une bidonville très connue, où le Roi Mohamed V s'est declaré le roi des bidonville".

[15] Lagae, Johan. op. cit.

[16] Lagae, Johan. op. cit.

[17] Interview Sakib, Mohammed. 16.10.2014. Translated from French: „la tradition de halqa a besoin d'une grande espace et devient un endroit fixe."

[18] *The Casablanca Abattoir's culture factory : story of a transformation*. Casablanca: Sirocco. 2014.

[19] Interview Jamal. 14.10.2014. Translated from French: "Oui c'est très ancien ce centre. C'est la patrimoine de la ville". "Pas du patrimoine architecturale. C'est culturel!"

first music lessons. Remarkably then, this building –today quite demoded and underused- still proves to be able to figure as a spatial hinge for stories, persons and actions to be remembered.

Talking about heritage in Hay Mohammadi, we gradually move towards a definition where material and immaterial aspects are related in a specific way. The apparent opposition between material and immaterial divides current heritage actors in two 'sides' and thus obstructs an overarching strategy. Yet this opposition is indeed perceived. Space is interwoven with its stories, but at the same time maintains a certain degree of 'looseness' in terms of its formal characteristics. Approaching heritage in this sense is the opposite of freezing buildings in their current (architectural) state, where one supposes that only the exact same spatial context is able to absorb a certain meaning. In the context of Hay Mohammadi, many stories are circulating but many of them are not to be caught in one spatial counterpart. If this is mostly because space is inherently inscribed in a dynamic of constant change, how then to translate these memories spatially in such a context? According to us, the answer lies not just in considering its space as a dynamic given, but even more in doing so for its histories. Therefore, we will argue for one more step in our construct of a broader definition: the passage from stories to 'operative memories'.

Operative heritage? The dynamics of memories

Classical examples of the translation of memory in spatial terms – placards, monuments, tombstones, etcetera – are situated mainly on the 'object'-side of space and hence do not work on the scale of 'urban ensembles' as discussed above. Yet these approaches do not fundamentally differ from the classification and restoration of buildings. They too aim to define in an absolute way, be it not a certain form but |a memory. Jennifer Jordan reminds us that a memory is remembered and retold as "an active process of sense-making through time"[20] – one that evolves along with the population of a given context. By denying the much needed dynamics of memory, heritage risks to lose its potential for the present. Especially in Hay Mohammadi, with all its social difficulties, processes of change should rather be adopted as a fruitful paradigm for memory. Ultimately, we want to re-interpret memories in such a way that their spatial translation can actually 'serve' the quarter, its inhabitants and local dynamics.

As a counterexample we study the Red Location Museum in Port Elisabeth, South Africa – an area recalling Hay Mohammadi in many aspects. The museum was built to commemorate the Township as a centre of resistance to apartheid. The architects sough to inscribe the building in its context, creating a "stunning interior [that] also invites reoccupation"[21]. Yet the community reacted disdainfully: "Why build a house for dead people when us the living do not have a roof over our heads?"[22]. Though the architects' intent sure was innovative, the translation of

[20] Jordan, Jennifer A. op. cit.

[21] Le Roux, Hannah. "Architecture from the frontline." *Domus*. No. 7. 2008, pp. 44-50.

[22] Unknown author. *PE residents force anti-apartheid museum to close.* http://www.news24.com/

memory by means of a museum proved not satisfying in this context. The 'frozen' memories of apartheid did not manage to generate a spatial production that fits the current and future state of the quarter. For Hay Mohammadi, that equally has to deal with a revolutionary legacy, this example provides some valid lessons. What is needed is not an exclusive focus on that legacy itself, but rather the facilitation of a collectively carried out project for the quarter and its future. If then, this project can be 'revolutionary', this must be understood as empowering and self-conscious rather than disrupting or subversive. Exploiting this argument, we can draw a parallel with the case of the 'Congress of the People' in South Africa. Here, a dusty piece of no-man's land in the Soweto Township became the stage for a mass popular meeting set to launch the South Africa Freedom Charter in 1955. Today the site has been intensely redeveloped. Hannah Leroux writes how the result - paved, renamed, and with a cenotaph marking the document's signature - "now conveys an image of monumentality and permanence that overwrites the ephemeral nature of the original event"[23]. In short: the power of the event back then disappeared in the memorialization of today. From Jordan, we recall a division of heritage strategies in two extremes: "the total erasure or forgetting and the total memorialization or marking of historical sites"[24]. While the examples given might seem more nuanced, they do indeed put a lot (if not too much) emphasis on the built project itself and on it being a literal, complete reference to the considered events. How then to escape this temptation of 'over-memorializing', whilst not slipping into a negation or even erasure of a site's past? Here, a wonderful prospective is offered by memorialist Mohamed Sakib. His proposal for the installation of a *halqa* garden on the site where soon the last *bidonvilles* of Hay Mohammadi will be erased, tackles the perceived oppositions between spaces and stories, the colonial and the indigenous, the static and the dynamic, with a most elegant ease[25]. Of course it considers only a part of the quarters heritage potential, but it clearly points out some crucial 'extensions' of our understanding of what precisely heritage is and could be. Remarkably, the focus is not on the remembered legacy of past *halqa*-spectacles in the quarter as such, but on the construction of a space that allows a similar social dynamic – be it literally as *halqa,* or as a re-interpretation of the concept. Spatially then, the project is not obliged to carry references to the *bidonville* that it replaces, but again is hoped to re-enact the social coherence and feeling of unity the place stood for. The project looks back, but equally projects into the future. History is remembered in an active way, by providing the quarter with a new and most welcome social space. While this dream is far from being realised, it embodies an inspiring model of what could be possible in Hay Mohammadi.

SouthAfrica/News/PE-residents-force-anti-apartheid-museum-to-close-20140731 (accessed 29.02.2015*)*

[23] Le Roux, Hannah, "The Congress as Architecture: modernism and politics in post-war Transvaal." *Architecture South Africa*. No. 1. 2006, pp. 72-76.

[24] Jordan, Jennifer A. op. cit.

[25] Interview Sakib, Mohamed. 16.10.2014. Translated from French.

Conclusion

By considering the case of Hay Mohammadi we have attempted to develop a broader definition of what can be considered heritage and how it can be dealt with. First, we took the step from objects to urban ensembles, hence proposing a less itemized and more embedded way of selecting heritage. Second, by listening to local voices and considering their way(s) of treating questions of memorialisation we went beyond a purely spatial conception of heritage. We deconstructed the perceived opposition between material (spaces) and immaterial (stories) forms of heritage and instead described the specific entanglement between the two. Thereby we concluded that space does not act as an independent entity but as a carrier of stories. Finally, we pointed at the fact that neither the material – the spaces where memories are linked to – nor the memories themselves are static concepts. Only by taking their dynamic character into account, we can imagine a kind of heritage that would actually work in Hay Mohammadi – a context where change is an integral part of the spatial as well as the social construction of the quarter. As such, this study ultimately wants to reach out to all actors currently dealing with or interested in Hay Mohammadi's heritage. We hope it can form a stepping-stone for a common ground between all strategies and policymakers at stake, and that it might lead to some much needed, concrete actions in the future. However, we also hope it provides some more general insights, not in the least for other contexts where heritage is 'less evident'. Due to reasons of location – the peripheral and often underdeveloped outskirts of cities – or to particular histories – the difficulties of a colonial patrimony – a new and extended understanding of heritage seems much needed. Here, special attention should be given to local agencies, popular understandings of histories, and to more future and action-oriented approaches in general. When defined in an operative way, the unexpected potential of heritage becomes evident. In these little valorised contexts, it outgrows its own existence. Instead, it becomes a relevant spatial and social project for the future.

URBAN VOIDS AS COMMUNICATION GAPS

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Introduction

The study is an attempt to analyse the influence of urban voids on a low level of public awareness of Lodz nineteenth century heritage, which has little cognizance even among the residents of the city. Apparently, the problem lies in post war clichés and in the present bad opinion of the neglected city. Semiotic research apparatus[1] is used to describe and explain communication difficulties in recognising the architectural heritage (sign) by the inhabitants (interpreter).

Lodz urban heritage – 19th century multicultural industrial cityscape

Recently, some chosen parts of Lodz, representing 19th century multicultural industrial cityscape, have been awarded the title of the Monument of History appreciating its national heritage.[2] On the other hand, the surveys conducted for the City Hall show that the citizens do not identify themselves with the city and they have a negative attitude towards Lodz. In consequence, they do not feel responsible not only for their heritage but also for their urban space.[3]

The negative approach seems to be a consequence of 45 years lasting communistic policy and propaganda. Additionally, for fifty years, from 1939 to 1989, there was no investment in public housing[4], no renovation or technical modernisation. Before the war Lodz was designed in accordance with the 19th century European architectural standards of a big city. Private investors made it a well-formed industrial city with numerous cherished parks, beautifully ornamented tenement houses and residential palaces. Although it was not ruined during the war, the communists managed to convince the newcomers that Lodz has nothing to offer since it is a grey, polluted city with many factory chimneys[5]

[1] Semiotics of architecture analyses buildings that constitute a consistent system of signs, selected as an object of study. – Pelc, Jerzy. *Wstęp do semiotyki*. Warszawa: Wiedza Powszechna. 1982, p. 337.

[2] Łódź – wielokulturowy krajobraz miasta przemysłowego. http://www.zabytek.gov.pl/Zabytek/szczegoly.php?ID=270 (accessed 04.03.2015).

[3] Lodz City Council Resolution no LV/1146/13 – appendix: *Strategia przestrzennego Rozwoju Łodzi 2020+,* p. 3.

[4] After the nationalisation private tenement houses functioned as cheap, overexploited, communal houses.

[5] Lodz City Council Resolution, op. cit., p. 38.

being the most characteristic feature of the cityscape. Capitalism was condemned and so was its cultural heritage. Such a process of negation and deterioration of the past achievements is described by practitioners of cultural studies: "Space is not only the current message, but the lasting memory of society. [..] One of the forms of struggle in the sphere of culture, i.e. in the space of a symbolic nature, is a mandatory request of forgetting certain spatial elements and forms"[6].

Twenty four years after the collapse of textile industry Polish visitors and students who come to Lodz have in mind the stereotype of the neglected city without any heritage worth seeing. During the transition period Lodz has lost 120 000 inhabitants and is the only big city in Poland suffering from depopulation.[7]

The conducted analysis tries to find an answer to the question why the inhabitants can see all the ugly elements in the streets and are not able to notice the previous beauty of the city, its streetscapes, magnificent textile industry complexes, and residences.

On the basis of my teaching experience it is assumed that the students and new residents coming from small towns and villages do not understand their urban surrounding, because they do not know the language in which it has been "written". They do not understand modular organisation, street patterns, materials and tools for design. The task then is to provide them with the necessary knowledge and skills used for making meanings.

Streetscape as a message

Architectural approach to the cityscape

The field of architecture was defined two thousand years ago by Marcus Vitruvius' Triad of Architecture i.e.: *firmitas* (durability), *utilitas* (usefulness) and *venustas* (beauty)[8]. This Triad can be extended to the art of building cities in three corresponding categories: form, function and quality.

The classical architectural approach to the city is visually oriented. Since majority of our cognition comes from the sense of sight[9], therefore the landscape – a visual image of the city – is dominant in architectural consideration. Other sensory scapes of the city: soundscape, smellscape, touchscape, tastescape are deliberately omitted in the study.

The domain of architectural design are buildings and building complexes. As for the urban design, it is assumed that, the basic unit and the smallest object is the urban interior – e.g. a square, an alley, a street. Consequently, the landscape of the city is treated in this study as an assemblage of streetscapes.

[6] Jałowiecki, Bohdan cited in Rewers, Ewa. *Post-polis. Wstęp do filozofii ponowoczesnego miasta*. Kraków: Universitas. 2005, p. 185.
[7] Szukalski, Piotr. „Depopulacja dużych miast w Polsce", in: *Demografia i Gerontologia Społeczna – Biuletyn informacyjny 2014 nr 7*. Łódź: Uniwersytet Łódzki, 2014.
[8] Witruwiusz *O Architekturze ksiąg dziesięć*. Warszawa: Prószyński i S-ka. 1999, p. 32.
[9] Gehl, Jan. *Cities for People*. Copenhagen: Island Press. 2010, p. 33.

The streetscape is constituted by all visual elements of a street and is defined as the open space bounded by walls of adjoining buildings, by its flooring i.e. roads, sidewalks, lawns and finally, by its celling, i.e. a visible part of the sky. The interior of the open space may be equipped with various street objects, e.g. street furniture, trees, ads. All forms that constitute the street character are public good. In other word, public realm contains all outdoor places and built form elements visually accessible from the street regardless of the ownership. As a result, the streetscape is created by many authors.

Reading the cityscape

Recently, the cityscape, has been treated as a cultural text that can be recognised and "read". This approach is based on the assumption that language is the semiotic model revealing principles that can be applied to other sign systems. Reading the city is like reading a palimpsest[10]. Each generation imposes another layer of text on a scraped place. The city becomes a message informing not only about form and function of the material objects, but also about factors determining them, specifically: time, phenomena, forces. In other words, it is possible to "read" about past and present processes such as industrialisation, deterioration, depopulation, social and economic development etc. Thus, the metaphor of the palimpsest combines in the description of the city current and historical contexts of its development.

To "read the city" we have to assume that the cityscape is a formal system of conventional architectural signs. Additionally, we can distinguish three readable subsystems of urban space (streetscape) namely: space physiognomy, architectural costume and information vesture of the city.

Space physiognomy is designed of surfaces, openings, lines, points. It is an urban composition built with elements such as facade walls, fences, street furniture, flooring, trees, etc.[11]. which define space character. It may be, for instance metropolitan, provincial, suburban, or rural.

Architectural costume consists of layout and detailed shape of solids, tectonics and elements of its façade, architectural style, colours, materials, and technical condition. Through these components architectural form transmits its purpose and function, symbols and archetypes, hierarchies and prestige[12].

The term **information vesture of the city** is used to cover formal administrative and road markings, informal and non-formal captions and images. Name plaques, signs, pylons, showcases, maps, advertising poles, storefronts, billboards, graffiti, and many others constitute information vesture. Their function is to notify and to regulate.

These three subsystems precisely define Lodz cityscape as metropolitan, multicultural, industrial in the past, and presently post-industrial.

[10] Rewers, Ewa. *Post-polis. Wstęp do filozofii ponowoczesnego miasta*. Kraków: Universitas. 2005, p. 22.
[11] Wejchert, Kazimierz. *Elementy kompozycji urbanistycznej*. Warszawa, Arkady. 1974, pp. 127-160.
[12] Basista, Andrzej, Nowakowski, Andrzej. *Jak czytać architekturę.* Kraków: Universitas. 2012, pp. 152-251.

Community oriented urban researchers suggest that an additional subsystem of "reading" the city is its life[13]. Elements such as crowd, movement, interactions, strollers and other urban figures, their fashion and vehicles – do not meet the Vitruvian principles of durability. Thus, this category goes beyond classical architectural approach and it will not be developed in this study.

Semiotic approach to the cityscape

Charles Sanders Peirce (1839-1914), an American philosopher and logician used a term, "semiosis" to refer to the process of making meaning through the formation of signs and symbols. For Peirce, the process of semiosis had three indispensable elements: **the sign**, which stood for an object; **the object** that the sign stood for; and the **interpretant**, understood as the cognitive connection between the sign and its object[14].

His follower, Charles W. Morris claimed that symbols have three types of relations: **syntactic** relation sign–sign, **semantic** sign–and the object it refers to, **pragmatic** sign–and the interpreter. Hence, semiotic analyses are conducted in three branches, namely Syntactics, Semantics, and Pragmatics[15].

It can be assumed that cityscape is a complex, multilayer system of physical signs by means of which people communicate and interact with their environment. Consequently, from architectural point of view syntactics is the branch of semiotics that concerns itself with the relationship between signs as they co-exist and interact within a formal structure, such as a language or a city. Thus, it is presumed that urban syntactics deals with a coherent sequence of signs of the build environment and describes the pattern of the street and relations between the elements of a given pattern. Semantics associates a building and its function by adopting Ludwig Wittgenstein's definition that "the meaning of a word is its use"[16]. Therefore, a revitalised factory building may have two meanings: past *cotton mill* and present *hotel*. Pragmatics deals with the relation between the build environment and its user. Architects and urban planners design information in a format allowing the users to decode it, so that a spatial continuum becomes obvious. This relation can be rewritten as **sender/designer → sign → receiver/interpreter**. To avoid misunderstanding and difficulties in defining the concept of sign the term "semantic entity" proposed by S. Ossowski may be applied in this analysis. By "semantic entities" Ossowski means "material objects which have a semantic function: denoting, representing, or meaning. Each of these functions may be an attribute of an object only with respect to someone's intention"[17].

[13] Gehl, Jan op.cit., p. 198.
[14] Pelc, Jerzy. *Wstęp do semiotyki*. Warszawa: Wiedza Powszechna. 1982, p. 69.
[15] ibidem, p. 318.
[16] Wolniewicz, Bogusław. „Elzenberg o «Dociekaniach» Wittgensteina", in: Pelc, Jerzy (ed.), *Studia Semiotyczne tom XXIV* Warszawa, PTS, 2001.
[17] Ossowski, Stanisław. „An analysis of the concept of sign", in: Pelc, Jerzy (ed.), *Semiotics in Poland*. Warszawa, PWN, 1979, p. 164.

Cityscape pragmatics

The ability to read the cityscape as a "written text" is associated with the notion of **semiosis**, i.e. the process of signification. An identical understanding of symbols by a social group is called **monosemy**. An opposite concept is **polysemy**, i.e. a variety of diverse understanding of symbols by different social groups. "An example is the reverse «reading» and understanding of anthropogenic and natural space by the inhabitants of towns and villages. For the previous ones a town is full of meanings and senses, as opposed to semantically empty forest. For the latter a forest is full of meanings and in a semantically empty city «there is nothing»"[18].

To understand the surveys conducted for the City Council, the analysis should focus on the streetscape. It seems that Lodz inhabitants do not identify themselves with the city due to numerous urban voids in the build environment even in the very centre of the city. They are areas converted into uninhabited, insecure, unproductive, ugly places, unchanged for the decades. Two groups of residents can by distinguished. The first group consist of individuals being the *n*-generation of the city residents, for whom the technical functionality, social and cultural quality of the city and its heritage is of great significance. However, they seemed to be frustrated by the frequent ugly urban voids in the streetscape. The second group are the newcomers from small towns and villages, for whom the cityscape is not homely and sometimes it is even hostile. Therefore, in their opinion, tenement houses are hovels to be demolished.

Wasteland typology

Landscape architects enumerate greenfields waiting for urbanization, brownfields and greyfields vacant to reurbanisation, and roofs in properly built-up areas as the wastelands. Roofs located above eye-level, invisible from street level do not constitute the streetscape. The greenfield in the depopulating city, like Lodz, should be protected against destructive development mainly by peri-urban agriculture. The subject of this study, however, is the built environment. The quest for "reading" the cultural heritage should be focused on gaps in urban fabric, belonging to the city but lacking the physical and mental content, called **urban voids**.

Reading the urban void

"The voids of the city are spaces which disrupt the urban tissue, leaving it incomplete and throw into question the use of those spaces. Sometimes called urban ruins, they are at the limit between private and public space, without belonging either to the one or to the other" [19].

Typical causes of urban voids are as follows: **phenomenological** (wars, acts of terrorism, natural disasters), **functional** (change of use, abandonment, de-industrialization), **geographic** (physical obstacles in the land forms and land

[18] Rykier, Zbigniew. „Szata dezinformacyjna miasta", in: Jałowiecki, Bohdan; Łukowski Wojciech (eds.), *Szata informacyjna miasta.* Warszawa, Scholar, 2008, p. 137.

[19] *Parole – a dynamic dictionary of the contemporary city.* http://aporee.org/parole/work/hier.php?spec_id=5430&words_id=410 (accessed 24.09.2014).

cover)[20]. Some urban planners[21] add to the list **faulty planning** voids which are the results of design errors, or defective planning process. I would add to this category abandoned construction sites, unfinished projects, undervalued, without idea for investment nor maintenance financing.

If we assume that a streetscape in a city landscape is an equivalent of a sentence in a language, urban voids – interior islands without activity – are like missing words in a sentence or utterance. For instance, sentence [1] may be interpreted as [2] or [3].

[1] *John is ea… (cough) to please.*
[2] *John is eager to please.*
[3] *John is easy to please.*

Superficially, it seems that the hearer does not know the meaning of [1], but he/she knows the structure of it. Nevertheless, it is only the first impression because his/her linguistic competence assigns two different syntactic descriptions to [2] and [3]. Their internalised grammar tells them that [2] is active but [3] is passive, its structure is much more complicated and it is rewritten as *It is easy for X to please John.* [22]

Thus, a strange, ugly place in the structure that should be organised, i.e. the disrupted urban continuum along the street cannot be decoded. An interpreter has trouble in finding a proper element fitting the gap, and in imaging space physiognomy and/or architectural costume. The gap itself, i.e. an urban void, is interpreted as a sign of a decay, deterioration, and abandonment. Pragmatic relation, which in case of streetscape should be evoking positive aesthetic feelings (Vitruvius' *venustas*) is disturbed and the evoked feelings are negative.

Restoring readable articulation of the streetscape. The limits of long term development and necessity of interim landscaping

Lodz revitalisation project and its limits

Local administration strategy for a further urban development assumes[23] that Lodz should grow according to the rules of sustainable development i.e. within the city to achieve a compact city structure and to restore the balance between the centre and the peripheries belt located in the present city proper[24].

City Council resolution on a development strategy for Lodz from 2013 to 2020 divides the city into three concentric zones: inner – historical urban centre,

[20] Rojas, Andrea. *Urban Voids in Medium Size Chilean Cities*. http://vagueterrain.net/journal13/andrea-rojas/01 (accessed 04.05.2014).
[21] Narayanan, Nipesh P. *Urban Voids & Shared Spaces.* http://nipppo.wordpress.com/2012/05/07/urban-voids/ (accessed 04.05.2014).
[22] Chomsky, Noam, Aspects of the theory of syntax. Cambridge, Massachusetts: MIT Press. 1965, p. 22.
[23] City council resolution, p. 6.
[24] City council resolution, p. 14.57% of Lodz population lives in the historical urban centre and the contemporary urban centre, which constitutes only 1/5 of the city proper area.

middle – contemporary urban centre within the ring of city railway, and outer-peripheral urban area. An organised inner zone restoration is planned for the next EU perspective and is supposed to prevent further decay of the 19th century urban fabric. It seems, however, that Lodz has too few investors and little money to restore its heritage completely and to build quickly all the necessary infill which is promoted as an economical use of existing infrastructure and a successful remedy for urban sprawl.

Re-urbanization, and revitalization is proposed only for the downtown in the northern part of the city centre. Unfortunately, it is not enough to solve a problem of underinvestment and numerous voids since the project will not be able to cover all the needs.

Legal basis for temporary land use and interim landscape

The study proposes interim streetscapes and temporary land use to solve the problem of underinvestment, urban voids, a lack of identification with the city resulting in depopulation and inability to attract newcomers.

According to the Polish Construction Law and Planning Law three main types of temporary landscaping can be distinguish. Firstly, temporary fences, construction works and buildings. Temporary construction is defined as intended for use in a shorter period then its technical lifetime. Secondly, the temporary land use, defined by zoning which specify the manner and timing of interim land use other than target one. Thirdly, continuation of existing land use where the zoning changes the type of use. Nevertheless, the area can be used in a previous way until the implementation of the target land use or till the technological downfall. Other two types of temporary landscaping can be distinguish, namely, the abandoned land waiting for investment and also abandoned, started in the past, and unfinished projects.

Temporary fences and construction buildings are getting to look better but the last two types of vacant land are not controlled and the most harmful for the quality of the cityscape. Therefore, investment in cheap, quickly achievable green infill for urban voids to improve the streetscape, seems to be inevitable, if the City Council wants to change the damaging stereotype.

The pictures [Fig. 1-3] may serve as a precise illustration of numerous urban voids suitable for temporary renovation by means of provisional urban infill e.g. any type of urban horticulture. It would be enough to grow any kind of green cover for walls or/and fences to arrange in public open empty space tiny vegetable or flower gardens and mini playgrounds for the children. May be on a smaller scale than in Lodz, but the problem of urban voids pertains to many European cities. Recently, a kind of residents movement to do something with disused plots of land is visible. In my opinion, the best example of good practices in temporary land use is Glasgow Stalled Spaces Programme[25]. It gets the whole community involved in generating new urban uses for temporarily vacant plots of land, the number of which has increased due to the economic crisis. Filling the gap Stalled Spaces encourages

[25] Stalled Spaces. https://www.glasgow.gov.uk/stalledspaces (accessed 04.05.2014).

community groups to identify plots of land in their neighbourhood which could be temporarily turned to new urban uses. The city supports the community groups in 'borrowing' the plots from the landowners and creating projects ranging from children's play areas to communal gardens.

Conclusions

To sum up, it seems that many European cities, like Lodz still struggle with economic decline, lack of investment, surplus of post – industrial vacant land, and depopulating neighbourhood. The presented proposals of redevelopment alternatives i.e. green infill for urban voids seem to be an interesting solution ready to apply in different contexts, so that the urban continuum and national heritage become readable and, in consequence, appreciated. Other types of interim landscape are also needed to make the urban voids invisible and the cityscape attractive.

Fig. 1. Lodz, 35th Pietrusińsiego str. Termination of functions for technical reasons. The urban void adjacent to the Catholic and Protestant Old Cemeteries wall (on right), which are multicultural part of the Monument of History
Source: Wiktor Wróblewski, 2013.

Fig. 2. Lodz, Zachodnia str. Fault planning urban void – street widening by the front buildings demolition in the 60s. Opened backyards of the Piotkowska street, which is a key element and spine of the Monument of History
Source: Wiktor Wróblewski, 2014.

Fig. 3. Lodz, 250th Piotrkowska str. Termination of functions for economic reasons.
Post-industrial urban void being a part of the Monument of History.
Source: Wiktor Wróblewski, 2014.

Fig. 4. Lodz, Fabryczna 12 and 17. Termination of functions for economic reasons. The urban void adjacent to the Źródliska Park and Księży Młyn estate, which are significant parts of the Monument of History.
Two former cotton warehouses standing gate to gate, one adapted for the new function and other still vacant
Source: Wiktor Wróblewski, 2004 (top), 2014 (bottom).

DIGITAL TECHNOLOGIES AND THE EXPERIENCE OF HISTORIC BUILDINGS – CHOSEN ASPECTS[1]

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Introduction

> City planning becomes data structure design, construction costs become computational costs, accessibility becomes transmissibility, proximity is measured in numbers of required links and available bandwidth. Everything changes, but architecture remains[2].

Research and protection of historic architecture stands presently at a turning point. On the one hand, it still relies on methods and procedures that belong to the analogue era (for example traditional architectonic documentation), on the other, new tools that belong to digital times are implemented into research and protection[3]. Similarly, modern ways of perception and presentation in cultural heritage (with reference to the needs of presentation-popularization)[4] are twofold – traditional *in situ* presentations of architecture are still functioning, as are

[1] This paper refers to research carried out within the scientific project "Use of Laser Scanning and Remote Sensing in the Protection, Analysis and Inventory of the Cultural Heritage. Development of Non-invasive, Digital Methods of Documentation and Recognition of Architectural and Archaeological Heritage Resources" conducted by the Cardinal Stefan Wyszyński University in Warsaw as part of the "National Program for the Advancement of Humanities" established by the Ministry of Science and Higher Education in Poland.

[2] Novak, Marcos. "Transmitting Architecture: The Transphysical City". *Ctheory*, 1996 – www.ctheory.net/articles.aspx?id=76 (accessed 16.03.2015).

[3] Among others: *Karta Krakowska 2000 dziesięć lat później*, Kadłuczka, Andrzej (ed.), Kraków: Wydawnictwo Politechniki Krakowskiej. 2011; Kępczyńska-Walczak, Anetta. "A method proposed for adoption of digital technology in architectural heritage documentation", in: *Computer Aided Architectural Design Futures 2005. Proceedings of the 11th International CAAD Futures Conference*. 2005 – http://cumincad.architexturez.net/system/files/pdf/cf2005_1_23_170.content.pdf (accessed 16.03.2015), Kępczyńska-Walczak, Anetta & Walczak, Bartosz M. „Nowoczesne technologie w dokumentacji i interpretacji dziedzictwa architektonicznego", *Informatyka, Automatyka, Pomiary w Gospodarce i Ochronie Środowiska*, No. 1, 2011, pp. 4-6.

[4] For example: Kadłuczka, Andrzej. „Rekonstrukcja architektoniczna – realne czy wirtualne modelowanie rzeczywistości historycznej?", in: Krasnowolski, Bogusław (ed.), *Doktryny i realizacje konserwatorskie w świetle doświadczeń krakowskich ostatnich 30 lat*, Kraków: Wydawnictwo WAM–SKOZK, 2011, p. 209-223; Derwisz, Justyna. „Współczesne technologie multimedialne w wirtualnej rekonstrukcji oraz prezentacji historycznych obiektów architektonicznych". *Wiadomości Konserwatorskie*. No. 34, 2013, pp. 82-91.

new-media methods[5], such as *augmented reality* (acronym AR) or *body immersion*. In addition, characteristic for the post-modern society is the so called *iconic turn*, also described as *visual turn* and *pictorial turn*[6]. It is indicated by the fact that modern culture is more and more often expressed through images of various origin, including digital images generated on the basis of digital technology, created with different aims and to different effects[7].

The starting point in discussing the topic indicated in the title is the conviction of the usefulness of new technologies, conditioned by a constant control, analysis and tracking of results achieved with their help, especially such results that have been unexpected and unforeseen. This will allow, for example, to eliminate undesirable outcomes and to notice new possibilities for the protection and research of cultural heritage, as well as for its perception, evaluation and experiencing. This text is intended to provide ideas for the ongoing discussion and to provide a description of chosen positive and negative, aspects of the implementation of digital technologies in research and popularization of cultural heritage – historic architecture. This article is a result and a continuation of hitherto conducted research and scientific inquiries[8], with references to Polish literature of this subject; oftentimes, it does not provide clear solutions, but sets directions for research,

[5] The term „new-media" is used in adjective in line with the concept of Lev Manovich - Manovich, Lev. *Język nowych mediów*. Warszawa; Wydawnictwa Akademickie i Profesjonalne. 2006 (Manovich, Lev. *The Language of New media*. Massachusetts: The MIT Press Cambridge. 2001).

[6] More about this subject in: Jay, Martin. "Scopic Regimes of Modernity", in: Jay, Martin (ed.) *Forces Fields. Between Intellectual History and Cultural Critique*. New York - London: Routledge, 1993, pp. 51-63; Mirzoeff, Nichilas, "The subject of visual culture", in: Mirzoeff, Nicholas (ed.), *The visual culture reader*. London – New York: Routledge, 2002, pp. 3-13; Mitchel, William, J.T., *Picture Theory: Essays on Verbal and Visual Representation*. Chicago: University of Chicago Press. 1994; Mitchel, William, J.T. 2002, "Showing Seeing: a Critique of Visual Culture". *Journal of Visual Culture*. Vol. 1(2). 2002, pp. 165-181; Zeidler-Janiszewska, Anna, „Visual Culture Studies czy antropologicznie zorientowana Bildwissenschaft? O kierunkach zwrotu ikonicznego w naukach o kulturze". *Teksty Drugie*. No. 4. 2006, pp. 9-30; Zeidler-Janiszewska, Anna, "The anthropology of image and Bildwissenschaft as interdisciplinary project. Archeology in the transdisciplinary network". *Archaeologia Polona*. Vol. 44. 2006, p. 53-64; Zawojski, Piotr. 2008, „Jean Baudrillard i fotografia". *Kultura Współczesna*. No. 1. 2008, pp. 190-213 – http://www.zawojski.com/2008/11/06/jean-baudrillard-i-fotografi (accessed 16.03.2015); Pawleta, Michał, Zapłata, Rafał, „Nowomedialne kreacje przeszłości – przeszłość wizualnie zapośredniczona" [in:] Seidel-Grzesińska, Agnieszka & Stanicka-Brzezicka, Ksenia (eds.), *Cyfrowe spotkania z zabytkami. Reprodukcja cyfrowa zabytku –metody, wiarygodność, trwałość*. Vol. 4. Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego. [in press], pp. 179-189.

[7] Sztompka, Piotr. *Socjologia wizualna. Fotografia jako metoda badawcza*. Warszawa: Państwowe Wydawnictwo Naukowe. 2006, Zapłata, Rafał, „Obrazowanie przeszłości – wizualizacja w archeologii. Archeologiczne widzenie widzenia", in: Kluza, Maciej (ed.), *Wizualizacja wiedzy. Od Biblii pauperum do hipertekstu*. Warszawa, Portal Wiedza i Edukacja. 2011, pp. 238-247.

[8] Zapłata, Rafał, "Badania i modele cyfrowe zabytków architektury – wybrane zagadnienia", in: Seidel-Grzesińska, Agnieszka & Stanicka-Brzezicka, Ksenia (eds.). *Cyfrowe spotkania z zabytkami. Niewidzialne dziedzictwo*. Vol. 5. Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego [in press]; Zapłata, Rafał, „Zabytkowa architektura we współczesnym mieście – krajobraz miejski zmysłowo doświadczany. Wybrane zagadnienia prezentacji in situ historycznej zabudowy", in: *Krajobraz kulturowy*, Frydryczak, Barbara & Ciesielski, Mieszko (ed.), Gniezno [in press].

with the aim of reflecting about processes and phenomena from the crossroads of historic architecture and new technologies. The reason for driving inquiries into the above described direction lies in the need to describe and analyze factors which are not a continuation of hitherto prevailing activities. This attitude is based on the conviction that new technologies are not a typical, fluent transition to another stage of research, documentation, designing and presenting cultural heritage. They provide access to a new quality, which we, at its initial stages, try to define and understand within traditional, know to us terms. This is, however, impossible and we are forced to develop new methods of understanding modern phenomena.

In the analysis of phenomena that relate to receivers, users – not creators, of digital environments, replicas and models of heritage objects, focus will be on those aspects of modern technologies that have become widespread and commonly accessible and which are characterized by, among others, participation through the interface of a computer or mobile device. Phenomena connected with CAVE (Cave Automatic Virtual Environment) or *full body-immersion* will be placed in the background, as a more detailed description of them is too wide to be contained within this article.

Digitization of cultural heritage – new technologies and historic architecture

Architecture today must be a media suite[9]

Contact with historic architecture is currently experienced at least twofold. On the one hand we experience space, surrounding and surface of objects with our senses, through our bodies, in a static and active way, including movement and change of positions. On the other hand, we experience it with the use of various tools that serve as extensions of our bodies. The experience of shape, surface and the newly emerging environment is transmitted by more and more numerous electronic devices, both permanently connected with objects and mobile, used by us on a daily basis. Today, a new meaning is added to the statement that architecture should be experienced actively[10], whereby active cognition goes far beyond the physical, natural body and senses. Knowledge acquired through images, text and transmission is in the era of digital technologies enriched by data and experiences, the emergence of which we combine with digital models and replicas of objects, with their reconstructions (with regard to heritage objects) or, finally, with techniques that allow us to submerse in virtual reality (acronym VR) – the so called *body immersion*. This altered method of establishing connection with objects is not without meaning in the process of perception and interpretation of heritage,

[9] Ito, Toyo. "Image of Architecture in Electronic Age". *Interview Statement, Designboom* – http://www.designboom.com/eng/interview/ito_statement.html (accessed 16.03.2015).

[10] Rasmussen, Steen, E., *Odczuwanie architektury*. Warszawa: MURATOR. 1999, (Rasmussen, Steen, E. *Experiencing Architecture*, Massachusetts: Massachusetts Institute of Technology. 1959), p. 158.

which differs from traditional cognition[11]. Consulting the texts mentioned earlier in this article, we notice a differentiation between participation in and experience of material and intangible (virtual) architectonic spaces. It can be illustrated with research results that point out the difference in participating in and experiencing space in virtual reality. Those result show (1) contrasts in the definition of spatial organization of a building perceived (a) through a virtual model and (b) in reality, (2) discrepancies in the evaluation of time and intensity of experience as well as (3) the loss of meaning of such notions as "proximity" and "distance".[12] This leads to the conclusion that intangibility of virtual spaces, according to researchers, strongly weakens the perception of the organization of the form[13]. Thus, augmented and virtual reality do not add new objects to the existing world, but rather introduce new ways of spatial orientation, changing sequences of events that apply in the world of material architecture.

Once we realize the existence of the above described differences[14], we can see the meaning of digital relation to objects in an entirely new light. Actions carried out through VR cease to be identical with activities in the real world. This forces us to eliminate certain activities that represent real experiences – evoked by contact with material objects. In the context of the above analyzed circumstances and examples (more information about which will follow), the implementation of, for example, *augmented reality*, in public consultations raises the question about the role and meaning of analysis and evaluation conducted by the public (recipients of simulations and models) with the use of such means.[15] What is the subject of such consultations and, thus, what leads to the choice of a certain concept – a set of new media experiences that are not identical with the experience of real space?

Digitization (understood broadly – for example as a process of creating digital replicas of objects, digital visualizing and modelling etc.) is currently perceived as a necessity of contemporary times[16]. It has also been accepted and approved in processes connected with historic architecture. We document, investigate but

[11] Among others: Wartenberg, Fredrik, May, Mark, Péruch, Patric. "Spatial Orientation in Virtual Environments: Background Considerations and Experiments". *Lecture Notes in Computer Science*. Vol. 1404, 1998, pp. 469-489 .

[12] Asanowicz, Aleksander. „Systemy rzeczywistości wirtualnej w architekturze", *ARCHITECTURAE et ARTIBUS*, No. 4, 2012, pp. 5-12.

[13] Alvarado, Rodrigo G., Parra, Juan C., Vergara, Rodrigo L., Chateau, Hernán B. "Architectural References to Virtual Environments Design", in: *Proceedings of ECAADE'2000*. Weimar: Bauhaus-University Weimar. 2000, pp. 151-155 za Asanowicz, Aleksander, op. cit.

[14] Although those two situations are often treated similarly, basing on and argumenting with slogans like: „Modern technologies are tools just as a hammers is – they merely increase our abilities", after http://www.focus.pl/technika/technologia-uczlowiecz-9874?strona=2

[15] Konopacki, Jacek. „Rozszerzona rzeczywistość – jako narzędzie wspomagające procesy analityczno-decyzyjne w architekturze i planowaniu przestrzennym". *Przestrzeń i FORMA*. No. 21. 2014, pp. 89-108 – http://www.cs.unc.edu/~azuma/ARpresence.pdf (accessed 16.03.2015); Konopacki, Jacek, "The Technology of Augmented Reality – Virtual Reconstructions of Landscape Architecture Design". *Technical Transactions. Architecture / Czasopismo Techniczne. Architektura*, no. 5-A, 2014, pp. 97-112, https://suw.biblos.pk.edu.pl/resources/i4/i6/i1/i4/i3/r46143/KonopackiJ_TechnologyAugmented.pdf (accessed 16.03.2015).

[16] For example, new rules or standards for documentation emerge and „force" us to implement new technologies".

also present and provide access to heritage in digital form. This could be the shortest description of phenomena that have dominated several of our activities for the past years. This change has brought upon usually positive manifestations in the protection and popularization of heritage. It has, however, also a different side that is connected with a shift in our attitude towards heritage objects as such. What is interesting are thus experiences and ways in which we interact with objects that emerged trough the introduction of new technologies into our everyday investigations and cognitive processes, rather than the process and the product – a digital replica or a virtual model.

Historic architecture, preserved in various shapes, has gained in the last decades new tools for measurement and documentation, for analysis and diagnosis and for presentation. Those are, for example, terrestrial laser scanning, geodata and VR, AR, mixed reality (acronym MR). This assemblage of tools has been providing for several years now a basis for new methods of research, modelling and reconstruction, especially in the case of destroyed objects. Contemporary documentation and research practice introduces digital technologies more and more often already at initial stages, leading, unavoidably, to the generation of data that is of primary importance for further research. This situation gradually "accustoms" us to working with a digital, not analogous, set of data and with the necessity of using electronic tools. This change is seemingly unimportant. However, if we consider the numerous, earlier mentioned examples of research results, this change introduces a new quality, incomparable to the previous one, into our relations with objects. Simulations and animations designed on the basis of digital data create cognitively-analytic sequences that could not be obtained by any analogue methods.

In the modern world architects and conservators are equipped with new media devices. As part of their professional activities, they should also stimulate recipients and encourage them to act. The act of visiting or touring is performed in accordance with rules set by technology and the author, for example, virtually. Models and virtual replicas enforce particular, also interactive, activities that go beyond the traditional way of learning about heritage objects and require from users competence in new media. A characteristic trait of our culture is a multidimensional relation with an object during which the sequence structure of materiality is rejected. Virtualization introduces a new category of space – experienced space[17], filled, for instance, with quality information developed in a virtual environment or at the boarder of real and virtual environments. The currently dominating visual perspective – the perspective of a visualized shape and surface, in the context of the widespread multimedia devices, usually allows to relate to an object visually, more rarely engages hearing and still less often other senses. It should be added that movement – kinesthesia – takes a specific shape, different from the natural, because although it is included into virtual projects, it happens through a simulation of movement rather than physical movement as such.

[17] Borowska, Magdalena. „Doświadczanie architektury a problem przestrzeni", in: Wilkoszewska, Krystyna (ed.), *Czas przestrzeni*. Kraków: UNIVERSITAS. 2008, pp. 101-116 (105).

Literature turns our attention also to a different, negative result of implementing new technologies into the workshop of an architect – it can lead to emotions of future clients being influenced in a sometimes dishonest way[18]. A similar perspective is seen in the context of spatial planning[19]. Reconstruction and visualization of historic architecture can be also perceived from this perspective;the decision-maker, investor in the process of reconstruction (revitalization) is (or may be) *influenced* through the use of new technologies. The choice of a particular frame, a relativity of shape conditioned by the point of view etc. are elements that allow to *influence* the recipient – investor. According to Barbara Świt-Jakowska, visualization should be a guide book to the form and function of an object[20]; yet, evidence gathered through various case studies allows to state that, oftentimes, the addressee of spatial concepts is being manipulated.

If we agree with Piotr Zawojski that cyberspace defines to a high degree the logic in which real space is functioning, then cyberarchitecture, including digital replicas of heritage objects, defines to a high degree the logic in which physical objects are functioning[21]. The digital model, learned and "visited" first, determines the trajectory of learning about and experiencing monuments. It shapes the imagination about the space of a building and its qualities. Such a hierarchy of events in the cognition of objects is a natural consequence of the attitude we have developed towards investigated and visited monuments. A tourist precedes preparations, including reading, with consulting a guide-book or map and, nowadays, also a digital model available online. The so created new-media set of experiences[22], combined with a confrontation between the recipient and a real object, shapes in the recipient a new-media (and also a *mixed*) experience, which is a result of participation in the material and in the intangible reality[23].

The imagery generated with the use of new technologies is disclosed in heritage architecture also in the form of interventions – images projected on façades of buildings, called architectonic mapping, which *inscribe* an activity into a space[24]. Another example of inscribing actions into phenomena of contemporary

[18] Świt-Jankowska, Barbara. „Współczesne narzędzia pracy architekta, a jakość nowo projektowanej przestrzeni mieszkalnej", *ARCHITECTURE et ARTIBUS*, No 2, 2010, pp. 79-85.

[19] Konopacki, Jacek. „Rozszerzona rzeczywistość…"; Konopacki, Jacek. "The Technology of Augmented Reality…".

[20] Świt-Jankowska, Barbara. op. cit., p. 84.

[21] Zawojski, Piotr. „Czas cyberprzestrzenie", in: Wilkoszewska, Krystyna (ed.), *Czas przestrzeni*. Kraków: UNIVERSITAS. 2008, pp. 281-289 (282).

[22] Zapłata, Rafał, „Cyfryzacja w naukach o przeszłości – cyfrowe oblicza przeszłości", [paper presented at conference „Zwrot cyfrowy w humanistyce: Internet-Nowe media-Kultura 2.0", Lublin, 25-26.10. 2012] – http://humanistykacyfrowa.umcs.lublin.pl/nagrania-audio/ (accessed 16.03.2015); Pawleta, Michał; Zapłata, Rafał. „Nowomedialne kreacje przeszłości…", p. 187.

[23] For example, the description of experience and gathered information has a different character. We write about cities and objects that we have experienced through a sensual and practical effort of mind and a modified (electronic/digital) kinesthetic effort. After: Rewers, Ewa. *POST-POLIS. Wstęp do filozofii ponowoczesnego miasta*. Kraków: UNIVERSITAS. 2005, p. 14.

[24] Kluszczyński, Ryszard. *Sztuka interaktywna. Od dzieła-instrumentu do interaktywnego spektaklu*. Warszawa: Wydawnictwa Akademickie i Profesjonalne. 2010, p. 285.

culture connected with images is the omnipresent and common visualization (in a city, museum or private space), based on new media. It is a specific complementation of visual aspects of cities and objects. This three-dimensional image is set in the message transmitted from interfaces of permanent devices, connected with buildings, and of mobile devices.[25] The iconosphere of cities is built of digital images. A pattern emerges in the light of the above deliberations, which characterizes some contemporary phenomena connected with historic architecture (that has a digital dimension) – (1) we image, then we (2) relate with images thanks to which we (3) develop an understanding and recognition of buildings. New media become a basis to develop a new sensitivity to historic architecture[26] and to break the link between the traditional engagement of human body movement. Another trait of contemporary culture is the possibility to create and include into objects' visualizations/models images that have been previously invisible[27], such as thermal images. Also potential functional effects in a city space can be visualized in media presentations – viewing corridors, sun exposure or temperature distribution, to name only some examples.

Limits to our relation with space and to the possibility of acquiring knowledge about real world through new media are set by the designer-author, technology, the amount of accessible data or the kind of access available for a particular user. An example is the Google Earth software, which enables a *birds-eye view* and a *street-view* of cities, excluding, however, from the street-view numerous places that have not been documented. This is an example of digital exclusion of places and objects or of a process of fragmentation. They lead to a new valorization of places, city space and heritage objects. Certain phenomena are marginalized; this is an effect of the impossibility of virtualizing-digitizing particular objects[28]. A separate issue that should be mentioned here is digital exclusion. It affects this part of society that does not own the required electronic devices. In this way a differentiation of participation in the world is created – two worlds develop – (1) one recognized and experienced in the mixed way and (2) a world based on direct participation.

Other phenomena that belong to the negative sides of implementing new technologies are temporariness, passing and elusiveness. Numerous digital events and products pass as quickly as they appear. This has direct influence on the intangibleness and on the analysis of certain phenomena from the perspective of science and history of culture. The possibility to analyze the influence of technology on people is lost. Literature turns our attention also to issues that incline us to think about certain practices and actions enforced on us by digitization of historic objects. According to Andrea Jelić:

[25] Kalitko, Krzysztof. *Architektura między materialnością i wirtualności*. Poznań: Wydawnictwo Naukowe UAM, p. 11.
[26] Jelewska, Agnieszka. *Sensorium. Eseje o sztuce i technologii*. Poznań: Wydawnictwo Naukowe UAM. 2012, p. 95.
[27] Stawowczyk, Edyta. *O widzeniu, mediach i poznaniu. Stłuczone lustra rzeczywistości*. Poznań: Wydawnictwo Fundacji Humaniora. 2002, p. 147.
[28] Kalitko, Krzysztof. op. cit., p. 125.

> perception is always embodied and enactive, meaning that it is intrinsically multi-modal and inseparable from movement, and since as Steven Holl claims, the only real test of architecture is the enmeshed experience – the body moving through space (…)architectural experience and architecture on the whole is always a multi-sensory event[29]

Thus, limiting relations with objects only to their digital forms, which is a trait of changing tourism (*e-turism*, *post-tourism*[30]), can lead to many misunderstandings and to an impoverishment of experience.

Conclusions

To sum up the above presented analysis and to underline the importance of new technologies, I would like to quote Lev Manovich, who wrote that:

> Intellectually, architectural discourse came to be dominated by concepts and terms which parallel (or directly come from) the design elements (splines, NURB surfaces, particle systems) and operations offered by the software (working with flexible geometry, morphing, physically-based modelling and simulation, parametric design, particle systems, simulation of natural phenomena, AL, etc)[31]

The fact that our practice is determined by new technology – the so called soft determinism[32] – is an example of how a designer's (who is a user of new technologies) thinking process is conditioned by the way in which authors of software solved the problem of presenting physical space[33]. The technological determination of our actions and practices also concerns historic architecture because, through digitizing, modelling and creating digital images, we experience it in a new way. Thus, we can say that new technologies modernize our actions, offering new possibilities for modelling and designing, but at the same time, they force us to adopt a course of e-*action* imposed by the technological environment.

Today, in order to become acquainted with historic architecture, knowledge of new media is indispensable, as are mobile devices, without which we are excluded

[29] Jelić, Andrea. "Designing 'pre-reflective' architecture", in: *11th EAEA Envisioning Architecture: Design, Evaluation, Communication Conference in 2013*, pp. 225-232 (225), http://www.labsimurb.polimi.it/11EAEA/T02/paper/EAEA11_PAPER_T02_JELIC.pdf (accessed 16.03.2015).

[30] Characteristic traits of post-tourism reconstructed by Ritzer are: the ability to „visit" a tourist attraction by way of Internet, television or virtual reality, without leaving home - Podemski, Krzysztof. *Socjologia podróży*. Poznań: Wydawnictwo Naukowe UAM. 2005, p. 95.

[31] Manovich, Lev. "NURBS theory | conceptualizing cultural processes: from discrete categories to continuous curves". 2008, http://lab.softwarestudies.com/2008/12/theory-for-nurbs-era-from-timelines-and.html (accessed 16.03.2015).

[32] Levinson, Paul. *Miękkie ostrze. Naturalna historia i przeszłość rewolucji informacyjne*j, Warszawa: Muza S. A.,1999, p. 20. (Levinson, Paul. *Soft edge: A Natural History and Future of the Information*. London & New York: Routledge. 1997).

[33] Feliciak, Mirosław. „Wirtualne nie jest niematerialne. Od atomów do bitów i z powrotem". *AUTOPORTRET. Pismo o dobrej przestrzeni*. 2/27. 2009, pp. 58-61 (59).

from the cognitive processes offered by makers of digital worlds. Today, to learn about objects, it is not enough to be in them – it is, among other, interactivity that defines the cognitive process. The perception of objects is made easier, according to Steen E. Rassmusen, or shaped by any knowledge about those objects which we acquire on the basis of *digital experiences*. Today, visualizations and 3D models have to be considered as a kind of *predetermination* of the perception and understanding of objects, which is fulfilled in the contact with the real object. This contact is preceded by a digital relation – a cyber-experience that does affect the general perception of buildings and spaces. In the world of information technology (IT), not only body movement but also interaction intermediated by devices introduces into architectonic space a new sequence of events[34]. Traditionally: "the movement of bodies and objects introduces into each space a sequence of events"[35], yet today this situation is more and more often complemented by practices emerging from *body-immersion*, AR etc.

Among further research questions let us name two most important: (1) continued efforts leading towards investigating the meaning, effects and possibilities of implementing new technologies in the protection and popularization of historic architecture[36] and (2) analysis of the above discusses phenomena on the basis of case studies. The most significant demand connected with studying cultural heritage in the context of new technologies is to firmly establish within the scientific and popularization discourse the cognitive and participatory differences between the two diverse, or *mixed*, worlds. This should allow to make users of new technologies aware of the effects caused by the diverse ways of perception and experiencing heritage.

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[34] Rewers, Ewa. op. cit., p. 95.
[35] ibidem.
[36] Illustrative research – Human Systems Integration Division w NASA, http://humansystems.arc.nasa.gov/factsheets/th_trifold_brochure_web.pdf

AUGMENTED CITIES: REVEALED HISTORIES

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Introduction

The human relationship with the environment, history, and culture is framed by our already embedded experiences and mental images—we see what we expect to see. In turn, cultural and technological context (the technological tool kit) continuously redefines self-identity and forms new mental images, which then feed back into the aforementioned conformational biases. This continuous feedback loop is pointedly expressed by the recent closing statement to Microsoft's HoloLens device release video: "when you change the way you see the world, you can change the world you see."[1] This exact paradigm of mutually dependent perception and reality is at the core of the contemporary discourse on immersive media environments. While this is not a new phenomenon, but one which has occurred multiple times throughout history, current implementations seem to be more disruptive, transformative, and at the same time promising in the way they engage everyday lives and connect emotionally with users. This paper looks into interactive augmented reality (AR) environments as places where people engage with the past and experience the future; environments that subscribe to broader cultural history, evoking emotional connections with the physical world and promoting new social interactions.

As during the Renaissance, when the discovery of visual perspective led to new concepts and organization of spaces[2], today emerging digital technologies redefine our expectations for the outside reality. This has already been evident in early digital visualizations such as the unbuilt monuments (Fig. 1) that virtually recreated unbuilt designs or no-longer-existing structures to provide new insights about these projects. This new way of visually representing spatial environments has also triggered new technologies that allow us to analyze, dissect, and conceptualize space, often forming unexpected relationships between the virtual and physical worlds. This congruency between the physical and the digital is apparent in projects such as *Digitarama*[3] and *Deskrama*[4] (Fig. 2) that employ the established tradition of an apparatus to experience visual space as discussed by Nagakura and Oshi.

[1] http://www.youtube.com/watch?v=aThCr0PsyuA (quote is at time 1m:41s) (accessed 26.03. 2015).
[2] As discussed by White, John in the book: *The birth and rebirth of pictorial space*.
[3] http://cat2.mit.edu/arc/research/digitarama/paper_e_index.html (accessed 26.03. 2015).
[4] http://cat2.mit.edu/deskrama/ (accessed 26.03. 2015).

Fig. 1.Tatlin's Tower-Unbuilt Monuments
Source: Nagakura, Zarzycki, Brick, and Sich, 1999.

Similar to past inventions, current developments do not merely provide a new look into unknown space, but allow for new forms of spatial relations and conceptual connections to be made. AR technology, including projection mapping, is at the forefront of spatial visualization. It is technology that not only considers users but also understands their geo-location and their broader cultural context. Furthermore, AR provides for the multiplicity of personalized perspectives, evoking rich visual and mental narrative collages that involve the participant in active content creation and interpretation.

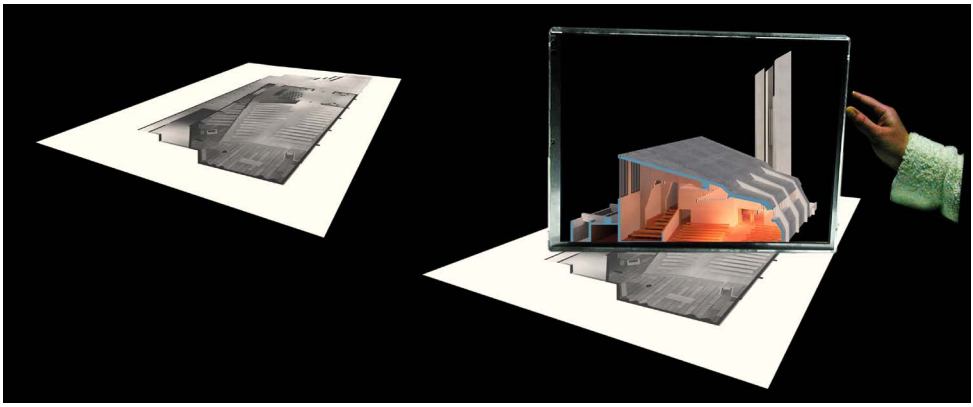

Fig. 2. Deskrama as a space browser designed for three dimensional architectural designs
Source: Takehiko Nagakura, and Jun Oshi, 2006.

New Modes of Seeing

While some of the current AR research focuses on the photographic and near-original virtual recreations that are situated within geographic settings (Fig. 3). This allows for combining three-dimensional photogrammetric models with their corresponding geo-locations and historical data. A parallel lineage treats AR representations as a knowledge building and mapping exercise by Nagakura and Sung. This approach follows the nineteenth-century analytique tradition where multiple drawing fragments together create a visually new and conceptually resolved composition. In this implementation, an analytique becomes a knowledge recording device where element proportions and tectonic relationships are made explicit. Nagakura's and Sung's *Ramalytique* project (Fig. 4) follows this tradition by merging multiple forms of media in a mutually informing relationship. However, the advantage of AR technology lies in the ability to combine the conceptual and diagrammatic representation with photorealistic imagery. The former allows for compositional and tectonic relationships while the latter situates design within an actual environment and provides a commonly-accepted path to understanding the project.

The ability to interact with three-dimensional virtual models by turning on and off various building components provides better understanding of the overall structures as well as facilitates progressive knowledge-building. Furthermore, it takes advantage of the just-in-place and just-in-time learning philosophy based on the contextualized knowledge achieved through virtual, yet situated, context. It also reestablishes a cohesive and unified form of the representation, wherein multiple forms of data and media are tightly connected. This extends the earlier-discussed arguments of Nagakura and Sung (regarding traditional methods of representation) from table-top AR installations to full fledge urban environments.

Fig. 3. Photogrammetric 3D models of the tomb and tombstone at the Mt. Auburn Cemetery, Cambridge, MA. This form of visualization allows for greater user engagements

Source: Andrzej Zarzycki, Mystery Spaces App.

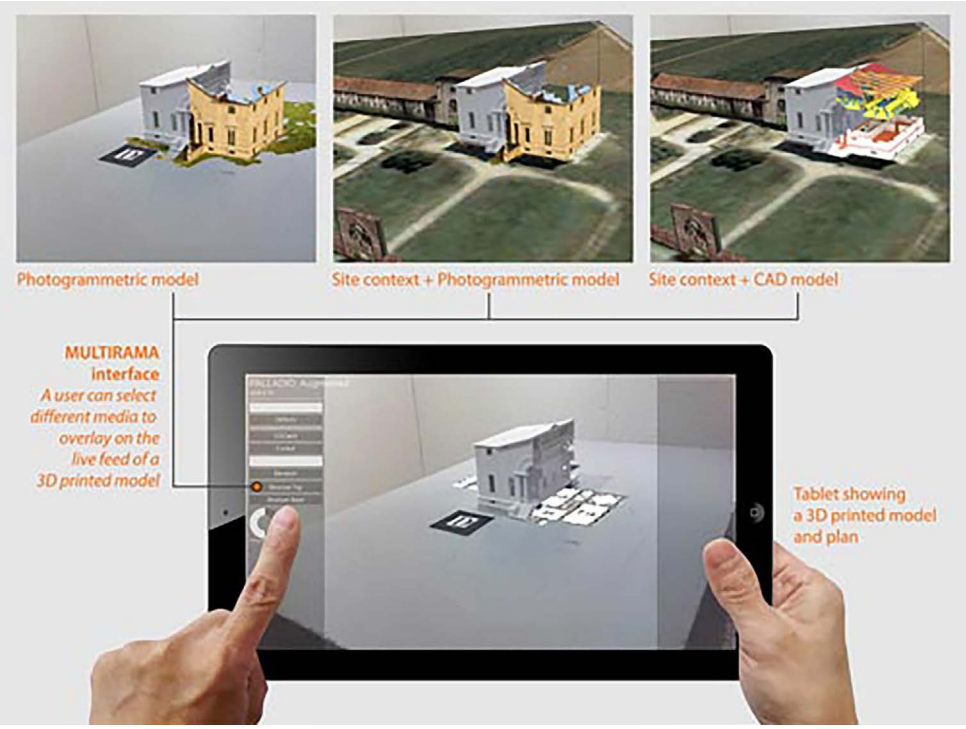

Fig. 4. Deskrama as a space browser designed for three dimensional architectural designs
Source: Takehiko Nagakura, and Woong-ki Sung, 2014.

The *Mystery Spaces* app[5] with embedded small photogrammetric virtual models provides a similar layering and registration of multiple media layers, as discussed earlier in the tabletop examples.

The Emergence of Context Awareness

While originally virtual worlds were often developed as dreamscapes or design projections responding to "what if" scenarios, more recently an interest in physically and contextually grounded virtual designs has gained significance. This can also be seen in consideration of materiality and physics-based behavior in architectural digital design[6] or the use of physics in gaming engines. The inclusion of the context is an essential element that situates the virtual and serves as the reference scale. It provides a greater relevance of design for everyday users since they can go seamlessly back-and-forth between the physical and the virtual. In this aspect, the situated virtual worlds extend physical experiences and the perception of reality.

[5] http://mysteryspaces.com/ (accessed 20.03.2015).
[6] As discussed by Zarzycki, in: *Integrating Physical and Digital Assemblies.*

Look into the Past

The context awareness deployed with AR technology has multiple meanings and methods of implementation. It can refer to a geo-location with an understanding of spatial arrangement in relation to other artifacts. The context can also be understood as visual, cultural or historical. For example, it organizes experience according to chronological events. AR technology is also used to visualize intangible aspects of physical environments. This is the case in a number of mobile AR projects that reveal histories and facilitate urban explorations[7]. The Niedmermair's application recognizes, tracks, and augments the existing urban setting while providing 3D model overlays in the historic context by superimposing a virtual model over a camera video feed. The sophistication of the project lies in the combination of image recognition (image targets with CV) and GPS tracking. The image recognition in the context of architecture is particularly challenging, since the visual appearance of buildings (facades) changes depending on the time of the day, lighting conditions, and seasonal variations that include greenery and street-level activities.

TimeWarp[8], another mobile edutainment application designed as an AR game situated in Cologne, Germany, focuses on virtual reconstruction of historic buildings by superimposing virtual imagery over currently existing structures. The application not only shows no-longer-existing buildings as they originally appeared but also visualizes design changes that occurred over time to still-present structures. Along the same lines and more recently, ARMedia introduced *Coliseum AR* app[9] that presents the digital reconstruction of the missing portion of the structure (Fig. 5).

Fig. 5. Augmented Coliseum by AR-media
Source: AR-media, 2013.

[7] A project by Stefan Niedmermair (see bibilography).
[8] A project by A. Herbst (see bibilography).
[9] http://www.youtube.com/watch?v=WOVjISxlhpU (accessed 25.03.2015).

It also introduces an element of gamification by building in a 3D puzzle that can be played directly on the real Coliseum.

The *Immersive Experience of Cultural Heritage*[10] project uses an AR tour approach to provide tourists with a more realistic experience by placing virtual characters within historical structures. Visitors to the heritage sites of Sajeongjeon and Gangnyeongjeon in Korea can use their mobile devices to access additional facts associated with the showcased physical content. While a similar approach is routinely used by many museums, this particular project does not rely on AR markers such as QR codes. It implements visual camera tracking of the rectangular display space to position its virtual actors without a need for visually intrusive markers.

Look into the Future

AR technologies not only provide an opportunity to contextualize unbuilt designs in their proper urban setting, as is the case with the AR environments showcasing winning entries for the *SHIFTboston 2009 Ideas Competition* in the Future City Tour app[11], but also provide a broader solution for reconnecting semantic layers of multiple histories and traditions. This can be seen in the *High Line AR* app[12] that provides High Line Park visitors with information on historical, current, and future developments of this landmark elevated railroad structure.

The location-aware functionalities allow for positioning and filtering relevant data based on the user geolocation – it knows where the user is and which direction the phone is pointing. Through the app, users can track year-around activities with photographs of various plant species and seasonal foliage. They can visit a particular section of a project and freely navigate through historic photographs and future design proposals related to this locality. In many aspects the app functions as a time capsule that combines multiple layers of information into a single geo-location. These multiple layers can be individually accessed and combined to provide an individualized perspective into the project. To some extent this media overlay provides a third alternative to "renovate and lose the charm of the past" versus "keep the past untouched and do not adapt to new uses or current needs". The AR component, at least virtually, preserves to a certain extent the original conditions and memories of the past.

Gamified Cites

This is also the case with the AR environment called *Mystery Spaces* developed by the Tremont Underground Theater Space (TUTS) initiative. This AR app is using gamified virtual tourism media not only to popularize ideas of the adaptive reuse

[10] A project by A. Herbst (see bibilography).
[11] http://www.shiftboston.org/exhibits/future_city_tour.php (accessed 25.03.2015).
[12] http://www.layar.com/layers/highlinefinal/ (accessed 25.03.2015).

of the abandoned public infrastructure but also to build social constituency and connect with the general public. The *Mystery Spaces* AR app encourages users to "[b]ecome an urban explorer and discover the mystery of abandoned public infrastructure, secret tunnels, bridges, architectural landmarks and rooftops. Navigate through the unknown, forgotten, and underappreciated public spaces. Document their daily lives and share them with the rest of the world. Discover what architecture guides can't tell you!"[13]

Mystery Spaces is an interactive, locative (context-aware) app for urban adventures. It engages players in mystery-solving-like pursuit with the goal of slowly revealing the secrets hidden within a city. As a game, it gives a new edge to traditional scavenger hunts or geocaching activities by providing engaging ways to unlock hidden clues and visit forgotten urban jewels. Unlike traditional offline games, *Mystery Spaces* allows players to contribute the knowledge about the city and new Points of Interest (POIs) into an AR environment. The game authoring as well as the social media sharing components are critical new additions to mobile social gaming.

Another important new development allows for following multiple routes while pursuing urban discoveries. This is particularly effective with the multiplayer option, where different players follow routes that adapt to their own knowledge of the city and the ability to solve required clues. The *Mystery Spaces* app can be used as a multiplayer, location-based online urban game or just as an interactive guide for discovering mysteries of the city. This dual functionality allows for stepping up and down from different levels of participatory engagement.

The AR spatial mechanics are organized around (1) individual *POIs* as mystery events hidden from players/participants, (2) *portals* that provide an opportunity to enter the environment/game-space, and (3) *keys* that unlock the clues for further explorations. Portals are located among POIs and are always visible from a distance when viewed on a mobile device. When players approach a portal, they hear an announcement informing them that they are entering the portal zone. At that point keys with clues become visible, or at least able to be spotted.

Keys are harder to find: they are only visible when a player is within the portal zone and points a mobile device at the right spot – when the camera view aligns with the key's location, the key appears on your screen with menu buttons and instructions. Finding a key opens two or three mystery spaces POIs. This starts the exploration route - once you find one, other hidden locations will appear. The spatial structure of the environment follows the logic of the gallery and museum design, allowing for multiple and exclusive routes.

According to the app directions, "[p]layers can proceed in any sequence, passing through a different mystery spaces every time. This means that they can come back and play again – the game will be new every time!" (Fig. 6).

[13] http://mysteryspaces.com/ (accessed 25.03.2015).

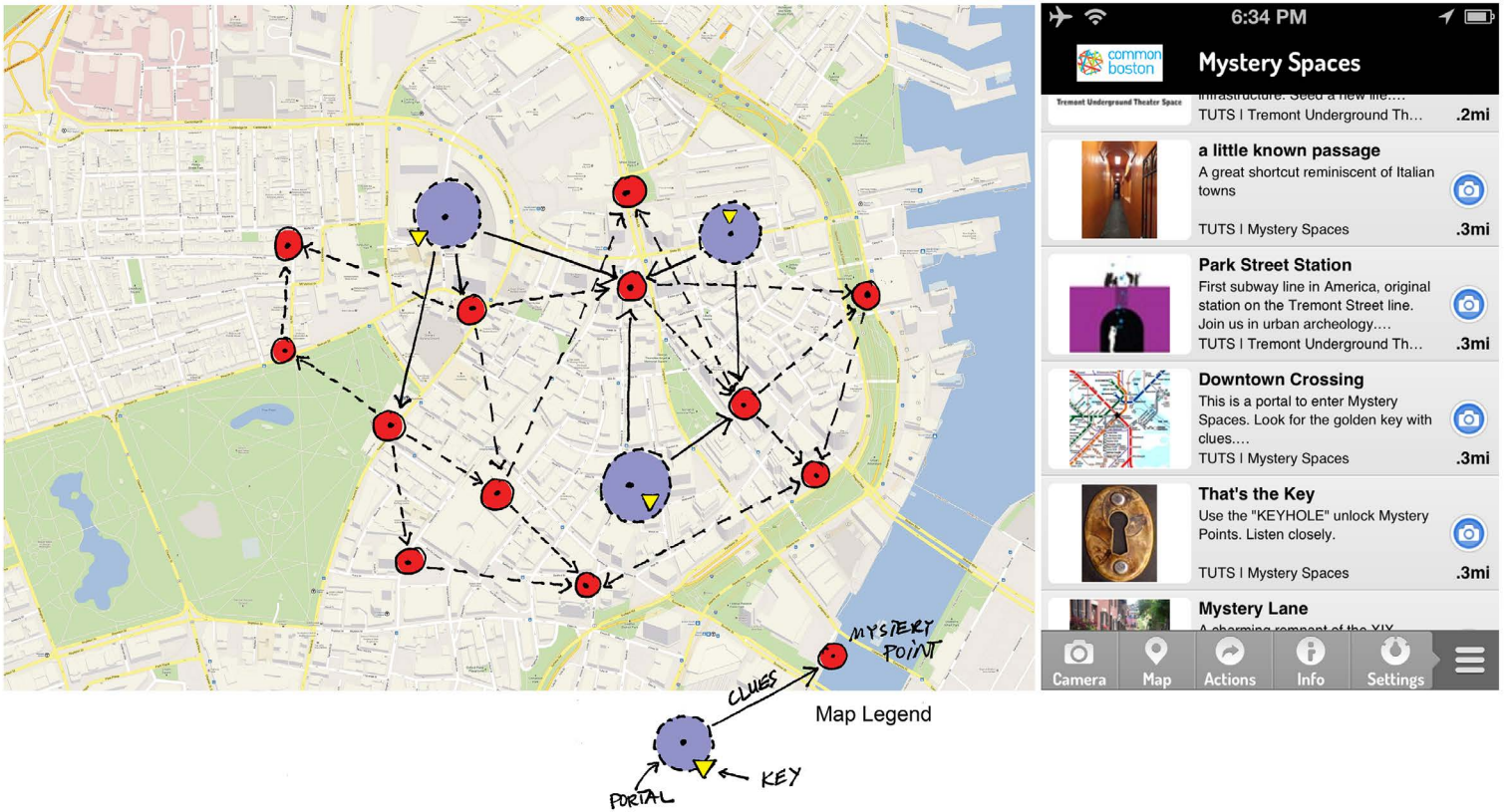

Fig. 6. Mystery Spaces, a map with POIs arranged in the form of the game play. Multiple routes lead through the AR environment. (Left) Individual POIs (Right)
Source: Andrzej Zarzycki, Mystery Spaces App.

Situated Histories

From individual AR apps overlaying the physical world with context-aware information (High Line AR app) to broader repositories of geo-located data and Web sites/apps, such as the *Museum Without Wall*[14] by cultureNOW, the established physical edifices such as museums and galleries start losing their exclusive role as cultural disseminators. While there is a significant appeal in seeing an original artwork in the controlled environment of a museum, there is also a sense of loss when the artwork is uprooted from its original cultural context and presented as a context-less object.

Situating cultural artifacts in their proper context could lead to a greater appreciation of their value by the public as well as to forming new conceptual and semantical links with new interpretations. The *Museum Without Walls* is a Web-based datascape that collocates physical environs with data overlays. While not an AR app, it provides contextualized information on art, architecture, and history with broad multimedia content. Its content and the way it is formatted fit naturally into a context-aware model of AR technology.

Final Thoughts

AR has brought the virtual and the physical world closer and made them highly interconnected and interdependent through location awareness, enhanced data overlays, and user-focused content. It also finds its applications in a diverse range of disciplines. AR-based applications increasing occupy an important place in tourism, education, and preserving historical and cultural heritage.

AR technology increases the synergy between the virtual and the physical worlds, making them more interconnected and interdependent through location awareness and user-focused content. It also advances an idea of "learning anytime, anywhere", which builds on Weiser's vision for the role of computers in the 21st century.

This new role synergizes key characteristics of AR environments that include location awareness, always-connected networks, and the ability to superimpose digital data over the physical world with interactive and user-friendly graphics. Participants in these AR environments not only visually experience static information but also interact with data and author it in highly dynamic and synthetic ways. These interactions promote an environment of increased user participation with the benefits of experiential learning and the authorship of the public realm. The authorship of the public realm that is at the core of the role architecture plays in culture and society.

[14] http://www.culturenow.org/ (accessed 25.03.2015).

BIBLIOGRAPHY

BIBLIOGRAPHY

Books and chapters

17th PRP Project Team. *Investigation and Cultural Cognition of Port Heritage (Sites) in Shanghai*. Shanghai: Shanghai Jiao Tong University. 2010.

2nd International Congress of Architects and Technicians of Historic Monuments. Venice: ICOMOS. 1964.

A Brief History Binghamton, NY. The Parlor City. Binghamton: Binghamton Public Library. 1984.

Abel, C. *Architecture and Identity Towards a global Eco-culture*. Oxford: Architectural Press. 1997.

Adress Und Geschafts-Handbuch der Stadt Posen. Poznań 1896, p. 5.

Agnew, J. *Place and politics: The geographical mediation of state and society*. Boston: Allen and Unwin. 1987.

Alexander, C. *The Oregon Experiment* Oxford: University Press. 1995.

Algaze, G., Matney, T. "Titriş Höyük: The Nature and Context of Third Millennium B.C.E. Urbanism in the Upper Euphrates Basin", in: *The Oxford Handbook of Ancient Anatolia*. Oxford: Oxford University Press. 2011.

Alioğlu, Fusan E. *Mardin Şehir Dokusu ve Evleri*. Istanbul: TarihVakfı. 2000.

Altman, I.; Rogoff, B. "World views in psychology: Trait, interactional, organismic and transactional perspectives", in: Stokols D.; Altman I. (eds.), *Handbook of environmental psychology.* Vol. 1. New York: Wiley. 1987, pp. 7-40.

Alvarado, R.G.; Parra, J.C.; Vergara, R.L.; Chateau, H.B. "Architectural References to Virtual Environments Design", in: *Proceedings of ECAADE'2000*. Weimar: Bauhaus-University Weimar. 2000, pp. 151-155.

Andrieu, B. *Bronzage. Une petite histoire du soleil et de la peau*. Paris: CNRS Editions. 2008.

Anthouard, P. "La bâtiment scolaire", in: Vettier, R. (ed.), *L'école publique française. Tome 1: De l'école de jadis à l'école d'aujourd'hui.* Paris: Rombaldi. 1951, pp. 241-284.

Aquilar, G. "Rovine moderne e sequenze sincopate. Dispositivi di trasformazione per gli spazi dell'abbandono nelle città d'acqua", in: Miano, P.; Russo, M. (eds.), *Città tra terra e acqua*. Naples: Clean. 2014, pp. 166-185.

Architetti per Torino. Torino: Officina Città Torino. 2002.

Armstrong, H. "Time, Dereliction and Beauty: An Argument for «Landscapes of Contempt»", in: *The Landscape Architect, IFLA Conference Papers*. 2006, pp. 116-127.

Ashworth G.J. „Can you move from the object to the experience", *Kongres Konserwatorów Polskich*, Warszawa 2005.

Ashworth G.J. „Sfragmentaryzowane dziedzictwo: sfragmentaryzowany instrument sfragmentaryzowanej polityki", in: Murzyn M., Purchla J. (eds.) *Dziedzictwo kulturowe w XXI wieku. Szanse i wyzwania*, Kraków: Międzynarodowe Centrum Kultury, 2007, pp. 29-42.

Ashworth, G.J. "Planowanie dziedzictwa", in: Broński, K.; Purchla, Zuziak, Zbigniew, K. (eds.), *Miasto historyczne Potencjał dziedzictwa*. Krakow: Międzynarodowe Centrum Kultury. 1997, p. 36.

Augenbroe, G. "Building Simulation Trends Going into the New Millennium", in: *Proceedings of the Seventh International IBPSA Conference*. Rio de Janeiro. 2001.

Avermaete, T. *Another Modern: The Post-War Architecture and Urbanism of Candilis-Josic-Woods*. Rotterdam: Nai010 Publishers. 2006.

Avermaete, T.; Casciato M. *Casablanca Chandigarh. A Report on Modernization*. Zürich: Park Books. 2014.

Bańko M. (ed.). *Inny słownik języka polskiego*, Warsaw: PWN, 2000.

Baracchini, C.; Fabiani, F.; Ponticelli, P.; Vecchi, A. *Verso un sistema unico di riferimento per la documentazione di restauro. Sistemi informativi per l'architettura,* Firenze: Atti del convegno, Ancona maggio 2007.

Baracchini, Clara; Lanari, Paolo; Ponticelli, Paola; Parenti, Roberto; Vecchi, Andrea. *SICaR: un sistema per la documentazione georeferenziata in rete*, in: *Sulle pitture murali. Riflessioni, Conoscenze, Interventi.* Venezia: Atti del Convegno di Studi, Bressanone 12-15 luglio 2005, pp. 735-747.

Baracchini, Clara; Lanari, Paolo; Scopino, Roberto; Tecchia, Franco; Vecchi, Andrea. *SICAR: Geographic Information System for the documentation of restoration analysis and intervention*, in: *Optical Metrology for Arts and Multimedia*. Monaco: Atti del Convegno, Monaco. 2003.

Basista, A.; Nowakowski, A. *Jak czytać architekturę.* Kraków: Universitas. 2012.

Baudrillard, J. *Simulacra and Simulation*, Paris: Editions Galilee. 1981.

Bergdoll, B.; Oechslin, W. (eds.), *Fragments: Architecture and the Unfinished: Essays Presented to Robin Middleton*. London: Thames & Hudson. 2006.

Berleant, A. "Environmental sensibility", in: Thibaud, JP., Siret, D. (eds.), *Ambiances in action: Proceedings of the 2nd International Congress on Ambiances*. Montreal: Canadian Centre for Architecture. 2012.

Bernardo, F.; Casakin, H. (eds.), *The Role of* Place Identity *in the Perception, Understanding, and Design of Built Environments,* Sharjah: Bentham Science Publishing (ebooks). 2012.

Bertagna, A.; Marini, S. *The Landscape of Waste.* Milan: Skira. 2011.

Bertuzzi, J.; Zreik, K. "Mixed Reality Games – Augmented Cultural Heritage", in: *SIGraDi 2011 [Proceedings of the 15th Iberoamerican Congress of Digital Graphics]*. Santa Fe. 2011, pp. 304-307.

Bianchi, C. „Making online monuments more accessible through interface design", in: MacDonald, L. (ed.), *Digital heritage: applying digital imaging to cultural heritage*. Amsterdam: Elsevier. 2006, p. 445-466.

Bianjun, C. et al., *Shanghai Industrial Heritage Records*. Shanghai: Shanghai Jiao Tong University Publishing House. 2009.

Bishop, I. D.; Lange, E. *Visualization in Landscape and Environmental Planning: Technology and Applications*. London - New York: Taylor & Francis. 2005.

Bocchi, R. "Dal riuso al riciclo. Strategie architettonico-urbane per le città in tempo di crisi", in: *Re-cycle Italy. Viaggio in Italia.* No. 3. Rome: Aracne. 2013. pp. 185-190.

Bock, M. (ed.). *Michel de Klerk; architect and artist of the Amsterdam School 1884-1923*. Rotterdam: NAi Publishers. 1997.

Boeykens, S. "Using 3D Design Software, BIM and Game Engines for Architectural Historical Reconstruction", in: *Computer Aided Architectural Design Futures 2011*. Liege. 2011, pp. 493-509.

Boeykens, S.; Himpe, C.; Martens, B. "A Case Study of Using BIM in Historical Reconstruction: The Vinohrady synagogue in Prague", in: Achten, H.; Pavlicek, J.; Hulin, J.; Matejovska, D. (eds.), *Digital Physicality –Proceedings of the 30th eCAADe Conference – Volume 1.* Prague: Czech Technical University in Prague. 2012, pp. 729-737.

Borowska, M. „Doświadczanie architektury a problem przestrzeni", in: Wiloszewska, K. (ed.), *Czas przestrzeni*. Kraków: Universitas. 2008, pp. 101-116.

Borský, M. *Synagogue Architecture in Slovakia: A Memorial Landscape of a Lost Community.* Bratislava: The Jewish heritage foundation-Menorah. 2007.

Bosselmann, P. *Representation of Places: Reality and Realism in City Design*. Berkeley – Los Angeles – London: University of California Press. 1998.

Bosselmann, P. *Urban Transformation: Understanding City Form and Design*. Washington: Island Press. 2008.

Boubekri, M. *Daylighting, Architecture and Health, Building Design Strategies.* Oxford: Elsevier, Architectural Press. 2008.

Breen, J. „Towards Evocative, Thematic Design Dossiers; Learning from an Experimental, Domain-based Design Visualization Study", in: Uddin S. et al. (eds.), *The Proceedings of the 2014 DCA conference*. Atlanta. 2014.

Breen J.; Stellingwerff M. (eds.). *Envisioning Architecture, Proceedings of the 10th international conference of the EAEA*, Delft: Delft University of Technology. 2011.

Brett, D. The *Construction of Heritage*, Cork: Cork University Press, 1996.

Brykowska, M. *Metody pomiarów i badań zabytków architektury*. Warsaw: Wydawnictwo Politechniki Warszawskiej. 2003.

Burry, J.; Burry, M. *The new mathematics of architecture*. London: Thames & Hudson. 2010.

Burszta, W. J.; Kuligowski, W. *Sequel. Dalsze przygody kultury w globalnym świecie*. Warsaw: MUZA. 2005.

Butti, K.; Perlin, J. *A Golden Thread: 2,500 Years of Solar Architecture and Technology*. New York: Van Nostrand Reinhold. 1981.

Calvino, I. *Why Read the Classics*. London. Penguin. 2013.

Cantacuzino, S. *Re/Architecture. Old buildings/New uses*. London: Thames and Hudson. 1989.

Cariane central, Hay Mohammadi. Mémoire et dignité. Casablanca: Consortium Mémoire et Dignité, Initiative Urbaine. 2011.

Carpiceci, M. *Fotografia digitale e architettura. Storia, strumenti ed elaborazioni con le odierne attrezzature fotografiche e informatiche*. Roma: Aracne. 2012.

Carpiceci, M.; Inglese, C.; Colonnese, F.; Cresciani, G.; Angelini, A. "Dalla roccia alla città. Il rilievo del villaggio rupestre di Sahinefendi / From the rock to the city. The survey of the rupestrian village of Sahinefendi", in: *Italian Survey and International Experience*. Roma: Gangemi. 2014, pp. 603-610.

Casagrande, L.; Cavallini, P.; Frigeri, A.; Furieri, A.; Marchesini, I.; Neteler, M. *GIS Open Source. GRASSGIS, Quantum GIS e Spatialite.* Palermo: Flaccovio. 2012.

Carter, S. *Rise and Shine. Sunlight, Technology and Health*. Oxford, New York: Berg. 2007.

Čepo, Z. *Željezara Sisak 1938-1968*. Sisak: Institut za historiju radničkog pokreta. 1968.

Certeau, M. De, *The practice of everyday life*, Berkeley: University of California Press. 1984.

Choay, F. *The Invention of the Historic Monument*. Cambridge: Cambridge University Press 2001.

Chomsky, N. *Aspects of the theory of syntax*. Cambridge: MIT Press. 1965.

Ciorra, P.; Marini, S. *Re-Cycle. Strategie per l'architettura, la città e il pianeta*. Milan: Electa. 2011.

Cohen, J.-L.; Eleb, M. *Casablanca: Colonial Myths and Architectural Ventures*. New York: The Monacelli Press. 2003.

Colletti, M. (ed.). *Exuberance. New Virtuosity in Contemporary Architecture*. Chichester: John Wiley & Sons Ltd. 2010.

Coomans, T. *Abbaye de Villers-en-Brabant: Construction, configuration et signification d'une abbaye cistercienne gothique*. Bruxelles – Brecht: Éditions Racine & Cîteaux. 2000.

Corbin, A. *Les Cloches de la terre. Paysage sonore et culture sensible dans les campagnes au XIXe siècle*. Paris: Flammarion. 1994.

Corbin, A. Le miasme et la jonquille. L'odorat et l'imaginaire social, XVIIIe-XIXe siècles. Paris: Flammarion. 1982.

Corten, J.-P.; Geurts, E.; Meurs, P.; Rypkema, D.; Wall, R. *Heritage as an Asset for Inner City Development. An Urban Managers' Guidebook*. Rotterdam: Nai010 Publishers. 2014.

Cremnitzer, J.-B. *Architecture et santé, le temps du sanatorium en France et en Europe.* Paris: Picard. 2005.

Cresswell, T. *Place: an Introduction*. Chichester: John Wiley & Sons Ltd. 2015.

Cresswell, T. *Place.* Amsterdam: Elsevier, 2009.

Crosby, A. *The Columbian Exchange: Biological and Cultural Consequences of 1492*. Westport: Greenwood. 1973.

Cutting, M. „The Architecture of Çatalhöyük: Continuity, Household and Settlement" in Hodder I. (ed.), Çatalhöyük Perspectives: *Reports from the 1995–99 seasons*: 151-169. Çatalhöyük Research Project Volume 6. Cambridge / London: McDonald Institute for Archaeological Research / British Institute at Ankara. 2005.

Davallon, J. „The Game of Heritagization", in: Roigé, X.; Frigolé J. (eds.), *Constructing Cultural and Natural Heritage Parks, Museums and Rural Heritage*. Girona: ICRPC. 2010, pp. 39-62.

Davies, P.J.E, et al. *Janson's History of Art*. New Jersey: Prentice Hall. 2011.

De la Soudière, M. *Au bonheur des saisons. Voyage au pays de la météo*. Paris: Grasset. 1999.

De Landa, M., *A New Philosophy of Society: Assemblage Theory and Social Complexity.* London: Continuum. 2006.

De Landa, M. *A Thousand Years of Nonlinear History.* Cambridge Mass: MIT Press. 1997.

Deidda, M.; Fiorino, D. R.; Vacca, G. *Gestione urbana e programmazione della conservazione: l'apporto dell'ICT,* in: Giannattasio, C.; Scarpellini, P. (eds.), *Proposte per Stampace. Idee per un piano di conservazione del quartiere storico cagliaritano*. Roma: Gangemi. 2009, pp. 147-152.

Deleuze, G.; Guattari, F.; Massumi, B. *A Thousand Plateaus: Capitalism and Schizophrenia.* London: Continuum. 2008.

Deleuze, G. *Le Pli. Leibniz* et *le* baro*que.* Paris: Editians de Minuit. 1988.

Deleuze, G. *The Fold: Leibniz and the Baroque*. (trans. Tom Conley). Minneapolis: University of Minnesota Press. 1993.

Di Mascio, D. „Digital Reconstruction and Analysis of Turchinio's Trabocco: A method of digital reconstruction of a complex structure as a way to improve our knowledge of a cultural heritage artifact", in: Abdelhameed, W.; Hamza N.; Bennadji A. (eds.), *Digitizing Architecture: Formalization and Content.* Manama: ASCAAD. 2009, pp. 177-189.

Di Mascio, D. „Preserving memories with digital media: a methodology for the reconstruction of Castelnuovo Village", in: Dave, B.; Li A. I. – Kang and Hyoung-June Park. *New Frontiers*. Hong Kong: CAADRIA. 2010, pp. 83-92.

Di Mascio, D. „Digital mediated techniques for the knowledge of the evolutionary peculiarities of the built environment: Three case studies", in: Yu-Cheng, L.; Shih-Chung J. K. Taipei: CONVR 2012, pp. 37-46.

Di Mascio, D. „Investigating a narrative architecture: Mackintosh's Glasgow School of Art", in: Thompson, E. M. (ed.) *Fusion*. Newcastle upon Tyne: ECAADE 2014, p. 653-663.

Dias, M. T. *The History of the Lisbon Trams*, Lisbon: Ed. Quimera. 2005.

Diderot, D. *Lettre sur les aveugles*. Paris: Edition Sociales. 1952.

Dillon, B. *Ruins*: *Documents of Contemporary Art*. London: Whitechapel Gallery. 2011.

Dorfman, R.; Ben-Zion. *Synagogues without Jews and the communities that built and used them.* Philadelphia: The Jewish Publication Society. 2000.

Drabik, L.; Sobol, E. (eds.). *Słownik języka polskiego*, Warsaw: PWN, 2007.

Droj, G. "Cultural Heritage Conservation by GIS", in: *Társadalom – térinformatika – kataszter GISopen konferencia.* Székesfehérvár: Nyugat-Magyarországi Egyetem, Geoinformatikai Kar. 2010.

Duke, R. D. *Gaming: The future's language*, New York: Sage Publications. 1974.

Edensor, T. *Industrial Ruins. Space, Aesthetics And Materiality*. London: Berg Publishers. 2005.

Engler, M. *Designing America's Waste Landscapes*. Baltimore: JHU Press. 2004.

Erdem, C. „Palimpsest, Not Tabula Rasa: Thinking a Nonlinear History of Architecture", in: Duyan, E.; Catak, N. *Creativity, autonomy, function*, Istanbul: ARCHTHEO'13 Conference Proceedings. 2013, p. 365.

Erikson, E. H. *Identity: Youth and crisis*, New York: W. W. Norton Company. 1968.

Evans, R. "Translations from Drawing to Building", in: *Translations from Drawing to Building and Other Essays*. London: Architectural Association Publications. 1997, pp. 153-193.

Farrelly, L. *Representational techniques*. Lausanne: AVA Publishing. 2008.

Fathy, H. *Natural energy and vernacular architecture: principles and examples with reference to hot arid climates.* Chicago: University of Chicago Press. 1986.

Fatullayev, Sh. S. *Gradostroitel'stvo Baku XIX - nachala XX vekov* (Фатуллаев Ш.С., Градостройтиельство Баку XIX – начала XX веков), Leningrad 1978.

Favre-Brun, A. *Architecture Virtuelle et Représentation de L'incertitude : Analyse de Solutions de Visualisation de La Représentation 3D : Application À L'église de La Chartreuse de Villeneuve Lez Avignon (Gard) et À L'abbaye de Saint-Michel de Cuxa (Pyrénées-Orientales)*. Aix-Marseille, 2013.

Fijałek, J.; Indulski J. *Opieka zdrowotna w Łodzi od 1945 roku. Studium organizacyjno-historyczne*. Łódź: Instytut Medycyny Pracy im. prof. dra med. Jerzego Nofera. 1995.

Fiorino, D.R. *La stratigrafia urbana.* Giannattasio, C.; Scarpellini, P. *Proposte per Stampace. Idee per un piano di conservazione del quartiere storico cagliaritano*. Roma: Gangemi. 2009, pp. 69-74.

Fiorino, D.R. *Stratigraphic evidence in the ancient urban walls of Cagliari (Sardinia-Italy),* in: Brebbia, C. A.; Clark, C. (eds.), *Defence Sites II Heritage and Future*, *WIT Transactions on the Built Environment*. Vol. 143. Southampton: WIT Press. 2014, pp. 257-268.

Fish, E.A. (ed.). *The Memorial Book of Jewish Bardejov, Slovakia: Dedicated to its People, History, and Legacy.* Pasadena: The Bardejov Jewish Preservation Committee. 2014.

Franco, G.; Musso, S. F. „The «Albergo dei Poveri» in Genova: con-serving and using in the uncertainty and in the provisional", in: *PPC Conference 2014.* Monza – Mantova. 5-9 May 2014.

Franco, G.; Musso, S.F. „A comprenhensive sustainability. New design paradigms and methods for maintaining, conserving and managing monuments and traditional architecture", in: *Atti del 30° Convegno Internazionale Scienza e Beni culturali, Quale sostenibilità per il restauro. Bressanone, 1-4 luglio 2014*. CITY: Arcadia Ricerche. 2014.

Frank, T.; Luke, C.; Roosevelt, C. "Thermal Zoning and Natural Ventilation in Vernacular Anatolian Settlements", in: *Vernacular Architecture: Towards a Sustainable Future*. Leiden: CRC Press/Balkema. 2015, pp. 305-310.

Freedom Park. A heritage destination. Johannesburg: An agency of the Department of Arts and Culture. 2014.

Gausa, M.; Guallart, V. et al. *The Metapolis Dictionary of Advanced Architecture.* Barcelona: ACTAR. 2003.

Gauzin-Muller, D. *Sustainable Architecture and Urbanism.* Italy: Birkhauser. 2002, p. 41.

Gehl, Jan. *Cities for People*. Copenhagen: Island Press. 2010.

Gibson, J.J. *The ecological approach to visual perception*. Boston: Houghton Mifflin. 1979.

Golka, M. *Socjologia kultury*, Warsaw: Wydawnictwo Naukowe Scholar, 2007.

Gonzalez-Perez, C.; Parcero-Oubiña, C. „A conceptual model for cultural definition and motivation", in: *Proceedings of the 39th Conference in Computer Applications and Quantitative Methods in Archaeology*. Beijing. 2011.

Gonzalez-Perez, C.; Henderson-Sellers, B. „Granularity in Conceptual Modelling: Application to Metamodels", in: *Conceptual Modelling – ER 2010: Proceedings of the 29th International Conference on Conceptual Modeling*. New York: Springer. 2010.

Grabowska-Pałecka, H. *Niepełnosprawni obszarach i obiektach zabytkowych. Problem dostępności*. Kraków: Politechnika Krakowska 2004.

Graham, B.; Ashworth, G.J.; Tunbridge, J.E., *A geography of heritage: power and economy,* London: Arnold, 2000.

Granger, C. "Le soleil, ou la saveur des temps insoucieux", in: Corbin, A. (ed.), La pluie, le soleil et le vent. Une histoire de la sensibilité au temps qu'il fait. Paris: Aubier Flammarion. 2013.

Gravari-Barbas, M., *New challenges for cultural heritage: Synthesis of the final report*, Paris: Université Paris, Agence Nationale de la Recherche. 2014.

Gruber, R.E. *Jewish Heritage Travel: A Guide to East-Central Europe.* Northvale - Jerusalem: Jason Aronson, Inc. 1999.

Guidelines for the Implementation of the World Heritage Convention 2nd February 2005. Paris: UNESCO. 2005.

Güleç, S.A.; Canan, F.; Korumaz, M. „Analysis of the Units Contributing Climate Comfort Conditions in Outdoor Spaces in Turkish Traditional Architecture", in: *Proceedings of the 23rd International PLEA Conference.* Geneva. 2006.

Hagan, S. *Taking Shape: A new contract between architecture and nature.* Oxford: Architectural Press. 2001.

Harbison, R. *Eccentric Spaces*. London: The MIT Press. 2000.

Harbison, R. *The Built, the Unbuilt, and the Unbuildable: In Pursuit of Architectural Meaning*. London: The MIT Press. 1993.

Harzallah, A.; Siret, D.; Monin, E.; Bouyer, J. "Controverses autour de l'axe héliothermique: l'apport de la simulation physique à l'analyse des théories urbaines". *International Conference Changing boundaries: architectural history in transition*. Paris: INHA. 2005.

Hasegawa, T.; Collins, M. *Proxy Log*, New York: Lulu Press. 2009.

Heitlinger, A. *In the Shadows of the Holocaust and Communism: Czech and Slovak Jews since 1945.* New Brunswick - London: Transaction Publishers. 2006.

Hell, J.; Schönle, A. *Ruins of Modernity.* Durham – London: Duke University Press. 2010.

Herbst, I.; Braun, A.-K.; McCall, R.; Broll, W. „TimeWarp: interactive time travel with a mobile mixed reality game", in: *Proceedings of MobileHCI 2008*. Amsterdam: ACM Press. 2008, pp. 235-244.

Herman, D. „Narrative Ways of Worldmaking", in: Heinen S.; Sommer R. (eds.), *Narratology in the Age of Cross-Disciplinary Narrative Research. Inaugural Symposium of the Center for Narrative Research*. Berlin: W. de Gruyter. 2009, pp. 71-87.

Heylighen, A. „Inclusive Built Heritage as a Matter of Concern: A Field Experiment", in: Langdon P.; Clarkson P.; Robinson P.; Lazar J. (eds.), *Designing Inclusive Systems*, London: Springer-Verlag 2012, pp. 207-216.

Hobday, R. *The Light Revolution: Health, Architecture, And the Sun*. Forres: Findhorn Press. 2006.

Hodder, I. *The Leopard's Tale: Revealing the Mysteries of Turkey's Ancient Town.* London: Thames and Hudson. 2011.

Hofstadter, D.; Sander, E. *Surfaces and Essences, Analogy as the fuel and fire of thinking*. Philadelphia: Basic Books. 2013.

Hollier, D. *Against architecture: The writings of Georges Bataille.* Cambridge: The MIT Press. 1989.

Hoon, M.; Kehoe, M. „Enhancing Architectural Communication with Gaming Engines", in: *Connecting >> Crossroads of Digital Discourse [Proceedings of the 2003 Annual Conference of the Association for Computer Aided Design In Architecture]*. Indianapolis. 2003, pp. 349-355.

Howes, D. *Empire of the Senses. The sensual Culture Reader*. Oxford: Berg. 2005.

ICOMOS Charter on the Built Vernacular Heritage. Charters. ICOMOS 12th General Assembly. Mexico: ICOMOS. 1999.

Inglese, C. *I tracciati di cantiere di epoca romana. Progetti, esecuzioni e montaggi*. Roma: Gangemi. 2014.

Ingold, T. *Making; Anthropology, Archaeology, Art and Architecture*. London - New York: Routledge. 2013.

Ingold, T. „Up, across and along", in: Ingold, T. *Lines: A Brief History.* London: Routledge. 2007, pp. 72-103.

International Charter for the Conservation and Restoration of Monuments and Sites adopted during Second International Congress of Architects and Technicians of Historic Monuments, Venice, 1964.

Ioannides, M.; Quak, E. (eds.). *3D Research Challenges in Cultural Heritage*. Vol. 8355. Lecture Notes in Computer Science. Berlin - Heidelberg: Springer. 2014.

Izquierdo Tugas, P.; Tresserras J., Jordi et al. *Heritage Interpretation Centres. The Hicira Book.* Barcelona: Deputacio Barcelona. 2005.

Januszkiewicz, K. *O projektowaniu architektury w dobie narzędzi cyfrowych. Stan aktualny i perspektywy rozwoju*. Wrocław: Oficyna Wydawnicza PWr. 2010.

Jay, M. „Scopic Regimes of Modernity", in: Jay, M. (ed.), *Forces Fields. Between Intellectual History and Cultural Critique*. New York - London: Routledge. 1993, pp. 51-63.

Jelewska, A. *Sensorium. Eseje o sztuce i technologii*. Poznań: Wydawnictwo Naukowe UAM. 2012.

Jelić, A. „Designing 'pre-reflective' architecture", in: Morello, E.; Piga B. E. A. (eds.), *Envisioning Architecture: Design, Evaluation, Communication*. Milan: EAEA. 2013, pp. 225-232.

Jerphanion, G. *Les Églises Rupestres De Cappadoce: Une Nouvelle Province De L'art Byzantin*. Paris: Geuthner. 1925.

Jezierski, A.; Zawadzki, S.M. *Dwa wieki przemysłu w Polsce. Zarys dziejów*. Warsaw: Wiedza Powszechna. 1966.

Jobé, J. (ed.), *Le grand livre du soleil*. Lausanne: Edita, Paris: Denoël. 1969.

Jordan, J.A. *Structures of Memory: Understanding Urban Change in Berlin and Beyond.* Redwood City: Stanford University Press. 2006.

Juchnowicz, S. „Rola dziedzictwa kulturowego w projekcie rewitalizacji i rozwoju Nowej Huty i zdegradowanych terenów otaczających", in: Walczak, B. (ed.), *Rewitalizacja miast poprzemysłowych – rola dziedzictwa kulturowego*. Łódź: PRO-REVITA. 2004.

Juraszyński, J.; Nitsch, A.; Porębowicz, S.; Radwański, Z. *Projektowanie obiektów służby zdrowia*. Warszawa: Arkady. 1973.

Kaczmarek, R. „Zarys historii miasta", in: Rosset, E. (ed.), *Łódź w latach 1945-1960.* Łódź: Towarzystwo Przyjaciół Łodzi. 1962.

Kalitko, K. *Architektura między materialnością i wirtualności*. Poznań: Wydawnictwo Naukowe UAM. 2005.

Kanekar, A. *Architecture's Pretexts, Spaces of Translation*. New York: Routledge. 2015.

Kaplan, S. „Perception and Landscape: Conceptions and Misconceptions", in: Elsner, G. H.; Smardon, R. C. (eds.), *Proceedings of Our National Landscape: A Conference on Applied Techniques for Analysis and Management of the Visual Resource*. Incline Village. 1979, pp. 241-248.

Kądziela, M., Rynkowska-Sachse, A."Re-discovering the African philosophy of the architecture through the other/other's lens. European-based considerations", in: Osman, Bruyns, Aigbavboa (eds.), *UIA 2014 Durban Congress Proceedings.* Durban: UIA 2014 Durban. 2014, pp. 552-563.

Kenney, P. „Pojęcie «Matki Polki» w języku opozycji i władzy", in: Szarota, T. (ed.), *Komunizm: ideologia, system, ludzie.* Warszawa: NERITON/Instytut Historii PAN. 2001.

Kepes, G. *Language of Vision*. Chicago: Theobald. 1944.

Kępczyńska-Walczak, A. „Dziedzictwo jako czynnik kulturotwórczy miasta", in: Przesmycka E., Trocka-Leszczyńska E. (eds.), *Miasto w kulturze*, Wrocław: Oficyna Wydawnicza Politechniki Wrocławskiej, 2012, pp. 65-74.

Kępczyńska-Walczak, A. "Performing the Past and the Present for the Knowledge of the Future", in: Stouffs, R.; Sariyildiz, S. (eds.), *Computation and Performance.* Delft: Delft University of Technology. 2013, pp. 453-462.

Kępczyńska-Walczak, A. „Przeszłość architektury wobec ewolucji koncepcji ochrony dziedzictwa kulturowego, zmian społecznych oraz współczesnych problemów historycznych środowiska zurbanizowanego", in: Przesmycka, E.; Trocka-Leszczyńska, E. (eds.), *Architektura Przyszłości.* Wrocław: Politechnika Wrocławska. 2014, pp. 99-112.

Kępczynska-Walczak, A. Walczak, B. "Visualising Genius Loci of built heritage", in: Morello, E.; Piga B.E.A. (eds.), *Envisioning Architecture: Design, Evaluation,Communication*. Milan: EAEA. 2013.

Kim K.; Seo, B.-K.; Han, J.-H.; Park, J.-I. „Augmented Reality Tour System for Immersive Experience of Cultural Heritage", in: *Proceedings of VRCAI 2009*, Yokohama. 2009.

Klabbers J. *The Magic Circle*, Amsterdam: Sense Publishers. 2006.

Klein, L. „Postmodernizm polski: od wielkiej płyty do architektury wczesnej transformacji", in: Klein, L. (ed.), *P1. Postmodernizm polski. Architektura i urbanistyka.* Warszawa: Stowarzyszenie 40 000 Malarzy. 2013.

Kleiner, F.S. et al. *Gardner's Art Through Ages*. Twelfth edition. Belmont: Wardsworth/ Thomson Learning. 2005.

Kluszczyński, R. *Sztuka interaktywna. Od dzieła-instrumentu do interaktywnego spektaklu*. Warszawa: Wydawnictwa Akademickie i Profesjonalne. 2010.

Knowles, R. *Sun Rhythm Form.* Cambridge: MIT Press. 1981.

Kobyliński Z. „Filozoficzne i socjologiczne aspekty ochrony i zarządzania dziedzictwem kulturowym", in: Gutowska K. (ed.), *Problemy zarządzania dziedzictwem kulturowym*, Warsaw: Res Publica Multiethnica, 2000, pp. 12-19.

Koestler, A. *The Act of Creation*, London – New York: Hutchinson – MacMillian, 1964.

Kolarevic, B. (ed.). *Architecture in the Digital Age: Design and Manufacturing*. New York: Talyor & Francis. 2005.

Kordej De Villa, Ž.; Sumpor, M.; Stubbs, P. *Participativno upravljanje za održivi razvoj* [Participating management for sustainable development]. Zagreb: Ekonomski Institut. 2009, pp. 47-62.

Kortan, E. *Turkish Architecture and urbanism through the eyes of Le Corbusier.* İstanbul: Boyut Yayıncılık. 2005.

Koshar, R. *From Monuments to Traces: Artifacts of German Memory, 1870-1990*. Oakland: University of California Press. 2002.

Kozarski, P.; Molski, P. „Zagospodarowanie i konserwacja zabytkowych budowli. Poradnik", in: *Fortyfikacja*. Vol. XIV. Warsaw: Towarzystwo Przyjaciół Fortyfikacji. 2001, pp. 34-35.

Krier, R. *Architectural composition*, Fellbach: Edition Axel Menges. 2010 [1988].

Kryza, F.T. *The Power of Light. The Epic Story of Man's Quest to Harness the Sun*. New York: McGraw-Hill. 2003.

Kuratowski, K. *Wstęp do teorii mnogości i topologii*. Warszawa: PWN. 1965.

Kuban, D. İstanbul an Urban History. İstanbul: İş Bankası Yayınları. 2010.

Kuban, D. İstanbul Ansiklopedesi. İstanbul: Tarih Vakfı. 1995.

Kusiński, J.; Bonisławski R.; Janik M. *Księga Fabryk Łodzi*. Łódź: Wydawnictwo Jacek Kusiński, 2010.

Kwartler, M.; Longo, G. *Visioning and visualization: people, pixels, and plans*. City: Lincoln Institute of Land Policy. 2008.

Lagae, J. „Towards a rough guide for Lumbashi, Congo: rethinking «shared built heritage» in a former Belgian colony", in: Bruyns, G.; Graafland, A. (eds.), *African perspectives : [South] Africa : city, society, space, literature and architecture*. Rotterdam: 010 Publishers. 2012, pp. 88-109.

Lainé, M. *Les constructions scolaires en France.* Paris: PUF. 1996.

Lang, J. *Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design*, New York: Van Nostrand Reinhold. 1987.

Lange, E. „Issues and Questions for Research in Communicating with the Public through Visualizations", in: Buhmann, E.; Paar, P.; Bishop, I. D.; Lange, E. *Trends in Real-Time Landscape Visualization and Participation*. Anhalt (Germany): 6th International Conference on Information Technologies in Landscape Architecture. 2005, p. 1-11.

Larkham, P.J. *Conservation and the City*, London: Routledge, Taylor and Francis Group. 1996.

Latour, A. (ed.). *Kahn, Louis I. Writings, Lectures, Interviews*. New York: Rizzoli. 1991.

Le Officine Grandi Riparazioni: un polo espositivo per la Città. Turin: Città di Torino. 2002.

Lee, J.; Ingold, T. *Introduction* in *Ways of walking: Ethnography and Practice on Foot*. (Anthropological studies of creativity and perception) England: Ashgate. 2008, pp. 1-19.

Lehnerer, A. *Grand Urban Rules*, Rotterdam: 010 Publishers. 2009.

Les journées du patrimoine de Casablanca. Dossier pédagogique. Casablanca: Casamémoire. 2011.

Letellier, R. *Recording, Documentation, and Information Management for the Conservation of Heritage Places, Guiding principles.* Los Angeles: The Getty Conservation Institute. 2007.

Levinson, P. *Miękkie ostrze. Naturalna historia i przeszłość rewolucji informacyjne*j, Warsaw: MUZA. 1999. (Levinson, Paul. *Soft edge: A Natural History and Future of the Information*. London & New York: Routledge. 1997).

Lewicka, M. *Psychologia miejsca*. Warsaw: Wydawnictwo Naukowe Scholar. 2012.

Lodz City Council Resolution no LV/1146/13 – appendix: *Strategia przestrzennego Rozwoju Łodzi 2020+*.

Lu, S. *From Decaying to Rebirth: Study on the Redevelopment of Urban Port Industrial Districts*. Shanghai: Tongji University. 1997.

Lynch, K. *The Image of the City*. Cambridge: MIT Press. 1960.

Lynch, K. *Wasting Away*. San Francisco: Sierra Club Books. 1990.

Łęcki, W.; Maluśkiewicz, P. (eds.). *Poznań od A do Z. Leksykon krajoznawczy*, Poznań: WYDAWCA. 1998.

Łoziński, J.; Miłobędzki, A. *Atlas zabytków architektury w Polsce*. Warsaw: Polonia. 1967.

Łódź wczoraj, dziś i jutro. Łódź: Wydawnictwo Łódzkiego Komitetu Wyborczego Frontu Narodowego. 1952.

MacCannell, D. *Turysta - nowa teoria klasy podróżniczej*. Warsaw: MUZA. 2005.

Majewski, T. *Psychologia niewidomych i niedowidzących*. Warsaw: PWN. 1983.

Mandoul, T. *Entre Raison et Utopie. L'Histoire de l'Architecture d'Auguste Choisy*. Wavre: Mardaga Editions. 2008.

Maniaque, C. „Les édifices publics en France: de la décoration à l'équipement", in: Cohen, J.-L. (ed.), *Les années 30. L'architecture et les arts de l'espace entre industrie et nostalgie.* Paris: Editions du patrimoine. 1997, pp. 214-224.

Manovich, L. *Język nowych mediów*. Warsaw: Wydawnictwa Akademickie i Profesjonalne. 2006. (Manovich, Lev. *The Language of New media*. Massachusetts: The MIT Press Cambridge. 2001).

Mapungubwe National Park. UNESCO World Heritage Site. World Heritage Landscape. South African National Parks. 2013.

Marini, S. „Le ali dell'architettura. Spazi del lavoro ed altre alchimie", in: Bertagna, A.; Gastaldi, F.; Marini, S. (eds.), *L'architettura degli spazi del lavoro. Nuovi compiti e nuovi luoghi per il progetto*. Macerata: Quodlibet. 2013, pp. 18-23.

Marschall, S. *Landscape of Memory: Commemorative Monuments, Memorials and Public Statuary in Post-Apartheid South Africa.* Amsterdam: ASC Series. 2009.

Matos, A.C. et al. *A Electricidade em Portugal – Dos primórdios à Segunda Guerra Mundial* (Electricity in Portugal – From the early beginings to the Second World War), Lisbon: Ed. EDP. 2004.

Mellaart, J. Çatalhöyük, A Neolithic Town in Anatolia. London: Thames & Hudson. 1967.

Miano, P. „Vita e attesa di due edifici macchina", in: Di Domenico, C. (ed.), *Sul futuro dell'origine. Novità ed originalità in architettura.* Genoa: Il melangolo. 2014, pp. 171-178.

Mirzoeff, N. „The subject of visual culture", in: Mirzoeff, N. (ed.), *The visual culture reader*. London - New York: Routledge. 2002, pp. 3-13.

Mission Report Thirty-seventh session Convention Concerning the Protection of the World Cultural and Natural Heritage of UNESCO. Phnom Penh, Cambodia. 2013.

Mitchel, W.J.T. *Picture Theory: Essays on Verbal and Visual Representation*. Chicago: University of Chicago Press. 1994.

Monnier, G. *L'architecture en France. Une histoire critique 1918-1950, architecture, culture, modernité.* Paris: Philippe Sers. 1990.

Morello, E.; Piga B.E.A. (eds.). *Envisioning Architecture: Design, Evaluation, Communication*. Milan: EAEA. 2013.

Morizet, A. *Du vieux Paris au Paris moderne.* Paris: Hachette. 1932.

Mostaedi, A. *Building Conversion & Renovation.* Barcelona: Carles Broto & Mª Minguet. 2003.

Motty, M. *Przechadzki po mieście*. v. II. Poznań: Wydawnictwo Miejskie. 1999.

Mutizwa-Mangiza N.; Moisseev, I. (eds.). *The State of the Worlds Cities 2004/2005: Globalization and Urban Culture Report, United Nations Human Settlements Programme (UN-Habitat)*. London: Earthscan 2004.

Nagai, K.; Kijima, S. *High School Art I/II*. Tokyo: Nihon Bunkyo Syuppan. 2014.

Nagakura, T.; Oishi, J. „Deskrama", in: *Emerging Technologies, ACM SIGGRAPH 2006 Proceedings* (http://cat2.mit.edu/deskrama/siggraph2006-etech-0159-deskrama.pdf)

Nagakura, T.; Sung, W.-K. „Ramalytique: Augmented Reality in Architectural Exhibitions", in: *Proceedings for Conference on Cultural Heritage and New Technologies (CHNT)*. Vienna. 2014.

Nanchao L. *Beyond neon light: everyday Shanghai in the early twentieth century*. London: University of California Press. 2004.

Negri, A. „Tecnologie Informatiche per la conoscenza e la conservazione", in: Carbonara, G. (ed.), *Trattato di Restauro - Secondo aggiornamento*. Vol. X. Torino: UTET. 2008.

Neil, M.; Stones, R. *Beginning Databases with PostgreSQL: From Novice to Professional, Second Edition*. New York: Apress. 2005.

Niedmermair, S.; Ferschin, P. „An Augmented Reality Framework for On-Site Visualization of Archaeological Data.", in: *Proceedings of the 16th International*

Conference on Cultural Heritage and New Technologies. Vienna: Museen der Stadt Wien – Stadtarchäologie. 2011, pp. 636-647.

Niedmermair, S.; Ferschin, P. „An Augmented Reality Framework for Architectural Applications", in: Gartner G.; Ortag F. (eds.), *Proceedings of the 8th International Symposium on Location-Based Services*. MIASTO: WYDAWCA. 2011. pp. 192-205.

Nieftagodien, N. „Public history in Alexandra", in: Silverman, R. (ed.), Museum as process. *Translating Local and Global Knowledges.* New York: Routledge. 2015, pp. 169-187.

Nizhny Tagil Charter for the Industrial Heritage. TICCIH. 2003.

Norberg-Schulz, C. *Bycie, przestrzeń, architektura*. Warsaw: Wydawnictwo Murator. 2000.

Norberg-Schultz, C. *Genius Loci: Towards a Phenomenology of Architecture*. New York: Rizzoli International. 1980.

Ohno, R.; Soeda, M.; Nakajima, K. „The Effectiveness of design guideline regulations for improving streetscape", in: *Proceedings of 6th Conference of the European Architectural Endoscopy Association*. Bratislava: EAEA. 2003, pp. 21-27.

Olsen, B.; Pétursdóttir, Þ. (eds.). *Ruin Memories: Materialities, Aesthetics and the Archaeology of the Recent Past.* London – New York: Routledge. 2014.

Ory, P. *L'invention du bronzage*, Paris: Edition Complexe. 2008.

Ossowski, S. „An analysis of the concept of sign" in Pelc, Jerzy (ed.), *Semiotics in Poland*. Warszawa: PWN. 1979.

Ostrowska-Kębłowska, Z. *Architektura i budownictwo w Poznaniu latach 1790-1880*. Warsaw-Poznań: PWN. 1982.

Outstanding Universal value and monitoring of word heritage properties. Warsaw: ICOMOS. 2011.

Özbay, C.; Candan, A.B. 2 *Yeni İstanbul Çalışmaları.* Metis Yayınları. 2014.

Parlor City Center Project Survey and Planning Study, Mowry Architects Associated, 1978.

Pallasmaa, J. *Encounters 1: Architectural Essays*. Helsinki: Rakennustieto. 2013.

Pallasmaa, J. *The Eyes of the Skin, Architecture and the Senses*. Chichester: John Wiley & Sons, (1996) 2005, 2013.

Pamuk, O. *Istanbul: Memories and the City*. New York: Vintage. 2006.

Parthenios, P.; Mania, K.; Oikonomou, A.; Mallouchou, F.; Ragia, L.; Patsavos, N.; Christaki, A.; Kotsarinis, P.; Dimitriou, M. „Using WEBGl to design an interactive 3D Platform for the monuments of Crete", in: *Proceedings of the 1st CAA GR Conference*. Rethymno. 2014.

Pawleta, M.; Zapłata, R. „Nowomedialne kreacje przeszłości – przeszłość wizualnie zapośredniczona", in: Seidel-Grzesińska, A.; Stanicka-Brzezicka, K. (eds.), *Cyfrowe spotkania z zabytkami. Reprodukcja cyfrowa zabytku - metody, wiarygodność, trwałość*. Vol. 4. Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego [in press], pp. 179-189.

Peirce, C. S. *The Essential Peirce Selected Philosophical Writings*. Vol. 2. Bloomington: Indiana University Press. 1998.

Pelc, J. *Wstęp do semiotyki*. Warszawa: Wiedza Powszechna. 1982.

Pendlebury, J. *Conservation in the Age of Consensus*, London: Routledge, Taylor and Francis Group. 2009.

Pierrot-Deseilligny, M.; De Luca, L.; Remondino, F. „Automated Image-Based Procedures for Accurate Artifacts 3D Modeling and Orthoimage", in: *XXIIIth International CIPA Symposium*. 2011.

Piga, B.E.A.; Morello, E.; Signorelli, V. „The Combined Use of Urban Models to Support a Collaborative Approach to Design Towards the Sustainable University Campus: Participation, Design, Transformation", in: Saleh, M. U.; Chis, W. (eds.), *Design & Graphic Palimpsest: Dialogue, Discourse, Discussion*. Atlanta: Design Communication Conference. 2014, pp. 53-58.

Podemski, K. *Socjologia podróży*. Poznań: Wydawnictwo Naukowe UAM. 2005.

Projecto de Reconversão da Gare do Arco do Cego (IST Learning Center) –Requalificação das edificações que restam da antiga estação da Carris, Lisbon: IST, 2014.

Ptasiński, J. *Walka o Łódź socjalistyczną*. Łódź: Wydawnictwo Łódzkiego Komitetu Wyborczego Frontu Narodowego. 1952.

Purchla, J. *Dziedzictwo a transformacja*, Kraków: Międzynarodowe Centrum Kultury, 2005.

QGIS User Guide. Release 2.2. QGIS Project. QGIS Development Team. 2014.

Ramber, C. *Constructions scolaires et universitaires.* Paris: Vincent, Frial et Cie. 1954.

Rapoport, A. *Culture, Architecture and Design*. Chicago: Locke Science Publishing Company, Inc. 2005.

Rapoport, A. *The Meaning of the Built Environment*. Beverly Hills: Sage. 1982.

Rasmussen, S.E. *Odczuwanie architektury*. Warsaw: MURATOR. 1999. (Rasmussen, S.E. *Experiencing Architecture*. Cambridge: MIT Press. 1964.)

Reas, C.; Fry, B. *Processing: A Programming Handbook for Visual Designers and Artists*. Cambridge: The MIT Press. 2007.

Reas, C.; McWilliams, C. *Form & Code in Design, Art and Architecture*. New York: Princeton Architectural Press. 2010.

Reports on the Requests and Recommendations Made By the World Heritage Committee Regarding the World Heritage Site "Historic Centre of Vienna (Austria). September 2002.

Révész, G. *Psychology and Art of the Blind*. London: Longmans, Green. 1950.

Rewers, E. *Post-polis. Wstęp do filozofii ponowoczesnego miasta*. Kraków: Universitas. 2005.

Rhodes, M. *Shanghai - the key to modern China*. Shanghai: Shanghai People's Publishing House. 1953.

Rizzi, P. „Slang, language or metalanguage? On the fleetingness of words", in: *Defining the architectural Space. Durability and fleetingness of architecture, Technical Transactions*. Kraków: Wydawnictwo PK. 2011, pp. 334-337.

Robert, P. *Ristrutturazioni, Nuovi Usi per Vecchi Edifici.* Milan: Tecniche Nuove. 1990.

Rodley, L. *Cave monasteries of Byzantine Cappadocia*. Cambridge: Cambridge University Press. 1985.

Rodwell, D. *Conservation and Sustainability in Historic Cities*. Oxford: Blackwell Publishing. 2007.

Rowe, C.; Koetter, F. *Collage City*. Cambridge: MIT Press. 1978.

Colin, R. „The New City: Architecture and Urban Renewal", in: Caragonne, A. (ed.), *As I was Saying: Recollections and Miscellaneous Essays, Volume Three: RUrbanistics*. Cambridge - London: MIT Press. 1966, pp. 87-96.

Ryan, M.-L. „Story/Worlds/Media.", in: Ryan, M.-L.; Thon, J.-N. (eds.), *Storyworlds across Media: Toward a Media Conscious Narratology*. Lincoln: University of Nebraska Press, 2014, pp. 25-49.

Rykier, Z. „Szata dezinformacyjna miasta", in: Jałowiecki, B.; Łukowski W. (eds.), *Szata informacyjna miasta.* Warszawa: Scholar. 2008.

Rykwert, J. *Pokusa miejsca. Przeszłość i przyszłość miast*. Kraków: Międzynarodowe Centrum Kultury. 2013.

Sack, R.D. *Human Territoriality: Its Theory and History*. New York: Cambridge University Press. 1986.

Sakamoto, T.; Ferre, A.; Kubo, R. *From Control to Design*. Barcelona: ACTAR. 2006.

Salimbeni, R.; Pini, R.; Siano, S. „The Optocantieri Project: Toward a Synergy between Optoelectronics and Information", in: *Optical Metrology for Arts and Multimedia*. Monaco: Atti del Convegno. 2003.

Sánchez-Carretero, C. „Significance and social value of Cultural Heritage: Analyzing the fractures of Heritage", in: Rogerio-Candelera, L.; Cano (eds.), *Science and Technology for the Conservation of Cultural Heritage*. London: Taylor & Francis Group. 2013.

Sanoff, H. *Design Games: Playing for keeps with personal and environmental design decisions*, Los Altos: William Kaufmann, Inc. 1979.

Scharfstein, B.-A. *Spontaneity in Art*. Tel-Aviv: Am Oved. 2006.

Schittich, C. *Building in Existing Frabric*. Basel-Boston-Berlin: Birkhäuser. 2003.

Schumacher, P. *Autopoiesis of Architecture: A New Framework for Architecture*. Chichester: John Wiley. 2011.

Sennett, R. *Flesh and Stone: The Body and the City in Western Civilization.* New York: WW Norton & Comapny. 1994.

Shanghai Archives. *The Record of Foreign Settlement in Shanghai.* Shanghai: Shanghai Academy of Social Sciences Publishing House. 2001.

Shanghai Library. *Record of Customs in Old Shanghai (1)*. Shanghai: Shanghai Cultural Publisher.1998.

Shanghai Library. *Record of Customs in Old Shanghai (2)*. Shanghai: Shanghai Cultural Publisher. 1998.

Shanghai National Government. *Harbor Plan of Great Shanghai.* Shanghai Archives. 1936.

Shaoyi, S. I*maginative City: Literature, Movie and Visual Shanghai.* Shanghai: Fudan University Press. 2009.

Sheppard, S.R.J. *Visual Simulation: A User Guide for Architects, Engineers, and Planners*. New York: Van Nostrand Reinhold. 1989.

Shumaker, S.A.; Taylor, R.B. „Toward a clarification of people-place relationships: A model of attachment to place", in: Feimer, N.R.; Geller, E.S. (eds.), *Environmental psychology: Direction and perspectives*. New York: Praeger. 1983, pp. 219-251.

Siret, D. "William Atkinson, pionnier de la science de l'ensoleillement en architecture en Amérique du Nord". in Mondini, D. (ed.), *Light and Darkness in XX Century Architecture*. Mendrisio: Accademia di Architettura. 2014.

Siret, D. "Les sensations du soleil dans les théories architecturales et urbaines: de l'hygiénisme à la ville durable", in: Beck, R., Krampl, U., Retaillaud-Bajac, E. (eds.), *Les cinq sens de la ville du Moyen Âge à nos jours*. Tours: Presses universitaires François Rabelais. 2013.

Slovakia in the UNESCO Treasury. RAX s.r.o. 2005.

Sipridonis, C.; Voyatzki, M. (eds.). *Dealing with Change: For an adaptive, responsive, engaging and dynamic architectural education*. Thessaloniki: 16th Meeting of Heads of European Schools of Architecture. 2014.

Springer, F. *Źle urodzone. Reportaże o architekturze PRL-u*. Kraków: Karakter. 2012.

Stawowczyk, E. *O widzeniu, mediach i poznaniu. Stłuczone lustra rzeczywistości*. Poznań: Wydawnictwo Fundacji Humaniora. 2002.

Stazioni. Stations. Viaggi e Fermate. Travel and Stops. Turin: Officina Città Torino. 2003.

Sztompka, P. *Socjologia wizualna. Fotografia jako metoda badawcza*. Warsaw: Państwowe Wydawnictwo Naukowe. 2006.

Szulc, W. „Rozwój przemysłu w pierwszej połowie XIX wieku", in: *Dzieje Poznania*. v. II. Part 1. Warszawa-Poznań: PWN, 1994, p. 140.

Tafuri, M. *The Sphere and the Labyrinth*. Boston: MIT Press. 1987.

Tanizaki, J. *In Praise of Shadows*. Connecticut: Leete's Island. 1977 (1933).

Tajchman, J. „Adaptacja zabytków architektury w świetle współczesnej teorii

ochrony dóbr kultury", in: *Konserwacja, wzmacnianie i modernizacja budowlanych obiektów historycznych i współczesnych*. Kielce 2001, p. 8.

Takashina, S. et al. *Western Art History*. Tokyo: Bijutsu-Syuppan. 2002.

The Bardejov Jewish Preservation Committee. Information Brochures, Pasadena.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, Australia ICOMOS, 2013.

The Casablanca Abattoir's culture factory: story of a transformation. Casablanca: Sirocco. 2014.

The Nara document on authenticity. Venice: UNESCO. 1963.

The New Charter of Athens. Firenze: Alinea. 2003.

The Slovak Jewish Heritage Route. Catalogue – a project of the Slovak Jewish Heritage Center, Bratislava.

Tomaszewski, A., „Dziedzictwo i zarządzanie", in: Gutowska, K. (ed.), *Problemy zarządzania dziedzictwem kulturowym*, Warsaw: Res Publica Multiethnica, 2000.

Tonkiss, F. *Cities by Design: The Social Life of Urban Form*. Cambridge: Polity. 2013.

Torino at Work. From Post-War Reconstruction to Economic Miracle. Turin. 2006.

Toulier, B.; Pabois, M. (eds.). *L'architecture coloniale. L'expérience française*, Paris: Institut National du Patrimoine. 2005.

Transforming Sites of Detention: A Review of and Roadmap for Reparations and Memorialization in Morocco. New York: International Coalition of Sites of Conscience. 2011.

Treib, M. *Spatial Recall: Memory in Architecture and Landscape*. New York: Routledge. 2009.

Ülkekul, C. *8200 Yıllık Bir Harita - Çatalhöyük Şehir Planı / An 8200 Year Old Map - The Town Plan of Çatalhöyük*. Istanbul: Dönence. 1999.

Umberto, E. *Storia Della Bruttezza*. Tel-Aviv: Knneret, Zmora-Bitan. 2013.

UNESCO WHC Convention Concerning The Protection Of The World Cultural And Natural Heritage Twenty-sixth session Budapest, Hungary 2002 WHC-02/CONF.202/17.

Unwin, S. *Analysing Architecture*. Abingdon: Routledge. 2009.

Venturi, R.; Brown, D.S.; Izenour, S. *Learning from Las Vegas: The forgotten symbolism of architectural form*. Cambridge: The MIT Press. 1977.

Vesely, D. *Architecture in the Age of Divided Representation: The Question of*. London: MIT Press. 2004.

Voula, P. M. *Sustainable Cities for the Third Millennium: The Odyssey of Urban Excellence.* London: Springer. 2010.

Walczak, B.M. „Évaluation des plus grands sites textiles de Łódź dans le contexte des récents plans de rénovation", in: Dorel-Ferré G. (ed.), *Patrimoines textiles de par le monde*, Reims: CRDP de Champagne-Ardenne, 2013.

Walczak, B.M. „The Importance of Industrial Heritage for Cultural Landscape of Lodz and its Local Identity", in: Wittbrodt E., Affelt W. (eds.), *International Conference Heritage of Technology – Gdańsk Outlook 4 Proceedings*, Gdańsk: Politechnika Gdańska 2005, pp. 311-318.

Wallis, M. *Sztuki i znaki: pisma semiotyczne.* Warsaw: Państwowy Instytut Wydawniczy. 1983.

Wejchert, K. *Elementy kompozycji urbanistycznej*, Warsaw: Arkady. 2008 [1974].

White, J. *The birth and rebirth of pictorial space*. Belknap Press; 3 Sub edition 1987.

Witruwiusz. *O Architekturze ksiąg dziesięć*. Warszawa: Prószyński i S-ka. 1999.

Wolniewicz, B. „Elzenberg o «Dociekaniach» Wittgensteina", in: Pelc, J. (ed.), *Studia Semiotyczne tom XXIV*. Warszawa: PTS. 2001.

Woods, L.; Myers, T.; Harries, K. (eds.). *Lebbeus Woods Experimental Architecture.* Pittsburgh: Carnegie Museum of Art. 2004.

Woodward, C. *In Ruins.* London: Vintage. 2002.

Worthing, D.; Bond, S. *Managing Built Heritage, The Role of Cultural Significance*. Oxford: Blackwell Publishing. 2008.

Wright, D. *Natural Solar Architecture: A Passive Primer.* New York: Van Nostrand Reinhold Company. 1978.

Xiaoqi, M. et al. *History of Shanghai Port: Ancient and Modern Part*. Beijing: People's Transportation Publishing House. 1990.

Yan, Z. (ed.). *Completed Dictionary of Shanghai Port*. Shanghai: Shanghai Academic of Science and Technology Publishing House. 1991.

Yangpu District Cultural Bureau. *History of Yangpu Years*. Shanghai: Shanghai Scientific and Technological Literature Publishing House. 2006.

Yee, R. *Architectural Drawing. A visual Compendium of Types and Methods*. Hoboken, New Jersey: John Wiley & Sons. 2013.

Young, J.E. *At Memory's Edge: After-images of the Holocaust in Contemporary Art and Architecture*. London: Yale University Press. 2002.

Young, J.E. *The Texture of memory: Holocaust Memorials and Meaning.* New Haven - London: Yale University Press. 1993.

Yuezhi, X. *General History of Shanghai (10 Volumes)*. Shanghai: Shanghai Academy of Social Sciences Publishing House. 1999.

Yücel, A. „Republican Period İstanbul", in: *İstanbul World City*. İstanbul: Türkiye Ekonomik ve Tarihsel Toplum Vakfı. 2014, pp. 189-207.

Zamani Project. Cultural Heritage Sites in Africa. Digital Collection of African Cultural Heritage Sites and Landscape Database. Cape Town: University of Cape Town. 2014.

Zapłata, R. „Obrazowanie przeszłości – wizualizacja w archeologii. Archeologiczne widzenie widzenia", in: Kluza, M. (ed.), *Wizualizacja wiedzy. Od Biblii pauperum do hipertekstu*. Warsaw: Portal Wiedza i Edukacja. 2011, pp. 238-247.

Zapłata, R. „Badania i modele cyfrowe zabytków architektury – wybrane zagadnienia", in: Seidel-Grzesińska, A.; Stanicka-Brzezicka, K. (eds.), *Cyfrowe spotkania z zabytkami. Niewidzialne dziedzictwo*. Vol. 5. Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego [in press].

Zapłata, R. „Zabytkowa architektura we współczesnym mieście - krajobraz miejski zmysłowo doświadczany. Wybrane zagadnienia prezentacji in situ historycznej zabudowy", in: Frydryczak, B.; Ciesielski, M. (ed.), *Krajobraz kulturowy*. Gniezno [in press].

Zarzycki, A. „Teaching and Designing for Augmented Reality", in: Thompson, E. M. (ed.), *Fusion – Proceedings of the 32nd eCAADe Conference* – Volume 1. Newcastle upon Tyne: Northumbria University. 2014, pp. 357-364.

Zawojski, P. „Czas cyberprzestrzenie", in: Wilkoszewska, K. (ed.), *Czas przestrzeni*. Kraków: Universitas. 2008, pp. 281-289.

Zawojski, P. *Cyberkultura. Syntopia sztuki, nauki i technologii*. Katowice: POLTEXT. 2010.

Zeisel, J. *Inquiry by Design: Tools for Environment – Behaviour Research*, Cambridge: Cambridge University Press. 1984.

Zhang, W. "A Bright Urban Symphony: Shanghai Modern Transportation", in: Shanghai Library. *Old Shanghai Customs Volume 2.* Shanghai: Shanghai Fine Art Publisher. 1998.

Zhongtian, Y. *Reading Cities*. Shanghai: Shanghai Literature & Arts Publishing House. 2000.

Zu'an, Z. *Formation of Modern Shanghai City*. Shanghai: Xuelin Publishing House. 1984.

Zukin, S. *The Naked City: The Death and Life of Authentic Urban Places*. Oxford: Oxford University Press. 2013.

Zumthor, P. *Myślenie architekturą*. Kraków: Karakter. 2010. (Zumthor, P**.** *Thinking architecture*. CITY: Baselin. (1999) 2010

Żórawski, J. *O budowie formy architektonicznej*, Warsaw: Arkady. 1973.

Papers in journals

Akyüz, L.E.; Coşgun, N.; Erdoğdu Erkarslan, Ö. „Türkiye'de Mimarlık Eğitimine Niceliksel Bir Bakış". *Mimarlık.* Vol. 381. 2015.

Asomani-Boateng, R. „Borrowing from the past to sustain the present and the future: indigenous African urban forms, architecture, and sustinable urban development in contemporary Africa". *Journal of Urbanism*. No. 4:3. 2011, pp. 239-262.

Arnold, D. „Facts or Fragments? Visual Histories in the Age of Mechanical Reproduction". *Art History*. Vol. 25. 2002, pp. 450-468.

Asanowicz, A. „Systemy rzeczywistości wirtualnej w architekturze", *ARCHITECTURAE et ARTIBUS*. No. 4. 2012, pp. 5-12.

Bar-Eli, A. „On the Fragment, the Worn, the Twisted, and the Aesthetics of the Non-Complete". *International Journal of Arts & Sciences*. Vol. 7. 2014. pp. 161-168.

Blaise, J.-Y.; Dudek I. „Informative Modelling". *MIA Journal*. No. 1. 2006, pp. 143-154.

Braičić, Z. „Razvoj metalurgije i njezin utjecaj na urbanu preobrazbu i stambenu izgradnju Siska". *Geoadria*. No. 2. 2005, pp. 211-228.

Breakwell, G.M. „Social representations and social identity". *Papers on Social Representations – Textes sur les Representations Sociales*. No. 2. 1993, pp. 1-20.

Campbell, M. "What Tuberculosis did for Modernism: The Influence of a Curative Environment on Modernist Design and Architecture", *Medical History.* Vol. 49. No. 4. 2005.

Corbin, A. "Histoire et anthropologie sensorielle". *Anthropologie et Sociétés,* Vol. 14. No. 2. 1990.

Danahy, J. W. „Technology for dynamic viewing and peripheral vision in landscape visualization". *Landscape and Urban Planning*. No. 54. 2001, pp. 127-138.

De la Soudière, M; Tabeaud, M. (eds.). "Météo. Du climat et des hommes", *Revue Ethnologie française*. Vol. 39. No. 4. 2009.

DeSilvey, C.; Edensor, T. „Reckoning with Ruins". *Progress in Human Geography*. Vol. 37. 2013, pp. 465-485.

Düring, B. „Social Dimensions in the Architecture of Neolithic Çatalhöyük". *Anatolian Studies*. No. 51. 2001, pp. 1-18.

Edensor, T. „Sensing the Ruin". *The Senses and Society*. Vol. 2. 2007, pp. 217-232.

Edensor, T. „The Ghosts of Industrial Ruins: Ordering and Disordering Memory in Excessive Space". *Environment and Planning D: Society and Space*. Vol. 23. 2005, pp. 829-849.

Ellin, N. „Practising Integral Urbanism in Metropolitan Phoenix". *Canalscape*. No. 15 (4). 2010, pp. 599-610.

Fagan, G. „Mapungubwe Interpretation Centre". *Architectural Review*. No. 1356. 2010, pp. 40-46.

Febvre, L. "La sensibilité et l'histoire. Comment reconstituer la vie affective d'autrefois?", *Combats pour l'histoire. Paris: Armand Colin*. 1952, pp. 221-238 (1st Edition in Annales d'histoire sociale, n°3, 1941).

Feliciak, M. „Wirtualne nie jest niematerialne. Od atomów do bitów i z powrotem". *AUTOPORTRET. Pismo o dobrej przestrzeni*. No. 2/27. 2009, pp. 58-61.

Foruzanmehr, A.; Vellinga, M. „Vernacular Architecture: Questions of Comfort and Practicability". *Building Research and Information*. Vol. 39 (3). 2011.

Franco, G. „La qualità nei processi di recupero: aperture interdisciplinari e innovazione tecnologica". *Il progetto sostenibile.* No. 34-35. 2014, pp. 96-101.

Franco, G. „Sustainability and Heritage: from a case study, new horizon of research". *TECHNE, Journal of Technology for Architecture and Environment.* No. 8. 2014, pp. 190-197.

Franco, G.; Magrini, A.; Cartesegna, M.; Guerrini, M. „Towards a systematic approach for energy refurbishment of historical buildings: the case study of Albergo dei Poveri in Genoa, Italy". *Energy and buildings.* No. 5434. 2014, pp. 1-7.

Freinet, C. „La nouvelle école de Villejuif". *L'Educateur Prolétarien.* No. 3. 1933, pp. 157-158.

Fukushima K.; Tsumita H.; Kobayashi M.; Shimazu M. „Analysis of the constitution of the landscape and the psychological evaluation (Study of the landscape in the Japanese garden)". *Summaries of Technical Papers of Annual Meeting., Architectural Institute of Japan E1*. No. 9. 2014, pp. 739-740.

Garrett, B.L. „Urban Explorers: Quests for Myth, Mystery and Meaning". *Geography Compass*. Vol. 4. 2010, pp. 1448-1461.

Gonzalez-Perez, C.; Henderson-Sellers, B. „A powertype-bassed metamodeling framework". *Software & Systems modelling*, Vol. 5. No. 1, pp. 72-90.

Granger, C. "(Im)Pressions atmosphériques. Histoire du beau temps en vacances", *Ethnologie française*. Vol. 34. No. 1. 2004.

„Groupe scolaire des vignes blanches à Pierrefittes". *L'Architecture d'Aujourd'hui.* No. 5. 1936, pp. 33-35.

„Groupe scolaires". *L'Architecture d'Aujourd'hui.* No. 1. 1933, pp. 47-49.

Horvat, J.; Pavković, M. „Physical planning and Programming Agenda – Mapping and Programming Spatial Potentials as Basis for Integral Developement". *Prostor*. No. 21(2). 2013, pp. 293-301.

Hull IV, R.B.; Stewart, W. „Validity of photo-based scenic beauty judgments". *Journal of Environmental Psychology*. Vol. 12. No. 2. 1992, pp. 101-114.

Huyssen, A. „Nostalgia for Ruins". *Grey Room*. No.?. 2006, pp. 6-21.

Jessup, H.I. „Architectural Visions of the Indonesian Tradition". *Muqarnas*. Vol. 3. 1985, pp. 138-161.

Jivén, G.; J. Larkham, P. „Sense of Place, Authenticity and Character: A Commentary". *Journal of Urban Design*. No. 8 (1). 2003, pp. 67-81.

Jodidio, P. „Architecture Virtuelle Voir L'invisible". *Connaissance des Arts*. No. 560. 1999, pp. 110-115.

Kłopotowska, A. „Niewidzialna architektura-status piękna w pozawzrokowej percepcji przestrzeni architektonicznej". *Definiowanie przestrzeni architektonicznej. Co z tym pięknem architektury współczesnej, Czasopismo Techniczne Architektura*. Vol. 104. No. 6-A. 2007, pp. 165-169

Komrska, J. „Urbánny pamätník". *Časopis ARCH, mienkotvorný mesačník o architektúre a inej kultúre - tradičné periodikum slovenských architektov*. No. 12. 2014, pp. 24-29.

Konopacki, J. „Rozszerzona rzeczywistość – jako narzędzie wspomagające procesy analityczno-decyzyjne w architekturze i planowaniu przestrzennym". *Przestrzeń i FORMA*. No. 21. 2014, pp. 89-108.

Konopacki, J. „The Technology of Augmented Reality - Virtual Reconstructions of Landscape Architecture Design". *Technical Transactions. Architecture / Czasopismo Techniczne. Architektura*. Vol. 104. No. 5-A. 2014, pp. 97-112.

Kranjčević, J. „Teritorijalni pristup kao polazište za planiranje ruralnog razvoja". *Central European Agriculture Journal*. No. 7 (3). 2006, pp. 549-550.

Krausse J. „Information, Folding in Architecture"*, ARCH*. No. 4. 1996, pp. 71-74.

Küçükdoğu, M.Ş. „Mimarlık Bölümü Açılması ve Sürdürülmesinde Aranacak Asgari Koşullar Üzerine Bir Araştırma". *Mimarlık.* Vol. 374. 2013.

Lagae, J. "From «Patrimoine partagé» to «whose heritage»? Critical reflections on colonial built heritage in the city of Lubumbashi, Democratic Republic of the Congo". *Afrika Focus*. Vol. 21. No. 1. 2008, pp. 11-30.

Lai, H.-H.; Chen, Y.-C. „A study on the blind's sensory ability". *International Journal of Industrial Ergonomics*. No. 36. 2006, pp. 565-570.

Le Roux, H. „The Congress as Architecture: modernism and politics in post-war Transvaal". *Architecture South Africa*. No. 1. 2006, pp. 72-76.

Lemoine, B. „Ecoles des années 1930". *L'architecture d'Aujourd'hui*. No. 232. 1984, pp. 32-37.

Lisboa Carris, Internal periodical of the Companhia do Caminhos de Ferro de Lisboa, July-September 1996. Serie II, Year III, nº 9, 3º trimester, Lisbon: 1996, p. 2.

Lu, S. „Object, Place, and Event: method of preservation of Historic Port Preservation". *Planner*. No. 9. 2010, pp. 109-114.

Lurçat, A. „Groupe scolaire de Villejuif". *L'Architecture d'Aujourd'hui.* No. 1. 1933, pp. 53-59.

Lurçat, A. „Mobilier scolaire". *L'Architecture d'Aujourd'hui.* No. 1. 1933, p. 95-96.

Magnano Lampugnani, V. „How to put contradiction into effect". *The Architectural Review*. Vol. 176. No. 1051. 1984, pp. 26-27.

McGraw, B. „Life in the Ruins of Detroit". *History Workshop Journal*. No. 2007, pp. 288-302.

Medici, T.C. "100 ans de la Ligue pulmonaire suisse: La tuberculose et l'idéal de l'habitat moderne". *Médecine et hygiène*. Vol. 61. No. 2448. 2003.

Meece, S. „A Bird's Eye View – Of a Leopard's Spots: The Çatalhöyük 'Map' and the Development of Cartographic Representation in Prehistory". *Anatolian Studies*. No. 56. 2006, pp. 1-16.

Miotto, L. „André Lurçat. Scuola a Villejuif". *Universale di architettura.* No. 34. 1998.

Mitchel, W.J.T. „Showing Seeing: a Critique of Visual Culture". *Journal of Visual Culture*. Vol. 1(2). 2002, pp. 165-181.

Montgomery, J. „The Story of Temple Bar: creating Dublin's cultural quarter". *Planning Practice and Research*. Vol. 10. No. 2. 1995, pp. 135-172.

Moore R. „Metropol Parasol, Seville by Jurgen Mayer H. - review, Art and Design". *The Observer*. 27.03.2011.

Mozas, J. „Remediate, Reuse, Recycle". *A+t – Reclaim*. No. 39-40. 2012, pp. 4-25.

Oku, T.; Kamino, K.; Funahashi, K.; Koura, H.; Kita, M. „The effect of one building transformation on the estimation of continuity of townscape-The stereogram simulation experiment". *City planning review*. Special issue: Papers on city planning 30. 1995, pp. 295-300.

Palmer, J.F.; Hoffman, R.E. „Rating reliability and representation validity in scenic landscape assessments". *Landscape and Urban Planning*. Vol. 54. No. 1-4. 2001, pp. 149-161.

Paszkowski, Z. „Architectural Heritage – Today. Architecture As Culutral Heritage". *Architectural Volumes.* No. 2-3. 2011-2012, pp. 35-42.

Pietsch, S.M. „Computer Visualisation in the Design Control of Urban Environments: A Literature Review". *Environment and Planning B*. Vol. 27. No. 4. 2000, pp. 521-536.

Proshansky, H.M.; Fabian, A.K.; Kaminoff, R. „Place identity: Physical world socialization of the self". *Journal of Environmental Psychology*. No. 3. 1983, pp. 57-93.

Riger, S.; Lavrakas, P.J. „Community ties: Patterns of attachment and social interaction in urban neighborhoods". *American Journal of Community Psychology*. No. 9. 1981, pp. 55-66.

Scannell, L.; Gifford, R. „Defining place attachment: A tripartite organizing framework". *Journal of Environmental Psychology*. No. 30. 2010, pp. 1-10.

Shimazu, M.; Tsumita, H.; Kobayashi, M. „Hermeneutic Consideration Of Landscape Composition Zakansiki". *Summaries of Technical Papers of Annual Meeting. Architectural Institute of Japan E1*. No. 8. 2013, pp. 631-632.

Shimazu, M.; Tsumita, H.; Kobayashi, M.; Fukushima, K. „Analysis of space recognition properties and the impression degree by the drawing (Study of the landscape in the Japanese garden)". *Summaries of Technical Papers of Annual Meeting. Architectural Institute of Japan E1*. No. 9. 2014, pp. 741-742.

Siret, D. "Généalogie du brise-soleil dans l'œuvre de Le Corbusier: Carthage, Marseille, Chandigarh". *Cahiers thématiques : architecture histoire conception.* N°4. Lille: Ecole nationale supérieure d'architecture et de paysage. 2004.

Slessor, C. „Dublin Renaissance". *The Architectural Review.* Vol. 192. No. 1151. 1993, pp. 42-45.

Stinson, J. „The Port Industrial District". *Canadian Architect*. No. 10. 1992, p. 30.

Stoler, A.L. „Imperial Debris: Reflections on Ruins and Ruination". *Cultural Anthropology*. Vol. 23. 2008, pp. 191-219.

Strumiłło, K. „Teoria Witruwiusza w kontekście współczesnych adaptacji obiektów pofabrycznych", *Czasopismo Techniczne. Architektura*. Vol. 106. 2009. pp. 512-516.

"Suresnes. Etude sur l'évolution et l'aménagement d'une ville de banlieue". *L'Urbansime.* No. 32. 1935, pp. 1-72.

Szukalski, Piotr. „Depopulacja dużych miast w Polsce", in: *Demografia i Gerontologia Społeczna – Biuletyn informacyjny 2014 nr 7*. Łódź: Uniwersytet Łódzki. 2014.

Świt-Jankowska, B. „Współczesne narzędzia pracy architekta, a jakość nowo projektowanej przestrzeni mieszkalnej". *ARCHITECTURE et ARTIBUS*. No. 2. 2010, pp. 79-85.

Takeuchi, M.; Tsumita, H. „Study on composition of mental scenery and psychological evaluation association from the HAIKU". *Journal of Architecture and Planning E1*. No. 8. 2013, pp. 2093-2099.

Townsend, T.; Pendlebury, J. „Public Participation in the Conservation of Historic Areas: Case-studies from North-east England", *Journal of Urban Design*. Vol. 4. No. 3. 1999.

Turgut, H. „Normative Values and Their Cultural Roots in the Traditional Turkish House". *Traditional Dwellings and Settlements Review.* Vol. VI. No. II. 1995.

Twigger-Ross, C.; Uzzell, D.L. „Place and identity process". *Journal of Environmental Psychology*. No. 16. 1996, pp. 139-169.

van Eyck, A. „The Child, The City, The Artist". *Byggekunst*. No. 1. 1969.

Weiser, M. „The Computer for the Twenty-First Century". *Scientific American*. September 1991, pp. 94-110.

Witwicki, M.T. „Kryterium oceny wartości zabytkowej obiektów architektury zabytkowej jako podstawa wpisu do rejestru zabytków". *Ochrona Zabytków*. No. 1. 2006, pp. 77-98.

Zarzycki, A. „Integrating Physical and Digital Assemblies". *International Journal of Architectural Computing (IJAC)*. Vol. 11. No. 2, pp. 247-266.

Zawojski, P. „Jean Baudrillard i fotografia". *Kultura Współczesna*. No. 1. 2008, pp. 190-213.

Zeidler-Janiszewska, A. „Visual Culture Studies czy antropologicznie zorientowana Bildwissenschaft? O kierunkach zwrotu ikonicznego w naukach o kulturze". *Teksty Drugie*. No. 4. 2006, pp. 9-30.

Zeidler-Janiszewska, A. „The anthropology of image and Bildwissenschaft as interdisciplinary project. Archeology in the transdisciplinary network". *Archaeologia Polona*. Vol. 44. 2006, pp. 53-64.

Zieseniss, C.-O. „Les projets d'aménagement de la region parisienne". *Annales de Géographie.* Vol. 47. No. 277. 1940, pp. 28-34.

Zucker, P. „Ruins. An Aesthetic Hybrid". *The Journal of Aesthetics and Art Criticism*. Vol. 20. 1961, pp. 119-130.

Unpublished sources

Both, K. *Bibliotecas Universitárias: Análise da Organização, Flexibilidade e Adaptabilidade dos seus Espaços* (University Libraries: Analisys of organization, flexibility and adaptability of its spaces), Final dissertation for the degree in Architecture at the Instituto Superior Técnico, Lisbon, 2012.

Calabrese, C. *Realtà Aumentata e applicazioni mobile a supporto della pianificazione urbanistica*. M.Sc. thesis in Computer Science and Engineering. Politecnico di Milano. April 2015.

Cullen, B. *Claiming Space in Casablanca: Modernist experiments and user-initiated dwelling transformations in Hay Mohammadi*. Masterthesis Utrecht University. 2011.

Hudák, P. *K osudom bardejovskej židovskej komunity v rokoch 1918-1989* [The fate of Bardejov's Jewish Community, 1918-1989]. Ph.D. Dissertation: Constantine the Philosopher University Nitra. 2013.

Marquart Architecten "Description of the Design". International Architectural Competition for Freedom Park. Johannesburg. South Africa 2003.

Olenderek, J. *Polityka ochrony dóbr kultury współczesnej Łodzi. Opracowanie studialno – koncepcyjne. Etap II*. Typescript. Łódź. 2008.

Oles, B.T. *Recovering the wall: enclosure, ethics and the American landscape*, PhD, Citable URI: http://hdl.handle.net/1721.1/45437. 2008.

Silva, J.G. *Arquitectura e Impacto Social. O Caso do Uso e Apropriação do Jardim do Arco do Cego* (Architecture and Social Impact. The case of use and

appropriation of the Arco do Cego Garden), Final dissertation for the degree in Architecture at the Instituto Superior Técnico, Lisbon, 2012.

Sorić, S. Bojanić, O.; Šćitaroci, B. *The transformation of the Sisak Ironworks' industrial landscape*. Faculty of Architecture, University of Zagreb. Masters' diploma thesis. 2014 / 2015.

State Archive in Poznan, Fire Insurance Company records. signature 852. k 54-57; 59-66; 71-89.

Personal interviews by Laure De Vroey and Lize Nevens: with Abdeljalil Bakkar on 9/10/2014 and 14/10/2014; with Casamémoire staff (Aurélie) on 15/10/2014; with Fatna El-Bouih on 15/10/2014; with Najib Taki on 15/10/2014; with Mohammed Sakib on 16/10/2014. Informal conversations with Nabil and his friends, Fatima, Ilham, Fatima, Semir, Ibrahim and his family, Jamal Nassiri, Mourad, Sakina, participants in the Abbatoirs Summer Lab, and many others in and outside Hay Mohammadi.

Walczak, B.M. *British experience in the conversion and rehabilitation of textile mills and the lessons for comparable work in Łódź, Poland,* unpublished PhD Thesis, Glasgow: University of Strathclyde, 2002.

Websites

Afoulous, S. *Un siècle d'archives pour la sauvegarde d'une mémoire vive.* http://www.lopinion.ma/def.asp?codelangue=23&id_info=29320&date_ar=2012-12-7 (accessed 29.02.2015).

Benjamin, W. (1936) *The Storyteller: Reflections on the Works of Nikolai Leskov,* http://slought.org/files/downloads/events/SF_1331-Benjamin.pdf(accessed 06.08.2013).

Danowski, A. *Po co komu stare fabryki*? Komisja Opieki nad Zabytkami, 2010, http://konz.pttk.pl/artykuly/4-po-co-komu-stare-fabryki (accessed 13.03.2015).

Ito, T. „Image of Architecture in Electronic Age". *Interview Statement, Designboom*. http://www.designboom.com/eng/interview/ito_statement.html (accessed 16.03.2015).

Łódź – wielokulturowy krajobraz miasta przemysłowego. http://www.zabytek.gov.pl/Zabytek/szczegoly.php?ID=270 (accessed 04.03.2015).

Manovich, L. *NURBS theory | conceptualizing cultural processes: from discrete categories to continuous curves*. http://lab.softwarestudies.com/2008/12/theory-for-nurbs-era-from-timelines-and.html (accessed 16.03.2015).

Mdidech, J. *Hay Mohammadi, mémoire d'un quartier mythique.* http://www.lavieeco.com/news/societe/hay-mohammadi-memoire-d-un-quartier-mythique-6580.html (accessed 29.02.2015).

Narayanan, N. p. *Urban Voids & Shared Spaces.* http://nipppo.wordpress.com/2012/05/07/urban-voids/ (accessed 04.05.2014).

Novak, M. „Transmitting Architecture: The Transphysical City". *Ctheory*. 1996. http://www.ctheory.net/articles.aspx?id=76 (accessed 16.03.2015).

Parole – a dynamic dictionary of the contemporary city. http://aporee.org/parole/work/hier.php?spec_id=5430&words_id=410 (accessed 24.09.2014).

Rojas, A. *Urban Voids in Medium Size Chilean Cities*. http://vagueterrain.net/journal13/andrea-rojas/01 (accessed 04.05.2014).

Stalled paces. https://www.glasgow.gov.uk/stalledspaces (accessed 04.05.2014).

Strauss, André. *Namibian culture - unity, diversity and tolerance.* http://www.nied.edu.na/publications/journals/journal13/Journal%2013%20Article%201.pdf (accessed 10.02.2015).

Wellershoff, M. *We Shouldn't Tear Down Buildings We Can Still Use*. (Interview with Rem Koolhaas). Spiegel Online International. http://www.spiegel.de/international/europe/interview-with-rem-koolhaas-about-the-fondazione-prada-a-1031551.html (accessed 04.05.2015).

Zapłata, R. „Cyfryzacja w naukach o przeszłości – cyfrowe oblicza przeszłości", [paper presented at conference „Zwrot cyfrowy w humanistyce: Internet-Nowe media-Kultura 2.0", Lublin, 25-26.10. 2012] – http://humanistykacyfrowa.umcs.lublin.pl/nagrania-audio/ (accessed 16.03.2015).

http://cumincad.scix.net

http://edugamesresearch.com/blog/tag/assassins-creed-2-educational/

http://gobustan.si.edu/introduction (access 13.04.2015).

http://help.sketchup.com/en/article/114389.

http://indexofpotential.net/terrain-vague-ignasi-de-sola-morales/(accessed 15.09.2014).

http://knowledge.autodesk.com/support/3ds-max/learn-explore/caas/CloudHelp/cloudhelp/2015/ENU/3DSMax/files/GUID-109C880F-181B-4067-91F0-B4EF79639FB3-htm.html

http://knowledge.autodesk.com/support/3ds-max/learn-explore/caas/CloudHelp/cloudhelp/2015/ENU/3DSMax/files/GUID-4D61E710-9D95-4469-B05C-8C8A126D59CC-htm.html

http://lebbeuswoods.wordpress.com/2009/06/08/doom-time/ (accessed 1.3.2015).

http://m.lodz.gazeta.pl/lodz/5,106512,18383900.html?i=8 (accessed 20.07.2015).

http://mapy.zabytek.gov.pl/nid/ (accessed 15.03.2015).

http://marjan-colletti.blogspot.com/2009/10/cyberbaroque-and-other-digitales-marjan.html (accessed 24.02.2015).

http://vincoliinrete.beniculturali.it/VincoliInRete/vir/utente/login

http://warszawa.sarp.org.pl/php/dobra/r_trepka.htm, (accessed 10.07.2010).

http://whc.unesco.org/ (accessed 13-15.03.2015).

http://www.arcgis.com (accessed 13.03.2015).

http://www.archdaily.com/297713/freedom-park-phase-2-gapp-mashabane-rose-architects-mma/ (accessed: 20.02.2015).

http://www.azstat.org/MESearch/search?departament=4&lang=en (accessed 05.03.2015).

http://www.bardejov.org/about-us/our-history-and-vision/ (accessed 15.03.2015).

http://www.beniculturali.it/

http://www.cca.qc.ca/en/collection/540-cedric-price-archive

http://www.digitalheritage2015.org

http://www.fastcompany.com/3021008/why-video-games-succeed-where-the-movie-and-music-industries-fail

http://www.gsa.ac.uk

http://www.heritageabroad.gov/ (accessed 15.03.2015).

http://www.ibb.gov.tr/tr-TR/kurumsal/Birimler/ulasimPlanlama/Documents/%C4%B0UAP_Ana_Raporu.pdf (accessed 06.05.2015).

http://www.iccd.beniculturali.it/index.php?it/1/home

http://www.industrialheritage2015.eu (accessed 13.02.2015).

http://www.internationalmasterofarchitecture.be

http://www.jutarnji.hr/40--rodendan-digitrona--u-bujama-je-izraden-prvi-europski-dzepni-kalkulator--te-1971-kostao-je-koliko-i-fico/9 (accessed 27.03.2015).

http://www.kanalahaber.comdother1423951791424.jpg

http://www.lewandowski.com.pl/willa_ernesta_wevera.php (accessed 12. 03.2015).

http://www.londoncharter.org/

http://www.monumentos.pt (accessed 24.07.2014).

http://www.muzeum-lodz.pl/ (accessed 10.01.2015).

http://www.nid.pl/pl/Dla_wlascicieli_i_zarzadcow/opieka-nad-zabytkami/pomniki-historii/identyfikacja-wizualna/manual_pomnik_historii.pdf (accessed 13.03.2015).

http://www.nied.edu.na/publications/journals/journal13/Journal%2013%20Article%201.pdf (accessed 10.02.2015).

http://www.oxforddictionaries.com

http://www.qgis.org/(accessed 13.03.2015).

http://www.scottishten.org

http://www.scran.ac.uk

http://www.slovak-jewish-heritage.org/ (accessed 15.03.2015).
http://www.stadtarchaeologie.at/?page_id=5665.
http://www.stat.gov.az/map/indexen.php (access 04.03.2015).
http://www.sukcesja.eu/index.php/stara-fabryka.html (accessed 10.09.2010).

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This monograph is a result of the 12th European Architectural Envisioning Association Conference Envisioning Architecture: Image, Perception and Communication of Heritage hosted by the Faculty of Civil Engineering, Architecture and Environmental Engineering at Lodz University of Technology, Poland, 23-26 September 2015.

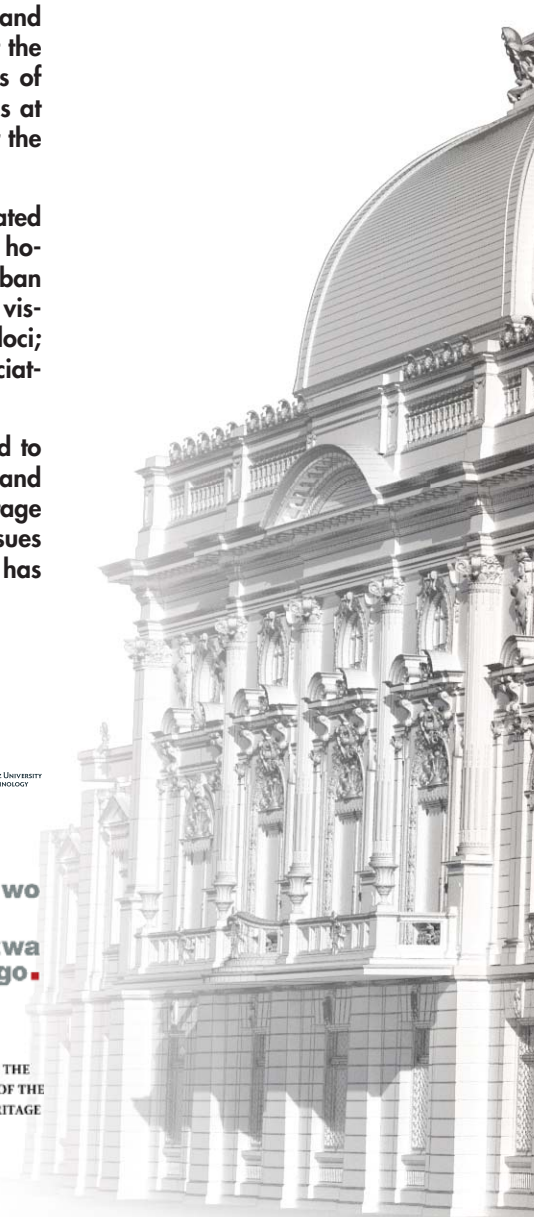
Following the mission of the European Architectural Envisioning Association, the conference was meant to be a platform for cAommunication and exchange of experience, experimentation, research and collaboration in the field of envisioning built heritage with the special focus on industrial heritage referring to "2015 a European Industrial and Technical Heritage Year".

The monograph consists of three parts, namely:

1. THE IMAGE OF (INDUSTRIAL) HERITAGE. In the light of the campaign for announcing 2015 the European Industrial and Technical Heritage Year and taking into consideration that the host city was one of the most important industrial centres of the 19th-century industrialisation in Europe, this part aims at exploring the role of industrial buildings and structures for the image of urban areas.

2. PERCEPTION OF THE PAST. This part covers problems related to the changing meaning of heritage, including contextual, holistic and phenomenological approaches plus a historic urban landscape protection. The envisioning of sensorial aspects; visible and invisible elements of a built environment; genius loci; social context; heritage interpretation as well as other associated topics are discussed in this section.

3. COMMUNICATION OF HERITAGE. This part is dedicated to different approaches to envisioning reflecting the specifics and requirements of research, design and education in the heritage domain. The question how to communicate the heritage issues to a society - including professionals and lay persons – has become the motto of this part.



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