

Design in the Anthropocene. Towards a cosmopolitical perspective

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RETROACTIVE RESEARCH IN ARCHITECTURE

SELECTED ARTICLES

ELABORATE TOPICS AND DISCUSSIONS THAT EMERGED DURING THE 9th
EURAU CONGRESS ON ARCHITECTURE'S CAPACITY TO CHALLENGE AND
EXTEND THE LIMITS OF OTHER DISCIPLINES

ALICANTE 19/20/21/21 SEPTEMBER 2018

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retroactiveresearch
ARCHITECTURE'S CAPACITY TO CHALLENGE AND
EXTEND THE LIMITS OF OTHER DISCIPLINES

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RETROACTIVE RESEARCH IN ARCHITECTURE



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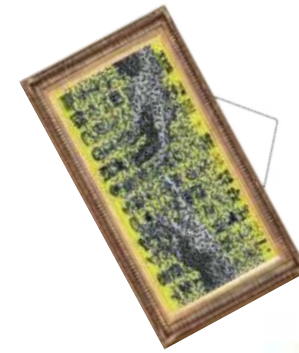
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For EURAU.

EURAU is by now a well-known acronym; it is a network made up of researchers, architects, and urban planners, who act within cultural institutions and universities.

But not only this; it is an open community, that grows, expands and branches without closing into narrow institutional and disciplinary enclosures. It is a place where comparisons can be made between individuals who reflect upon the future of architecture, of the city, of the landscape, within the framework of a European context. This encounter happens every two years, and these participating individuals are perhaps an example of the "community

that happens", of which the Italian philosopher Giorgio Agamben spoke in his book "La comunità che viene." EURAU was born in France, but in a north-western Mediterranean city, Marseille, way back in 2004. Founded by an architect from Algeria, Farid Ameziane, as a powerful expression of the plurality of cultural horizons, very well expressed by his North African eyes. The EURAU community owes him a lot; we have lost him too soon, but we don't forget him.

Amirante, Roberta¹

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Constantin Spiridonidis, the Greek coordinator of the European Network of Head of Schools of Architecture (ENSHA), invented EURAU together with Farid, thus symbolically affirming the other pole, the south-eastern Mediterranean one, which constitutes the geographical horizon of the research network: an open horizon; European but not Euro-centric that also looks towards the South of the world.

European Research in Architecture and Urbanism: the Mediterranean French language immediately included the English language, to be opened more towards an international dimension. From the very beginning, the first edition in Marseille, dedicated to the "recherche doctorale / doctoral research", it was clear that the congress aimed at challenging- with the most advanced expressions of research- fixed ideas on architecture, on the city, and on landscape.

The first three editions took place annually. Lille hosted EURAU in 2005, a small city that had become the European symbol of a new idea of "centrality" based on the railway network. And it has been here that the relationship between the host city and the theme of the congress began to become a "must": in this edition the topic was the "Large Scale."

In 2006, in Brussels, the geometric and geographical centre of the united Europe, the theme was "Heritage", the word that most of all could represent the cultural horizon of the European world.

EURAU grew from one edition to the next, and the organizational commitment became more complex. It became impossible to organize it in a single year. Better to meet every two years, and to extract, from previous experiences, a first hypothesis for the "format"; the leaders of the previous editions became the members of the organizing committee of the following editions and addressed the "process" that has to be followed in order to organize the congress in a different city.

In 2008 it was the turn of Madrid; Joaquín Ibáñez, with Darío Gazapo and Miguel Ángel Aníbarro, formed part of a research group of the ETSAM to focus on the topic of "Cultural landscapes." The network has expanded and strengthened;

hundreds of researchers met in Madrid with many of them becoming "serial" participants of the EURAU congresses.

In 2010, Naples was chosen, the "città-mondo / city as a world", suspended between hell and paradise, where EURAU explored the Vitruvian theme "Venustas", this time not only to "contemplate it", but also to "relate" to it. And not only to consider the architecture that pursues it, but also the market that undermines it and the democracy that exposes it.

And then EURAU arrived in Porto in 2012, the city that is also a symbol of a School of Architecture that has made Portugal a centre of a disciplinary culture, where the theme was "Public space", conceived in a non-bureaucratic but in more "geographical" terms. Architecture and urban planning are now moving into a new dimension, which is one considered more broadly as "landscape."

To move forward to 2014, when EURAU took a leap towards a new territorial location positioned on the eastern edge where Europe and Asia touch, merging in the extraordinary setting of Istanbul. The "Composite City" was the topic, and being here, it couldn't be any other one.

In 2016, EURAU entered an Eastern European country for the first time; "beyond the curtain", in the city of Bucharest, where modern architecture has left important and contradictory signs. "In between scales" was the theme, which, in this context, dwelt on many different meanings, and touched upon all the layers that the concept of "scale" can encounter.

At this point, having reached the eighth edition, I have to deal with the issue of "gender" equality: the first four congresses took place in a masculine universe, although evidently open, tolerant and rich in female collaborations. From then on four women coordinated the editions of EURAU: myself, first, in Naples, with the generous male collaboration of Marco Triscioglio and Emanuele Carreri (and perhaps for this reason I earned the title of "mother" of EURAU, with a place of honour next to Farid, recognized by all as the "great father"), Maria Madalena Pinto da Silva

in Porto, Gülsün Sağlamer in Istanbul, and Beatrice Jöger in Bucharest (with the gentle accompaniment of an enlightened headmaster, Zeno Bogdănescu). With the eighth edition we drew up the accounts; you can believe me if I write that it is entirely accidental this happened. But it is a good sign for a European network that is built not to "catch fish" but to expand, creating knots and knitting together, without impediments, constraints and discrimination.

And then we arrived in Alicante: Javier Sánchez Merina is the first of a new generation of congress "coordinators." He didn't choose to deal with it because he knew some of the organizers. He chose to deal with it because he knew the acronym EURAU and because he knew that the network has been built around it. And also, because he knew that behind this acronym there was an idea of open and plural architectural culture. A culture that wants to put education, research and design actions in a contemporary dimension at the centre of the discourse on architecture that forces this activity to respond to new and difficult questions. That wants to question the relationship between research and "professional" activity in the complex contemporary condition. That wants to offer to the young researchers a place of comparison and a chance to network with so many "others", or even just some "others."

To be actively involved in this network, which is constantly expanding and questioning the reasons for its existence, Javier has chosen a theme of extraordinary importance. To talk about "Retroactive Research" means to hold together Benjamin's Angel of History, the third culture introduced by C. P. Snow, the circular economy. And, above all, to link the idea of scientific research to a knowledge that does not follow linear paths: a knowledge that knows how to play by exploring side roads; a knowledge used to confront single and singular problems that do not correspond to pre-established models; a knowledge that in order to solve these problems, must have the courage to build new "hypotheses." The architect's knowledge: the material with which EURAU continued and will continue to weave its network.

The 9th EURAU Congress.

The French Ministry of Culture initiated EURAU in 2004. Since then, a series of international congresses, or editions, have taken place and now, with the participation of hundreds of researchers from around the world, the momentum has become impossible to stop. The series organized by different Schools of Architecture have been centred discussions around the following themes:

1st/ 2004

**École Nationale Supérieure
d'Architecture de Marseille.**

On Doctoral Research.

2nd/ 2005

**École Nationale Supérieure
d'Architecture et Paysage de Lille.**

Large Scale.

3rd/ 2006

**Association des Instituts Supérieurs
Brussels-Liège-Mons.**

Cultural Heritage.

4th/ 2008

**Escuela Superior de Arquitectura
Universidad Politécnica de Madrid.**

Cultural Landscape.

5th/ 2010

**Facoltà di Architettura dell'Università
degli Studi di Napoli Federico II.**

Venustas/Architettura/Mercato/Democrazia.

6th/ 2012

**Faculdade de Arquitectura da
Universidade do Porto.**

Public Space and Contemporary City.

7th/ 2014

**Faculty of Architecture of the
Istanbul Technical University.**

Composite Cities.

8th/ 2016

**Ion Mincu University of Architecture
and Urban Planning in Bucharest.**

In Between Scales.

Sánchez Merina, Javier¹

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9th / 2018 The School of Architecture at Alicante University

RETROACTIVE RESEARCH: Architecture's capacity to challenge and extend the limits of other disciplines.

Interdisciplinary research in architecture is something that society demands from our profession. Furthermore, in many countries that are currently immersed in economic recession, it is the only possible solution.

In that context, it is urgent to clarify the scope of our projects: those whose ultimate goal consists of going beyond the limits of other disciplines through the possible applications of architecture. Starting with architecture's capacity to learn from other disciplines and to follow their guidelines and techniques, we aim to build and offer new specific tools. With these new tools, our research will provide the opportunity to challenge and expand the boundaries of those other disciplines we engage with.

Traditionally, architecture supported itself by various branches of knowledge to

advance its own proposals:

- Structural Knowledge: Gothic, High-Tech...
- Artistic Trends: Surrealism, Constructivism, Deconstruction...
- New Materials: Polymers, Metallic glasses...
- Technological Advances: Self production (3d printers), Software...
- Economic Changes: Rationalism, Postmodernism...
- Political positions and Conflicts: Neo-regionalisms, Post-colonialisms, planning regulations Anti-demonstrations, gated neighbourhoods and city surveillance...
- Environmental Crisis and Natural Catastrophes: Technical Codes, bioclimatic architecture...
- Social organizations: urban gardens, Collaborative networks...

While the resulting architectures have produced excellent examples of applying these areas of knowledge, our interest here lies in the reverse process: how the discipline of architecture can cause changes in others. It is an applied research that extends its scope to a prior discourse that originated in the past. That is to say, becomes a Retroactive Research.

Gentrification, Democracy, Integration, Gender, Neurodegenerative Diseases, Patents, Space Syntax, Demography and Welfare, Urban Orchards, Energy and Transport, Ecology, New Materials, Collaborative projects... are just some of the issues that we include. These are potentially as many as the fields where architecture can contribute to their development.

An important consequence of this methodology is the specialization.

Whether it is serendipity, making a fortunate discovery by accident, or when both students and architects feel an urgent need to include an external expert in the process as an important link with reality.

In the end, the architectural project is an effective process of documentation that not only establishes a program but also defines the author as an entrepreneur, understanding this quality as a position that opens the door to different types of practices that architects can exercise: from running a professional architecture office, to teach, to do interior and furniture design, to write, to design digital scenarios, to work in social associations, to collaborate with research centres...

Those propositions attracted 250 participants to the 9th EURAU Congress (Alicante 19/20/21/22 September 2018), an event that was designed primarily to establish cross conversations, and to avoid or going beyond monologues. From the very beginning, this proposal of a congress and its coordination were drawn from the standpoint of the architectural profession. That is, it was understood as an architectural project, where everything is designed, from its general concept to the smallest detail.

For example, during the limited time that an international congress lasts, many participants hesitate between the need to follow the programme and their desire to visit the unknown host city. To respond to this frustration, EURAU Alicante changed its location daily. In that way, the participants in the congress would get to know Alicante better together with its surroundings, more so than if they would have gone on a sight-seeing tour alone. During the four days, EURAU Alicante offered the participants the best locations and products of the region, from the City of Alicante itself to the University Campus, and from the Beach in Benidorm to the Island of Tabarca.

The conception of multiple spaces for conversations is a model based on the incorporation of ludic experiences to encourage communication between the participants. In fact, it was also to make use of other typical university experiences

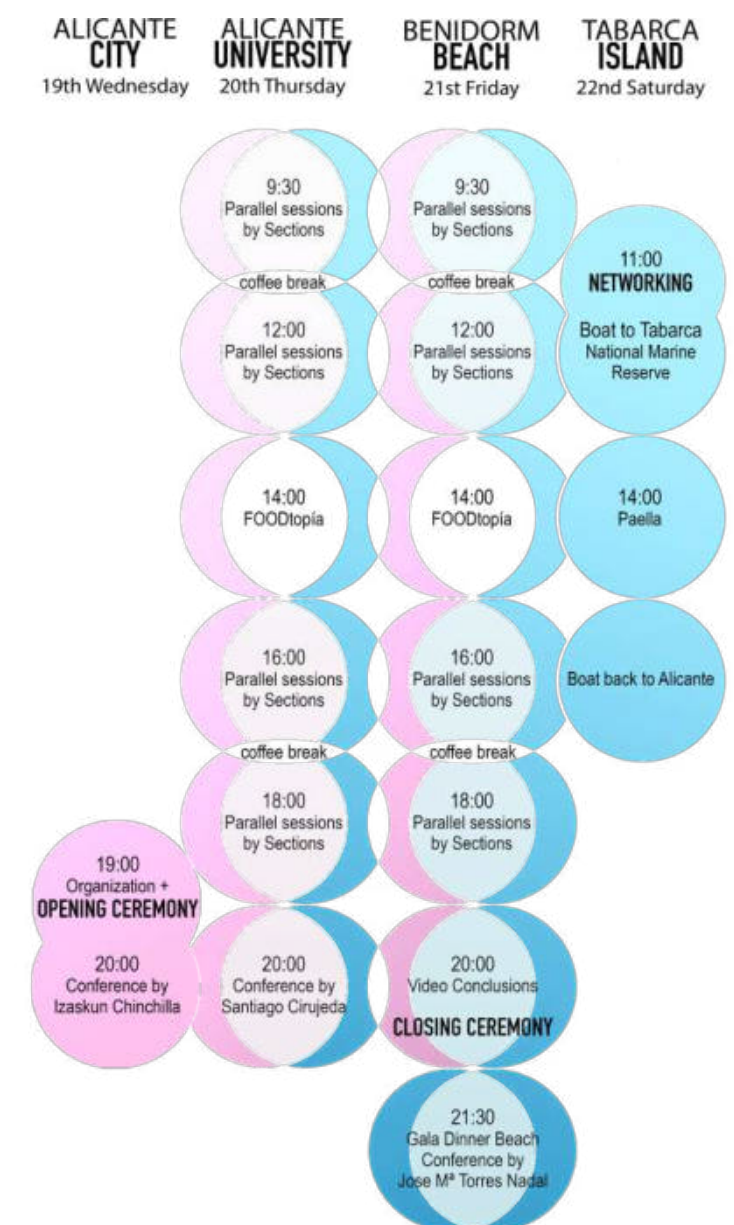
such as the Field Trip, a very important part in the architect's education, or Workshops organized by invited external agents. In both cases, the participants are encouraged to integrate and collaborate with different groups.

EURAU Alicante included various elements of this kind: Foodtopía gave us an edible lecture. Wasara offered their sustainable and incredible tableware, and Turrón de Alicante 1880 provided a special present to take back to the family, so the participants saved time and effort in looking for a souvenir. We designed, together with TAZ studio and Amimanera, an intelligent identification brooch, instead of using the typical ID lanyard, and with Secaneta a Microfibre Bathrobe to be used after swimming in the sea, the night of the gala dinner with verbena. Panadería Ballesteros and its delicious Cocas, Hotel

Les Mongues, Restaurant Hestia Lucentum, Vectalia, Bodegas Volver and Tarima Hill, Rios Levante, Ecoologic, Tabarca Water Taxi, Portes, Tram Alicante, along with the institutions Generalitat Valenciana, Alicante and Benidorm cities hall, Casa Mediterráneo, Patrimonio Inteligente, Institute of Architects of Alicante and, of course, Alicante University with the Superior Polytechnic School, who have been major collaborators in offering cultural activities. Another lucid element of EURAU Alicante was found in its website, where communication and dissemination of activities could be modified by the user, by unveiling levels of information:

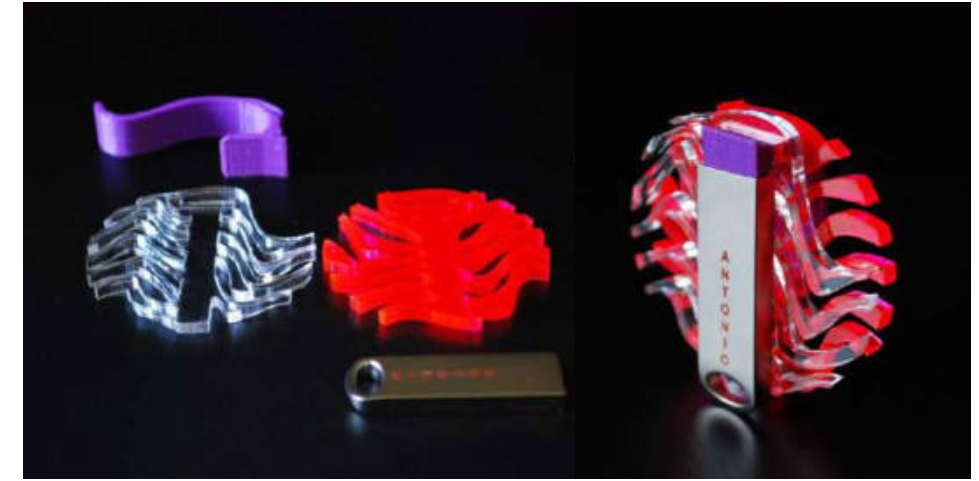
<https://eurau.ua.es>

This was the structure of the EURAU Alicante congress that has formed the present publication, a selection of papers elaborated from our dialogues.



Day1 /Find yourself at The City.

Casa Mediterráneo:
Opening Lecture by Izaskun Chinchilla.



Day2/Find yourself at The Campus.

Alicante School of Architecture:
Lectures by Foodtopía + Santiago Cirugeda.



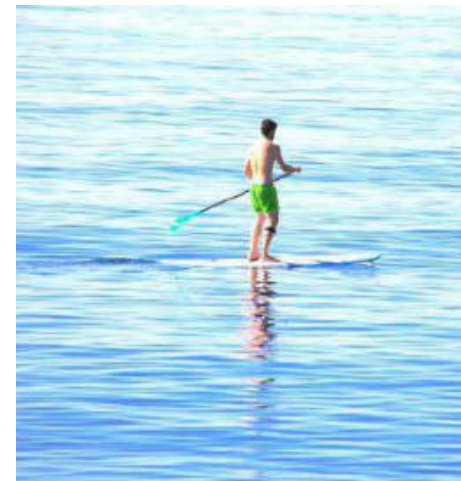
Day3 / Find yourself at The Beach.

Benidorm:
Closing Lecture by José María Torres Nadal.



Day4/Find yourself at The Island.

Tabarca:
Sharing divertissement with teachers of Alicante.



Topic 01 / Critical Pedagogies.

It refers to those practices that focus on the activation of the critical dimension of learning communities. This is done through multidisciplinary approaches, a use of transgressive methodologies and the consideration of ways of teaching as architectural practices in its own right.

Into the Immensity of Otherness.

The philosophy of between and the body of the architectural uncertainty.

Grigoriadou, Magdalini¹ + Giannopoulou, Efi²

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The human being, attempting to find certainties and an escape from the existential abyss, separates the world into antonyms. Over and above binary logic, this paper outlines how the philosophy of between proposes an architecture of fuzzy thinking, and how this architectural approach reshapes the limits of the Humanities.

This retroactive disciplinary movement appears mediated by the body and corporeal images, as the projective metaphors evoke the reality and become part of it. Transindividuality, emerges as an operation at a *suprastant* level for a dynamic association with otherness; the *deleuzian fold* prioritizes relations other than dualities, and promotes

instead *serendipity states*: in this, a sense of epiphany appears and an impression of an unforced creative process happens where things occur naturally.

Architectural practices that are standing in the *hyper-tectonic* implications of transindividuality and fuzzy thinking, are emerging as the most effective mediators for revitalizing the physical, augmented or virtual spaces. The relations with otherness and the retroactive coherence between disciplines result in innovative design tools for the Architecture yet to come.

Key words:

Dipole, Body, Otherness, In-Between, Transindividuality.

The History of Architecture mirrors the history of humanity in past and present civilizations; buildings and architectural ideation tools embody in its architectural artifacts, visions, the fears, hopes and uncertainties of other disciplines. From its creation, the term architecture is infused with uncertainties and distortions, without being able to provide a stable definition of what architecture really is.

Architecture as Thinking.

The term architecture is the Latin evolution of the ancient Greek word *architektonikē* (*architektonikḗ*), a compound word formed by the combination of *arché*/*archḗ* is the beginning, the origin, and *techné*/*téchḡnḗ* is often translated as art or craft. The term architecture, as the art of construction, is introduced by Vitruvius in the Ten Books on Architecture. Initially, architecture is conceived as the representation of space, and since the 7th century, it is assumed to be spatial determination. In its most accepted definition, architecture regulates space absolutely and deterministically (Argan, 1973; 17). Nevertheless, although Aristotle used *architektonikē* to describe the art of construction - "house-building" (*oikodomikē*) - he also referred to it as the capacity of the mind: the complex and synthetic logical thinking capable of organizing thoughts and plans in order to reach and materialize a purpose (Aristotle, Nicomachean Ethics).

Outside the world of tectonic construction, the Latin term architecture maintains the sense of the Greek word *architektonikē*, that is the organization of structured thinking. The architecture of a novel is not the novel itself, for example, as the architecture of a computer is not the computer itself; rather it refers to the structure, order, systematization, hierarchies, phases or processes in the creation of something, and not to something itself (López Galiacho, 2014; 37). Thus architecture, in this sense, constitutes a structure of thinking, a stratified, organized conformation of the reality.

Binary Thinking.

According to Morales, humans are like architectural beings that require knowledge and established disciplines, not only to settle in the world but to understand, order and place themselves in it (Morales, 1999; 176). Human beings understand the world by classifying and naming, i.e., through delineating intuitive knowledge and linguistic boundaries. These boundaries constitute definitions and the categories. Language operates as a medium that allows the comprehension of the world and experience. To classify is to define, delimit; classifying is giving the world a structure: manipulating its probabilities (Bauman, 1996; 74).

The simplest way of classification is the delimitation of the world into antonyms. Binary thinking - "this" or "that"- divides the world and any practice into pairs of opposite terms (Elbow, 1993; 55). Although duality is a phenomenological undeniable paradigm in nature and in our observation of it, Lévi Strauss argues that any classification of the world as dualistic is more complex than it may appear. Cornford suggests that the prototype of all opposition can be reduced to binary gender differences, while Burnet proposes a vision of the world in a cyclic repetition of growth and decay; summer and winter, birth and death (Lloyd, 1987).

The western world is traditionally constructed in terms of opposites, and the universe or any constructed space in particular, is explained as a duality: inside-out, up-down, right-left, day-night, male-female, black-white. In the binary construction of the world, the way we inhabit it is determined through the relations that are outlined between the dipoles. Thus, ideological and political actions, as well as architectural practice, are defined through binary opposition. The quality of life itself is affected through the way we glide between the dipoles, as they are the structured axes of everyday life (Bégout, 2005; 31).

The body-mind dipole.

The platonic duality body-mind has

deeply defined western culture including architectural thought. In the modern era, the Cartesian worldview considered that the mind is extensive in itself, without any limits, and can foresee possible futures, but above all it can be liberated from the body. Nevertheless, there is a close relationship in fact between lived experience and the theorization of the world (Pallasmaa, 2014; 46).

In the experience of everyday life, entering a space or interacting within a digital space presupposes and represents an unexpected and unconscious exchange; it is an ambivalent reaction to the occupation of space, and of being enveloped by it instantaneously. In a similar way, non-visual images, and corporeal and projective images, become an integral part of the encounter between the environment and the body, as architectural-projective metaphors (Pallasmaa, 2014; 81).

The human body then, can be considered as an architectural structure based upon the innate communication with the space-time continuum, and consequently the body constitutes a pattern that permits penetrating into the experience of the other. The roots of communication, and even empathy, are found in the body and, as with projective identification, this process is originated unconsciously within our imagination.

A theme emerges and returns with constancy in the duality body-mind; that is the relation to otherness - rather if this other refers to the world, or rather if it is another member of the community, or even the body, as material entity, then this architectural dipole presents several challenges; the human being does not know how to approach the other or how to deal with the incarnated otherness. The outside world is a totally unknown element and humans do not even have the cognitive capacity to understand it, without the notion of otherness (Parra, 2015; 32).

Due to the plasticity that it possesses, the human body, material and immaterial, is reborn through conscious action; sometimes it is transformed into archetypal forms, and others in proto-genetic, exceptional, or extraordinary

shapes. The human body is like an architectural structure itself. This set of elements contributes to the emergence of novel tools, approaches and languages, which install the subjective, intersubjective and transubjective experimentation of the human (Alcázar, 2016; 11). Human's corporeality, beyond being a simple personalized or individual entity, makes sense as in a collective body, as long as it connects with other embodied conditions; there is a major transition where our body is re-armed in the evolution of life (Nancy, 2010; 42). Then, when the encounter of bodies really arises, under conditions of heterogeneity and not of constitutive otherness as identity, an action of freedom is produced, a new possibility of freedom (Sicerone, 2016). The possibility emerges by revoking and dissolving the separation between individuality and community, and between the body and the self (Barroso, 2014; 11-48), presenting an innovative paradigm of architectural practice.

The deleuzian fold, in this sense, is nothing other than a politics of liberation, or perhaps a friendship policy that guarantees the power to think and operate on the given heterogeneity, of being able to generate new senses, to arouse constituent bodies sustained by the desire of the transindividuality. The term transindividuality indicates this double movement of individuation; the first implies the co-existence at a pre-individual level, while the second movement corresponds to collective actions. The transindividuality is a metastable system that incorporates the psychic and collective individualization, interweaving relationships that are co-composed between individuals and society, methodologically excluding the substantiation of one or the other (Mpartsidis, 2014; 35).

The Philosophy of Between.

The mind-body dualism defines not only the failed connection to the self but also every relation with otherness, and therefore an architectural structure is delineated between individuality and collectivity. The duality of individuality-

collectivity, similar to any other dipole, is an imaginary, non-existent structure designed to present and provide a phenomenological certainty of separating itself from the otherness, the "I" from the "You."

For Martin Buber, the self is not an entity but a relationship. The self is connected to an "I" and to a "You", which means that an "I" is related to a "You" and is related to an "It" (Buber, 1984; 8). There is not an "I" separately, but something that exists only in a structural relation to the pre-reflective worlds "I-You" and "I-This." The first compound occurs in relation to the environment as an object, the "I-You" appears as a person and acquires self-awareness as an objectivity (independent of gender), while the second arises from the relation to the otherness. The primordial word "I-It" appears as an isolated being and acquires self-consciousness as a subject (the subject of

practical and customary knowledge) (Díaz, 1990; 19).

The true qualitative encounter between two entities transpires when there is no mediation between them, when no system of ideas, shapes or schemes exist and interfere; it happens in the sphere of the between. In this dimension what happens does not occur only in one of the participants, nor in the world that encompasses both and all other things, but in the most precise sense, "between" the two (Díaz, 1990; 23). The Between is the real place and support of the interhuman occurrences, and encapsulates not only a variety of structures but also tools to engender new architectural practices (Wood, 1969; 41). The post-human structure through imaginary explorations can be presented as visual metaphors, even as provocative forms, in the work of Jason Hopkins (Fig.1 and 2).



Fig.1

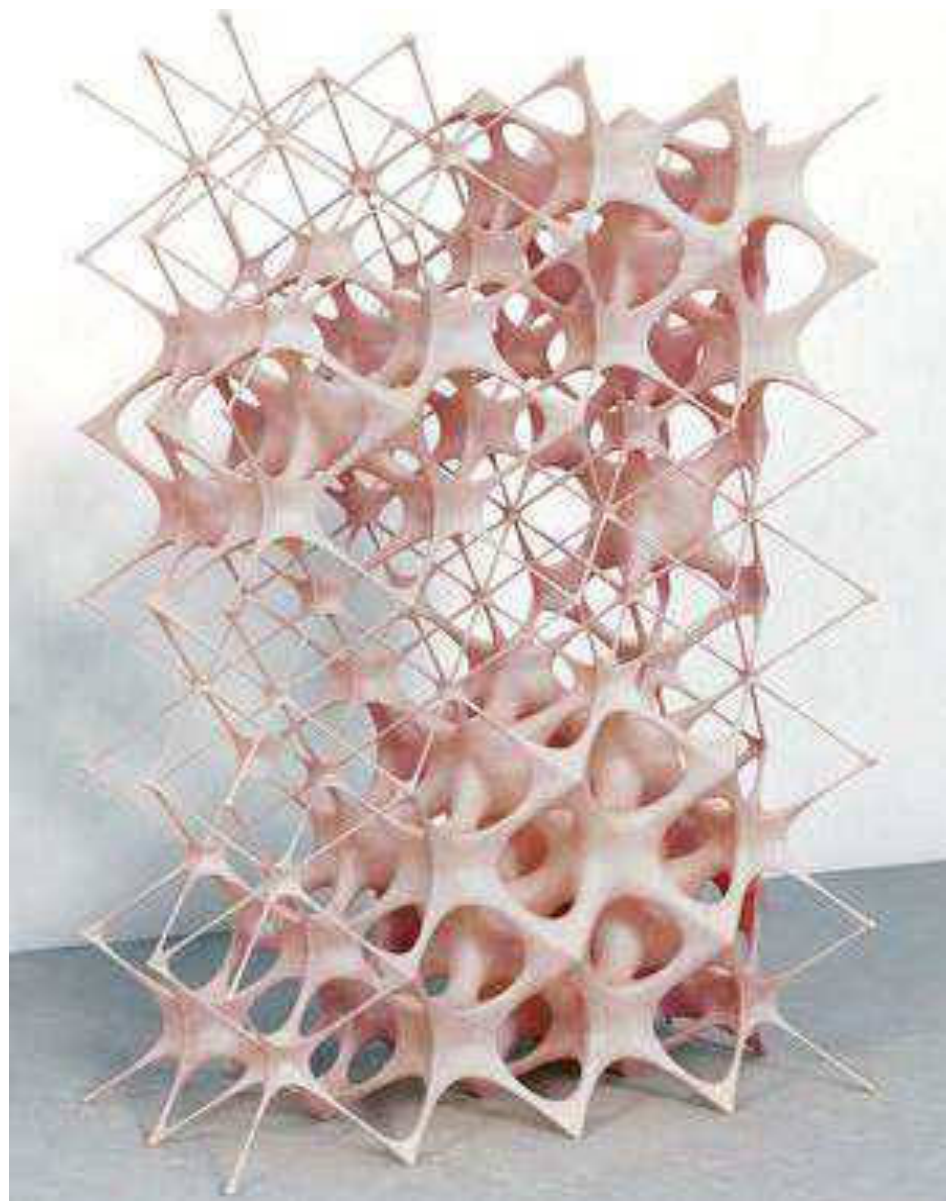


Fig.2. Biostructure VI / 2, 2009 - 2011, Abhormal Project, Jason Hopkins _ Genetic structural imaginary modifications as inhuman exploratory abstract forms in the body-space relation. These posthuman beings are presented as potential nature flesh of artificial and artistic selection.

The notion of transindividuality and the consequent terms are results of the Philosophy of Between in opposition to the traditional occidental Philosophy of Being. The Philosophy of Between refers to all those theories and thoughts that do not start from Being, but on the contrary to what exists Between; the emphasis is on the entry and not on the entity (Arancibia, 2010; 28-30). The Philosophy of Between is founded upon the theories of Heraclitus, where everything is in continuous flux or change, to the Khora of Plato, the third genre where everything is instate or it could be (Derrida, 2011). Hegel referred to it with the term mediation, Deleuze through the threshold theory, Desmond with the Logic of Being and

the Logic of Between, while Foucault introduces the space of the between as the space of knowledge, and Sloterdijk connects it with the Being-contained-in-a-Between. It is also described in the Third Gender of Blanchot, in the Interval of Levinas, in Merleau-Ponty's Interstitial Disorder, in the Liminal Entity by Paul Ricoeur, the Logic of Limit of Trías and in Rancière's being-between (Arancibia, 2010; 28-30).

Fuzzy Thinking.

The Philosophy of Being and the Philosophy of Between arise from different types of thinking. Binary thinking is an act of exclusion, in contrast to polar

thinking, multi-valued thinking and fuzzy thinking. In these there are no antonyms or there is more than one dominant term, which means that there is a constant act of inclusion. The focus of fuzzy thinking is on searching for the contradiction and the undefined, the unfinished, the imperfect; therefore, inquiry concentrates on no limits, no end, no form. Fuzzy thinking is centred in the between and not on the end; does not initiate with an Idea, precisely because it has no purpose.

According to Venturi, the thought of exclusion is an effortless mental activity. Some techniques of thinking based on inclusion are the trivalent thought - where a third term is introduced in a previous binary scheme; polyvalent thought - when more than three elements are considered as a basis for constituting a concept; complex thought - as Edgar Morin defines it; lateral thinking - a contribution of Edward de Bono; rhizomatic thinking - of Guattari and Deleuze; queer or trans thought - a later post-feminism attack on hetero-normal division of the world; and blurred or fuzzy thinking - by Kosko.

Robert Venturi, Bernard Tschumi and Peter Eisenman all understand the structure of architectural thinking as the contradiction of antithetical terms and the relationship between them. Venturi introduces the concept of contradictory spatial order, whereas Tschumi focuses on the unclassifiable or unprogrammed spaces that arise when the pairs of opposites are in conflict. The places that emerge between them - sometimes considered residual - are the places where unplanned events can happen. Eisenman focuses on the processes of interstitiality as a new concept of spatiality. In his Interstitial Processes, he operates with a new duality, forming-spacing. Forming is the traditional way of architectural processes that divides space into the 'container' concept of the classic system of values and uses. On the other hand, spacing does not imply the same structure of values, and therefore it constitutes an architectural process that ought to provide forms of self-regulation. The interstitial process is a form of spacing, and the vacuum is the substantial interstitial space that generates architectural dynamism (Eisenman, 1997; 21-35).

Influenced by Buber's views, Aldo van Eyck understands and establishes the architectural concepts of the in between realm and the twin phenomena. Van Eyck understands dualities as false realities; twin phenomena are the pairs of opposites that are not opposed but are precisely twins. It is thought more to be the reconciliation of antithetical concepts, part of the architectural process in a constant exploration of the relationships and the reciprocity between them. Architecture for Van Eyck is primarily defined as the design of inbetween spaces. The opposing terms are regarded as identical; the public becomes private, the outside becomes inside, "You" become "I." Van Eyck argues that architecture should be conceived as a configuration of inbetween spaces, as places of transition and transformation where the interaction and the encounter between inhabitants takes place. The Otterlo Circles, the diagram presented by Aldo van Eyck at the CIAM meeting in Otterlo, Netherlands, 1959, is an example of such an approach; architecture and urban design for each man and all men; the place where individuality and collectivity are not opposites terms, but twin phenomena

(Fig.3). The Inbetween is an occasion; it is a moment in which contrary tendencies enter into equilibrium and which constitutes a space full of ambivalence, and therefore the space that corresponds to the ambivalent nature of being human (Eyck, Ligtelijn, Strauven, 2008; 58).

A line of architects including Camillo Sitte, the Smithsons, Christopher Alexander, Candilis, Team 10, Serge Chermayeff, Constant, the Situationists, Stalker, Venturi, Turner, Matta-Clark, amongst other contemporary activist architects and active collectives, are centred in the in-between and follow the Philosophy of Between. Alexander and Chermayeff argue that the gap, the void, the space between the buildings, is as important as the structural components of the building. Alison and Peter Smithson examined the different forms of seemingly empty space in European and American cities, and raised their importance by introducing the Threshold Philosophy, which was later enriched by Team X. The concept of infrastructural logic is also found in the works of Fumihiko Maki in his Investigations in Collective Form, Reyner Banham in Megastructure, or Shadrach

Woods in The Man in the Street, Stan Allen in Points + Lines, Edward Soja in Postmetropolis and Frei Otto in Occupying and Connecting.

Sitte explores the between from a different perspective; he understands it as the existential space rather than a geometric one. His work "City Planning according to artistic principles", focuses on the emptiness of what is between the buildings. The relationship between the built and unbuilt has been reversed; that is, construction usually starts from a free space, regarding it as a closed set, and looks for ways to achieve effects of unity. In modern planning, however, building lots of regular figures are made and the void between is named as squares and streets. In the past, what existed between the buildings, the invisible side of the unbuilt surface, used to achieve unity and helped shape encounters. What might appear as empty vacant places are more important than buildings, as they are the places where the inhabitants meet; the spaces of encounters, vows and celebrations that instrumental or rational urbanism sees only as left over spaces (Sitte, 1926).

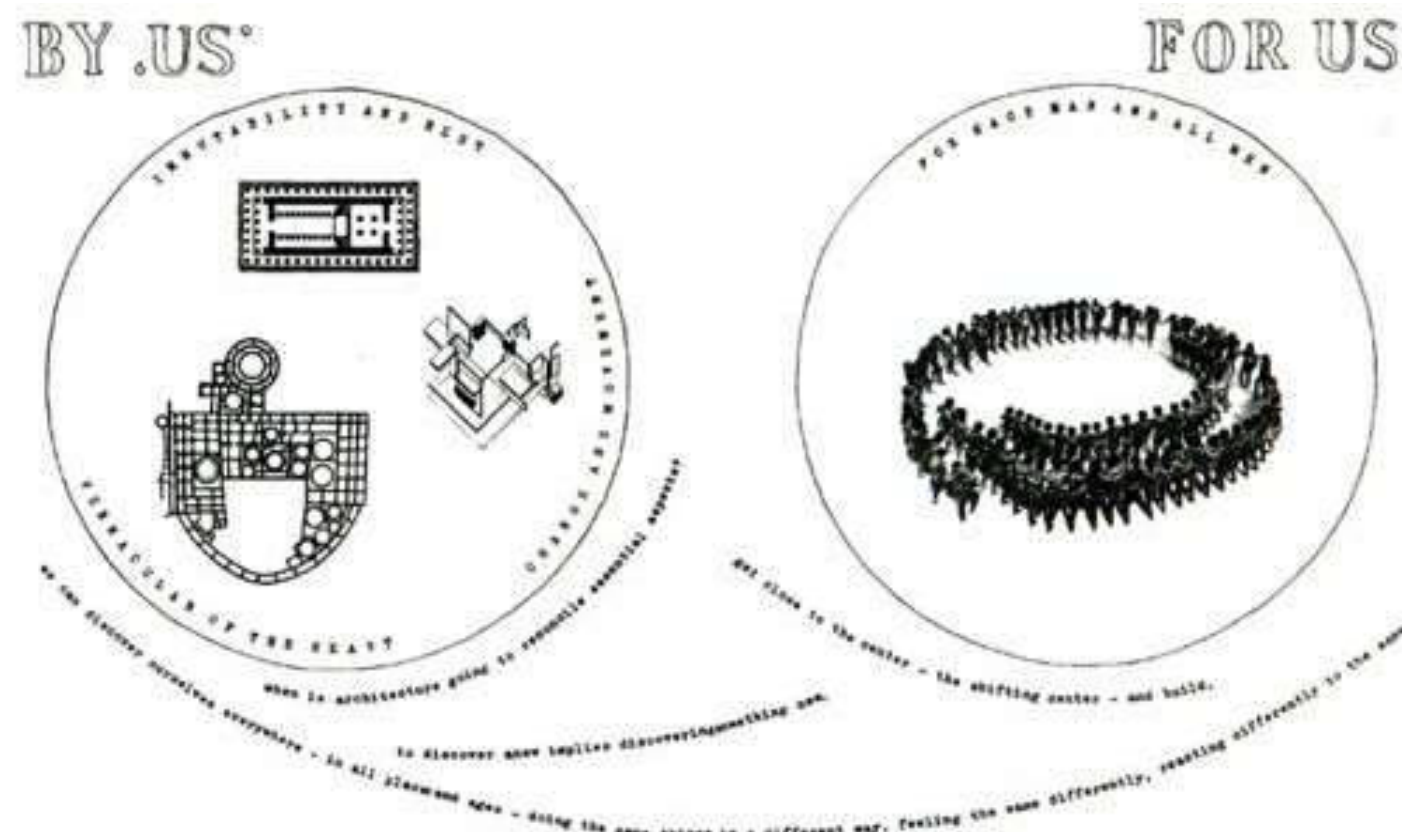


Fig.3. Otterlo Circles, 1959, Aldo Van Eyck, CIAM 11, detail of a second version, prepared for the volume: Id., The Child, the City, and the Artist, 1962. Aldo van Eyck, at the CIAM meeting in Otterlo, Netherlands, 1959, defines architecture as the design of the in between space: the place where the reconciliation of opposites happens; for each man and all men, for individuality and collectivity.

Through Sitte's concept of between space, the philosophical notion of "nonobject comes to mind: [that which] is too hazy-indistinct - diffuse - evanescent - confused to keep still and isolated (...) sinks into the undifferentiated and, as a result, cannot be fixed or represented, cannot have the consistency of an in-itself, cannot be composed of *being*. It is [something] we constantly experience, leading us back to the indefiniteness of the foundational, but which science and philosophy left behind early on in their haste to treat things logically (...)" (Jullien, 2009; xiv).

Serendipity and the wu wei practice.

Fuzzy thinking, as an architectural structure, is abnegating anything that is rigid and stable, while it emphasizes anything that is flexible, or capable of transforming itself according to the occasion; is not interested in delineating the procedure of production but rather the generation of procedures. What is essential is not the product or the building but the process itself; when the transformations happen are the crucial moments. In these time lapses, the conditions of procedures are at their maximum potentiality; it is in these moments that a thing could be either latent or in an operating state.

A way to approach these moments, to project or design from the Between, is the technique of wu wei: the strategy of not acting (Jullien, 2007). There is nothing more useful than doing nothing. It does not refer to adopting a passive attitude, as understood in the West, but to allow things to happen naturally. While seemingly there is no methodology, suddenly things are done without realizing how they were made. This type of acting isn't based in the duality of imagination-reality or theory-praxis; there is not a previous ideal object to reach. And therefore, it is not necessary to design a plan or a programme, which would eliminate the unexpected.

The wu wei technique evaluates situations and combines the dynamism of the accidental for its own benefit.

This structural thinking is conducive to the fifth kind of ambiguity. It is a fortunate confusion in which the author discovers an idea while s/he creates (Empson, 1949; 2). It refers to creating from states of epiphanies, or states of serendipity. The moment in which the inspiration happens is not accidental or casual, but is the work of the preliminary period of consciousness that always precedes all fruitful work of the unconscious (Ghiselin, 2005; 22-31).

The ways of designing are the ways of living. The quality of life depends on the mode in which we move within imagination and reality: to be continually planning to reach an end, or not to plan but to evaluate and trust the silent transformations (Jullien, 2008); to expect things to be done by their own, to mature naturally into an architectural structure.

The architecture of uncertainty.

In the age of Modernity, binary thinking has prevailed. Societal relations are in a constant struggle to fight the unexpected, the contradictory and arbitrary that are disruptive to order. Abolishing the unexpected created homogenous, monotonous, urban landscapes that induce metropolitan boredom, as the absence of discomfort or ambiguity does not allow the body to escape from it. The central concern of humans has been order, understanding the world in a hierarchical regulation.

The liquid modernity is the era of the articulation of "and", of the thought of "the one and the other": what prevails is the fuzzy logic that pursues the antithetical, the unclear, doubt and the hybrid. The liquid society navigates without a point of reference, does not remain in one place, but in "between." Contemporary humans have been left fragmented and unrelated in a prolonged feeling of tedium. In the liquid society, life is unfolded in the "between", human beings do not care about any one space, as its form is not maintained for a long time (Bauman, 2001; 18).

As Luhmann argues, humans do not fully belong to any of the places or the societies they constitute; the

contemporary living conditions are the corridors and the links of social structures. Contemporary beings live in links and, during a tiny time lapse, they stop to glance in one direction; but as long as a click lasts, they enter again into another link to find a new sensation (Bauman, 2001; 169). Faced with the breadth of sights and destinations that open in contemporary experience or simulations, it becomes impossible to choose a transcendent sense, and so humans submerge themselves in nonsense, in a meta-urban tedium.

It is evident that the defining figure of the 21st century is the immigrant, the exiled, tourist and urban wanderer; a human being without roots, and therefore without identity. Living in the liminal area is to move in the uncertainty, taking risks, being a minority, almost enjoying being marginal. Liminality and marginality are full of potential and power, being the subjunctive mood of verbs, where everything can be and could be, in an undefined place, without rules; being in between infinite options and selves (Bourriaud, 2009; 23).

Life, as in such an architecture, appears as something indeterminate, full of potentialities. Folded on itself, neutralizing all transcendence, the notion of possibility yields to all virtuality (Deleuze, 2002; 225). To live and settle in uncertainty, the human being ought to be a radiant organism: an organism that expands its roots as it advances, rather than a radical one, that creates deep roots (Bourriaud, 2009; 21). In the liquid condition of contemporary life, the idea and tools of fuzzy thinking appear more effective in embodying a liquid life, connecting with the Otherness beyond hetero-referentiality and antithesis, revitalizing the physical, augmented or virtual spaces and experimenting with serendipity. Architecture in contemporary practice could return to its original or Aristotelian state; as facilitator of tools between different structures; as a link between its inhabitants; as a channel in between diverse disciplines. New connections between identity and the otherness become derived, and an awareness of ambiguity, uncertainty and instability is enhanced.

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Biography

Magdalini Grigoriadou is an architect (2007) by the University of Thessaloniki (Greece), with a Master's Degree (2008) in Digital Communication and Multimedia in Architectural Project, and a PhD (2014) by the Polytechnic University of Madrid. She is currently a Post-Doctoral Research Associate at the Laboratory of Environmental Communication and Environmental Documentation, of Department of Architecture, in University of Thessaly, where she is developing the project DISEMBODY.

Efi Giannopoulou, architect D.U.Thrace, Greece (2005), International Mention Doctor in Architecture (thesis titled: BETWEEN: Suddenly, Without End, The Unnamable) of the E.T.S.A.M (2016), forms her research lines while following the concept of Between, as a place and as a process in between disciplines, spaces and states. Participant in various collective exhibitions with games, video and installations, she is an Adjunct Assistant Professor in the Faculty of Fine Arts, of the University of Ioannina, where she contributes to courses related to the creative process and to the metaphorical capacity of the artist.

Soft Networks and Emergent Topographies.

The paper focuses on mapping of liminal space along the Buffer Zone of Nicosia and its emerging urban identity that is revealed through the documentation of its inhabitation patterns over time. The practice of seeing activities from the ground and the effective representation of the findings expose the complex and often-invisible layers of information that exist. The subsequent dynamic processing of information becomes a tool for reinterpreting and reconstructing how the site is portrayed and recognised. The process of re-reading the site extends and enriches our interaction with the specific conditions of the place; the slow and seemingly insignificant and 'unseen' organic evolution of the site is acknowledged as a strong part of its identity.

The edges from both sides of the buffer zone are examined, identifying penetrations and mutation of the buffer edge and how they affect the urban space of the city of Nicosia. Studying the relationship along this discarded and forgotten edge of the

green line and the adjacent urban environment, creates a shift of focus from the built infrastructure to the soft network of multiple and complex relations of dependence and autonomy of public actors. Activities are understood in terms of their temporal and spatial structure and then seen as opportunities for change or points of transformation. Through close analysis of the site we examine how small-scale occupations of the site create emerging practices of self-organization. Perceiving the site through this study, we find users and activities that are excluded from the official public spaces and that find their place and expression in the loosely defined edges of the buffer edge. By identifying the latent qualities of the site, we were able to cultivate the potential of these existing environments by finding opportunities in the emergent topography.

Key words:

Mapping, Mutation, Buffer Zone, Soft Networks, Architectural Pedagogy.

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1. Mapping Liminal Space.

The research focuses on the mapping of Liminal Space along the Buffer Zone in the old city of Nicosia. Architecture Research Unit 6¹ foregrounds fieldwork investigation as a process that uncovers and examines the multicultural nature of the contested site, where political unrest between the two communities and the current status quo has left a distinct physiognomy to the urban fabric. The area's emerging urban identity is revealed through documentation of its inhabitation patterns over time.

1.1 Site.

The site of study is a part of the area along the buffer zone in the old city of Nicosia (Fig.1). This "green line" is an area of land that separates the northern occupied area of Nicosia from the southern part of the city. The zone of division follows the old river path with the northern edge defined by a permanent built border, while the south military boundary is composed of barrels and sandbags. Characterised as a lifeless space, the buffer zone has a unique and ambiguous core, dominated by vigorous wild vegetation, crumbling buildings and traces of previous trade activities. Simultaneously, the two edges of the divided city reveal distinctive urban characteristics that have developed along its (informally) inhabited boundaries.

As an area of disputed identity and ownership, the buffer zone has been actively owned only by natural elements over the last forty years. The enforced absence of development of particular areas of the dormant city has created an absence of life in many parts of the buffer area, but has embedded small-scale activities on the fringes of the old city, which demonstrate how changing spaces emerge and reflect actions of public exchange. As spaces that do not have a clear identity, they are not measured or clearly delineated and quantified. They are formed not through qualities of the commercial urban environment, but through small-scale actions and constant, apparently insignificant, spatial



Fig.1

transgressions.

Challenging the idea that space is represented as an empty container, which precedes use, this research work attempts to re-represent space, as an entity that is not a fixed commodity, but a space in the making, defined by practices and actors. The site is acknowledged as a space defined through use, where the production and value of common space are interlinked (Stavrides, 2016).

In the process of uncovering everyday practices on the site, there are no particular tools or actors that are sought for, but instead a series of mechanisms are invented in an attempt to reveal the accidental and unseen practices and players. The 'newly made space' is understood as integral to current and preceding spatial qualities and actions.

2. Seeing Activities from the Ground.

The process of seeing activities from the ground acts as a device for reconstructing how the place is defined and interpreted. It directs the observer to examine the small-scale ordinary things,

giving them importance. This elevates the meaning of the simple everyday to the extraordinary, and has the advantage of identifying the unique characteristics of the particular place at the same time as uncovering an alternative identity. The action of documenting takes the form of a series of parallel investigations into the physical conditions and history of the site. Field analysis is used as a tool to build on what is already on site, creating *Place identity and Social Continuity over time* (Lynne C. Manzo &, 2006). The complexity of conditions that are uncovered, often relegated to the status of 'boundary conditions' or 'accidents', are those which generate alternative narratives of urbanity. This re-reading provides a new understanding of the city, allowing us to negotiate spaces of conflict and explore further potential conditions that arise, seeing them as a public actions and urban opportunities.

The bottom-up research process acts to deconstruct the site through the practice of observing and drawing, the use of mapping (Fig.2)², cataloguing (Fig.3) and collage (Fig.5), which become active forms of thinking rather than a passive process of representation.

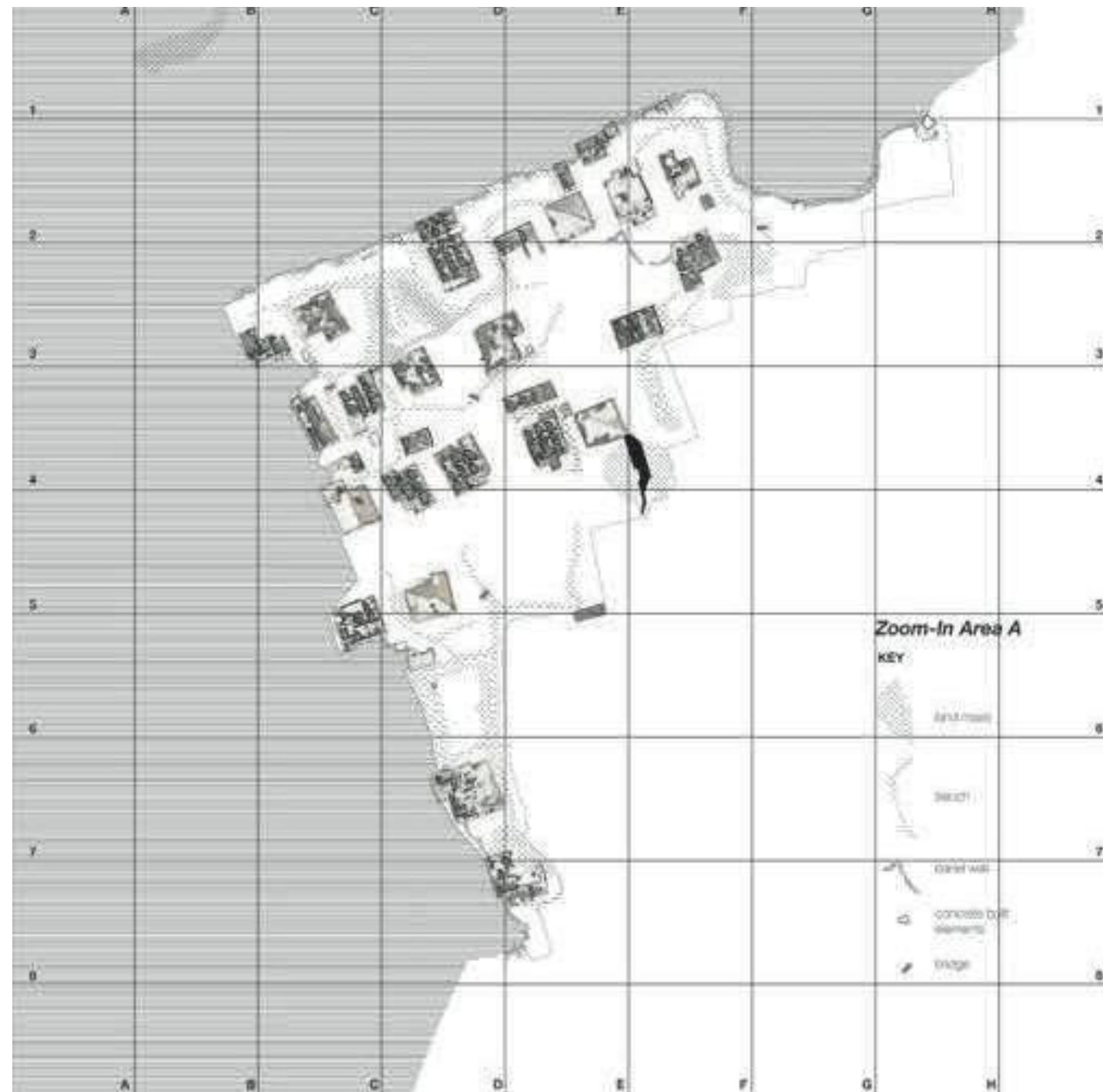


Fig.2

3. Methodology.

Investigating the lived space of the neighbourhood, meant avoiding pre-conceptions but also discovering new relations. Consequently, the method of representation plays an important role in how information is extracted and reassembled. Site findings attempt to communicate ideas about stories, places, moments and situations, which can trigger a different reading and communicate layers of complexity. As such, the representations of the site do

not create a hierarchy of information but convey a 'bottom-up' order appropriate to the way the site is investigated, often superimposing independent layers of information.

Traditionally, the concern about the process of architectural representation and design has been about preserving meaning from idea to drawing to building. Unit 6 site research promotes procedures that disrupt the linear continuation and repetition of visual information, embracing the potential of accidents and 'mistranslations' by shifting between

depictive mediums. In translation between cataloguing and drawing and the shift from mapping to making, we are looking to optimize possibilities through an assembly of context, scale and time, taking advantage of changes in site conditions through simultaneous shifts of representational media.

3.1 Mapping.

Mapping plays a central role in architecture - not only in the critique and scientific examination of already existing

architecture, but also in the conception and production of new architecture. The 'agency' of the map, is that which exploits the research to identify, decode and create the potential of possibilities for the place; '...the unfolding agency of mapping may allow designers and planners not only to see certain possibilities in the complexity and contradiction of what already exists but also to actualize that potential' (Corner, 1999).

Mapping is used as a methodology of archiving the particularities of the site but also as an important and inseparable part of developing future narratives and initiating proposals for the site. Mapping is simultaneously the process of searching for, and contributing to, the urban quality, essentially making invisible (relations) visible through this process (Corner, 1999).

In the process of mapping, activities and characteristics which may have been considered as adverse or unfavourable were put into a different context, often exposing new possibilities. Past events could not be separated from the experience of the place as it exists today, as such the mappings set out to expose the parallel or unseen layers of information that exist. Both visible and invisible traces were sought after and represented. The mapping process had to do with discovering new worlds within past and present ones, allowing phenomena to coexist and a series of alternative readings to expose new narratives of the site.

New readings that emerged from the mappings facilitated the 'unfolding' (Corner, 1999) of the specific conditions

and characteristics of the site, making evident the complexity of what exists but also giving the possibility to realize its potential. Opportunities were found in the very specific happenings and adversities of the neighbourhood such as: The Conditions of Non-Ownership, Social and physical disconnection, Displacement, Temporary Structures and Restrictions of development.

3.2. Cataloguing.

The experience of the city exists at many scales; even the smallest urbanisms appearing fleetingly and fading away is part of this concept of 'lived space' urbanism existing beside the bigger scale of the city. Just as Bow-Wow's Pet-Architecture catalogues inventive miniature urban conditions, curious and ordinary site findings are exposed and promoted through a similar indexed catalogue. (Fig.4) (Imai, et al., 2005)

Cataloguing (Fig.3) attempts to communicate ideas about stories, places, moments and situations of the site that are 'drawn out' in order to create a better understanding of the place and communicate the layers of complexity. Observations are pooled and collected from a wide variety of sources; through direct observation, interviews and surveys, historical archives, essentially through reciting the literature of the streets. Characteristics of place and practices of the neighbourhood are extracted through individual research, not merely by making an inventory of conditions, but also by a drawing-out of relational structures. Both the populated and apparently dormant

environment contains a complex system of territories and signs. Unfamiliar systems of occupational patterns and typologies are translated through simple drawing and diagramming, 'authorizing' their presence as acts of (public) inhabitation. (Fig.7)

3.3. Collage.

The process of searching for disregarded urban states also generated an interest in the synthesis of different conditions. An assembly of the material and spatial conditions, as well as activities, situated the recordings of the site in the context of how buildings and places are remade over time and thus introduced change as an important determining factor.

As an assembly of various fragments, the representation of elements of the site was recreated through the technique of collage (Fig.5) employed to achieve a sequence of translations exploring the potentials of new associations.

"... a collage has several levels of meaning: the original identity of the fragment or object and all of the histories it brings with it; the new meaning it gains in association with other objects or elements; and the meaning it acquires as the result of its metamorphosis into a new entity..." (Shields, 2014)

Through re-combining visual data and images, collage was explored as a method of bringing new meaning to the found conditions and events, attempting to recreate the processes of chance and change. Sequential

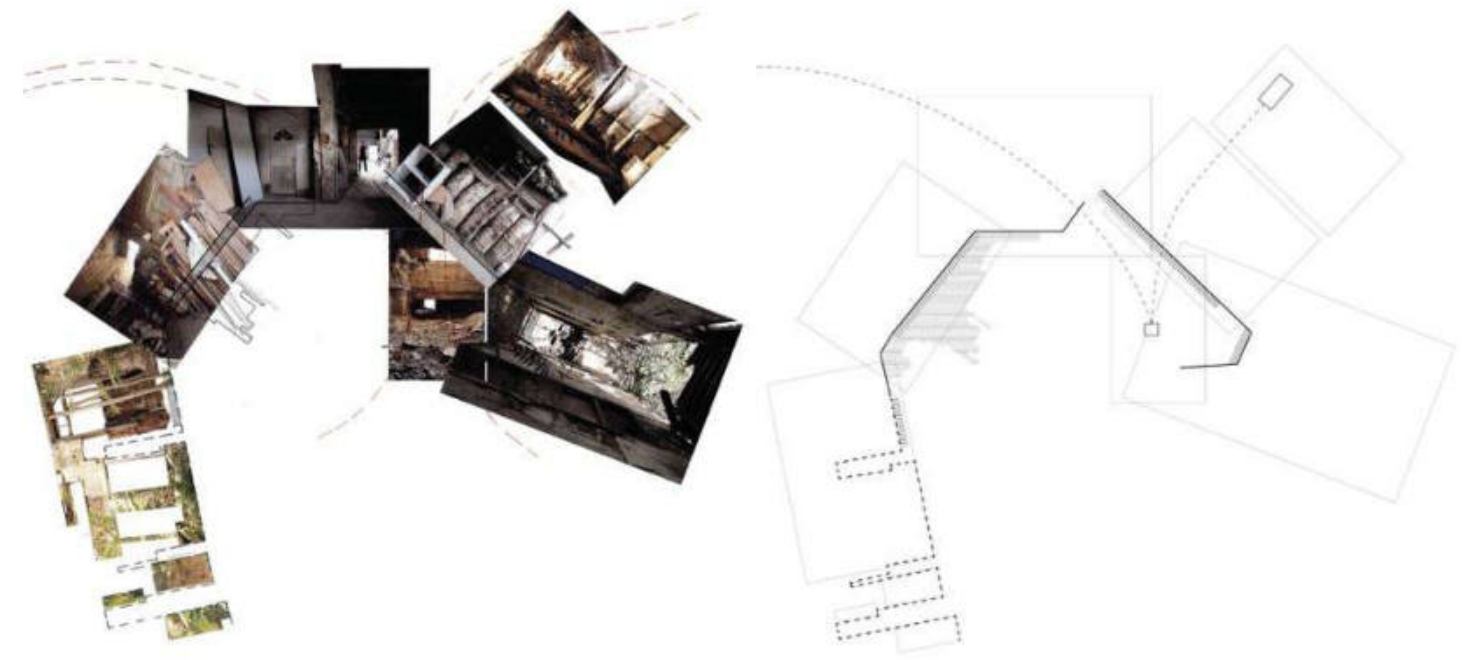


Fig.5

translations explored open-ended potentials of new associations. The new assemblage of collaged elements was intended to materialize and synthesize both existing and new propositions, often displacing events, elements and fragments of the site in an attempt to create new, more complex readings and possibilities, characterized by 'nonfinality' (Manolopoulou, 2013).

4. Potentials of the Site Revealed as forms of Hybridity.

Palimpsest conditions that were identified on the site disclosed alternative

layered narratives of place, re-coding spaces and actions with fused identities. Resulting Hybrid states were found to embody different cultural, and historical narratives admitting 'ownership' of place to the different conditions and communities that inhabited the city in the past, but also to those that are emerging.

Hybrid identity is discovered at the level of landscape, building, infrastructure and artifacts. Creating points of intensity and often contestation, hybridity is seen as a concept that allows for an overlap of old and new, private and public, not as opposite conditions, but as conditions that have a reciprocal relation. Findings guided conscious search for hybrid states on the site (Fig.6), assisting recognition of

characteristics of 'fusion' through spatial, material and programmatic explorations at a later stage. Hybridity, which may have been generated out of intolerance, is now sought after and recognised for its potential of collective opportunity, allowing coexistence between various conditions and identities.

Hybridity is seen as a cultural as well as material process. It is produced and enacted when particular kinds of things and practices are brought together and, in some way, challenge accepted forms of urbanity. Examining conditions of *Organic Hybridity* (Bakhtin, 1984) that exist within the area of the buffer zone, research identifies specific conditions of exchange and evolution such as, "life

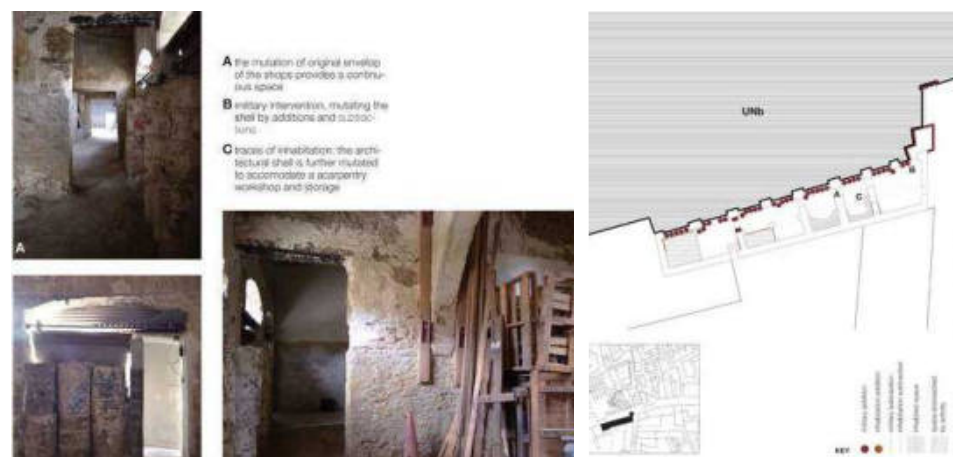


Fig.3



Fig.4



Fig.6



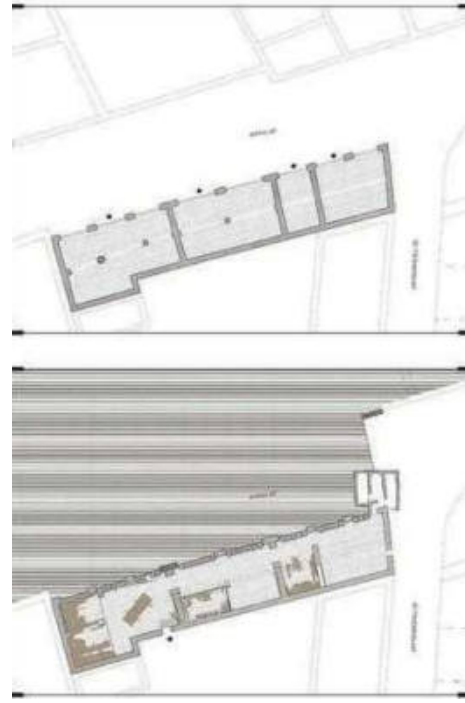
Fig.7

within the dead zone" and "porosity engrained in resilient boundaries", which detect borrowing and appropriation of (historical) elements through the layering and remaking of the city over time. Hybrid urban space is therefore seen as a potential new urban condition that derives from re-reading of space as an intentional mixing of diverse components.

5. Porosity Engrained in Resilient Boundaries.

5.1 Emergent Topographies.³

Penetrations and mutation (Fig.3 and 7) of the buffer edge are identified in terms of how they affect the urban space of the city of Nicosia. Studying the



relationship along this discarded and forgotten edge of the green line and the adjacent urban environment, creates a shift of focus from the built infrastructure to the soft network. Multiple and complex relations of dependence and autonomy of public actors are identified. Activities are understood in terms of their temporal and spatial structure and then seen as opportunities for change or points of transformation.

Perceiving the site through this study, we find users and activities that are excluded from the official public spaces and find their place and expression in the loosely defined edges of the buffer zone. By identifying the latent qualities of the site, we were able to recognize the potential of these existing environments by finding opportunities in the evolving



Fig.8

topography.

This emergent topography of the buffer zone is manifested through a series of additions and subtractions, often where military fortifications meet domestic spaces, linking everyday living with discarded underground tunnels, trenches and other disused structures. The seemingly strict buffer edge is seen to take different forms, masking, extending and penetrating the architectural shell as well as the surrounding landscape resulting in a mutation of the edge (Fig.3, 5 and 7). Organic appropriation begins to shape and mutate the existing environment; these conditions create opportunity for small-scale public activity and mechanisms for urban transformation.

5.2 'Life' within the 'Dead Zone'.⁴

The project's main purpose was determined due to the discovery of existing fragments of 'Life' within the 'Dead Zone' (Fig.8) in the city of Nicosia. The discarded and forgotten edge of the green line began to take a new meaning when mappings explored how the site was informally and organically inhabited. The proposition was grounded on these discoveries of fragments of life and public activity found within the 'Dead Zone'. Parts of the official military buffer zone were found to be accessible to the public. Penetrating this seemingly strict, formally defined buffer edge, points of entry and a new porous edge were identified. Small public gatherings and hideouts created a pretext for the proposal.

The collage was the main



Fig.9

tool of investigation (Fig.9) of this sequential movement and access. The documentation of the new penetrable edge enabled the possibility of inserting multiple entry paths within the buffer zone. The project introduced sequential activities that are phased over time, introducing a migrant population into the buffer edge at points where relations can be generated with the existing neighbourhoods. This new porous edge creates points of gathering and public activities. Occupants activate the area through uses and spaces which are at once autonomous but at the same time reliant on existing social and spatial networks. Communal activities initiate the reuse of the derelict buildings that maintain their architectural character and simultaneously introduce new communal spaces from a union of some existing structures, hosting small-scale common spaces.

5.3 Negotiating the Edge.⁵

An initial mapping investigating the user's awareness of the buffer edge identified conditions of intense urban tension at various points along the buffer edge. Despite the fact that the buffer zone was established 43 years ago, its edges are still fluctuating and affecting the urban environment diversely at various points. Absence of transitional space in parts of



the city has imposed a forced negotiation between the two edges of the liminal zone. By investigating the relationship between the edge of the buffer zone and the urban environment, the project: Negotiating the edge (Fig.10) proposes a new system that can respond to the needs of the city through proposed future scenarios.

Comprised of variable interfaces, the system can operate as a strict or permeable boundary according to the changes that occur over time. The proposed condition of the two new edges is created by either enhancing or reversing the pre-existing states. The transformation of the edge is achieved through adaptable structures, that accommodate the unpredictable shrinking or expanding of the boundaries of the buffer zone. Under a continuous negotiation between the inhabitants of Nicosia and the authority of the United Nations, new inhabitation spaces and situations emerge from the forced and accidental coexistence of new conditions.

6. Conclusion.

The open-ended nature of site research and representation of the evolving of sites and spaces over time, determines a particular design approach and eventually the kind of architecture

that is produced. Proposals investigate how existing organic hybrids can become manifest through "Intentional hybrids" which are then proposed as interventions in the contested urban site, generating alternative urban possibilities. The significance of this research methodology lies in the use of research and representation as an active form of thinking rather than a passive process of recording, allowing for a new site to be discovered and giving multiple opportunities for adaptive urban strategies and socially engaged design approaches.

The state of ownership is an important determining factor in the use and production of space in the area of study. Although conditions of hardship and conflict are hostile to occupancy, the value of the study reveals the opportunities of alternative modes of urban habitation under conditions of the site's evolving identity. The availability of common space is revealed through a distinctive condition of (non) possession; owned neither by the occupants or by the temporary body that has political possession, nor by previous legal titleholders. Both property and space have no clear boundaries but instead are expansive and ambiguous.

Between one built element to another, from ground to below ground, from built urban fabric to open space, there are constantly shifting boundaries where "the production and uses of common space cannot be separated" (Stavrides, 2016). Space and landscape shifts between proprietors and inhabitants, between nature and building and between public and private domains. The site reveals how public space survives as shared space when it is not defined by the public/private domain and does not have to adhere to the conditions of tenure. Edges and margins are constantly negotiated and create new conditions.

The conditions of everyday actions and expanding of space, the temporary and changing margins of occupancy and use, parallels the changing landscape of the buffer edge. Together they create a complex series of soft networks, facilitating spontaneous and accidental habitation and public activities.

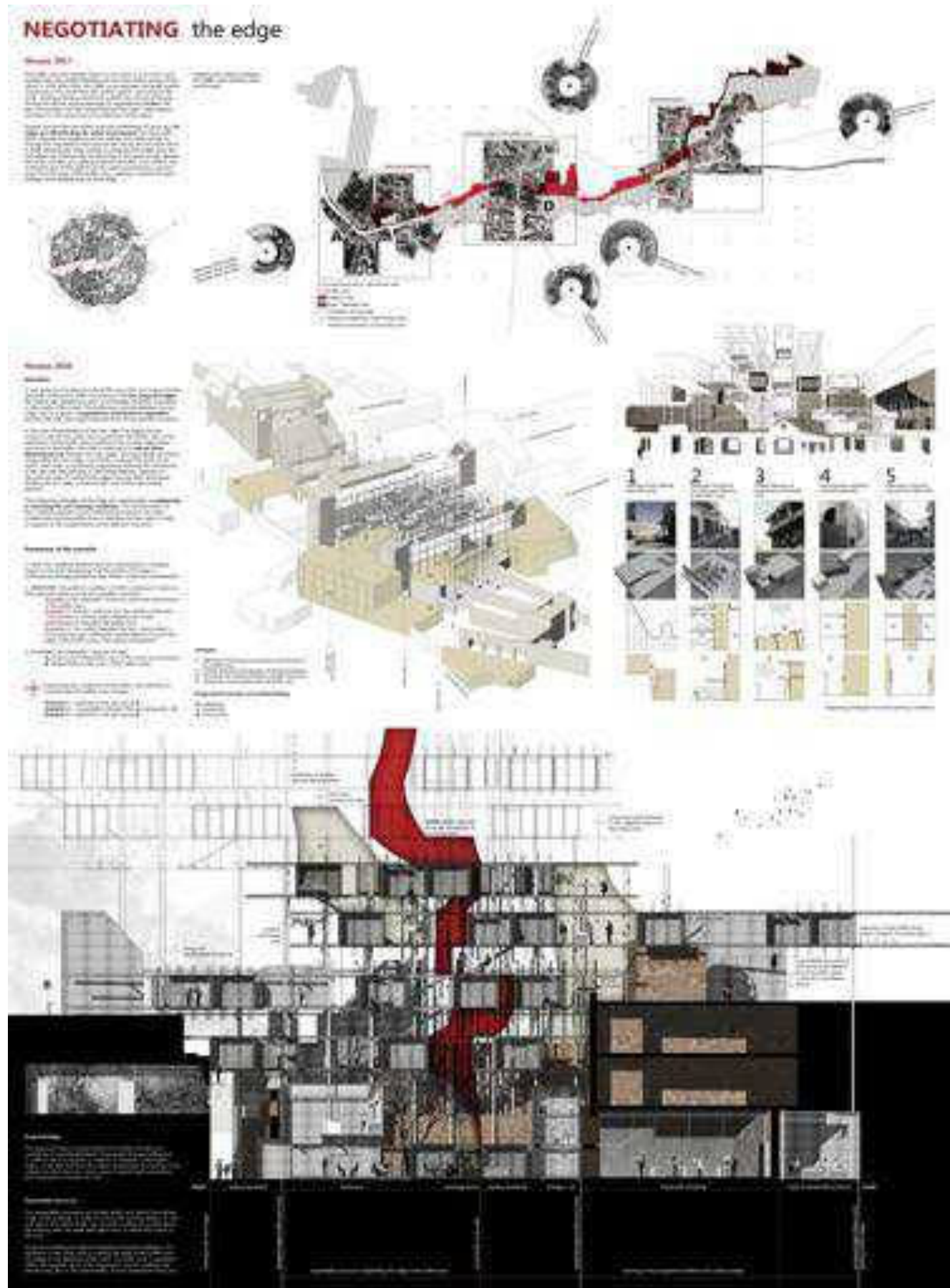


Fig.10

Notes

1. Unit 6 TIME SYNERGIES_ADAPTIVE ARCHITECTURE Advanced Design Studio, Department of Architecture, University of Nicosia. 2015-2016 Course coordinators Maria Hadjisoteriou & Angela Kyriacou Petrou. 2016-2017 Course coordinators Maria Hadjisoteriou & Angela Kyriacou Petrou, Tutors Yiorgos Hadjichristou & Christos Papastergiou.
2. The mapping shows an area where the military buffer zone meets the urban fabric. The military infrastructure such as trenches, landmasses, bunkers and fortified walls are appropriated by the inhabitants and the natural elements. A gradual mutation of the ground and the military infrastructure takes place.
3. Project by Christos Xenophontos, 2017.
4. Project by Chrystalla Koufopavlou, 2016.
5. Project by Andreas Prokopiou, 2017.

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Biography

Maria Hadjisoteriou is an Associate Professor of the Department of Architecture, University of Nicosia. She received her Dip-Arch from N.T.U.A., Greece, and her Master in Engineering from Mie University in Japan where she was a Monbusho scholar. Maria's main focus is "research by design"; therefore, parallel to her academic involvement, she has been a practicing architect since 1995. Maria has received a number of awards in local and international architectural competitions, among them is the European 9 Sterra project with a runner up prize, and the 1st prize for the Kalinikion Town Hall and Museum of Athienou and the development of the historical centre of Agia Fila. Her current research interests include: Mapping as a design methodology, issues of perception with a focus on intangible qualities in architecture and social sustainability in an urban context.

Angela Kyriacou-Petrou is an Assistant Professor in the Architecture Department at the University of Nicosia. She completed her architecture education in London, where she was born and lived until 2001. Practice work has involved an extensive range of projects and scales, in both London and Nicosia, including: Competitions, Independent practice, Project Management and Interdisciplinary design Collaborations. She began teaching in 1996 at Kingston University and Southbank University in London. She subsequently taught as adjunct faculty at the University of Cyprus from 2006, joining the University of Nicosia in 2010. Research interests are focused on Theories and methods of archiving rural and city histories and activities, particularly in how maps define public spatial relationships. Research work tries to identify data exploration as a process over data presentation as a product. Particular attention is given to rural land use and spatial practice.

One Day in LA.

Revisiting an architectural project is to open the mind to new knowledge.

Could an architecture project be revisited repeatedly, and still surprise you with new possibilities? In order to answer this question, the author decided to produce a new review of her own Master's Dissertation by adopting a different focus, discovering dimensions which have been always there. This project titled *One Day in LA: Networked Dreamers Build the Global City* manifested itself like a personal travel in which its author approached Los Angeles - and its individual and collective imaginaries - by exploring some of the ways of life that take place in the multiple architectures of that provisional city. Such an experimental and proactive research made it possible to explore new scenarios which emerged by the combination of architectural techniques with different techniques from other fields, such as film.

This had the aim of starting a discourse about some political, social and cultural factors - which are universally valid but - exemplified in this paper by Los Angeles. It is a combination of filmic methods with architectural ones, in which the author looks for new material and forms of approach to different ways of life, mixing the architectural object with the political condition of the characters through the eye of the camera. To sum up, this pedagogical project is a combination of film material (plot, storyboard), models (scenes) and a short film (with different chapters), created to allow the spectators to understand the author's point of view about Los Angeles and its inhabitants.

Key words:

Architecture, Film, Transgressor, Social, Pedagogical.

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ONE DAY IN LA
NETWORKED DREAMERS BUILD THE GLOBAL CITY



Fig.1. Film Poster.

1. One Day in LA: Networked Dreamers Build the Global City.

One Day in LA: Networked Dreamers Build the Global City (Fig.1) is a project that targets different situations and issues from diverse perspectives. The result is a short film¹ which operates by means of numerous layers. It is a story that shows how the architectural project, understood in all its cultural and political aspects, is able to establish the circumstances for a broad and proper discussion about the ideas and contexts of the global city,

reflected, in this case, by Los Angeles.

The situations of that global city are reproduced here by the design and the development of a screenplay and some scenes (Fig.2) which introduce the spectators to a reality that questions the everydayness of Los Angeles. In fact, this work shows the permeability of some spaces that evolve, acquiring new cultural and political connotations. This architectural project focuses on the social, cultural and political practices of four different communities (Hispanic, African-American, Asian and White people) who build their own representation of the city. For this purpose, the architecture must

target diverse scales - the residential, the urban and the territorial infrastructure - from different points of view fiddling with the scale of the objects.

Therefore, this project places importance on the space and also on the objects that acquire symbolic status. They are related to the feelings and living arrangements of citizens who struggle every day to claim their space in the public sphere. These objects help make sense of their story and allow an approach to the city and its multiple imaginaries by the personal vision of the citizen. The objects used by the characters and the different scenes provide insight into the functionality of the complex organism called Los Angeles. Thus, studying the significance of each of the objects, and working carefully in the design of each, were very important steps. The objects are the elements which allow the citizen/author to build complex realities about the city and its communities.

One of the central objects is the dress (Fig.3), which can be considered a metaphor of the American dream, the dream of those immigrants who leave their country in search of a new life. This object appears in different scenes. Firstly, it appears in the prologue, in its production process. Secondly, we can see the dress in the Los Angeles River. In this scene, the dress is trash, like a broken dream. Also, it is possible to see it in the Asian laundry in the Alhambra district, where Asians take care of it. And finally, we can see it in the last scene, where the dress has lost all its importance to become an object without future significance.

Another example of the importance of the objects and their varied scale is the chapter *Burn, Baby Burn*. In this scene the author decided that the city must have been inside the shack and the yard around the shack. By making this design the privacy of the yard is visible from the street. This strategy shows the African-American worries through empty plots, porches and cars. Here the relationship between private space and public space is the key. Similarly in the River, a big public infrastructure becomes a private space thanks to the objects that its inhabitants use, as for instance armchairs or cars. It happens also in the factory, which is

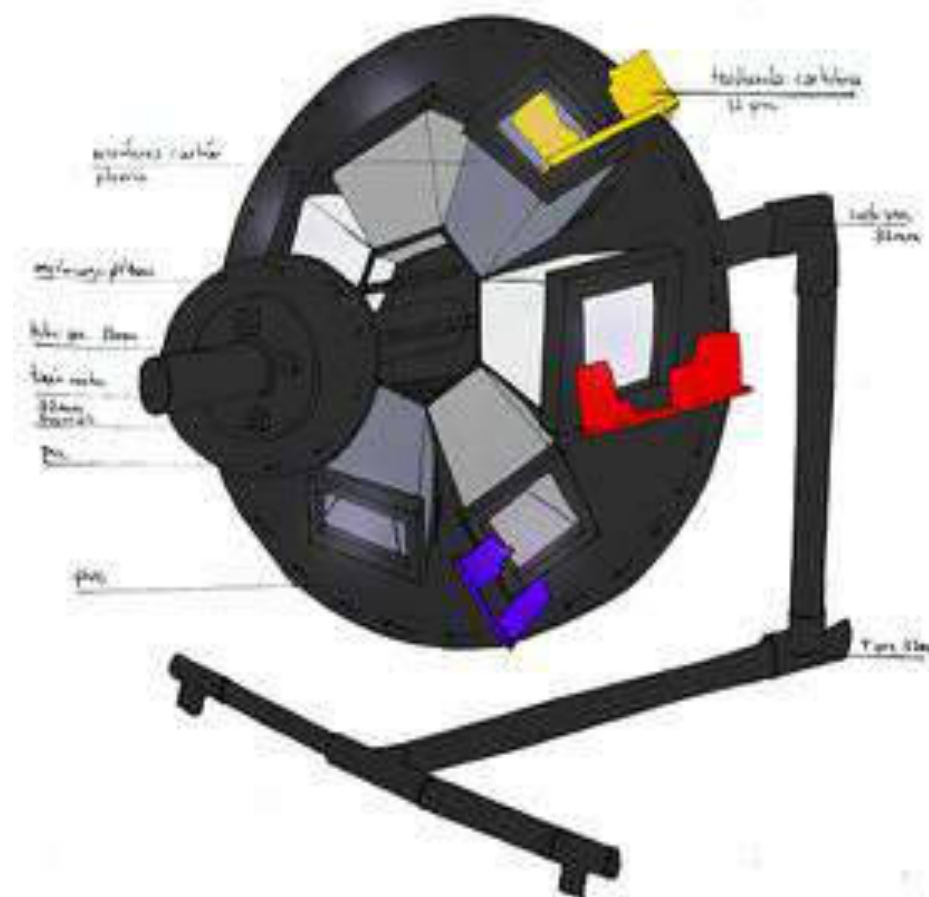


Fig.2. Asian Stock Model Design.

a clandestine and hidden space with a strong political charge because of the confrontation of each worker with the structural violence the city exerts over them.

This research is concerned, therefore, with the aspirations and challenges that the Angelinos, for example, have to deal

with. However, this is an imaginary travel to a city which has never been visited physically by the author. For this reason, it was essential, as in all architecture projects that are compromised with reality, to incorporate substantial research utilising new perspectives from external experts. In this case, films and



Fig.3. *El taller de los sueños*' objects.

literature transform the research into a multidisciplinary one, in which the architecture disseminates an imaginary universe that reflects upon the current situation.

2. Methodology: Films and Architecture.

One of the main objectives of this proactive research was to propose a working methodology which combined filmic methods with architectural ones. In this sense, the work aims to present an experimental approach that allows the progress of an architectural project to go in unsuspected ways. Furthermore, this approach combines architectonic objects and the political status of the characters through the perspective of the camera, such that the architectural project gets an imaginative dimension which acts as a communication vehicle of a specific as well as a global reality. This combination has allowed the author to approach the city, analyse it, and show its diverse ways of life, its urban culture and its social and political issues in a different way, more complex, but also more free, creative and suggestive.

The connection between the architect's role and the diverse film facets were used to research into the production of a screenplay (Fig.4) and some of the constantly changing scenes. Although, it was a process of trial and error, the



Fig.4. *Urbanismo mágico's* storyboard.

support given by experts from other fields, whose ideas are the basis of this project, was crucial. The research draws on texts such as *City of Quartz* by Mike Davis, or films such as *Crash*, to create a basis which reconfigures a personal imaginary creation. This imaginary work was built in order to establish a dialogue about the social, cultural and political issues of this heterogenic society, as well as between architecture and the broader territory.

In addition, one of the most important issues is social partition. Los Angeles presents a huge social division, although as an organism it has a more complex and interlinked functioning. There are frictions between the inhabitants, because they are not communities who inhabit sealed spaces; these are permeable and are constantly changing thanks to the effort of each citizen who constructs an image of their own city.

2.1. Methodology: Step by Step.

Los Angeles, the city known as the Mecca of the seventh art, is also known as the city where myth and reality are blurred. Where what looks real is a fiction and where products created by fantasy constituted the essence of the city. As a result, it has been the object and subject of diverse texts and films which have tried to understand its complexity. These constituted the basis of this imaginary work about Los Angeles.

By using multiple interpretations drawn from films and critics, a personal image has been created about the city, using the viewpoint of different authors and filmmakers. Consequently, the beginning of the project was researching some information about the city, in order to enrich my knowledge about the reality of Los Angeles.

The films analysed focus on the way of life of the four communities and their specific characteristics. For instance, Asian films usually focus on the personality and singularity of the little Asian areas of Los Angeles, such as Chinatown or Little Tokyo.

However, those about African-American communities show a pessimistic view; for these are communities marked by violence, drugs and gangs. This negative and pessimistic perspective has been much influenced by the riots of 1992, such as that in South Central.

Films about Hispanics focus on the difficulties that this community have due to their illegal citizenship and their dream of getting a better life. Also, they focus on the jobs they do; Hispanics usually work for white people in clothes factories, as cleaners in offices or luxury houses, or as gardeners or domestic assistants. Although almost all of these activities are developed in the west side, the Hispanics' life is very different from their bosses. As a result, the contrast between these two communities is very obvious in the films. White people are interested in diverse

activities that take place in different spots around the city; however, they are usually lonely characters who use private space in a very personal way.

After this first step, the knowledge gained about the city and its citizens is used to create some cinematographic diagrams (Fig.5). These diagrams are based on twenty-five films², chosen due to their ability to depict the way of life of four different communities: Asian, African-American, Hispanic and White people.

These documents allow the author to detect the connections between these communities, as well as to know something of the way of life and the spaces each community use and how they inhabit them. It is a display of the information extracted from the films that contrast with the information gathered from books.

All this information enables the author to extract ideas about the culture, architecture and relationships between these communities, creating the base and starting point of the project. The author focuses on the social, cultural and political practices of these communities, as well as on how public space arises through the domestic production of these communities, and how they are connected, creating through their conflicts, this global metropolis.

The project starts by deciding which stories need to be told. Firstly, it is important to decide when and where these stories are going to be told, and for that, writing the script and imagining the scenes are essential steps. They are the support of the story, so each change while filming is going to affect them.

After deciding the story, the author designs the scenes, working at the same time in different scales, choosing which objects are going to be filmed and how the different scenes (models) are going to be designed in order to place significance on their entire political dimension.

For instance, the story of the first episode, *El taller de los sueños*, is focused on immigration considered as illegal. Here the main object is the dress, and that is the reason why it is placed in the middle. The scene is a clandestine factory,

so it is difficult to see what is happening inside. It is both a terrible and magical space, powerful and fragile. It is a place where the economy of the American dream is created. But also, it is a place of insecurities where a lot of workers are afraid of been deported. They live in a country which does not protect them and which leaves them in a vulnerable position within the system.

The following step is to think about the storyboard. This is one of the most important steps, because at this point the camera appears. Where is the camera to be put? And how is the model to be filmed? These are political decisions as well. For instance, it was considered necessary get inside the Hispanic backyard, which has a meaning of strong privacy. Therefore, the camera has to be inside this backyard. Thus, once the model was built, it was necessary to cut it into pieces to film this scene, in order to be as near as possible to the worries and hopes of this family.

So once the story board is done and the scenes are built, it is necessary to think about all the other filmographic aspects, such as illumination, camera movements, etc. And also, not to be forgotten, it is the main idea of transporting the audience to this reality through the images, the scenes and the dialogue. (Fig.6)

3. Creative Research: Retroactive and Pedagogy.

Therefore, this Master Dissertation³ is a multidisciplinary project, because the architect draws on other disciplines to extend their body of knowledge and starts using other tools from their own imagination. In addition, this project extends the limits of how architecture can approach an understanding of the city, its urban culture, and its socio-spatial and political issues, by an imaginative and suggestive way to promote a discussion

about the social situation. The project targets topics of global relevance, such as illegal immigration, the "anchor babies' issue", the wars of water, or racial tensions and segregation. For instance, the episodes about the Hispanic inhabitants show the impossibility that these people have to be recognised as North American citizens. A lot of these people have lived all their lives in the United States. Some of them arrived there as children or babies, so they know no other reality. Yet they have not the same rights as other citizens, so they cannot get a studentship, for example. And what is worse, they could be deported to their birth country, a place where they have never lived before. They are known as the 1.5 generation. These people are living a dire situation because they are always in risk of being deported, although they work very hard to fulfil their dreams.

On the other hand, the worry for the Asian community is related to the anchor babies' issue. These anchor babies are children who are born in the United States, which allows their parents to obtain American citizenship. Despite this is a legal circumstance, some Asian mafias use it as a business. They attract rich Asians to Los Angeles in order to give their children all the American privileges. It is the natality-nationality industry, which is represented in the episode Asian Stock.

The third scene, called *Burn, Baby Burn*, shows us the 1965 and 1992 riots in the African-American communities. These riots have left open wounds that show us the racial tensions and the segregation in Los Angeles, which is supposed to be a multicultural and progressive city, but subdues its poorest districts. (Fig.7)

The last scene focuses on the way of life of some White communities, known as the wasp world, using imagery of the swimming pool. The swimming pool is used as a political mechanism to express the social, technological and territorial conflicts of the wars of water.

The architecture can not ignore these current social situations. It must call upon its ethical status and act to disseminate all these problems to create a discourse that involves agents of very different fields.

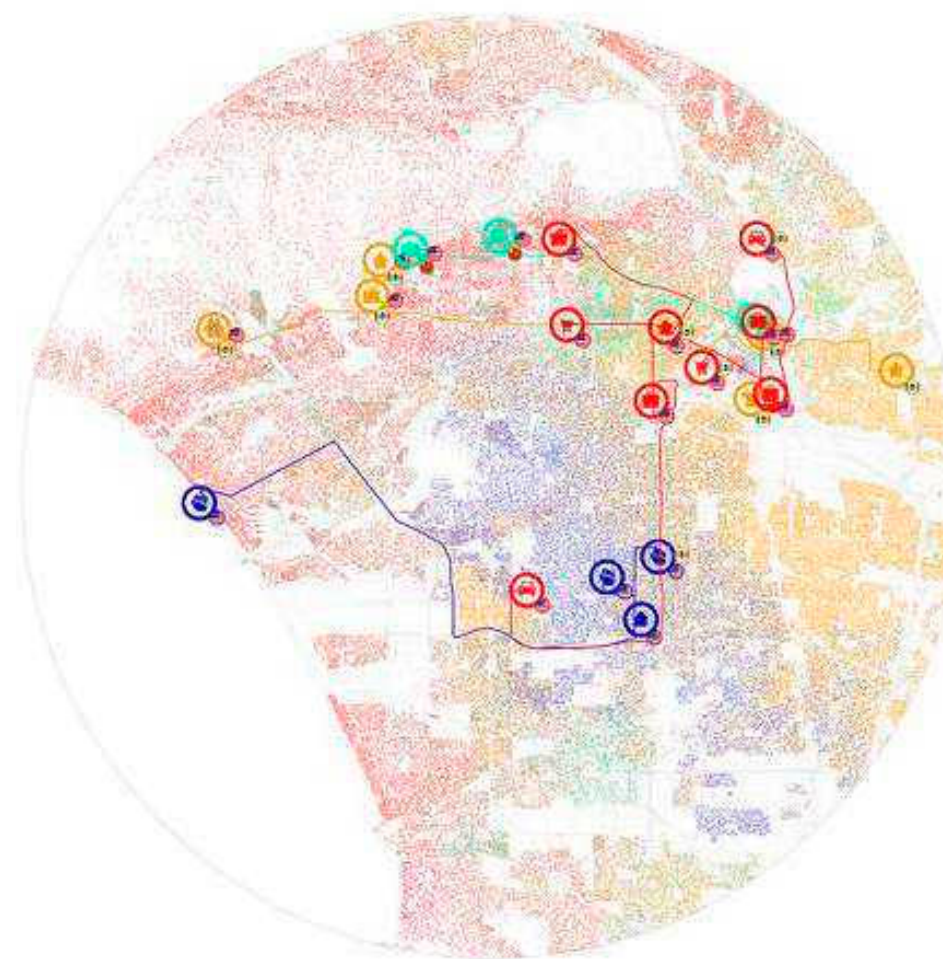


Fig.5. LA sociological film map.



Fig.6. *Reflejos en la ciudad oscura's* frame.



Fig.7. *Burn, Baby Burn* frame.



Fig.8. *One Day in LA* exhibition.

3.1. How an Architecture Project Can Send a Message.

In order to reach this aim, the way the project is explained or exposed is very important. It is necessary to design a space of discussion, not just for architects but for all the other agents involved in these kinds of issues. The architect alone is unable to solve these situations; however, they can design a space where it becomes possible to think about

them. In this case, the author designed a scenography (Fig.8) to thrill spectators, and transport them to an imaginary reality. She designed an exhibition that tried to immerse spectators into the Los Angeles reality. Thus, the exhibition is not the end, but a new beginning, a place to discuss and discover new possibilities.

The exhibition is the culmination of the work, a space in which the filmic techniques and the architectural ones work together to convey a message. The

author wants to show that architecture and the city can be seen in a different way, demonstrating that an architectural project or research does not need to follow predefined patterns.

This space places value on the research as well as on the imagination of the author. In addition, it allows the spectators to discover a reality which emotionally hits them, in spite of the distance. There, they can understand what these Angelinos feel, what they crave and how they live. All of this is possible thanks to the scenes and how they were filmed, as well as to the way they are projected. The exhibition was conceived as a route where the spectators could enjoy seven models and six videos while they travel inside the story. By this risky, experimental project, the author wants to emphasise the imaginative dimension of architecture. So as Boullée, for example, demonstrated, architecture is the art of the imagination; therefore, the art of producing images and imaginary scenarios. All of them created in order to express an idea.

However, this project can express different dimensions, because it would be interpreted in some diverse ways from experts in different fields. That is the reason why the author criticises her own work by designing an interview⁴ in which she thinks about the possibilities of the project as well as the disadvantages. It is a self-questioning document about the project. In this interview the author expresses her doubts, motivations, fears and aspirations about a city she has never physically visited.

In conclusion, this project also has an educative dimension. By constructing this story with a huge social charge and by the design of the scenes, the project makes the spectator feel something of the agony of these people, so they can empathise with their situation. It is a project of social pedagogy which shows complex situations through architectural language in order to send a message. Furthermore, this research constitutes a teaching vehicle for all the people that visit it, surprising them with their own interpretations, not just those of its author. Therefore, this research lays a foundation for a project that can be valid for the architecture field and beyond.

Notes

1. The film, *One Day in LA*, is available on <https://www.youtube.com/watch?v=p40NfUF8JUK&t=10s>
2. The twenty-five films are in the bibliography.
3. The document, *One Day in LA*, is available on <https://rua.ua.es/dspace/handle/10045/72253>
4. The interview is available on <https://www.youtube.com/watch?v=Qlawzn3DI4I&t=6s>

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Biography

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TILIBFOP: Things I Learned In Barcelona From Other Places.

A Research into European Architectural Identity.

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TILIBFOP is an introductory course to postgraduate research in architecture.

TILIBFOP is a retroactive research into European architectural identity. TILIBFOP is a cultural and interdisciplinary journey carried out by non-European architects.

TILIBFOP is an academic experience integrated in the M BArch *Master's Degree in Advanced Studies in Architecture-Barcelona, Contemporary Project Specialisation*, (ETSAB-UPC)

TILIBFOP is an academic exercise that brings together a group of foreign students starting their postgraduate studies. Considering this preliminary situation, TILIBFOP proposes an approach to research based on an interdisciplinary exercise that connects architecture and contemporary art. In this sense, TILIBFOP reaffirms the intellectual condition of this exercise and

takes advantage of the European and global cultural diversity at the same time as aiming to "create knowledge." Due to their inherent originality and engagement, the architectural and artistic practices studied in TILIBFOP are highly suitable from a pedagogical point of view.

TILIBFOP is a platform for academic debate and training a student's research personality. The student's development is measured and assessed through a programme of critical texts, graphic representations, architectural models and designs, and the edition of a booklet that gather the TILIBFOP's research production.

Key words:

TILIBFOP, Europe, Architecture, Contemporary Art, Culture, Research.

1. What does TILIBFOP mean?

The clock says 14:30 on a Tuesday afternoon in September. Thirty architects from different parts of the world meet in a classroom of the ETSAB's extension school; one of the last projects designed by the excellent architect José Antonio Coderch.

The thirty architects are now Master's students willing to be involved in a new academic experience far from their cultural origin. They do not know each other, and few of them speak or understand the others' language. Nor do they precisely understand what TILIBFOP means.

TILIBFOP conducts a clear academic objective: to initiate students in architectural research. Thus, TILIBFOP proposes to study the European architectural and cultural identity through an interdisciplinary exercise that intermingles art and architecture. TILIBFOP produces knowledge through the recognition of the differences and affinities between disciplines, and the difference between cultures. TILIBFOP takes place by way of a virtual journey in which European countries are visited through the study of contemporary art and works of architecture. Based on the thinking and works of artists and architects, students will cover criticism, research, systems of representation, and architectural design.

The European identity, in cultural and architectural terms, is one of the best expressions of the diversity of the European continent. In this academic exercise, this diversity is vindicated and given value; it is fixed as a starting and referential point for the investigation. As Rem Koolhaas pointed out at the request of the political authorities, Europe is a continent that cannot be seen metaphorically as a blue and uniform surface (Fig.1), but should be understood as a kaleidoscopic experience of colours and nuances.¹ (Fig.2)

From a pedagogical point of view, the relationship between art and architecture is understood here as a strategy to rethink architecture while avoiding prefixed ideas and forms. Consequently, this work should allow and foster a debate about the free formulation of research process hypotheses. Contemporary art readings bring a kind of freshness and immediacy that is rather rare in the field of architectural thinking, for it cannot be forgotten that architecture is greatly conditioned by an almost geological tempo.

TILIBFOP proposes a research that focuses the roots of architectural design. For this, it offers a conceptual kind of research which demonstrates both a prospective and retrospective capacity (sometimes historical). The TILIBFOP course ends with creating and editing a short publication that illustrates the learning process.

2. The presence of the past.

The first edition of the architecture biennial held in Venice in 1980, showed that "the presence of the past" had arrived to stay and to really influence the contemporary² architectural panorama. It was the great moment of Historicist Postmodernism, which enjoyed a major critical recognition for proposing an alternative to certain shortcomings of the Modern Movement. Over time, almost all the architecture classified as postmodern became associated with Historicist Postmodernism and as a consequence, the diversity and plurality that Charles Jencks defended through seven editions of *The Language of Postmodern Architecture* was diluted. Thus, other truly interesting postmodern forms, perhaps not so popular, as for example the direct Revivalism, the *Neovernaculo* or Contextualism, and the use of Metaphor were forgotten. Alternately to Historicist Postmodernism, other practices, in some ways indebted to those forgotten postmodernisms, had been developed earlier. These practices were in many cases *opera primas* that sought an original and/or user-driven architecture.

The interest in a user-driven architecture placed on the table again the question of redefining local cultural identities. This fact was retrieved by Team X, who were critical of the rigidity of some of the modern statements during the post-war period. These interests showed affinities with statements of Critical Regionalism, highlighting the value of place and topography, the relationship between architecture and territory, and the value of an authentic architecture.

These practices considered that by giving value to certain local, urban, territorial, social or cultural conditions, they would foster the redefinition of a specific and related identity. In this sense, the architects analysed in the TILIBFOP research, respond to all these concerns, attending to, and learning about the historical value (in a broad sense of the word) of architecture without direct evocation, but working with more abstract processes.

Interestingly, the influence of these independent practices outside the mainstream has been the benchmark for some influential contemporary architectures that have opted again for the "presence of the past." A past, that in their case, is close - 1960's and 1970's - or more distant - pre-modern references. For them, the presence of the past is not used in the manner of Historical Postmodernism but rather in Vernacularism or Contextualism. Thus, these practices currently aim to belong to a place and to value local architecture. We could cite here the British office of Tony Fretton Architects, Caruso St John, Sergison Bates, as well as the Belgian office De Vylder Vinck Taillieu, among others.

The verdict of the jury of the last edition (2017) of the Mies van der Rohe Awards underlined this tendency. And this has happened in two categories: in the principal award given to the Deflat Kleiburg intervention (a housing project indebted to Robin Hood Gardens', and therefore Brutalism and "Unfinished Architecture"); similarly, the award given to Emerging Architecture, the Navez project (a delicate housing block that completes - or continues - a housing block in Brussels, using sinuous forms that might evoke Art Nouveau). This tendency for appreciating the past, has its significant translation into the academic context. For example, relevant chairs of schools such as the ETH Zurich or the Accademia di Architettura di Mendrisio, are led by architects who professionally celebrate architecture that vindicates the past, fixing it as a non-negotiable condition.

3. TILIBFOP, a research.

TILIBFOP proposes a first approach to architectural research that consists in the analysis and study of buildings and contemporary art works, especially considering carefully the correspondences between them. In methodological terms, every exercise starts with a class on the thinking and work of both an artist and an architect (a total of seven, one for each European country). In this first phase, the student investigates the sources for their thinking and work, and they have to decipher in a retroactive way, what has been the creative process that has given

shape to an architecture or an art work. The influences and cultural references, the context, the materiality, the spatial and architectural, landscape, as well as the socio-cultural aspects are deeply analysed. In this sense, the understanding of the difference between format (idea) and form (formal definition) is key. As a conclusion to this first phase, the student is required to synthesize the thinking of the architect and the artist through a critical text.

In the second phase, the student works on a graphic exercise that illustrates the research developed during the first phase. This exercise is specific for each architect-artist couple, as is specific the proposed representation technique (photo-montage, drawing or model). For example, in some exercises the student is requested to elaborate a representation (understood as an art work) made in the artist's way. In others, the student is required to make a design by following the principles of the artist's thinking, and to locate the design in any space of a building designed by the studied architect. The fact of setting certain rules for these exercises, requires the student to argue the design decisions and to define the limits between the thinking and the physical construction.

The contrast between the student's cultural background, and that of the architect and the artist is the basis of the richness in these exercises. The knowledge gained from an unknown culture, pushes students to discern the essential decisions and the basis of thought for each work. The edition of a TILIBFOP publication (seven chapters, one for each class and country) ends with an epilogue that collects the value of the acquired knowledge. The simultaneous development of an accurate personal way of writing, representing and designing, fosters the interaction between them, and therefore, promotes their personal growth as researchers.

4. Contemporary art and architecture, face to face.

As has already been pointed out in the chapter "The presence of the past",

the independent architectural practices that explored alternatives to Historicist Postmodernism, were based on the definition of a more social and contextual architectural identity.

The creative references that shape the European journey presents different affinities. The first is the independence from mainstream tendencies. This independence is associated with a commitment to the architectural discipline, and especially to the social and cultural values of the place. From this attitude, grows a will to search for the essential and the original. The selected works for the development of the investigations are (in many cases) part of a set of raw works that show the intensity of youthfulness (sometimes spiritual) of the authors. These works propose a new reality that is based on a knowledge of the existing, and which become the basis for the development of future designs. All of the examples are works that explore new archetypes (formats) emerging or abstracted from reality, but also from not yet imagined forms. In this sense, a house seldom looks like a house, or an office building rarely looks like an office building, demonstrating the will to go beyond known ideas and forms.

Landscape, understood as a synonym of territory, is an important topic for many of the artists and architects selected in TILIBFOP. Another important issue is that the architectural space is understood as a social context in which it is possible to measure human relations and to identify a social landscape.

The TILIBFOP journey proposes seven couples of architect-artist: Manuel Gallego Jorroto - Perejaume (Spain), Caccia Dominioni - Michelangelo Pistoletto (Italy), Dolf Schenbli - Fischli & Weiss (Switzerland), Jacques Hondelatte - Gilbert Garcin (France), Herman Hertzberger - Droog Design (Holland), Chamberlin & Powell & Bon - Assemble (United Kingdom), and Manfreð Vilhjálmsson - Olafur Eliasson (Iceland). Out of these seven couples, three are presented in this article as a sample: Manuel Gallego Jorroto - Perejaume, Jacques Hondelatte - Gilbert Garcin and Herman Hertzberger - Droog Design.



Fig.1. "All of our earlier Europe's... reduced to bluerope." AMO EUROPE Babel bypassed. 2002.



Fig.2. "Instead of suggesting unwanted homogeneity, Europe should insist on the richness of its diversity." AMO EUROPE Babel bypassed. 2002.

Manuel Gallego (Galicia) is an architect interested in tradition and in the construction using local materials (especially involving stone), although he also investigated prefabricated construction systems. His projects are contemporary, but present as well a local dimension that demonstrates the knowledge of the tradition and the respect for the Galizian territory (both interior and coastal). The aesthetics of Gallego's architecture is committed to a certain ugliness as well as to a timeless will. Perejaume (Catalonia) is an artist rooted in the Catalan culture and tradition. Perejaume is attracted by geography and the essence of nature. His art works blend with the landscape and frame it, reflect it, or reconstruct it. His art works are the consequence of reflective and critical thinking (often also written), which turn the territory into a work of art in which it is possible to walk.

Jacques Hondelatte (Bordeaux) was an architect who emphasized the potential of architectural ideas. Hondelatte prioritized thinking before drawing, and devising rather than formalizing. He was a reference for his generation and for others to come, and he influenced without being dogmatic. Considered the mentor of Lacaton & Vassal, he



Fig.3. Paula Cabral.

imagined impossible projects than can be described as authentic, radical and truly original. Gilbert Garcin (Marseille) is, despite his advanced age, a young artist. Garcin constructs visual poems in which he self-psychoanalyses and defines a dream-world based on the most essential reality. His self-portraits, often shared with his wife, examine human behaviour and create real and surreal introspective scenes that suggest original atmospheres and situations.

Herman Hertzberger (Amsterdam), architect and pedagogue, understands the

discipline of architecture as a tool open to participation that is capable to structure social contexts. His projects are generally timeless, radical and social catalysts. Hertzberger is the constructor of an intentionally unfinished architecture that invites the user to interact with it and to transform it from use and experience. The search for new archetypes from the study of the present and the past, is proof of its investigative capacity. Droog (Amsterdam) is a collective of designers who, like Hertzberger, share the aim to produce unfinished design. Droog trusts the social

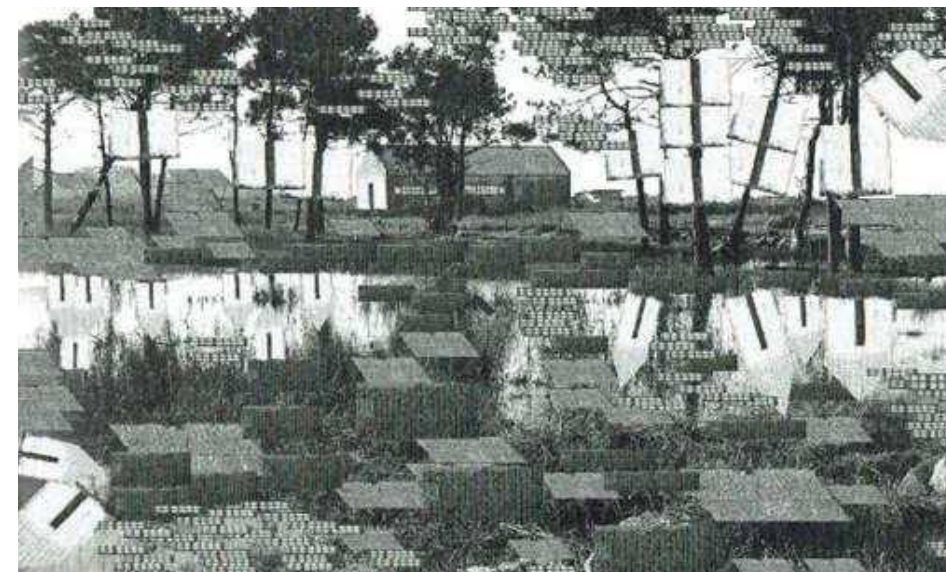


Fig.4. Paula Cabral.

need to recycle and the unexpected aesthetics that the processes generate. Droog projects promote democratic participation and the domesticity of space.

5. Student work.

Based on the close link between the projects of Manuel Gallego and Perejaume, this exercise proposes a project developed from two antagonistic ideas. The first (Fig.3) consists of a reconstruction of architecture through fragments of nature, achieving a fusion

between background and figure that creates a kind of mirage. The second (Fig.4) proposes exactly the opposite idea: to build nature from the basic architectural elements: roofs, façades and windows. The result shows a new hybrid nature, natural but at the same time artificial, in which the architectural elements function as a filter that is superimposed onto nature.

The oneiric and conceptual potential of the works of Jacques Hondelatte and Gilbert Garcin are the reference for these two exercises. Both work in the

reinterpretation and representation of the Fargues house designed by Hondelatte. A project that was the result of a long conversation between the architect and its users, and, consequently, was well-discussed before design. The house explores a concept of living and an integral relationship with the natural environment. In this sense, the first exercise (Fig.5) understands and reinterprets the house as a natural refuge, reconstructing it with materials (natural and "artificial"), which is maintained in balance thanks to Garcin's unique ability. In the second exercise, (Fig.6) the movement of land proposed by the project, which aims to create an artificial topography, gives rise to a surrealistic scene. The line taken in Garcin's work (authentic building project material) is taken as the fundamental element that builds the parts and the whole as a metaphor of life and human relations.

The unfinished condition awaiting the users' experience is a common situation in the works of Herman Hertzberger and the Droog Design collective. The crudeness of Hertzberger's architecture or Droog's radical designs offer the opportunity to activate space or objects. The exercise proposed to the students was to design and place a piece of "furniture" in a



Fig.5. Oscar Pita Wu.



Fig.6. Oana Birovescu.



Fig.7. Paula Cabral.

Hertzberger's building. The first exercise proposes the construction of a bridge that connects two differing ambiances through the large empty space of the Centraal Beheer offices in Apeldoorn (1972). The new construction is apparently precarious since it is made from recycled cardboard rolls that together form a resistant structure (Fig.7). The second exercise is located at the entrance of the Montessori school (1960-1966) and develops the idea of arrival and welcome to a building. In this case, the student places different rolled carpets in the reception area of the school, creating an external environment (Fig.8). This improvised, essential and casual furniture is able to create a welcoming domestic environment that transforms the space and humanizes it, in the same way the previous exercise did.

The selected exercises described above demonstrate the understanding of architectural and artistic practices analysed by students. This understanding is assessed through writing, representation and architectural design. The writing, following the requirements of the exercise, must be concise and limited. Representation is suggested to be the expression of the student's own architectural and artistic personality; and architectural design should show creativity and proactivity.



Fig.8. Oscar Pita Wu.

The development of the course is based on seven such exercises. At the end of the sequence of exercises, each student will publish his/her work on their own. The TILIBFOP booklet is the opportunity to create knowledge by relating the thinking of architects, artists and students (also architects, of course). In closing this publication, the student is asked to write an epilogue in which he/she must specify and synthesize retroactively what they have learned through TILIBFOP.

6. Conclusions.

The first conclusions from the results of TILIBFOP are revealed by the edition of the booklet prepared by students, which gathers together the seven exercises. In the first place it is understood that research is a process that is capable of creating knowledge. When the result of each chapter is revealed as a formal and conceptual discovery, unknown a priori, all previous research becomes fulfilled with meaning. In this sense, it is important not to forget that this architectural research ends up with a "formal result" departed from a "no-formal thinking."

The methodology applied in TILIBFOP presents a noteworthy aspect that facilitates the evolution of a personal way of thinking, representing and designing.

We must remember that TILIBFOP is developed in a Master's degree in architectural design. This evolutionary definition is interesting because it shows the student's confidence in their research and in being open to an unfamiliar cultural context. The ability to synthesize and discern between the essential and the superfluous is crucial to the subject. For this reason, the TILIBFOP edition is also synthetic and direct.

The fact of understanding TILIBFOP as a tool for the future, in this case a Master's second semester, promotes a more grounded, coherent and enhanced formulation of hypotheses in the final thesis phase. The interdisciplinary nature of the subject, allows us to recognize contemporary art as a research tool with a pragmatic nature, far from preconceptions that see contemporary art as useless.

The interest in European culture aims to highlight its diversity and, above all, the value of culture in absolute terms and its ability to influence the global context. In this sense, it is the aim of TILIBFOP to extrapolate this exercise to other cultures, and thus to promote the conviction that contemporary art and architecture influences society while at the same time offering a real possibility for the improvement of cities and territories.

Notes

1. In the project AMO EUROPE Babel bypassed, two maps of Europe continent are countered. One completely blue, and another colourful showing the cultural diversity in Europe.
2. The Historicist Postmodernism defined by Charles Jencks gathered buildings characterized by a certain abstraction of the past, as for example some ones designed by Kisho Kurokawa, Kiyonori Kikutake, Eero Saarinen or Robert Venturi and Short.

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Biography

Ferran Grau is an Architect (1996) and was awarded a PhD (2013) from the ETSAB, He is currently associate professor at the Escola Tècnica Superior d'Arquitectura de Barcelona, where he leads the "All scales of project" integrated in the M BArch Master's Degree in Advanced Studies in Architecture-Barcelona, Contemporary Project Specialisation, ETSAB-UPC). He has taught at several schools of architecture, including the ETH Zurich, Azrieli School of Architecture in Ottawa, TU Faculty of Architecture in Delft, Yıldız Technical University in Istanbul, and Arquitectura en Alicante (AeA). In parallel, he has collaborated with the Institute of Advance Architecture of Catalonia (IAAC) and the Barcelona Institute of Architecture (BIArch). His architectural projects were exhibited in the Biennale di Venezia (Unfinished - Spanish Pavilion, 2016, and Vogadors, 2012). His office (GRAUCASAI Architecture), has received many awards in competitions, and in 2018 he won the competition for directing the QUADERNS magazine (num. 273), with Nuria Casais and Rafa Mateo.

Extending Architecture Practice to Improve Participatory Design.

The learning loop and the atelier methodologies applied at Urban Living Labs in the LOOPER project.

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This paper aims to present how to activate the communities' critical analysis of urban issues by using the learning loop method and the atelier form of architectural study. It shows how by applying these methods to urban living labs can help the community to improve co-design of urban spaces by increasing the knowledge and competences of all stakeholders involved in a participatory process. This helps to teach citizens how to assess the feasibility of their suggestions and to evaluate the impact and the effectiveness of their decisions. The experience here described is fostered in the framework of the LOOPER project, in a pilot case in the south part of Verona. LOOPER is a European project, co-funded under the JPI Urban Europe program. Citizens were invited to work on the particular

urban issues of air and noise pollution. In this experiment, citizens learnt how to: create dialogue with policymakers; comprehend all the aspects of urban issues; understand which type of sensors exist to measure urban problems and how to use them; analyse which actions can be applied to urban fabric. This process is supported and was triggered by interdisciplinary research that, starting from architecture, expands to other disciplines such as sociology and information technology and turns on a retroactive research that reverses the experience of architecture atelier inside the co-design activities of the ULLs.

Key words:

Co-Design, Co-Monitoring, Learning Loop, Urban Living Labs.

1. Introduction.

LOOPER (Learning Loops in the Public Realm) is a European Research Project funded under the JPI Urban Europe programme. The aim of the LOOPER project is to build and validate a participatory co-creation methodology based on "learning loops" inside Urban Living Labs (ULLs) of citizens. ULLs, as later better explained, are the application of the Living Labs approach in urban contexts. It aims to create a new way of decision-making which brings together citizens, stakeholders and policymakers to learn iteratively – and afterwards decide – how to address urban challenges. The project, as part of the Europe 2020 strategy, works towards a smart, sustainable and inclusive society.

In the pilot case of Verona – that we describe here as an example – the project focuses on air quality as it is a real and serious problem of the city and also it is a common problem that is increasing in many European cities.¹ Besides the real situation of pollution, another aspect that the research deals with is the awareness, the understanding and the perception that citizens have of it. In fact, what people perceive does not always correspond to the real situation: researches demonstrated how perception is usually distorted by social rank, neighbourhood conditions, presence or absence of greenspaces, and educational level.² The difference found between the real situation and the perception when talking about air quality is frequently heightened by the communication problems that

can be found between citizens and policy makers.

The different perception of problems and the lack of knowledge sharing influence the results of participatory processes. For this reason, the project wants to approach at the same time, inside the participatory Living Labs, both the opportunity of finding solutions to solve urban issues and the reaching of community learning.

2. The problem of knowledge transfer and reuse inside co-design processes.

We can compare Urban Living Labs (ULLs) to design ateliers within architectural schools, where groups of students work on architectural or urban projects under the supervision of their teachers. In the same way, in the Urban Living Labs, groups of citizens work on urban issues under the guidance of experts.

Of course, the objective of the ULL is to find shared and accepted solutions to solve urban issues, and not to train citizens to solve design problems or teach them architectural design. Nevertheless, training citizens on how to approach and solve urban issues is fundamental in order to gain the best possible results.

This need for instruction and knowledge, moreover, is relevant when the topic of the ULL refers to aspects

belonging to the discipline of architecture and urban issues. In fact, as is well known, "architecture is a complex discipline, where technical and artistic knowledge blend, and influence each other. Due to this double influence, it happens that there is not an 'exact' and 'unique' solution to architectural design problems. Therefore, the architect, developing her project, has to remember, compare, choose and re-elaborate, a large stock of possible solutions, to move towards the final outcome step by step." (Stefaner et al., 2007)

In fact, the production of several and various solutions and alternatives is not really a problem of the ULLs; on the contrary, inside each session of work a lot of knowledge is produced. The problem is that this amount of knowledge is not shared among all participants and is not passed down to the different Labs sessions. This aspect is also common in design ateliers of architectural schools, where "a big amount of learning is entrusted to practical exercises conducted with various methods and instruments according to the discipline, characterized by the constant commitment of large amounts of time and energy to every single student to develop his/her personal, individual and specific preparation. Such an accumulation of didactic experience generally gets burnt into the training of only a single student." (Spigai, Condotta e Stefanelli, 2006)

This absence of knowledge storage and transfer, and therefore the impossibility for citizens working in the Urban Living Labs to compare,

re-elaborate and verify a large stock of possible solutions, is one of the causes of poor success in ULLs outcomes. Often the projects and the ideas generated inside ULLs are not appropriate and unsuitable for implementation in the city. It is because they are created inside a process which is not supported by a learning process: the results are superficial ideas or complex and unrealistic projects; or out-of-date solutions.

To enhance and make effective the outcomes of the Urban Living Labs, it is therefore necessary to capitalize the knowledge produced inside the Labs and reuse it to create new learning opportunities. The use of Information Technology and e-learning tools increased the possibility of classifying and storing the knowledge produced inside didactic Labs. Nowadays digital repositories of Learning Objects³ that organize the knowledge using advanced taxonomies or ontologies are "evolving from a pure multimedia tool to a new didactic opportunity for academic life, an incubator and a generator of new knowledge, written on the basis of old knowledge quanta." (Bogani, Condotta e Arlati, 2011)

The use of IT tools to "store" the solutions, the ideas, the suggestions, and any other output is a common practice, not only for didactic ateliers but also for Urban Living Labs. In the LOOPER project too, we use different IT tools to collect data about the urban problems, visualize information and to share ideas. The improvement that we are testing in our project, is to include the knowledge capitalization strategy inside a "multi-level" and "multi-temporal" learning process with the purpose of enhancing community learning to improve co-design of urban areas.

2.1. Urban living labs and the learning loop.

Before explaining the methodology of the LOOPER project, this section introduces and explain what we intend for Urban Living Labs and for Learning Loop, as these are at the base of the project

An Urban Living Lab is a new model for experimental design and innovation

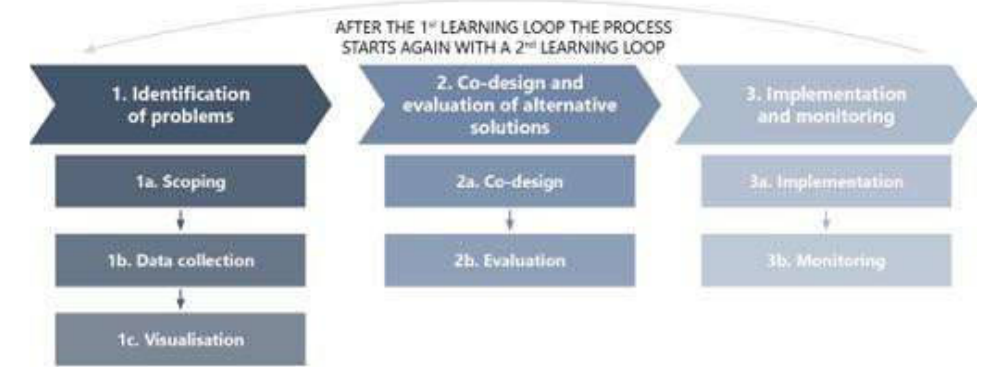


Fig.2

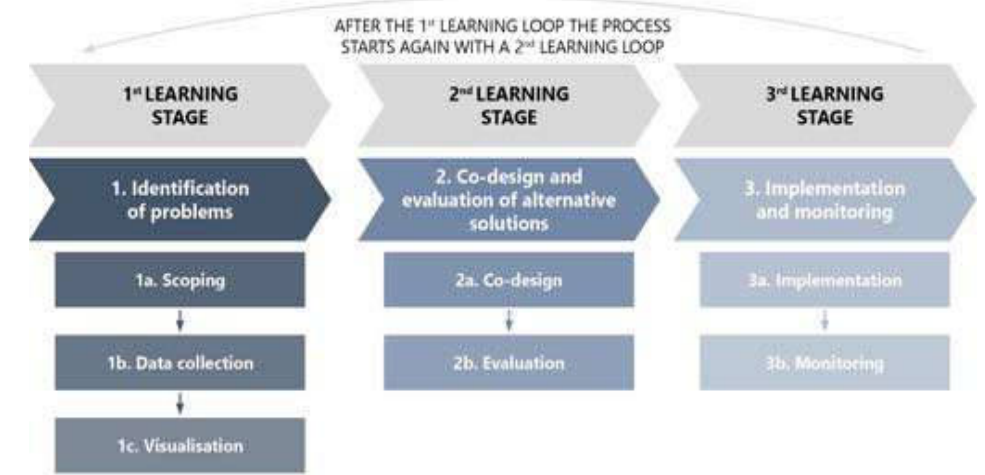


Fig.3

at urban and community level. It is an open innovative system based on a systematic approach of co-creation with the users within public-private-citizen partnerships. This integrates research and community participation processes in real environments. It can address practical problems such as air quality, road safety, noise, crime or greenspace.

The Learning Loop is a cycle which transforms information into knowledge and then knowledge into learning. The learning is then used to support the production of design solutions that are implemented in the city where they become action. If these implemented solutions are monitored and their effects evaluated, this new information is transformed into feedback and again into new knowledge. This works with citizens and communities, and with policy-makers and other stakeholders.

2.2. The LOOPER project and the Verona case study.

This case study is applied at the Verona neighbourhoods of Borgo Roma

and Golosine-Santa Lucia, situated in the south part of the city (Fig.1) which became established and developed as an Industrial Agricultural Zone. This led to rapid growth of two residential zones on the edges of this large area. The neighbourhood is clearly separated from the historic city by the railway infrastructure, while an important road connecting the highway with the old town divides the neighbourhood into two residential parts without a real urban centre.

3. Methodology.

The concept of the LOOPER project is to apply the methodology of the Learning Loop inside Urban Living labs. Each loop comprises three sequential stages conducted inside ULLs (Fig.2): Identification of problems; Co-design; Implementation and monitoring. This three-stage process will be conducted twice in order to trigger a learning loop. Furthermore, the LOOPER project brings three "learning stages" inside ULLs, which will take place during each one of the two Learning Loops. (Fig.3)

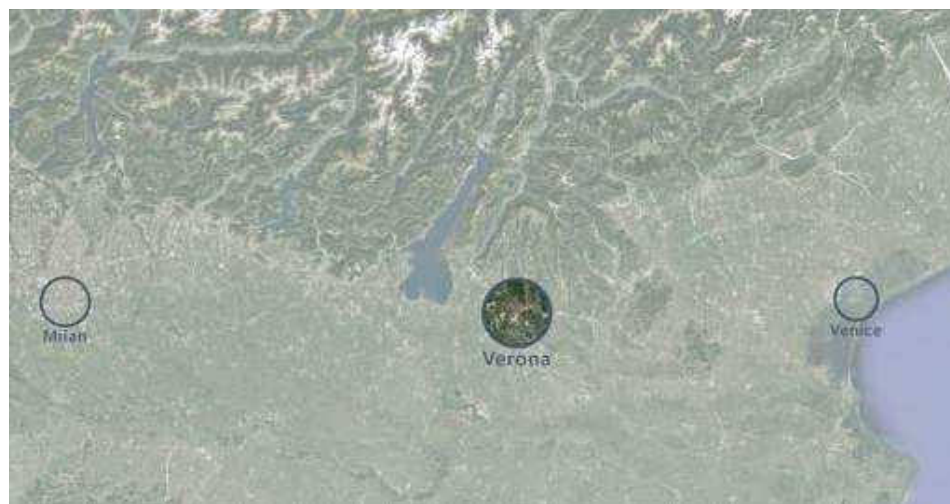


Fig.1





Fig.4

The first learning stage creates awareness of urban issues and the status of problems through some acknowledgment and observation activities. The first focuses on the scoping of issues done during ULLs meetings organized with stakeholders. Here citizens can learn what others perceive as issues, and which matters are deemed to be real or not and which are most relevant. Following this, data collection begins using a crowd-sensing approach (also called co-monitoring). This can be done by asking citizens to combine the issues they found with the identification of places to be monitored and with the consequent positions of air quality sensors.

As soon as this co-monitoring is ended, in the visualization step stakeholders are asked to analyse the information that they collected. An interactive web-based platform, developed inside the project, makes visible the results of data gathered during crowd-sensing and makes explicit the air quality of the city.

The second learning stage covers the activities of co-design and evaluation of urban mitigation measures. During the co-design, citizens propose possible solutions to solve urban issues and, at the same time, open a round table discussion between them and the policymakers to define which of the proposed solutions are feasible, effective and sustainable. During the evaluation activity each proposed solution is assessed using a Multi Actor Multi Criteria methodology in a process that involves citizens, policymaker-stakeholders and experts.



Fig.5

In the third learning stage the selected solutions are then implemented in the city, and the results are monitored with a second crowd-sensing campaign. Here citizens, but also Public Administration, assess the results of their activities and increase their knowledge of possible solutions to urban issues. From this point, the whole process is repeated creating a second loop that learns from the first one.

The co-design process based on ULLs and on the learning loop, which is proposed by the LOOPER project, has also the intention, or pedagogical ambition, of transforming any negative feeling of anger and protest from citizens into positive energies of proposition and participation. This process is important because most negative feelings towards policymakers creates resistance in citizens which leads to an inertia towards improvement measures proposed by public administrations.⁴

3.1. The different stages of the LOOPER methodology applied to the case of Verona.

3.1.1. First Stage: identification of problems.

The general aim of the first stage is to identify, in practical detail, the problems of a local community through a three-step process. "Problems" here also includes "opportunities" and pathways to go forward. The stage is divided in three phases: Scoping, Data collection, and Visualisation.

The scoping – meaning the setting up of the framework of issues for the pilot study – took place between November 2017 and February 2018 (Fig.4). During this period, it was possible to determine with the stakeholders which were the urban issues to be considered. In the scoping activity, following the broad

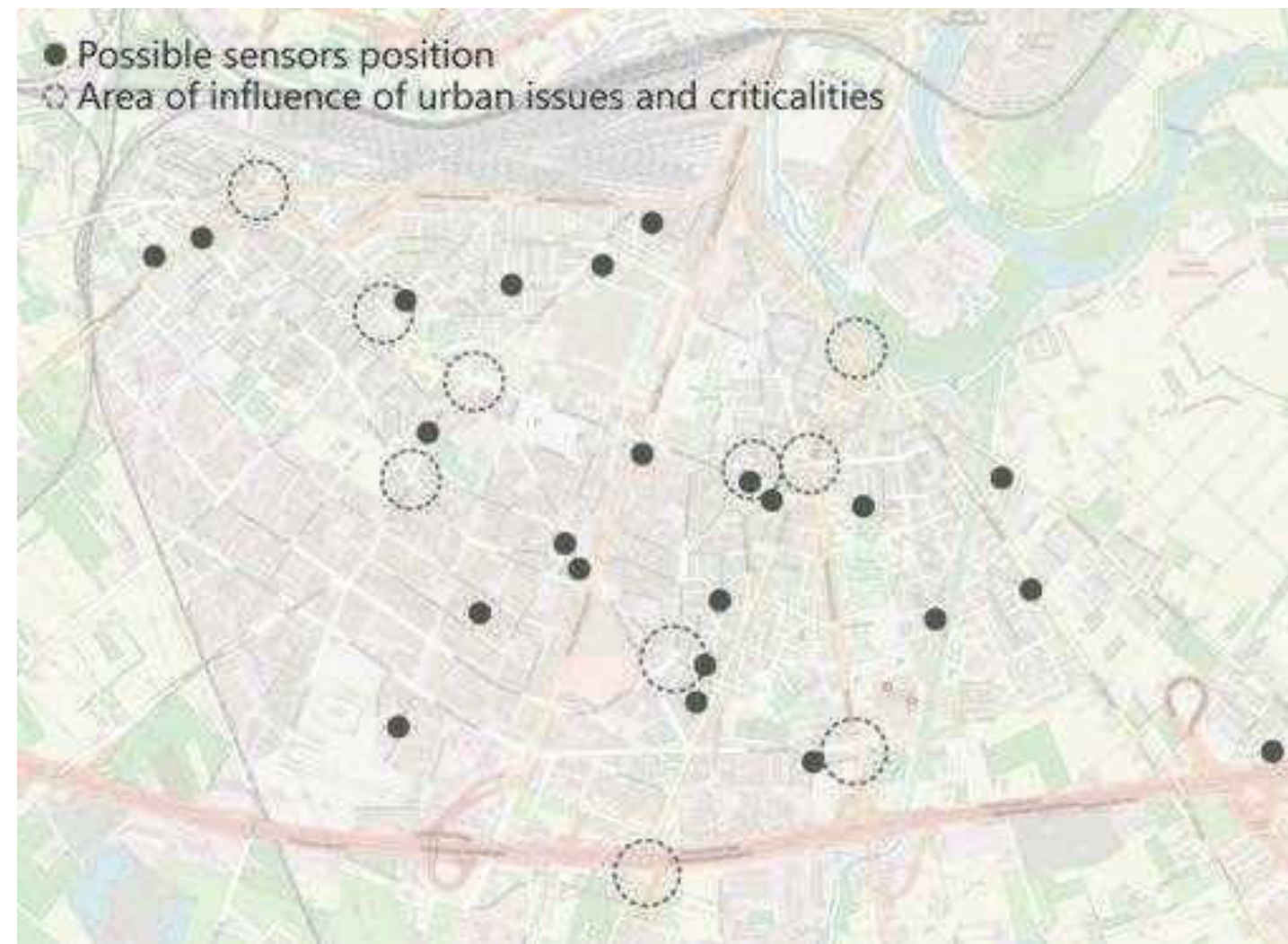


Fig.6

priorities for the whole Lab setup, we have focused (or zoomed) into particular interventions with problems/opportunities for the specific community, with particular attention to causes and effects. The problems later have been framed in a way that tangible aspects could have been identified through data. Typical problems found in different LOOPER Living Labs included: air quality, noise, traffic, crime, greenspace and public services. In the case of Verona, the main issues we have identified are air quality and noise pollution.

During the problem-scoping activity, the data collection activity was also planned, based on a participatory sensing campaign. The identification of data to be used as indicators of the urban problems were identified, as far possible, with the participation of citizens. Citizens have also been trained on aspects related to measuring data related to a specific issue (Fig.5) and decided the location of

sensors used to measure the specific urban issues identified in the Scoping phase. Stakeholders participated in where and when to make the monitoring, using mobile stations provided by the national environmental agency – to get official and accurate measurements – and low-cost passive sensors for a crowd-sensing activity.

The decisions about where and when to make the two monitoring campaigns were taken in three meetings where both citizens and policymakers collaborated to reach a final result, which satisfied everyone. Figure 6 shows where the stakeholders proposed to position some sensors, places near their houses or close to public buildings, and where the proposed spots overlap with critical points.

After this process of scoping of urban matters, and where to position sensors, it was evaluated which places were suitable for mobile stations and which could be

used to position low-cost passive sensors for noise and air pollution (Fig.7). In this activity stakeholders were helped by giving them the appropriate tools (i.e. knowledge about the issues found during the scoping, competences on sensors, and on the laws that regulate air monitoring). The first monitoring campaign took place between February and April 2018.

The Visualisations of the collected data have been produced with web-gis and similar tools, together with other media, such as audio, image, or video. These are already published on the LOOPER platform/dashboard.⁵ They can be compared, where possible, with official targets, scientific thresholds, risk factors, impacts on special groups, etc. Results of the visualization phase is publicly shared information that will be discussed inside ULLs by local stakeholders, and will be analysed in terms of thresholds, targets, priorities, opportunities. For example, technical data such as air quality can be

matched to official risk categories. Social data such as greenspace can be prioritized for action. An assessment/evaluation process will decide which problems to work on, by whom, with what resources, in what timescale, and in which locations, with which priorities.

3.1.2. Second Stage: co-design and evaluation of alternative solutions.

The co-design stage started in October 2018 following some sessions of visualisation of the data collected with participants and policymakers. This activity has been about responses to the problems and opportunities. This has involved collaborative co-design and evaluation of the options. The main issue with Co-design has been the creation of an iterative loop, i.e. from concept, to sketch, to outline, to detail, etc. Each of these needs some form of participation and cooperation between experts/citizens and all the public stakeholders and policymakers.

In the co-design activity, participants have engaged in qualitative and interactive online and face-to-face deliberation activities to propose a range of solutions. This process depends on the particular use-case, e.g., air quality co-design may be quite different to greenspace co-design. In most practical cases, co-design can also be an iterative process, which can include many cycles, from concept to detail. It also involves a relationship of power between community and experts/policymakers, which can be problematic, or potentially empowering.

Activities during this stage included: ideation, designing and assessing resources. During the ideation work, participants were asked to generate creative divergent visions, ideas, synergies and possibilities. After this phase they moved to the design activity during which the iterative process started to move from a vision to a concept, then to an outline and on to conclude by reaching towards detail. During this activity the relationship established between experts (or providers) and community (or non-experts) became very important.

The process of collection of possible solutions took place both online (with a tool that could be found on the local website) and offline. Ideas produced offline have also been integrated on the online tool, which was used as a storage of possible solutions to keep participants informed (Fig.8).

In the evaluation of options phase, the positives/negatives (costs/benefits) of each solution produced in the previous phase can be compared. In most practical cases, the primary criteria will be cost/ funding or feasibility. Where possible, a multi-criteria analysis will be used to appraise the alternatives, with the Multi-Actor Multi-Criteria Analysis (MAMCA) to identify stakeholders' preferences.

3.1.3. Third stage: Implementation and monitoring.

This last phase, that will take place

between December 2018 and April 2019, will include the implementation of the best options – produced inside ULLs during co-design – and the monitoring feedback of the results/effects obtained by the implementation of these solutions in the real context.

The implementation phase will be different for each intervention or use-case. Where there will be a physical action on the ground, it should be possible to involve the citizens and stakeholders through voluntary contribution. Where the action will be mainly about social innovation, or public service innovation, then the people may be at the centre of the plan, which can be risky, but also can be empowering. Activities will include: detailed/technical design & specification; contracts, service agreements, procurement paths; physical construction / service implementation / social innovation pilot. In the case of South Verona, the implementation activity



Fig.7



Fig.8

will be a forecast, as the activity has not started at the time of writing; some more physical actions on the ground such as the mitigation solutions, for example, implementation of cycle lanes, pedestrian zones, and integration of green areas.

In the Monitoring and feedback activity, the question is then, what will be the results, impacts, outputs and outcomes? Where possible, we will monitor the impact of the implemented co-designed solutions, with the same set of tools as in the first stage and with the input of stakeholders through participatory sensing and open data. This information will then go towards feedback for the next round of problem scoping and co-design. Activities will include: monitoring of the 'before & after' results; quantitative or qualitative; evaluation of the implications - e.g., did the co-design work, could it be improved, etc; feedback into the next round, and/or urban policies.

4. Interdisciplinary and retroactive research to improve co-design inside ULLs.

As indicated in the introduction, to improve the effectiveness of co-design in urban participatory processes we have introduced the concept of community learning inside ULLs. To do this we adopted two strategies that extend architectural practice to improve participatory design. The first was to approach architectural and urban design as an interdisciplinary research, that is something that today society demands from our profession. The second was to turn to a retroactive research that reverses the experience of an architecture atelier inside the co-design activities of the ULLs. In this way we apply architecture's capacity to challenge and extend the limits of other disciplines.

4.1. Interdisciplinary research to answer society questions.

As society is always evolving and asking for new processes, methodologies, and new technologies emerge, what is needed now is to link up different professionals to obtain more comprehensive results. In the LOOPER project, this interdisciplinarity is required as the various activities are intrinsically linked to different disciplines. During the first learning stage of scoping of issues, there is a first moment in which sociological and more technical aspects work together. This is because ULL organisers need to consider the environment in which the process is starting (area, population, cultural level, educational level, etc.) in order to create a bottom-up approach that can involve the majority of the stakeholders who are interested in the work of the ULL. This runs in parallel with starting to explain the technical aspects in order to strengthen



Fig.9



the bottom-up process, which, in LOOPER,

are the causes of urban issues (for example how pollutants are generated and their distribution) and the functioning of sensors that will be used to measure and understand them.

As the learning loop process continues, some more disciplines become involved to gain more complete results. Indeed, as the data collection starts, some IT competence is considered when crowdsensing is activated because there is a web app used to gain qualitative data, and an app is used to gain noise pollution data, in addition to which some self-made sensors are assembled to obtain air quality data. IT competence also allows the co-monitoring data with low-cost sensors. IT contribution can also be found during the visualisation activity as a visualisation platform has been developed in order to allow participants to check all data collected through a single tool with a user-friendly interface. The last main discipline that can be found in this interdisciplinary research is design, to be understood as architectural design and urban planning; this is most effective during the co-design stages which needs to consider multiple aspects such as changes to the viability, space usage, green barriers and spaces, etc.

4.2. The architecture atelier applied at ULLs.

People's perception of problems plays an important role in the work that the LOOPER project is engaged in. If participants don't have adequate knowledge to understand the issues they want to face, it can be difficult to reach the prefixed goals. To overcome the lack of understanding about urban problems, what can be done is to empower participants with the necessary knowledge such as to improve their approach to the topics they will be working on. To do so, people need to be able to recognize how problems can be measured, how to identify them through co-monitoring campaigns using adequate tools and, moreover, to interpret data they collected in order to understand if their initial perception was correct. In practice, as in University Ateliers, citizens need to gain knowledge, then apply what they have learned, and then repeat and/or

revise their production after realizing the limitations of their work up to this point. This process works on the principle of learning-by-doing, which means that there is both a theoretical aspect and a practical part. What happens is that theoretical knowledge can be sedimented by applying it to practical cases in order to have a way of checking what works ... or doesn't work. In fact, in our approach, the remedial solutions that stakeholders decide are applied to the urban fabric and then are assessed by monitoring their accuracy and efficacy.

Fig.9 shows two moments of ULLs activity where ideas and solutions were discussed and noted. On the left of the image, we can see a screenshot of the LOOPER portal where all ideas produced during the ULL sessions are stored. This virtual place that collects all the inputs of the ULLs, represent a repository of knowledge that can be consulted and used by all the stakeholders. The experience of some persons of any one particular living lab is therefore accessible to all the other participants exactly as happens in an architectural atelier where students learn not only by the advice and indications of teachers, but also by confrontation and comparison with other students.

5. Conclusions.

At the time of writing this article, the co-design activity (Fig.9) is almost concluded (it will end between December 2018 and January 2019), but there are some concrete results that can already be found within the process and that has generated relevant impacts. The first result is related to social interaction; participants changed their way of approaching urban issues, which was a slow process taking place every time a new interdisciplinary link was added to the work done within the ULL. As a consequence, participants started to change the way they now interface with policymakers looking for cooperation and a constructive exchange of concepts, ideas and vision, rather than engaging in an ideological confrontation of attitudes or approaches. We recognized the same improvements also from the policymaker side. This is a result of the bottom-up process activated when considering

sociological aspects linked to the area of South Verona.

Another result is linked to the conclusion of the first learning stage and is related to the behaviour of citizens regarding the urban issues. During the meetings, it was possible to notice how, faced with the duty of choosing where to position sensors, citizens had to think back on their views and had to deepen their knowledge on pollution-related issues and on what produces it. This is a preliminary step of raising consciousness, as citizens understood that to deal with urban issues in an effective way, they had to improve their knowledge of the problem and its particular cause. After the co-monitoring stage the process is now proceeding, from October 2018, with the co-design and will move forward in the first few months of 2019 to the evaluation stages. During the co-design stage, citizens are learning how urban spaces can be changed to improve the neighbourhood, and what is possible (or not) to do in an urbanized area. This is a further step in raising awareness and of increasing knowledge.

These three main results are a first step in overcoming one of the problems of participatory design that we declared at the beginning of this paper: the production of superficial ideas, or complex and unrealistic projects. In addition, after the implementation of the selected mitigation measures, citizens will be asked to evaluate their work by undertaking another campaign of monitoring to see if the solutions identified and chosen during the co-design improved the situation (evaluation stage). This will be a further occasion of acquiring and "storing" knowledge, enriching the process by which knowledge grows inside the ULL, a point that we identified as a strategy to improve the effectiveness of ULLs.

What is expected now, is the establishment of a process of collaboration with the public administration (bringing contributions and improving urban management). The growth of experience in the citizen body working in these participatory design processes is aimed at removing the clash that is commonly found today and which generates inertia and failure to solve urban issues.

Notes

1. See Air quality in Europe – 2017 report.
2. See Bladwin Johnson, 2011; Oltra and Roser, 2014; Saksena, 2011.
3. As Robert Beck suggest learning objects are much smaller units of learning, typically ranging from 2 minutes to 15 minutes. Are self-contained as each learning object can be taken independently. Are reusable as a single learning object may be used in multiple contexts for multiple purposes. Can be aggregated as learning objects can be grouped into larger collections of content, including traditional course structures. Are tagged with metadata as every learning object has descriptive information allowing it to be easily found by a search.
4. See Legrenzi, 2016.
5. For the general LOOPER website use www.looperproject.eu; for the Verona Living Lab platform use vernaloooperproject.eu

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Biography

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A Retroactive Interdisciplinary Research as a Non-formal Educational Experience.

DiARC meets TOC: A case history about collaborations and forms of critical pedagogies.

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In 2017 the TOC-Centre opened its doors to forty students of the Department of Architecture Federico II in Naples (DiARC) and launched an open call for an ambitious project: setting up the first edition of the Shuffle Screening Festival in Copertino - Salento, South Italy. This would involve spreading temporary "parasites" in different areas of this baroque city, in spaces with distinct urban and architectural situations. The call translated became two multidisciplinary workshops (winter and summer school) with the aims to allow students to experience new forms of knowledge and to implement the cultural usability of public space. Planned for the spring of 2019, the Shuffle Screening Festival

will be a path of performative actions in public space aiming to connect design and moving images thanks to contributions of an interdisciplinary and wide-ranging team that includes artists, curators, designers, independent cultural associations, students and the local community. This paper focuses on the opportunity to experiment with new teaching methods and new forms of approach to the architectural and urban project through a co-creation methodology in which different disciplines and abilities are involved.

Key words:

Critical Pedagogies, Serendipity, Parasite Architecture, Collaborative Networks, Public Space.

Today architecture education requires an approach closer and closer to real experiences, with an increasing cross-fertilization between different areas of knowledge and different languages. A 'liquid', hybrid approach is necessary to meet and address the needs of our contemporary society. Therefore, the role of the architect is changing: this new condition introduces "shuffles" - different practices and roles in his professional and higher-educational establishments. The way to teach (and to learn consequently) must take into consideration the current position of the architect today, one who manages complex processes and provides the key to imagine multifunctional landscapes, often deeply connected.

In this sense, the opportunity to experiment with new teaching methods and new forms of approach to the architectural project has been offered through the collaboration of the Department of Architecture of University of Naples "Federico II", with the TOC-Centre, a Cultural research centre based in Copertino, near Lecce. (Fig.1)

Students, teachers, tutors and high-profile partners were called out of their reassuring classrooms, without

their reassuring technological devices – such as personal computer, cad and 3d programs - and included in a new physical, social and cultural context: in several occasions (three sessions of work have been organized in a period of one year – December 2017, May 2018, November 2018) they contributed to the design of new ways of enhancing public space for the small city of Copertino - where "new" refers to both the concept and in the realization process.

The whole experience, as shown in this paper, is grafted on the local activities of the TOC-Centre, a cultural centre which by its generous nature constantly moves on different layers, larger dimensions and "cyclic" times.

Through the activities organized by the TOC-Centre, in collaboration with local organizations and collectives of young architects, students took part in the general debate about issues related to the design of public spaces, and they also dealt with a series of interesting contributions coming from figures of great importance on the international scene, such as Gilles Clément, Patrick Bouchain and the group of Coloco. At the same time, being able to compare

teachers and tutors with different skills - from the architectural and urban field, to the artistic, social and cultural one - and also the deep interaction with the needs explained by the interlocutors of the place, has allowed the students to enrich their project experience through different impulses and various fields of knowledge.

The main topic of the research carried out by the Department of Architecture and the TOC-Centre has been to reflect about parasite in nature and architecture introduced by the French landscape, philosopher and keen gardener Gilles Clément² in his lecture during the first "winter school" in Lecce. In this context, the relation between the topic of "parasite architecture" and the idea of the "third landscape" aims to rethink architecture as a discipline. The notion of "parasite" architecture is intended as an additive strategy. It's a trigger mechanism of adaptation and contamination. It's a strategy to employ in urban areas, which combines pre-existing structures with extensions or grafts. In the city this transmutation is translated into a new idea of relationship, which recalls the logic of symbiosis in biology, perhaps thought of as similar to accumulation, collage, or assemblage concepts.



Fig.1

It has been an experiment, conducted on several fronts and on different scales, which has moved the point of view of the project, as it is traditionally intended, onto a more complex and articulated process. This way of proceeding has positively modified, expanded and enriched the individual point of view of each of the subject areas involved in a single vision.

1. A Non-formal Education Approach: From Teaching Architecture to Community Engagement, from Place to Project (or vice versa).³

The reflection about critical form of pedagogies in teaching architecture starts with the idea of experiment, the non-formal education approach at the level of academic education using as an example the collaboration between the Department of Architecture and TOC-Centre.

1.1 TOC Case history.

The TOC - acronym of Tower of Copertino - is a recently opened cultural centre for the production of contemporary arts. The Clock Tower is located in Copertino (Salento, South Italy), a monument which has been inaccessible for several years. One of the main goals of the TOC is to renovate the first floor of the tower, transforming it into a venue for exhibitions, installations, artistic residencies, screenings, happenings, workshops and an open work place. It is an open space for research and production activities, focusing especially on the topic of the perception of time and space, through moving images and time-based arts. It is a place where researchers, artists, curators, designers, performers, students and the local community will interact, for the creation of cultural and artistic processes and - not least - to improve equal opportunities for people with disabilities. (Fig.2)



Fig.2

In its philosophy, the TOC-centre's curatorial board is able to put together a wide range of interdisciplinary skills, practices, languages and project staff to create osmotic relationships and unusual combinations in the contexts of contemporary languages. The TOC-Centre also has an educational department with a specific program dedicated to training researchers and designers, students and people with disability, and also to stimulate collaborative and co-creative practices inviting the public to actively participate. Among the goals, there are: the use of aesthetic contemporary languages, together with an ethical reflection on them, in order to contaminate the processes and to define matters of urgency and possible future topics. The use of a non-formal education approach and innovative methodologies aims to promote "community engagement" of the different communities that live in this small town in South Italy. In the TOC-Centre everything is cyclic, like Time.

The collaboration between the TOC-Centre and DiARC in Naples has focused on a common aim: thinking the design practice as a tool for the time-based art connected to visual and the languages of the moving image. It was an experimental approach based on the idea that it is possible to explore critical pedagogies in the School of Architecture based on the definition of non-formal education. The decision was to work with the students of the second year - as they have a basic background but at the same time they are still pure, free and opened to learn new ways of thinking about architecture. We

decided also to involve at the same time an interdisciplinary wide-ranging team dealing with several disciplines such as architecture, contemporary art, landscape, biology and acoustic design issues.

1.2 About Critical pedagogies and Non-formal education.

According to the definition of the International Standard Classification of Education (ISCED)⁴, non-formal education is a kind of Education that is institutionalized, intentional and planned by an education provider.

The defining characteristic of non-formal education is that it can be considered as an additional, alternative and/or a complement to formal education within the process of the lifelong learning of individuals. It is often provided as a guarantee for the right of access to education for all. It caters for people of all ages, but does not necessarily apply a continuous pathway-structure; it may be short in duration and/or low intensity, and it is typically provided in the form of short courses, workshops or seminars. Non-formal education mostly leads to qualifications that are not recognized as formal qualifications by the relevant national educational authorities or to no qualifications at all. Non-formal education can cover programmes contributing to adult and youth literacy and education for out-of-school children, as well as programmes on life skills, work skills, and social or cultural development.⁵

Adapting these principles at the level of academic education, our research



Fig.3

group questioned about the possibility of a more experimental way of teaching architecture in our Universities. This approach has been made possible through a theoretically-based programme, including practical components, informed by state-of-the-art research and best professional practice, thanks to the collaboration between the Department of Architecture of Naples and the TOC-Centre's board. So at the second year of the Architectural and urban design course, which is integrated to Interior architecture and exhibition, we decided to organize a workshop for the students at Knos Manifatture in Lecce, within the framework of the Third Places Meeting (Incontri del Terzo Luogo). On this occasion, the students visited Copertino city, and they investigated the city and its places intended to host the Shuffle Screening Festival: the project work of their "augmented" experience.

Conceiving the workshop as a non-formal education experimental way of teaching architecture, the students were given a complex mission: they had to deal with a project made up of artists, citizens, administrators, and project managers in order to understand the real needs of the project itself. They started thinking "out of the box", out of their ordinary spaces, in a cultural atmosphere in which there were many actors and - in a way - to build up different relationships.

It seemed important in making this premiss to introduce the Shuffle Screening's⁶ case history. Shuffle Screening is an ongoing festival format for moving images in public space co-created by the TOC-Centre in collaboration with LightCone (Paris), independent groups and collectives, non-profit making



Fig.4

associations, artists, schools, and also included professors, PhD students, graduated and non-graduated students of the Department of Architecture of the University Federico II in Naples (DiARC). (Fig.3)

2. A Retroactive Interdisciplinary Research: Thinking the Design Practice as Tool for a Time-Based Arts.⁷

The architecture student engagement is a crucial part of our process and critical pedagogic method. Reflecting on the conditions of contemporary cities in the Anthropocene era, we need to be more conscious about necessary changes in direction, both in practice and also in teaching and research in Architecture. Today the role of the architect has changed; consequently, also research that it is open to collaborations, with public bodies, with professional studies, with associations that operate in the social, artistic and cultural spheres. The relationship between architecture and humans (i.e., its inhabitants) is today one of the most important topics to be discussed in our field of research. The architect has the role to coordinate the process (by vocation, as Gropius says): this means that the architecture is open to infinite ways of interferences, and capable of influencing other kinds of disciplines.

2.1 An Interdisciplinary Approach.

The methodology adopted in this research is a co-creation process, in

which different disciplines and people are involved (students, professors, curators, landscapers, people with disabilities, art lovers, visual artists and independent researchers). This has to be considered as an osmotic exchange in which we can learn from each other starting from different backgrounds and different ways of working.

The experience of the design process was strongly connected with this way of thinking. The specific nature of the event and of the places identified for the Shuffle Screening Festival generated a positive interaction between the community and the practitioners involved, promoting a reconsideration of the use of public spaces as a physical and non-physical connection among its possible future users, including people with disabilities.

In this way, the co-creation group has been working for one year on the design of site specific "ephemeral" architectures, as "screens" through which the user can recognize the places of the city and recognize himself in these with a serendipitous effect.

The whole cultural program has been conceived as a "long working and learning experience" for students, artists, and citizens involved in the research. The TOC-Centre's board with the DiARC's group of teachers, architects and students - supported by a large group of local partners⁸ (Labuat, 72h, Foreste Urbane, Manifatture Knos, Giacche Verdi, Casello13, Municipality of Copertino and local entrepreneurs) - have been collaborating in this ambitious educational and research program that included workshops, lectures, shows and public screenings to inform the audience and our community. (Fig.4)

The research for a common strategy of intervention started at the end of November 2017 with an investigation of the site in the town of Copertino and the consequent analysis of the urban structure and of the relationship between specific places and the local community.

As already underlined, one of the main topics of the research carried out by the Department of Architecture and the TOC-Centre has been the reflection upon the relation between the topic of

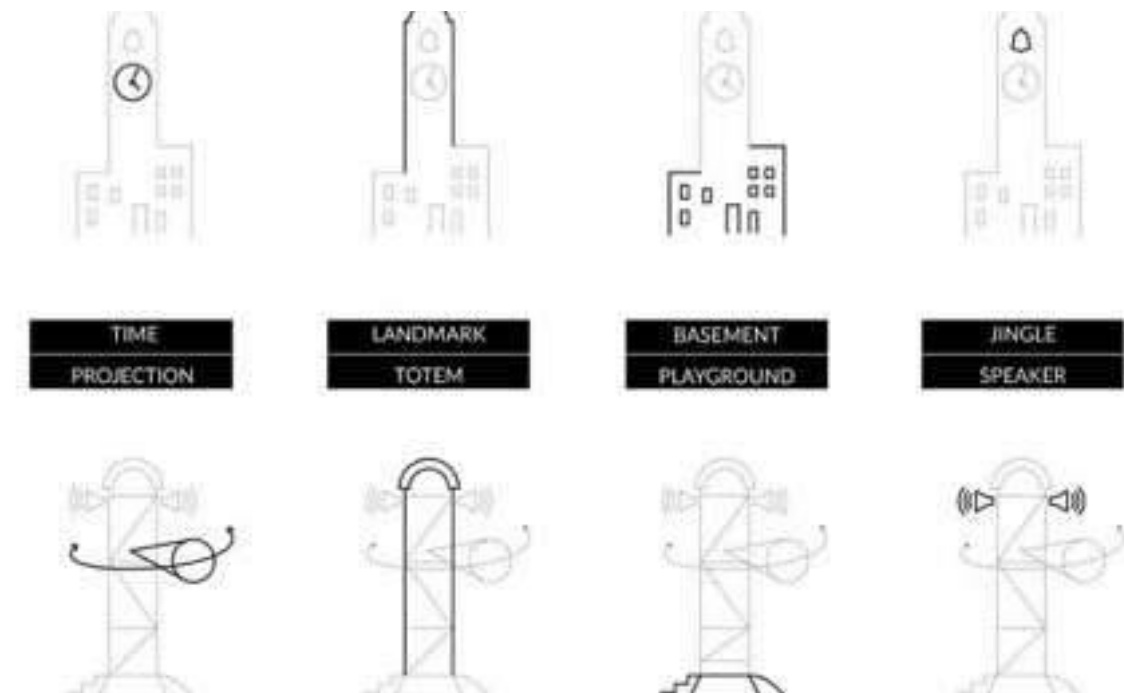


Fig.5

"parasite architecture" and the idea of the "third landscape" with the aim to re-think architecture as a discipline.

The choice of the term "parasite design" was the outcome of a collective discussion. From reflecting upon urban space, our research has led to the proposition of a defined "parasite design", a practice that proceeds through the introduction of new architectural bodies into pre-existing buildings and urban structures. Transposing the concept from biology, following the thoughts of Gilles Clément, the architectural parasite is an organism separated from the host both formally and spatially, but linked to this by a state of necessity. A winter school held in the framework of the winter session of the Third Places Meeting - "Balancing acts" - at Manifatture KNOS in Lecce resulted in a first phase a catalogue of several project proposals.

The design experiments adopted the parasite strategy to intervene in the urban fabric of the city of Copertino as a form of critical overlapping - in continuity or in contrast - of the existing spaces. This strategy was the starting point of the reflection carried out during the second phase of the "spring school", held again at Manifatture KNOS in Lecce. In the framework of the Spring session of the Third Places Meeting - "Entrusting." This point of view became a yardstick to measure possibilities of weaving interdisciplinary relationships with visual arts, acoustic design and urban spaces. This approach aims to transform - even if temporary - the perception of Copertino, grafting micro-architectures on the Clock Tower (TOC micro-venue and artist's studios), in the main square to the railway station and ex industrial area of the city. (Fig.5)⁹

2.2 Micro-architectures as Urban Generators.

Micro-architectures, effectively urban installations with the character of a playground, have been designed to help activate the use of public spaces in order to generate sociability and interaction among its possible future users, including people with disabilities. The concept of the project was basically conceived as a "generator" architecture to create conditions for shifting, or changing personal interactions in a reconfigurable and responsive architectural project.

"A building which will not contradict, but enhance, the feeling of being in the middle of nowhere; has to be accessible to the public as well as to private guests; has to create a feeling of seclusion conducive to creative impulses, yet... accommodate audiences; has to respect the wildness of



Fig.6



the environment while accommodating a grand piano; has to respect the continuity of the history of the place while being innovative." (Price, 1976) (Fig.6)

The whole intention of this project is to create an architecture sufficiently responsive to making a change of mind that is at the same time constructively pleasurable, i.e., that is useful, playful and enjoyable. "Design is the most human thing about us. Design is what makes the human. It is the basis of the social life, from the early artefacts to today's ongoing exponential expansion of human capability." (Colomina, 2016)

The aim of this research reflects on the possibility of architecture to extend the limits of other disciplines and to form different points of view. As an interdisciplinary collective independent group, we think that a retroactive research, based on a critical approach, is necessary to reflect upon the idea of a new role for Architecture, and also about a new way of teaching architecture in our Universities. In this sense, the research is part of a wider reflection on "ecological thinking": the idea that every aspect of information or knowledge is inseparable from its cultural, social, economic, political and natural context, and must simultaneously hold together a wide range of knowledge in the project. It forms a new basis of how to be involved, as designers, researchers and educators, in the design of the contemporary city, especially of its public spaces as genuine communal places. "The separation of disciplines makes it impossible to grasp what is woven together. [...] There is a complexity - when the different components that constitute a whole are inseparable - [...] and when there is an interdependent, interactive and inter-retroactive link between the parts and the whole, and between the whole and the different parts." (Morin, 2000)

The final display of the project is an "open work"¹⁰ subject to different combinations, the result of a co-creation process in which students, professors, curators, landscapers, people with disabilities, art lovers, visual artists and independents researchers are involved. (Fig.7)

3. Conclusions.

Our aim is to move from practice to theory looking for a retroactive model for our method. The aim of this research, as mentioned earlier, reflects on the possibility of architecture extending the limits of other disciplines to form different points of view. We would like to point to three main aspect of our work presented as interdisciplinary, collective, independent team work, a buffer between an academic institution and independent organizations.

We tried to shape was an environment characterized by osmosis, where it was possible to manage complexity (which requires further and more appropriate studies). We believe that our experimentation was helpful to present to the students a scenario drawn by the possibilities of collaborative practices, a new kind of sensibility oriented to physical and cultural accessibility.

In this process different disciplines and people were involved as mentioned earlier, and the osmosis generated exchange created a new kind of community where everyone learned from each other starting from different backgrounds and different ways of thinking, with the aim to build up a learning community.

The students challenged themselves with all the aspects pertinent to the production of the project without overlooking the administrative sphere, thinking about dismantling and storage: problems that are not often encountered in the study programme but sometimes in professional practice. They worked together led by personal interests and inspirations, helping each other towards a common goal; academic and creative thinking marching together to create a new dimension, a new level oriented to self-cultivation, scouting new talents. The student's engagement is a crucial part of our teaching process and critical pedagogies method. In this context, the relation between the topic of "parasite architecture" and the idea of the "third landscape" aims to re-think architecture as a discipline, in line with the coming idea

of a "planetary urbanization." As already said, reflecting on the conditions of contemporary cities and on uncontrolled urbanization, we need to become more conscious about a required change in direction, both in practice but also in teaching and research activities.

After three iterations of this educational experience we can imagine that this activity connected with the Shuffle Screening Festival could generate a positive interaction between the community and the practitioners (students, curators, artists and technicians) involved, reconsidering the use of public spaces as a physical and non-physical connection among its possible future users, including people with disabilities. (Fig.8)

In this process the shipwrecks were not lacking. But we don't hide the difficulties of working in a time of crisis, when and where uncertainty in policy frameworks often prevent us from giving continuity to this experiment.

In the immediate future, what we will do is to create an editorial project to edit this wealth of creative and intangible knowledge stored in our collective experience, with the aim of communicating it to as wide an audience as possible: this article can be considered just as a starting point of this reflection.



Fig.7



Fig.8

Notes

1. BAUMAN, Zygmunt, 2000. *Liquid Modernity*. 2002 [Modernity líquida], Roma-Bari: Laterza.
2. The Workshop has been part of the program of the "Incontri del Terzo Luogo" promoted by Manifatture KNOS in Lecce, where Gilles Clement gave a lecture at University Federico II.
3. The paragraph 1 "A Non-formal Education Approach: From Teaching Architecture to Community Engagement, from Place to Project" is to be referred to Bruna Sigillo as author.
4. ISCED is the reference classification for organizing education programmes and related qualifications by education levels and fields. ISCED is a product of international agreement adopted formally by the General Conference of UNESCO Member States.
5. Cfr. uis.unesco.org/en/glossary-term/non-formal-education.
6. The workshop was conceived in parallel with the activities of the TOC cultural centre project carried out within the framework of the Culturability competition financed by the Unipolis Foundation in collaboration with the Italian Ministry of Cultural Heritage.
7. The paragraph 2 "A Retroactive Interdisciplinary Research: Thinking the Design Practice as Tool for a Time-Based Art" is to be referred to Maria Luna Nobile as author.
8. Labuat (Urban Laboratory Architecture Taranto) is a collective that promotes processes of citizen participation in the themes of the redevelopment and regeneration of the city and its public spaces; 72h is a collective of architects based in Naples that has supported the 2nd phase of the process as tutor of the spring school; Foreste Urbane is an association which purpose to promote and concretize the culture of ecological responsibility; Manifatture Knos is a place for participation and sharing ideas and projects in the fields of creativity and social innovation;

Giacche Verdi, an environmentalist association and civil protection; Casello13, a Copertino cultural association.

9. The image was created by 72h.
10. ECO, Umberto, 1972. (1st ed. 1962) *Opera Aperta*. Tascabili Bompiani.

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Biography

Bruna Sigillo. Architect and PhD in Interior Architecture Philosophy. She is Adjunct Professor in Interior Design at the University Federico II in Naples. Her research topic is based on the analysis of shared spaces in different urban contexts, highlighting the gradual process of dissolution and virtualization in the imperative of connection, with special attention to the interiority and shared values of the human scale.

Maria Luna Nobile. Architect and PhD in Urban Studies, she is Associated Professor at the School of Architecture of Umeå University, she has been Adjunct Professor in Architectural and Urban Design at the University Federico II in Naples. Her research focuses on the design of the contemporary city, with special attention to urban regeneration local policies, interdisciplinary and innovative practices.

Valeria Raho. Art writer, curator and co-author of various artistic multidisciplinary projects on the theme of landscape and the relationship underlying visual arts and so-called "everyday places." Since 2017 she has been dealing with the activities of TOC-Centre especially in the field of time-based arts and the moving images. She is also a free-lance cultural journalist specializing in contemporary art.

Francesca Coppolino. Architect and PhD in Architectural and Urban Design, she is actually Post-doctoral Researcher at the Dep. of Architecture DiARC, University of Naples "Federico II." Her research interests focus on the relationship between architecture and ruins in the contemporary city, with particular attention to the archaeological contexts.

Maria Pia Amore. Architect and PhD in Architectural and Urban Design she is Adjunct Prof at the University Federico II in Naples. Her broader research interests focus on the design strategies of intervention, both at the architectural and urban scale, on existing building and territories, considering the underused or abandoned built-up spaces as a resource.

Reality Check.

Multidisciplinary ways of conditioning space.

The aim of the paper is to illustrate a series of pedagogical strategies utilised in the integration of other disciplines in the design process, looking towards redefining ways of conditioning space.

Via the agenda of a specific design studio laboratory, the quest for integration is tested and the boundaries of architecture and other disciplines are being challenged. The thematic of the studio poses "technology" as a lens to inspect the future of architecture, therefore it provides a fertile ground for reciprocally investigating the future of other disciplines.

A series of specific methodologies and processes are explored in order

to encourage a multidisciplinary approach. These processes are spread throughout the year as a continuous crossover of themes, exercises, workshops, references, case studies and discussions. The Reality Check exercise aims at redefining ways of innovatively conditioning architectural space by integrating personalised insights from the disciplines of mechanical, environmental and structural engineering, construction and building services.

Key words:

Multidisciplinarity, Conditioning Space, Technology, Pedagogy.

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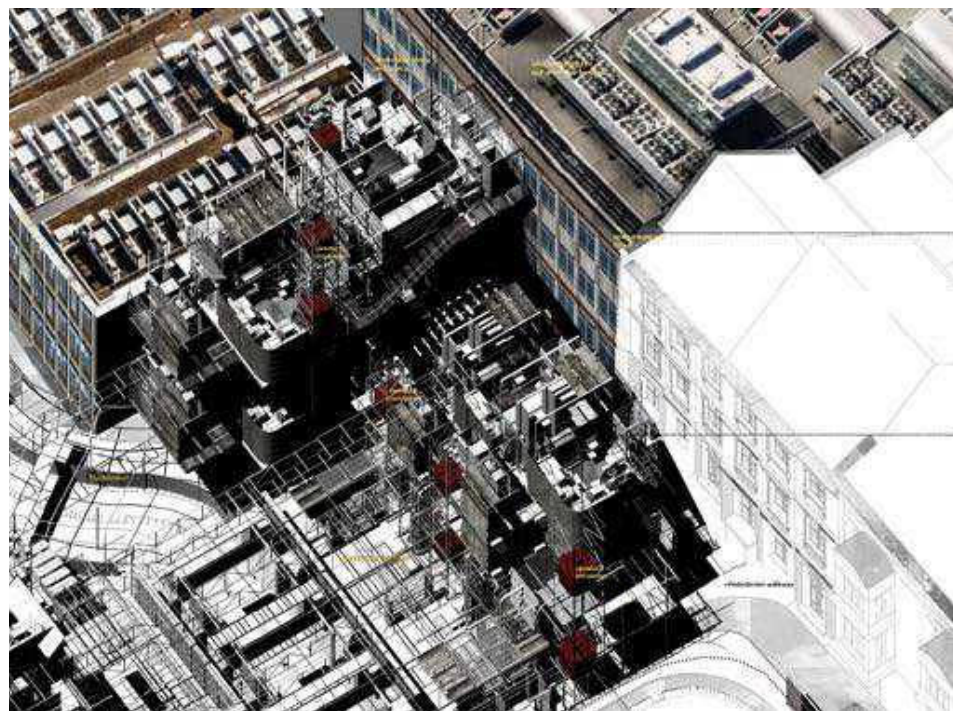


Fig.1

1. Introduction.

The aim of the paper is to illustrate the pedagogical strategies utilised at an advanced level in architectural education (4th/5th year of study "Unit"-design studio laboratory) concerning the integration of other disciplines in the design process towards redefining ways of conditioning space.

The coordinators of the Unit specialize in construction/technology subjects and have been genuinely concerned with how these disciplines fuse in the design studio. Within the framework of the Unit a series of specific methodologies and processes are being explored in order to encourage a multidisciplinary approach, by simultaneously broadening as well as focusing the design research.

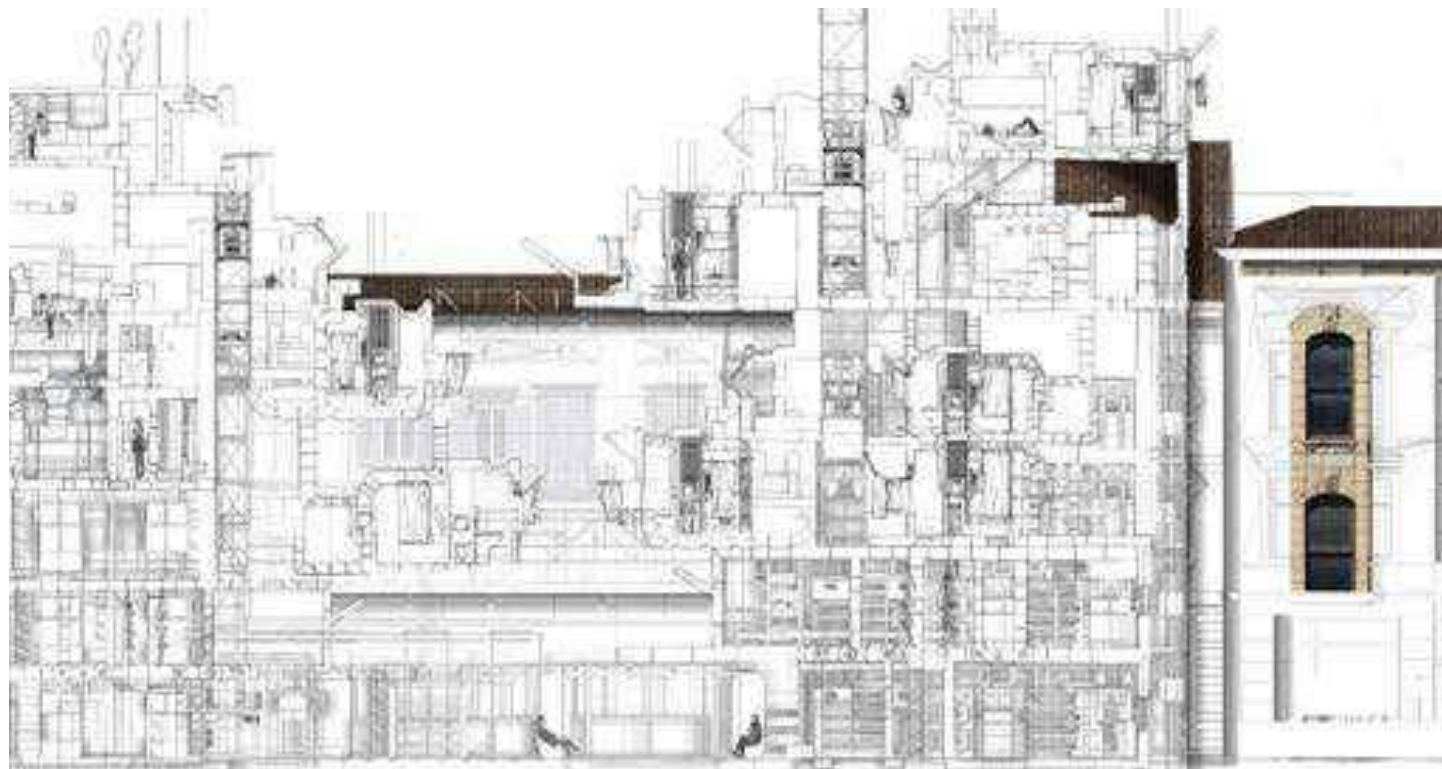


Fig.2

The thematic of the Unit poses "technology" as a lens to inspect the future of architecture; therefore, it provides a fertile ground for reciprocally investigating the future of other related disciplines. Specifically, the limits of disciplines such as mechanical/environmental/ structural engineering, construction and building services are challenged through architecture and vice-versa. (Fig.1)

2. Overarching drivers towards multidisciplinary/integrative thinking.

The Unit revolves around three key overarching drivers towards embracing multidisciplinary: "Fusing" / "In-fusing" / "Con-fusing." These intentions define the way in which all the ingredients of the studio are introduced, how the discussions evolve, and how the students' critical thinking matures.

Fusing: students produce work and then evaluate; a process that makes them appreciate potential reciprocal fusing of one discovery into others. The intensity of speed and amount of production is critical.

In-fusing: added ingredients and elements - such as intense workshops and exercises - are abruptly parachuted into the process, thus providing new sets of questions and parallel conditions. The element of surprise acts as a catalyst.

Con-fusing: confusion is enthusiastically encouraged and the only suggested remedy is more production! Through the introduction of thematics from other disciplines, confusion is both inevitable and expected. "Confusion" pedagogically means a positive stage of expansive options and issues for investigation. Instead of following a process of choosing and rejecting solutions, a longer process of distilling the multitude of findings is encouraged.

3. Pedagogical Strategies.

In line with the above-mentioned drivers, a number of specific pedagogical strategies were tested. A varied series of targeted workshops included exercises on conceptual narratives, programme speculations, timelines, logistics, technical resolutions and tectonic investigations.

The strategies aim to enhance the students' ability to grasp architecture as a coherent subject and positively embrace the merits of a multidisciplinary approach. Within an academic environment, it is vital to question how other disciplines are deciphered in order to challenge their boundaries, but equally to confront the limits of architecture itself. This appreciation is even more critical when the aim is to divine the future of architecture; speculations about the future of architecture inherently imply discussions about the future of other disciplines and their integration. (Fig.2)

Definitions of integrative approaches towards architectural creation are established through critically developed positions afforded from the plethora of historic and contemporary theories surrounding the subject. The Unit reviews architectural writing to promote conceptual understanding of technology, function, programme and performance, in order to enhance appreciation of the interdependence of all parameters in



Fig.3

architectural creation and the relationship with other disciplines.

This pedagogic methodology follows a spiralling design process, which is in opposition to earlier building design practices that followed linear thinking and development.

The Unit launches its programme with the development of process tools for exploring possibilities of in-depth study of past patterns of design in order to inform and trigger visions of the future. The timeline of a thousand years forward becomes the speculative proposition,

the conceptual axis for incrementally projecting architecture into the future.

Following the formulation of narratives about the deep future, students are abruptly asked to perform a "reality check" exercise that narrows the focus on the immediate future, approximately 100 years from now.

4. "In-fusing": "reality check" process.

The idea of "in-fusing" towards intelligent multidisciplinary ways of

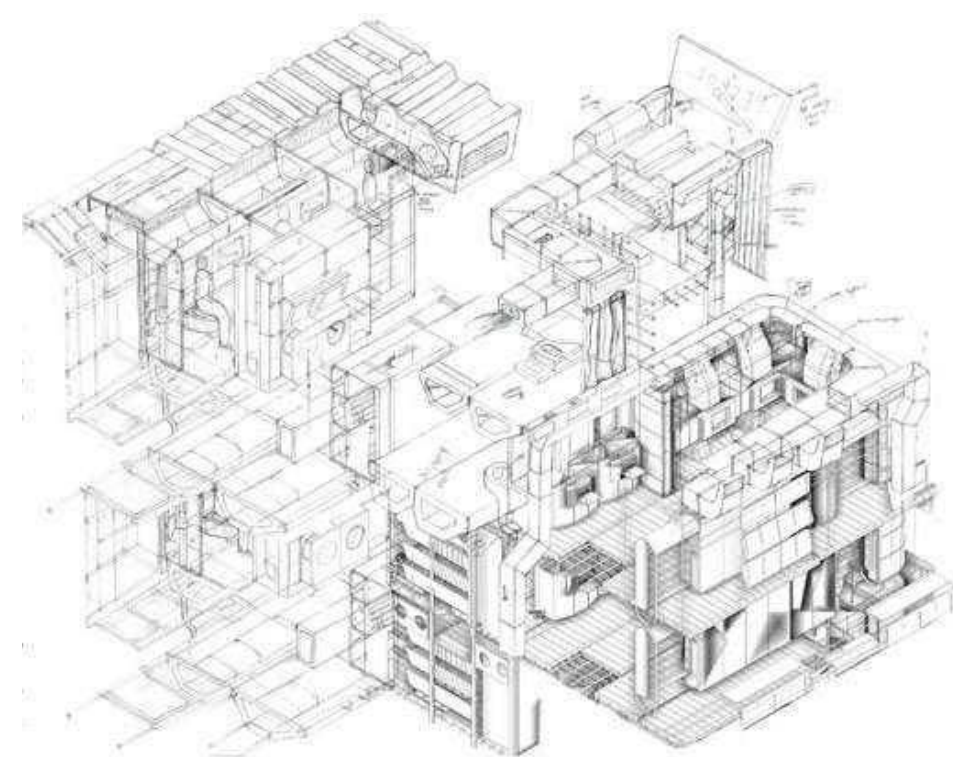


Fig.4

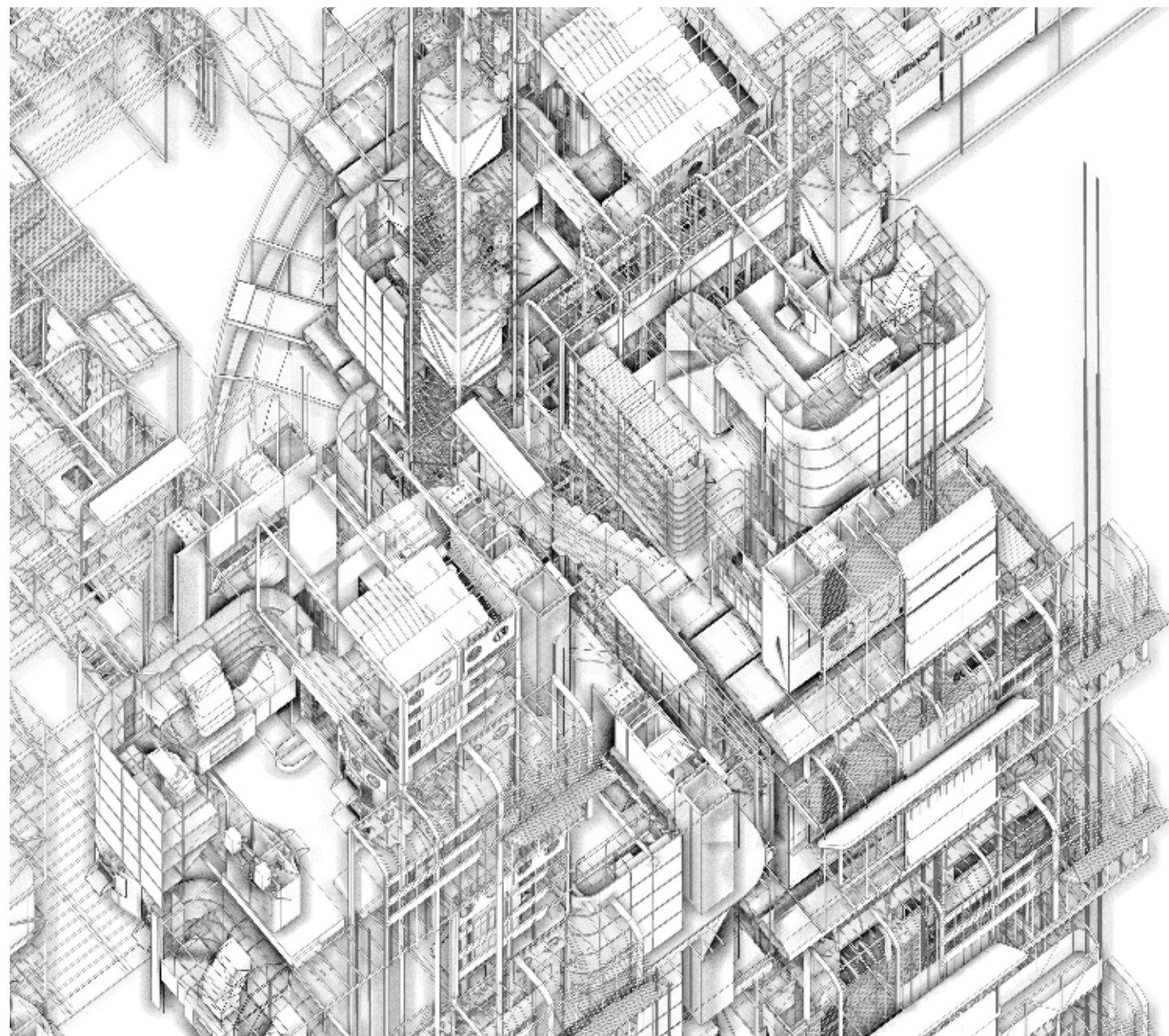


Fig.5

conditioning space is implemented through a number of abruptly introduced exercises such as the "reality check" workshop, followed by the "tectonics" and "skin-deep" workshops. (Fig.3)

4.1. Reality check.

The "reality check" exercise aims at testing early resolutions considering ways of conditioning space, materiality, systems, programmatic provisions, building services etc. The exercise is intentionally parachuted quite early in the design process to avoid misinterpreting it as a "detailing" exercise towards linear/traditional building resolutions. The objective is to equally appreciate this as

a conceptual driver of the propositions and thus draw "detail" into the proposal. Conditioning space is considered on both an operational/instrumental level as well as on an experiential/conceptual way. (Fig.4)

The focus of the exercise is "integrative thinking", where students gradually develop an inventory of alternative strategies (with inspiration/insights from other disciplines).

An Indicative list of parameters are considered:

- Life of buildings in time: process of manufacturing/use/operation/adaptation/reuse/abuse/renewal.
- Competence versus performance:

systems sophistication/operative clues.

- User customisation/programmatic intelligence.
- Autonomy and/or interdependence.
- Building as a 'development': a system of objects and processes over time.

The pedagogic objective is not to require students to rationally implement architectural/technological "conventions", but rather to understand "conventions" in order to appropriately reinvent them. All new findings should be incrementally accumulative and evident in the inter-crossed and synergetic strategies that enhance the performance of propositions and the intelligence in conditioning space.

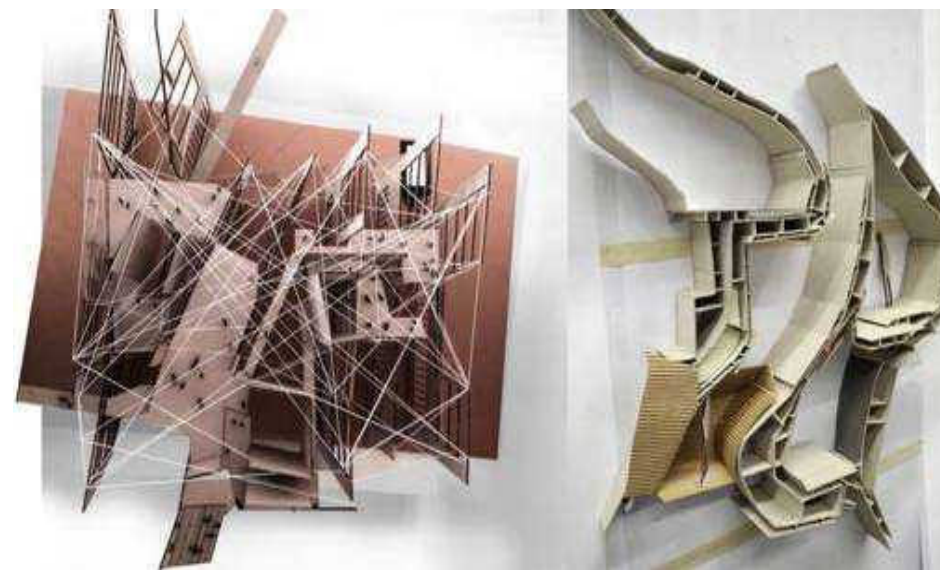


Fig.6

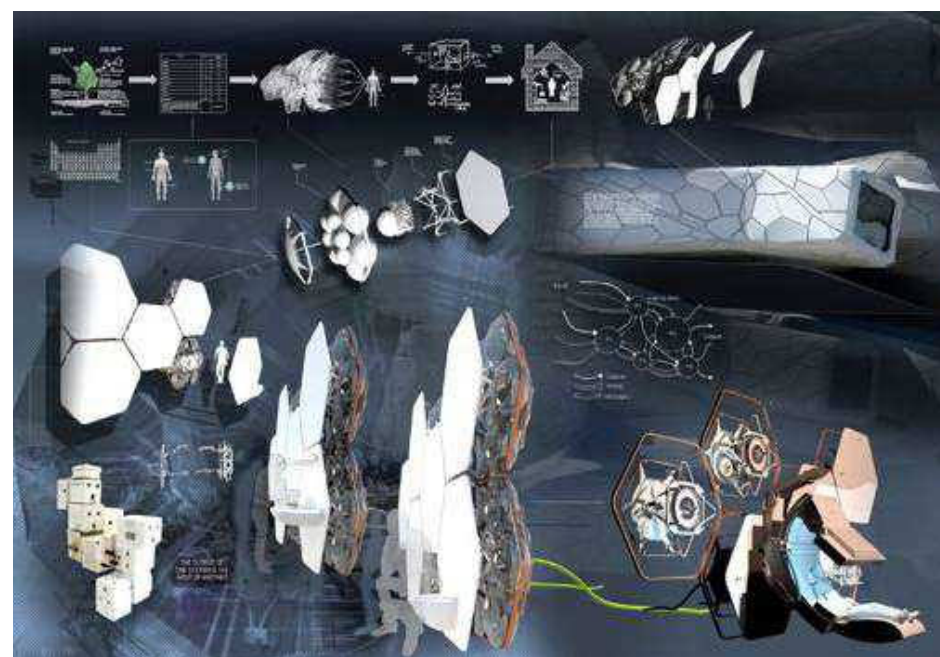


Fig.7

Technical resolutions in architecture are deemed to be the domain of other experts, such as mechanical, electrical and structural engineers. The "reality check" workshop attempts to present architecture as a coherently expanded and all-inclusive discipline.

The required output is sectional isometric / axonometric drawings at a scale appropriate to each proposition, accompanied by a multitude of other diagrams such as 3D plans, sections, details, assemblies and perspectival moments. (Fig.5)

A sample of the "reality check" workshop output is evident in the axonometric drawings produced for

project "Appliance Colony" (as shown in Fig.4 and 5). The project attempts integrative thinking by reversing the duality of "space" and "objects."

Commonly, architecture defines "space" and consequently this space is inhabited by objects. The project employs an amalgam of objects, defined as "appliances." These are precisely arranged in order to define spaces by themselves, thereby substituting for all other architectural elements. Appliances are driven into an extreme scenario where they multiply their performance as floors, walls, structure, windows, furniture and equipment. At the same time, the cumulative and intentional banality of the components results in phobic and

extreme mechanical atmospheres.

Clues from appliance performance are transferred and translated to the scale of buildings. In this complex interdependent system, objects and operations become indistinguishable. The building presents itself as a "development": a system of objects and processes where the spaces are defined and created by the very same appliances that service and support them.

4.2. Tectonics.

The "Tectonics" workshop aims at experimenting with the tectonic logic of propositions via the production of physical models. The definition of what is tectonic logic was left open for the students to interpret but they have to consider the elemental make-up of the constituent parts, the art of joining things together, the implied materiality, the response to site, issue of programmatic hierarchy and varying spatial qualities.

The students investigate alternative tectonic logics and then merge them into a compositional model appropriate to a highly developed narrative. (Fig.6)

Tectonics in architecture were initially discussed by Gottfried Semper in his seminal treatise "Style" and more recently updated in Kenneth Frampton's "Studies in Tectonic Culture."

Tectonics within the "reality check" process becomes a tool towards visualising the essential conceptual characteristics in an implied assemblage.

Tectonics viewed in this way is as much about concepts being supported as much as material coming together in physical manifestations.

4.3. Skin-deep.

The "Skin-deep" workshop requires students to rethink the future of building skin, as interface and mediator between inside/outside conditions, both actually as well as conceptually.

The aim is to reconsider the skin of buildings as a vital (and unavoidable) interface between: what is building and what is not, what is in and what is out,

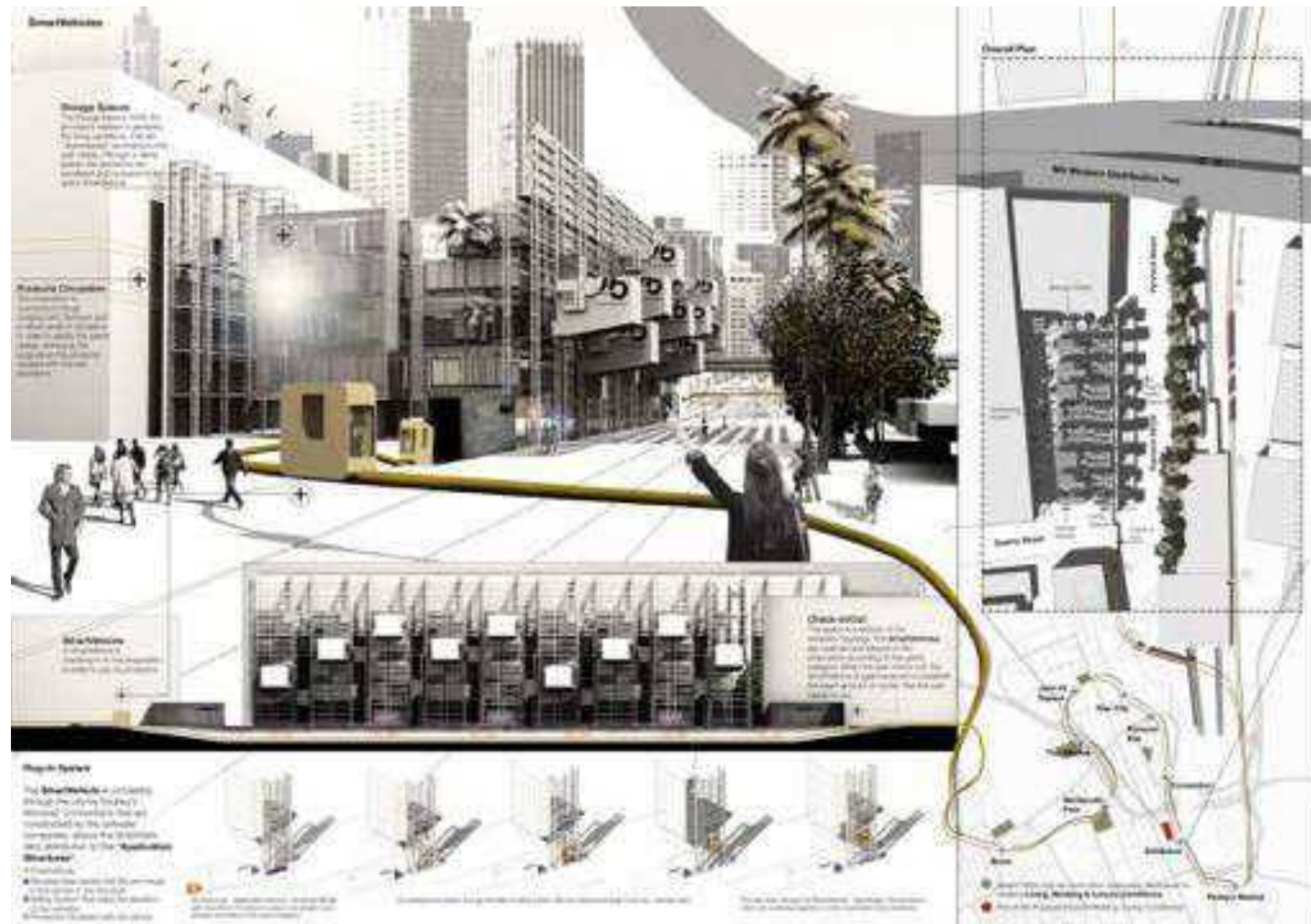


Fig.8

what is conditioned/transformed and what is left to its own devices, what postulates new ideas and what is left "being", what deliberately creates new atmospheres and what is plainly... the atmosphere.

"Skin-Deep" deals with a zoom-in investigation of selected and holistic concepts already developed in previous steps that attempted to project the proposition into the deep future. (Fig.7)

5. Project "Gadgetic Nomadism; pay as you go affordability."

The project shown in Fig.8, titled "Gadgetic Nomadism; pay as you go affordability", presents an example of how the aforementioned pedagogical strategies were employed:

– **Conceptual Narratives.**

Within the thematic framing of affordable housing in Sydney, an

elaborate conceptual narrative is developed to address the future of housing. Extreme mobility is taken into consideration; the cues are taken from current developments and the rise of the short-term rental industry. In parallel, the trend in short-term employment pointing to a new demand for frequent mobility is also taken into account. An added concern about the future of digital realities (virtual and augmented) and their relation to the future of the physical world, points to narratives of healthy symbiotic relationships where digital and physical environments fuse together seamlessly.

In developing a conceptual narrative, the required objective of 'housing affordability' is tackled through addressing social and technological investigations rather than the obvious construction cost reduction methodology. The pedagogical strategy is therefore promoting conceptual narratives employing unthinkable multidisciplinary observations. This affords a plethora

of alternating solutions that might be qualitatively more valid than the "head-on" approach. For example, it might prove that extreme construction cost (instead of low construction cost) is the solution towards housing affordability under specified conditions.

The conceptual narrative for the project is that in the future, the gig economy will intensify and be ubiquitous. Therefore, housing will only be required on a short-term basis. The digital technologies that create the nomads of the gig economy must therefore inform the habitat and render it affordable by fusing physical and digital environments.

– **Programme Speculations.**

The project proposes housing which operates along the basic principles of a hostel. The hostel rooms are partly the travelling wagons connected to the overall city transportation system. The housing is a temporary stop within a system of services ranging from private to public and organised as an on-demand list of

'furnishing'. For example, private sleeping spaces might share common outdoor spaces or realign their position to afford solitude. Virtual and augmented reality might satisfy on-demand services such as skiing or skydiving or having breakfast. The physical elements (snow, mountains, rocks, sports equipment, eggs-on-toast) are interwoven as an integral architectural part of the total environment system.

The actual physical space required is thus minimised, but in actual programmatic performance, infinitely multiplied! All physical elements of the new housing complex are also interchangeable through elaborate overhead gantry systems rearranging clusters of space on demand. The connectivity with city-wide public transportation (monorail-like) systems turns this new housing typology into a network of ever-shifting building components, whether on the move or stationary.

– **Timelines.**

The project considers the history of the workplace throughout Western history with a special focus on certain periods (medieval, renaissance, industrial revolution, modern, early and mid-20th century). Conclusions are drawn relating the socioeconomic environment of each period to the spatial or architectural adaptation for the provision of workspaces. Furthermore, timeline studies were also conducted into the effects of

shifting work patterns upon housing specifics and evolutionary patterns. For example, recognising that late 19th century urban factories intensified dense apartment block habitation, but at the same time, industrialisation (followed by legislation) afforded workers leisure time, therefore driving the newfound importance of the home interior. This guides the project into contemporary cues that might lead to housing resolutions for the future.

– **Logistics.**

Logistics is by definition a detailed organisation and implementation of a complex operation. Within the pedagogical strategy of the "reality check" workshop, logistics occupy a central position. Logistics in architectural design are often overlooked, and sadly pushed down to other experts such as engineers, surveyors and project managers.

Frequently architectural education practice utilises or favours notions of "planning" or "arrangement" or "coordination", all of which are part of logistics, but in tightly limiting fashion. Considering logistics in architectural investigations provides ways of seeing buildings, not as set and static objects, but rather as assemblies with evolutionary thrust.

The practice and theories of Cedric Price are studied as case studies towards this objective. His project "Potteries

Thinkbelt", exemplifies an architecture that recognises logistical thinking as a driver for the inception of architecture. The proposition is sited along existing railway tracks with the possibility of building parts arriving and departing as needed. The building was also conceived as having an expiration date when it could easily be disassembled and it could vanish as its operation would no longer be required. In fact, Price promoted the demolition of one of his built projects, the Interaction Centre, upon expiration despite the architectural community's pleas for heritage preservation. Logistics were elevated by Cedric Price to the high podium of design considerations.

In Cedric Price's project "Fun Palace", a bold suggestion of erecting cranes embodied within the building eventually becomes the building's backbone. It points to building as a never-ending process of responding to shifting and spontaneous needs even if these needs are for trivial, leisure, pleasure and entertainment desires. The responsive modification of the building ultimately serves to add to the pleasure of which it is being called to service.

Likewise, logistics are an integral part of the "Gadgetic Nomadism" project's conceptual axis. The depth of time from initial erection to it dissolving - with a range of in-between possibilities - is considered. Prefabricated building elements arrive and depart through

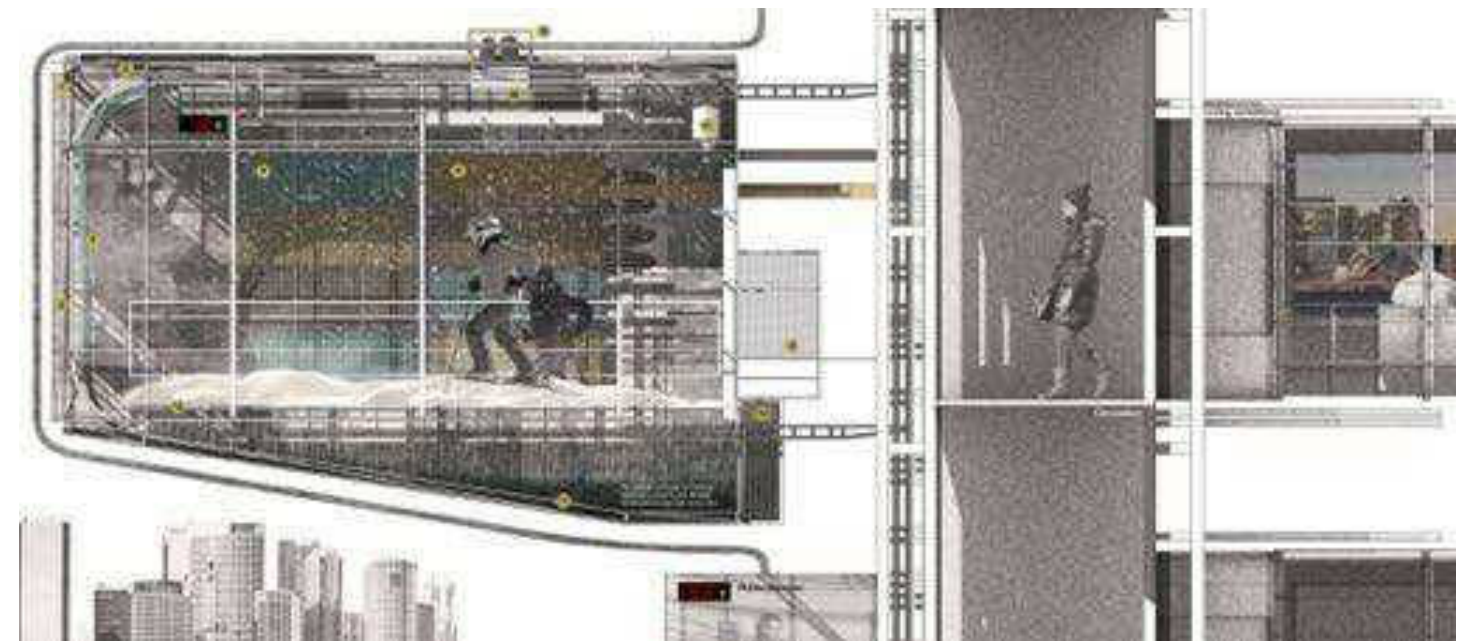


Fig.9

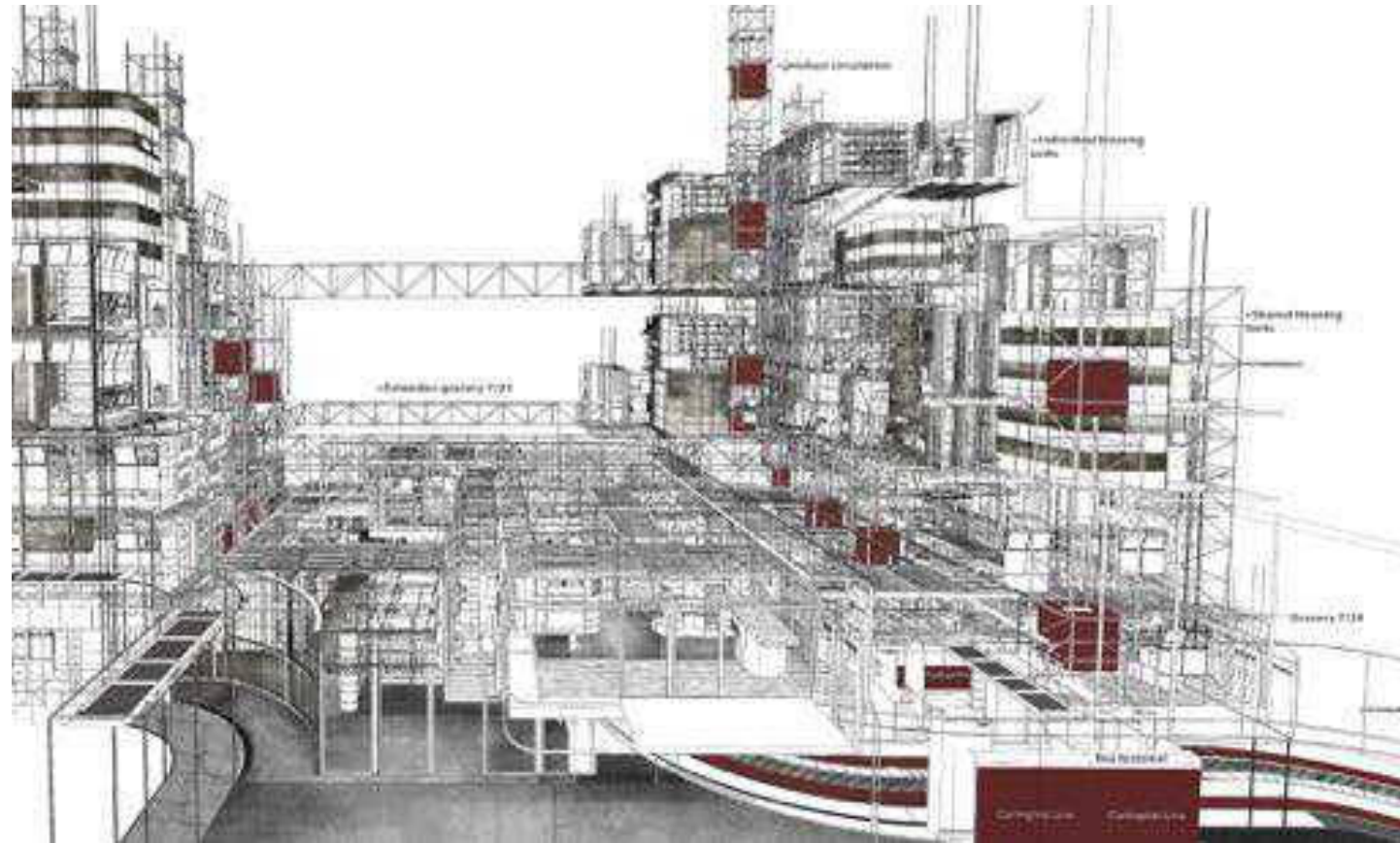


Fig.10

existing and upgraded transportation infrastructure and further shift and are rearranged locally and on-site according to ever-changing demands. These shifts might be in response to demands from remote locations in the network, from local users on a daily basis, or seasonal factors pertaining to climatic or food-production conditions.

Logistics within the "reality check" workshop become the ultimate reality. A reality that grants building design the mechanism to respond with bravery and imagination to the most 'mundane' of demands placed upon it.

– **Technical Resolutions.**

The "Gadgetic Nomadism" project proposes a structural system that responds to dynamic movement instead of static balancing. An appropriate three-dimensional steel grid enables the horizontal and vertical sliding of "rooms." This enables the structure not only to support the system, but to actively reorganise it. (Fig.9)

Likewise, thermal comfort depends on both simulated digital environmental conditioning, as well as on massive thermal storage doubling as provisions

and personal property storage for the hostel.

Public transportation and movement within the building are unified into a single strategy. Moving through the city or moving within the building is differentiated only in terms of immediacy. The means are the same: either required spaces move towards you, or you move towards them while in the comfort of your intimate room/wagon.

Smaller-in-size equipment and furnishings such as appliances, furniture, clothing and personal belongings are shipped by a similar dispensing system, used for as long as required, and sent back to a local or network repository system becoming available to other users.

– **Tectonic Investigations.**

The project explores a tectonic system that employs both permanent as well as moving parts. The in-between spaces or voids become shifting and ever-reorganised common spaces. The main three-dimensional dense - and therefore 'flimsy' in cross-section - grid elements now becomes vertical and horizontal rails accommodating the mobility of most other parts of the tectonic system. Lines

and volumes are orchestrated in the process of assembling following the on-demand requirement.

Rules of hierarchy, order and organisation assist in giving the tectonics their distinctive character. This attempts to initiate the viewer or user to the specific operations performed by the building.

6. Conclusion.

The paper has presented a perspective into utilising specific pedagogical strategies to encourage the integration of other disciplines in the design process towards redefining ways of conditioning space. The multidisciplinary approach in the design studio should not be prescribed, as the students could mistakenly perceive this as a recipe, leading to preconceived "solutions." It should instead remain implicitly contained within the thematic framing of the design studio.

Evidently, architecture can challenge the limits of other disciplines, but it should equally be actively challenged by these disciplines through a continuously cyclical and reciprocal process. (Fig.10)

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Biography

Markella Menikou is an Associate Professor and is the Head of the Architecture Department at the University of Nicosia. She received a B.A. (Hons) in Architecture with First Class in 2000, and a Bachelor of Architecture with Distinction in 2003 from the Manchester School of Architecture. In 2007 she completed an M.A. in Bioclimatic Architecture from the same university. She received scholarships and funding from the Cypriot Government and in the UK for high academic achievement. She taught at the Manchester School of Architecture from 2003 to 2007, as a Lecturer in Architectural Technology. She has been the Head of B.A. Technology since September 2006. In parallel to her academic involvement she has been involved in professional practice since 2000 and has qualified as an RIBA Chartered Architect in the UK, following graduation from the Advanced Diploma in Professional Practice in Architecture in 2004. She worked at the international firm Scott Brownrigg Architects, Limassol for a year and since her re-settlement in Cyprus in 2007 she has also been working as a freelance architect. She represented Cyprus in the Venice Architecture Biennale in 2008 with the project 'Easylove'. Her current research interests include instrumental architecture, theory of technology, prefabricated building systems, and sustainability.

Adonis Cleanthous is a practicing architect and Associate Professor of architecture in the Department of Architecture, University of Nicosia. He is a holder of an MSc in Advanced Architectural Design from Columbia University, Graduate School of Architecture Planning and Preservation. He is also a holder of a B.Arch from the University of Oregon, USA. He has been practising architecture since 1993 through work in numerous local practices, as well as through his own practice "Cleanthous + Eliassides", established in 2002. Cleanthous has been awarded a number of prizes in architectural competitions including the first prize and building commission for the university of Cyprus "social facilities" building complex for the new campus, an extensive facility of varied educational and social programmes.

He represented Cyprus in the Venice Architecture Biennale in 2008 with the project 'Easylove'. Recent interests through practice and academic development include construction and building technologies, and more specifically the design and manufacturability of pre-fabricated building components.

Retrospective - Retroactive Evaluation of Architecture Student Projects Competition.

ArchED Experience.

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As we know, especially in the areas where creativity plays a major role, it may not be very fruitful to implement standardized teaching-learning sessions to help young designers develop their design abilities. There is a strong need to create opportunities for different types of learning processes that widen the students learning spaces. To be able to realise this objective, we believe it is important to organize suitable environments for young designers to learn from their peers and exchange their ideas. **Student architectural design competitions can be perceived as flexible, learner-centered environments where**

students have more effective learning opportunities. With this point in view, the Association for Architectural Education (ArchED) started to organize a student projects competition - Student Awards for Architectural Education - in 2002. The main focus of the paper is to analyse and evaluate these competitions within the framework of architectural education based on different aspects and indicators of learning processes.

Key words:

Architectural Education, Student Competition, ArchED.

1. Introduction.

Learning processes are extremely complex and create different results for each personality. In the 21st century education landscape, in which one of the main components of the learning process has become "creativity", there has been rapid and extensive transition process from a teacher-centered structure towards learner/student-centered ones. In this paradigm shift, students have opportunities to extend their learning space and time to anywhere and anytime.

Hopper and Seaman characterized the 21st century learning environment as learner-centered, inquiry-based, technology-rich, interdisciplinary, collaborative and personalized. Similarly, Norman & Spohrer (1996) stated that in this "learner-centered education", focus is on "problem-based approaches" rather than "content", which was the case in the traditional education approach. This new approach is not based on a curriculum but rather on the learners and their interests and needs. This philosophy may not be an entirely new approach but the new interpretation of it without any doubt has applications for different fields with more diversity and enhancement.

These radical changes and ongoing discussions create constantly different impacts on different countries/regions/schools, questioning the existing curriculum and their applications. This approach not only focuses on formal education and curriculum but also gives great importance to extra-curriculum, or we can say informal, activities as well.

Undoubtedly all these discussions deeply affect design education. Lead educators, students and architects question present design education looking for new approaches, that involve stakeholders and their interactions. As we know, it may not be very fruitful to implement standardized teaching-learning sessions to help young designers to develop their design abilities and related skills, especially in the areas where creativity plays a major role. There is a strong need to include different types of learning opportunities/tools - such as participative actions in an organized but

Fig.1. Number of students participated in MIMED Student Project Competitions.

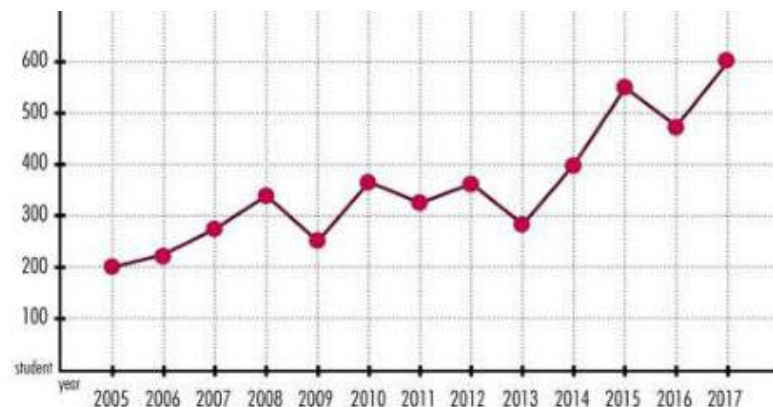


Fig.2. Number of universities participated in MIMED Student Project Competition.

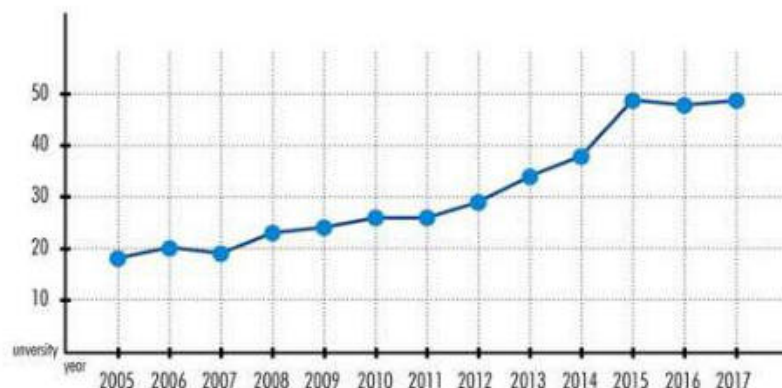
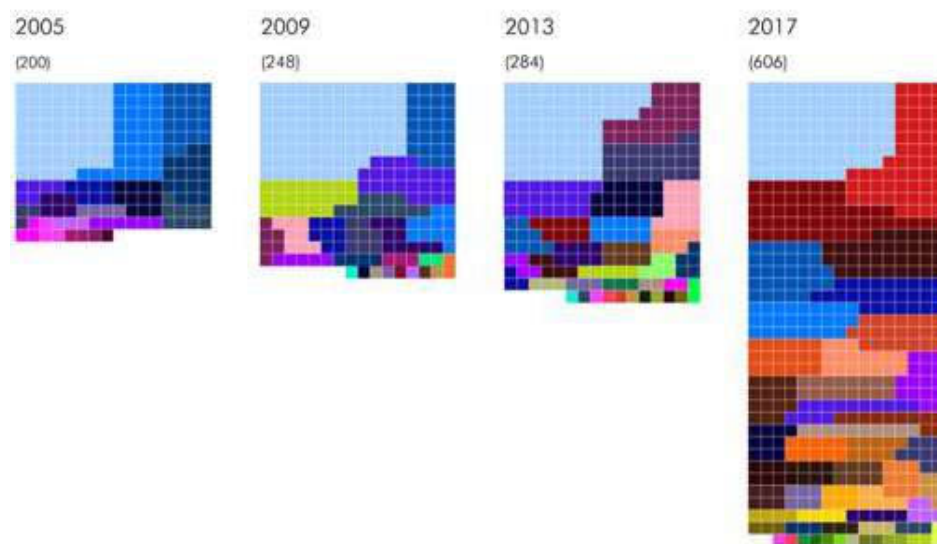


Fig.3. Number of participated universities in colours.



at the same time rather chaotic style - to widen the students learning spaces and enhance their learning processes.

To be able to realise this objective, we believe, among other factors, it is important to organize suitable environments for young designers to learn from their peers and exchange ideas. In order to widen the space for exchanging ideas and to learn from others experiences, student architectural design competitions can be perceived

as flexible/interdisciplinary/learner-centered environments where students have more effective and efficient learning opportunities. On the other hand, as extra -curricular activities, student project competitions specifically trigger Critical thinking, Creativity and Collaboration as well. Not only students but also parties/ stakeholders who participate in these competition processes gain different but related insight and experience in different aspects of architecture.

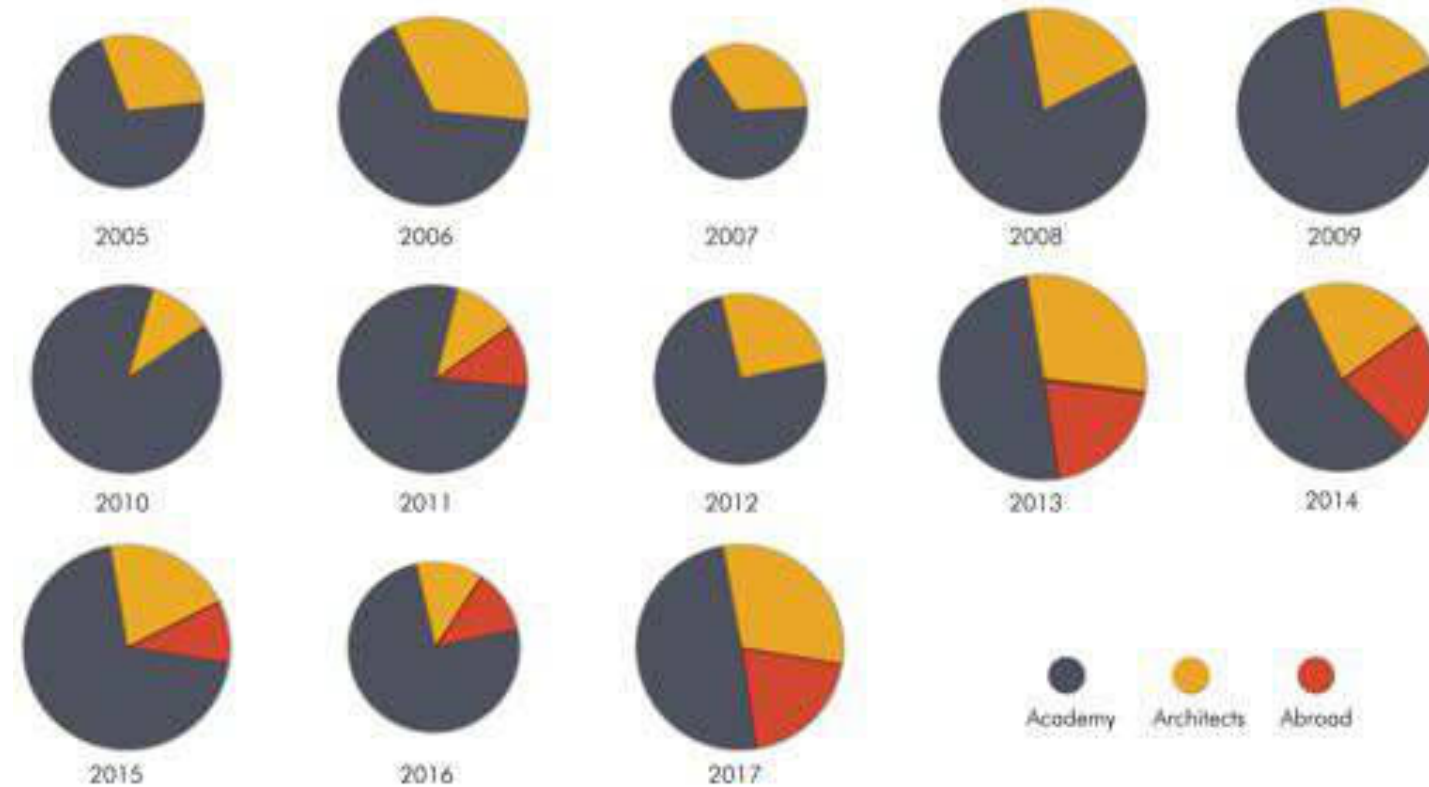


Fig.4. Composition of jury members throughout years.

2. Purpose and Scope.

Based on these considerations and experiences, the Association for Architectural Education (ArchED) started to organize a student projects competition named "Student Awards for Architectural Education" in 2002. ArchED (in Turkish: MIMED) is a non-profit governmental organization that aims to advance architectural education in Turkey. One of the important organizations of ArchED is "Student Awards for Architectural Education", which has been accomplished successfully for 16 years by the voluntary and valuable contributions of our academic members supported by the dedicated sponsors of ArchED that is much valued by architecture students in Turkey gaining their interest and affection.

2.1. Structure of the ArchED.

The ArchED Student Projects Competitions focus on students' projects that are designed in studios under the supervision of academic staff. This feature has created an important distinction from other competitions. The ArchED

competition consists of projects produced in architectural studios in Turkey and the Turkish Republic of Northern Cyprus and has won a well-deserved reputation with its increasing number of participants and for the independent evaluation process by international jury members in recent years.

The first competition in 2002 attracted only 110 entries. But since then entries have increased with 549 by 2015. Between 2002 and 2015 all the projects had been evaluated by the jury members during face to face jury sessions but by the year 2015 it became necessary to have a preliminary evaluation in order to have a feasible number of projects to be evaluated by the jury members in live sessions.

As a result, the ArchED website was altered and developed to run the online evaluations by the jury members. In the last two years, ArchED has been successfully implementing this evaluation model. By 2017, entries reached 606 projects from 36 universities (Fig.1 and 2). After the online evaluation by the jury members, 308 entries reached the second phase.

Awards are structured according to the various grades of the students; there are 4 groups of Awards for 4 grades each having one "Success Award" and "Encouragement Award." There are also "Jury Special Awards" designed for promising projects depending on the Jury's decision.

The number of participating architectural schools has increased tremendously in ArchED Competitions over the years (Fig.3). Special attention has been paid to the formation of juries where national and international academics, together with well-known practicing architects, are invited to take part (Fig.4). Every year, ArchED announces these competitions around August-September and collects the entries by the end of November. The results are announced before the New Year vacation in a well organised Award Ceremony with a colloquium to obtain feedback from students, academics and also jury members in order to improve the process. All the projects that are evaluated in the live jury sessions, together with award winners, are exhibited for two weeks. This presents another opportunity for students

and studio tutors to make observations and learn about different approaches implemented by the participating architectural schools. Throughout the years, all the award-winning projects, together with jury reports, have been published by ArchED and distributed not only in Turkey but also globally. Fig.5 shows the cover pages of some of these books.

3. Methods.

The aim of ArchED's student projects competition, within this context, could be thought of as creating a big architectural design studio covering all schools of architecture with their different attitudes and positions. Students work on their projects again and again, review and refine them in terms of visual models, and present them to the jury for evaluations. They form the determining part of the architectural discourse with their own ideas, projects and presentations. That makes for a strong learning situation with its participation, exhibition, colloquium and publication processes, which supports not only the critical, creative and visionary capacities of students, but also the architectural education professionals. These competitions are forming a kind of space where all the stakeholders are learning and earning experiences that are in one way or another interact with each other.

3.1. Impact.

These competitions offer an opportunity for students to include these projects in their portfolio no matter whether they receive an award or not. Students may extend their networks and strengthen their profile. Publications of the ArchED students' competitions projects - digital and printed - combined with the announcement of the results and dissemination of the winning projects on the ArchED website, create important publicity for both ArchED and Students. Competition creates opportunities for students to compare and evaluate their own skills and design performance with their peers and to learn from these experiences. Interactions between students and jury members create an

informal learning environment where students are encouraged to learn-unlearn-relearn.

3.2. Students' Benefits and Experiences with Competitions.

- Giving value to his/her personal portfolio.
- To gain visibility/publicity.
- Questioning and self-evaluation of their own work.
- To share ideas/learn from one another/student-student interaction.
- Works as learning and re-learning process.
- To have the opportunity to get feedback from professional architects and academics.
- To have the opportunity to advance their organizational and research skills.
- To have the opportunity to gain self-confidence.
- Giving opportunity for developing design and personal skills.
- Winning prizes.

4. Conclusions.

The ArchED competitions have been designed to establish a ground for an informal learning environment with extra-curricular learning opportunities. They also provide extensive knowledge and evidence about current architectural education, reflecting emerging problems and also good developments in different architectural schools across the country. They create a platform/forum to discuss the problems of architectural education. This kind of process provides important opportunities for students to exchange ideas, to discuss different aspects of architecture, to make comparisons and to reflect on different approaches in architecture. All of these opportunities form an interactive learning environment that has vital importance in the learning process of students.

Every year ArchED publishes a book (Turkish/English) on the competition results and sends them to all the libraries of the architectural schools thereby transmitting the experiences gained

during the process. Results are shared by the architectural communities in and out of the country (Turkish/English) on the ArchED website. Not only for students but also for all the architectural communities, ArchED has been trying to create collaborative information resources. The studio projects, entered the competition, may address a range of different building types, or sites, materials, technologies, all suitable for framing a broad range of curricular arrangements.

Methodologies that are implemented in studio environments can be completely different from each other based on different cultures of architectural schools, different pedagogical approaches, and different visions of studio supervisors. Sometimes master-apprenticeship relationships dominate the studios and sometimes a "learner/student-centered" approach becomes more visible. There is no doubt that these different studio environments and different approaches in design education have an important impact on the students' development and in the formation of their conceptual framework of design as well as on their design projects.

Design projects that are developed in the studio environment, within a complex relationship and with invisible knowledge flow networks, are accepted by juries as unique products of each student/student group. "Design projects" produced in studios can only be converted into "design competition projects" if the students own their projects rather than submitting them as products of the studios.



Fig.5. The Cover pages of the ArchED Books.

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Biography

Meltem Aksoy is an associate professor at Istanbul Technical University, Faculty of Architecture. She completed her Bachelor of Architecture, and holds MSc and PhD degrees from the ITU. She received her PhD in 2001 with a thesis entitled "Analysis of Shape Grammars in the Context of Existing and Potential Design Languages." She was as a visiting scholar at Newcastle University / UK in 1994 and at CMU / PA-USA between 1999-2001. She started her academic career at the ITU Faculty of Architecture at 1992 and has continued teaching, researching at that same institution since then. Her research areas focus on computational design, information technologies and their effects on architectural design theory, practice and education. In addition to her academic work, she has also been involved in a number of building designs. She has been actively teaching architectural design at the ITU Faculty of Architecture at undergraduate levels since 1991 and at graduate levels since 2004.

Gülsün Sağlamer, Former Rector of Istanbul Technical University (1996-2004) is a professor of architecture. She is a registered architect at the Chamber of Architects of Turkey. She has designed several important architectural projects and received awards at national and international levels. She is a member of the Editorial Boards of "Open House International", "International Journal for Housing Science and Its Applications." She is the founding president of the Association of Architectural Education Arch ED. She was a Board Member of European University Association (2005-2009) and she is the President of European Women Rectors Association (2015). The American Institute of Architects (AIA) awarded her "Honorary Fellowship (Hon FAIA) in 2006 and she has been also awarded the "Leonardo da Vinci Medal" by SEFI (Société Européenne Pour la Formation Ingénieurs) in 2005-2006. She was awarded Honoris Causa by Carleton University, Canada (2001), Universitatea de Nord Din Baia Mare University, Romania (2002), Ovidius University of Constantza in Romania (2009) and Queens University of Belfast (2018).

Meltem Baslo received her bachelor's degree in Architecture in 1994, Master of Architecture degree on Architectural Design in 1998 from Mimar Sinan Fine Arts University and her PhD on Architectural Design in 2008 from Istanbul Technical University. Baslo became a research assistant at ITU in 2004. She took part in many campus projects' design and construction until 2011 within ITU Project Management Center. She is a member of Executive Board of ArchED and she has organized ArchED Student Projects' Competition since 2009. She is also working at ITU Housing Research & Development Center as research assistant. Her research areas are Turkish Revolution and Modern Architecture in 1920s, Revolution Architecture, Housing and Modernism, 19th century Istanbul and eclecticism, Historical Mapping of Galata and Pera. She is currently teaching architectural design, visual communication & technical drawing and basic design for first year's students at ITU Faculty of Architecture.

Topic 02 / Ecological Policies.

It refers to those transformations of contemporary culture that affect the architectural project by redefining its scope, its capacity of resistance, its laboratory-like condition, its techno-affective dimension and its ethical demand.

Design in the Anthropocene.

Towards a cosmopolitical perspective.

In recent years, design has been undergoing a profound change, trying to address the widely debated topic of the Anthropocene. The shared awareness of man's responsibility for climate change and its effects has shaken the foundations of all fields and require a change in perspective. In this framework, my paper investigates the relationship between politics and design, going beyond the restrictive boundaries which see design only as a medium through which political programs are able to create forms of power and influence.

Bruno Latour's *Actor Network Theory*, together with New Materialism in philosophy - pioneered by political theorists such as Jane Bennett - are emerging trends in 21st century thought. They are contributing to the abolishment of the traditional dualities of Modernity, such as the nature and culture opposition. Against the modernist anthropocentric perspective, the surrounding world is no longer seen

as a passive background, but rather as a system of relationships, made of agents - human and non-human - that condition each other, revealing their political role, their *agency*. These reflections contribute to expanding the restrictive notion of politics towards the one of *cosmopolitics*, as suggested by the philosopher Isabelle Stengers. This new approach forces us to rethink the political sphere from an *ontological pluralism*, considering it as continuous negotiation, a practice of coexistence in which all the living beings and non-living entities participate.

How are professionals trying to deal with our condition of *liminality*? How can design practices contribute to the unveiling and re-shaping of the co-existence of different entities, agencies and their interweaving?

Key words:

Design, Architecture, Anthropocene, Inside/Outside, Cosmopolitics.

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1. Politics as inscription.

Martín Tironi, a Chilean sociologist interested in interdisciplinary research on design, starts his article in the 11th issue of *Revista DISEÑA* by asking "What has design to do with politics?"¹

He argues that, at first glance, these realms would appear opposing and ontologically unstable. While politics must deal with the governing of human interests for the sake of the common good, design, instead, would be focused on form, aesthetics and function. According to this conception, design only acts as a mediator that makes certain positions visible in the social structure; it would be an accessory of the political. Tironi suggests moving beyond these restrictive boundaries which see design as a tool or equipment outside the political.

In one of the interesting articles collected by Tironi, the sociologist Domínguez Rubio and the architect Foguè argue that until now the usual way to explore the relation between these realms has been focused around what we can call design's capacity to enfold² the political. That is its prescriptive attitude, its ability to inscribe political programs into materials, spaces or bodies, and to create silent forms of power and influence. The rendering of power would work at a sub-political level by controlling the physical and technological elements that silently shape our actions and thoughts, by establishing physical and non physical boundaries within which we act. This means - to use the sociologist Akrich's words - that politics works through inscribing a certain "vision of (or prediction about) the world in the technical content of the new object."³ These scripts or scenarios constitute attempts to predetermine certain settings, defining a framework of action.

Foucault pointed out that these enfolding mechanisms are able to slowly and silently create new political structures in which no one can see the architecture of power, but in which everyone is subjected to them. Domínguez Rubio and Foguè mention his famous discussion about school chairs in seventeenth century France. Foucault argued that

these chairs, even though not presenting themselves as evident instruments of power, operated in a sub-political level. They silently inscribed the body into the realm of disciplinary power by means of a purposely designed ergonomics.

Similarly, speed bumps, according to Latour, also operate as sub-political devices; they control driver' speed by inscribing a specific version of civility into asphalt.⁴ Another interesting example is given by Winner, in his analysis of the bridges over the parkways on Long Island, New York. Even though these overpasses are incredibly low, nobody would be inclined to attach any special meaning to this fact, as we are so accustomed to seeing such details of form as innocuous. But Winner reveals how they were designed by Moses, the master planner of New York,⁵ to actually achieve a particular social effect. Car-owning white people of upper classes would have been able to pass freely under the bridges. Poor people and black people, who normally used public transport, were kept off the roads because buses were too tall to get through the overpasses. This meant a limited access to Jones Beach, Moses' famous public park, resulting in a form of gentrification.

However, even if a design's capability to create silent forms of power is and remain undisputed, it is equally important not to overestimate it. Predetermined inscriptions "tend to create a sort of performative illusion",⁶ according to which the effects of intentions and programs are some sort of inevitable result of the original design. Design objects, instead, are continually changing as people creatively transform them according to their need. Unpredictable and unexpected events come to disturb the script and its borders vanish, letting the otherness in. Domínguez Rubio and Foguè draw attention to the fate of those projects that aimed to use architecture to enfold different visions of a new society, like Le Corbusier's project to the modernist city of Chandigarh - where his spaces instead have been turned into a flea-market and a place to hang clothes - and some buildings conceived by Constructivist architects to represent the communist society, and that now lay abandoned.

Another interesting case worth mentioning is that of the Hotel House in Porto Recanati, in Italy - a sixteen-story apartment building, with almost five hundred apartments produced by the tourist-construction industry in the 60's. Although not aiming at enfolding or embodying a certain political ideology, it intended to offer a residence on the Adriatic coast for the region's emerging upper-middle class. The slogan was "living in a house benefiting from a grand hotel services." Against its initial intentions, the project ended up creating an urban ghetto with a very high concentration of immigrants coming from about forty different countries. The building is now facing conditions of extreme degradation, fuelled by the lack of any public service or interest by the authorities. But this closure to the outside and from outside is fostering solidarity among its inhabitants, and a strong sense of community.

The tragic or unexpected fate of these examples leads us to realize the limits of the traditional way of considering the political capacities of design. We can see the gap between the programs inscribed through it and the way in which they are received, transformed or simply ignored.

It is therefore important to introduce a different way of thinking about how design can become a political matter.

2. A new philosophy of space: the disappearance of the outside.

Firstly, we need to gain an insight into the complexity of contemporary times. The process of disappearance of the outside, as Latour explains, "is certainly the defining trait of our epoch",⁷ a phenomenon with great architectural and urban impact. And design is undergoing a profound change, related to one of the most debated topics in recent years, that is the Anthropocene. This new era in which man is co-responsible for, and co-creator of, climate change, is an issue that requires a change in perspective.

Latour's Actor-Network Theory affirms that every scientific idea, technical artefact

or social fact is the product of a complex web of relationships, in which human and non-human social actors interact. A web that is always contingent, as it changes according to each specific condition. He draws attention to the thought of Peter Sloterdijk, who first grasped the depth and extension of the concept of Dasein, usually translated as 'being here' or 'being-in-the-world'.

"When we say that *Dasein is in the world* we usually pass very quickly on the little preposition *in*. Not Sloterdijk. In what? he asks, and in where? Are you in a room? In an air conditioned amphitheatre? And if so what sort of air pumps and energy sources keep it up? Are you outside? There is no outside."⁸

Sloterdijk describes the microsphere as the original unit of the individual: since in the amniotic medium humans feel the need to create spaces within which to establish an atmosphere, an inhabitable climate. The macrospheres are, in contrast, the social collectors, held together by symbolic bonds.

As the decline of the European macrosphere occurred with the great explorations, which destroyed the unitary image of the world, Sloterdijk argues that we have to realize our condition of what he calls a foam society, an agglomeration of bubbles, in which forms of sharing can and must emerge. Historically the personal sphere has always been formed at the expense of the foreign.⁹

Sloterdijk calls on us to think about the interconnectedness of the human subject, and society, together with objects, things, nature, animals, plants and the environment. This foreign sphere so far has always been objectified, taken for granted, exploited. He thinks of an unprecedented coupling between the personal and the foreign sphere: between human and non-human, to preserve themselves and the biosphere as an entity capable of guaranteeing their survival.

The architectural historian da Costa Meyer writes: "that is the peculiar claustrophobia of the Anthropocene: there is nothing exterior to it in the planet."¹⁰ We are facing a lack of an outside which rules out architecture's interiority:

"The materiality that creates interior space, the energy required to build and maintain structures, the emissions that they produce as a result, all yoke architecture to both local and faraway places, to deep time, present time and future time, as it transvaluates materiality into immateriality, interior space into exteriority, carbon into atmosphere."¹¹

3. Objects, things, assemblages: towards a political ecology.

Bodei, in his analysis of the term object, points out that the idea of objectum (in German Gegenstand, what stands in front of or against) implies a challenge, a contrast which prevents the subject from having an immediate affirmation of it.¹² The word thing instead (in German Ding) refers to gathering. It is not the object, the obstacle that I face and have to break down or circumvent, but a set of relations in which I am involved and over which I do not have exclusive control. The idea that a thing can stop being considered an object may appear rather bizarre, as we are accustomed to using these terms interchangeably. However, this assumption is not new: Heidegger already tried to unveil the deep meaning of things hidden below the anonymity of objects.¹³

In opposition to the modernist attitude towards the material world, Latour argues that we should stop considering artifacts as objects, but rather start looking at them as things, complex assemblies. In this way they no longer appear as matters of fact, but as matters of concern.¹⁴

On this issue, Domínguez Rubio¹⁵ proposes an ecological approach that also takes into account all those processes often ignored, such as time, fragility and change, shifting the focus towards the level of the processes and negotiations through which different material arrangements come into being and are constantly renegotiated. From an ecological perspective, some of the questions we should ask are:

"Under what conditions can certain

thing come to be differentiated and count as a particular kind of object? How are those conditions produced and maintained over time? What or who has the power to create those conditions? [...] And under what conditions does something cease to count as an object to become something else?"¹⁶

In this framework, he takes the case of the Leonardo's Mona Lisa as an interesting example, arguing that the painting is not an object made at one point in time but a slow event that continues to unfold through different chemical and mechanical processes. Maintaining its identity as an art object requires the invisible work of curators, architects and conservators, who carefully curate light, temperature, humidity and air, to contain its physical change. The political field is thus ecological, because every action arises from a network of conjoined actions.

In a similar way, the philosopher Jane Bennett questions the positivist perspective - according to which human understanding is the source of the general laws of nature - and promotes instead anti-anthropocentrism in defence of the hidden side of objects. Today more than ever, climate change and its effects show that coexistence is not only a human issue, but it rather concerns all the entities (animate or inanimate, material or immaterial) that compose the world. Climate change and global warming have become what Timothy Morton calls hyperobjects;¹⁷ both discursive and material objects, which are unconsciously perceived by everyone, from which everyone is affected but whose nature and causes can not be fully understood.

Bennett suggests abolishing the traditional dualities of Modernity, such as human/animal, life/matter, organic/inorganic. In this view the surrounding world is no longer seen as a passive background, but rather as a system of relationships, made of agents that condition each other, revealing their political role, their agency. Therefore, she asks, why advocate the vitality of matter?

"Because my hunch is that the image of dead or thoroughly instrumentalized matter feeds human hubris and our earth-

destroying fantasies of conquest and consumption. It does so by preventing us from detecting (seeing, hearing, smelling, tasting, feeling) a fuller range of the nonhuman powers circulating around and within human bodies. These material powers, which can aid or destroy, enrich or disable, ennoble or degrade us, in any case call for our attentiveness, or even respect."¹⁸

The fundamental step taken by Bennett has been the opening - not the solution of course - of a debate on political ecologies. Her aim is to demonstrate how, by observing the inorganic background, and other natural beings from the agents' point of view, we could gain awareness of the new climatic, political and social urgencies. As a term of choice for describing this system of relationships and its structure, the author refers to Deleuze's assemblage.¹⁹ She takes the electrical power grid as an interesting example of assemblage; a system which includes humans and their constructions, but also very active and powerful non-humans, such as electrons, trees, wind and electromagnetic fields.

According to the anthropologist Escobar, "Moderns imagine the world as an inanimate surface to be occupied; for many relational cultures, on the contrary, humans and other beings inhabit a world that is alive."²⁰ To strengthen this vision against the idea of a single world, he quotes Ingold:

"Rather than thinking of ourselves only as observers, [...] we must imagine ourselves in the first place as participants, each immersed with the whole of our being in the currents of a world-information [...]. Participation is not opposed to observation but is a condition for it."²¹

4. The (cosmo)political capacities of design.

The idea of extending agency to entities other than humans - objects, material things, technologies, natural elements - emphasizes the force of things, their "intangible and imponderable recalitrance."²²

Lieto and Beauregard, in their *Planning for a Material World*, argue that "thinking of the social as a matter of associations and not as an entity pre-existing the process of assembling is a path-breaking ontological position that questions enduring social theories deeply embedded in design theory and practice."²³

These reflections contribute to expanding the restrictive notion of politics and even going beyond its traditional boundaries.

Domínguez Rubio and Fogué introduce, besides their analysis of design's capacity to enfold the political - that is, as we've seen, its prescriptive attitude - a different way of thinking about how the project can become a political matter. Moving away from a technocratic approach aimed at setting the rules, the script, and its boundaries, they use the verb unfold.²⁴ It intends rather to highlight the ability of design to broaden the range of bodies, spaces and materials that constitute the cosmos of the political, by opening up epistemological boundaries. This unfolding ability, this letting the otherness in, can be defined as a cosmopolitical activity.

Stengers and Latour²⁵ argue that rather than politics today we should talk about (cosmo)politics; a continuous negotiation, a practice of coexistence in which all the living and non-living entities participate. In this sense, Cosmopolitics forces us to rethink political action as an ontological pluralism. Stengers argues that the words cosmos and politics are mutually necessary. The word cosmos points out that coexistence must be achieved among all the living and non-living entities, and existence is not just for an exclusive human club. The word politics instead suggests that coexistence is only possible through a continuous, collective negotiation. Cosmopolitics is not cosmopolitanism; cosmopolitan is a very old term which comes to us from Kant, referring to anyone who is a citizen of the cosmos. In this sense, it refers to the possible unification of all people - but only humans, who have different perspectives on the world - through universal laws, while nature, the cosmos, is simply there, a fixed background. Cosmopolitics

instead, refers to the politics of a cosmos, which includes all the many natural and material entities that make humans life possible. Whereas for cosmopolitans there is one unified nature; in cosmopolitics nature is multiplied, it is a Multiverse.²⁶ It is no longer seen as a simple backdrop for human activities; it has to be done, created, instigated and composed.²⁷ While cosmopolitanism stands for "politics in the cosmos", cosmopolitics instead refers to the "politics of the cosmos."

The anthropologist Albená Yaneva²⁸ mentions the interesting description of the natural park in the Alps by Mauz and Gravelle.²⁹ Their example shows how a park is no longer a natural environment out there, waiting to be discovered by visitors. Rather, re-design operations fully involved nature, including the behaviour of the wolfs and the goats. When the goats started to be protected and became accustomed to the human presence, visitors immediately lost interest towards the park. Hunters therefore had to teach the goats to be afraid of humans again and to flee, so as to revive the site's appeal. The example shows that the natural park is not a stable and passive nature or thing, but rather an assembly that has to be constantly redesigned. The ethical role that design can take in the composition and perception of these heterogeneous assemblies is fundamental. As Tironi points out "cosmopolitics as a matter of design is an invitation to recognise the boundaries and extents of the design methods centred around humans, and to explore forms of de-centralisation through operations of co-designing that allow the inclusion of other, invisibilised entities."³⁰

5. Design's attempts to deal with the Anthropocene.

In her *Architectural history in the Anthropocene: towards methodology*, da Costa Meyer brilliantly unveils the multilayered complexity of our new condition, and points out how architectural history and theory is struggling to produce methodologies that respond to its implications.

We cannot fail to observe that the Anthropocene has served as a catalyst, for professionals from all over the world are trying to deal with the issue in different ways, embracing our condition of liminality and re-evaluating widely held assumptions. "Architecture has lost its fixity, along with its presumed modern purity."³¹ In fact, it can no longer be seen as a self-contained, autonomous object set against the background of cities or landscapes. It is bound "to humans and non-humans, to material and immaterial entities, [...] to discursive and representational practices, to socio-economic and symbolic systems."³² The shared awareness of its ontological instability and heterogeneity is "subverting concepts, unsettling binaries, questioning received notions of agency and authorship, as well as troubling the discipline's authority."³³

However, to understand whether or not some attempts simply perform as politically correct, remaining actually tangled up in the capitalistic logic, concealing their neo-liberal ideology, is actually something which requires critical thinking. Referring to those design practices which try to express environmental concerns, da Costa Meyer warns against their tendency to "range from a naïve environmental fundamentalism to the more cynical forms of green capitalism."³⁴

Manfredo Tafuri, from a radical Marxist perspective, believed that "the practicing architect, in this society and within the closure of capitalism as a system, cannot hope to devise a radically different, a revolutionary, or a "utopian" architecture or space either."³⁵ For his part, Fredric Jameson, keeping his distance from Tafuri's rigid perspective, finds alternative possibilities from the more optimistic theory of Gramsci. It suggests that small moves, "strategic pockets or beachheads within the older system",³⁶ have the possibility to cause social transformation.³⁷ His notion of counter-hegemony, translated into the conception of politics of space, means "producing and keeping alive a certain alternate idea of space, the urban, daily life, and the like."³⁸

It's along these lines that cosmopolitics "installs a notion of politics



Fig.1

open to the potential, a relation with the present based on the speculative: it can make present, performatively, political worlds and possibilities that are still absent."³⁹ Moving away from a positivist totalizing logic aimed at proposing pre-configured solutions, it embraces the logic of prototyping, which "does not impose or reconfigure, but its reason to be is to allow realities based on its successive failures and malfunctions to emerge, forcing to reconsider other paths and questions."⁴⁰

Conceived in this way, design activity is not reduced to a logic of problem solving, but is also a kind of problem making, aimed at installing inventive modes of exploring and becoming sensitive to the contingent. It suggests new ways of understanding social life, considering the multiple agents which are involved in it, and makes new realities emerge.

"Only by positioning ourselves so that we can see architecture as a relational product rather than a thing in itself, can we divest architectural history from anachronistic notions of closure. One could say of architecture conceived in this way what Henri Lefebvre once said about space: namely, that *it is not a thing but rather a set of relations between things*."⁴¹

As previously said, to identify which are the truly valuable and effective ones in the broad range of contemporary design practices is not an easy task. However, it is worth mentioning a number of attempts that, by means of a cosmopolitical perspective, try to activate and unfold the

possibility of "an otherwise as a site of political action and imagination."⁴²

In Madrid, the Zuloark collective, in their project for *El Campo de la Cebada* (Fig.1), rather than trying to inscribe a program, a script into the square, created an under-defined space, by using a set of open-source, mobile urban furniture enabling unpredictable possibilities and configurations.

Díaz Moreno and García Grinda, founders of AMID.cero9, in Madrid, let the interaction between different agents emerge in their work. In their project named *Magic Mountain* (Fig.2) in Ames (Iowa, U.S.), they transformed a massive urban power station into a piece of landscape inside the city. Challenging established procedures, they proposed to deploy a local gardener's ancestral techniques of genetic selection and covered its volumes with a membrane of roses, lights, and honeysuckle. Like a

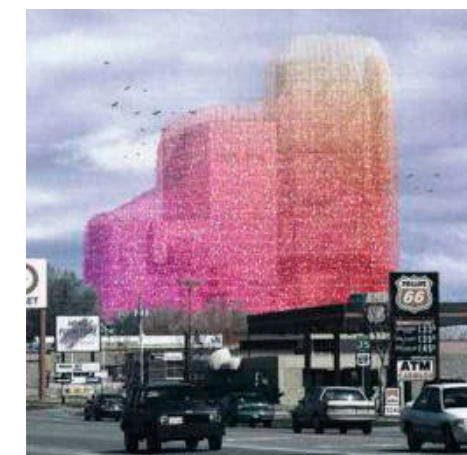


Fig.2



Fig.3

real mountain, the membrane provides a resting place for the largest species of North American butterflies on their migratory route. At the same time, an enormous variety of bird species can find a place to nest, previously difficult since in recent years many of the area's forests and wetlands have disappeared. The power station provides an alternative habitat and a living laboratory where the university can test new varieties of species adapted to this climate.

In their *Bioclimatic Prototype of a Host and Nectar Garden Building* (Fig.3), Husos, a Colombian Spanish architecture office, designed and constructed a bioclimatic building in the centre of the city of Cali. The green facade provides a comfortable microclimate within the building, reduces energy consumption and is a prototype for a welcoming domestic garden for all



Fig.4

the insects and birds in the area. The building uses the presence of butterflies as a biometer to measure the quality of the environment.

In France, Lacaton & Vassal (Fig.4) make intelligent re-use of the existing, and avoid recourse to demolition even when it is advocated by local authorities. Moving against the anthropocentric tendency to reduce and define, they choose the option of altering and remodelling the dysfunctional buildings from the inside out, letting the needs of the users dictate the final form and look.

Plasma Studio and Groundlab are interested in challenging the traditional notion of nature as spectacle, to be admired as such. In their project for the International Horticultural Expo (Fig.5), Xian, China, they proposed a park that was supposed to operate for the first six

months as a horticultural fair and then become an urban park. Over time, nature would have shown its agency, and the park would have developed an identity of its own, based on local soil, weather, water and vegetation.

All these attempts - although differing in scale and context - share the same approach; they question dominant practices and logics, deeply analyse realities, and also highlight the agency of different material and immaterial entities. Against an unquestioning technocratic approach, they use and allow slow reasoning, negotiation and re-interpretation. They openly embrace change, broadening the range of possibilities, and letting the otherness in.

Precisely as we cannot fully grasp the epistemological uncertainties of the Anthropocene, our goal should not be to provide answers but to stimulate critical thinking and create a space for hesitation. As Stengers writes: "How can we present a proposal intended not to say what is, or what ought to be, but to provoke thought, a proposal that requires no other verification than the way in which it is able to slow down reasoning and create an opportunity to arouse a slightly different awareness of the problems and situations mobilizing us?"⁴³



Fig.5

Notes

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Biography

Micol Rispoli. Ph.D candidate in Philosophical Sciences at Federico II University of Naples, from which she graduated in architecture. She also obtained a master's degree in Events and Museum Curator from IED, Roma. She carried out research activities at Politecnico di Milano and ELISAVA Barcelona. She is currently developing a thesis at the crossroads of Architecture and STS, on the impact that pedagogical experiments inspired by 'ANT' and reflections around 'Cosmopolitics' and 'matters of care' might be having on architectural practice.

Architecture as a Control Device.

Disciplinary strategies on architecture as a post-Enlightenment tendency.

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The period between the 18th and the 19th century involved many changes in Europe in the social, cultural and intellectual spheres of society. During this period, a new group of strategies were applied in order to fight against ignorance and superstition through knowledge and science i.e., the Enlightenment. At this time, when positivism also became applied to buildings and cities, architecture became established as a main device for social control, substituting the open spaces where public punishments were previously displayed. These rituals were no longer considered necessary, and institutions established for discipline intensified their activity. Violence became substituted by positivism as a way of keeping people under control. Institutions and organisations appeared aiming to control people

by building information about them, and architecture became used to inculcate it. Diverse typologies, such as prisons, schools, factories or hospitals appeared and, even though they had very different purposes, they all shared the same strategies and ways of performing. They all acted as productive architectures that optimise the outcome that power can obtain through surveillance, spatial organisation and time control over the inhabitants of such spaces, whether for production, knowledge, culture or health. So, we would like to ask just one question: can architecture and the city be understood as devices systematically used to ensure social control?

Key words:

Productive, Knowledge, Surveillance, Factories, Prisons.

1. The Enlightenment as a starting point.

During the 18th and 19th centuries, the concept of the body as a target for power relationships became established. Previously, the main ways to keep social control were by both public punishments and torture, but the new cultural environment changed these procedures. Bodies would no longer be punished and tortured but manipulated, taught, and prepared so that they would act and perform as desired by the ruling classes. These ideas had been previously expressed in a similar way by authors such as Descartes or La Mettrie, but it is at this precise moment when their application became widespread. As Michel Foucault writes in his book *Discipline and Punish: The Birth of the Prison*, disciplines emerged which became general and systematic expressions of dominance over the population during the Enlightenment.

Opposed to the power exhibited in the public arena - mainly through violence and intimidation - an alternative

and hidden power became deployed; a new economy of means that allowed not just control, but also to obtain greater productivity from these bodies that were surveilled and transformed through small procedures and gestures. "Discipline is a public anatomy of detail." Just as earlier Leonardo dissected bodies in order to learn how they were biologically constituted, so disciplinary architecture dissects individuals to know how they act and perform, so they can be more productive and efficient.¹

It could be considered that these strategies had an earlier origin in other kinds of organisations, such as convents or military camps, but during the Enlightenment they reached their peak, introducing new ways of control. The first change was the scale of this control. It would no longer be exercised over bodies as a general idea, but over its different parts, directing movements, attitudes or gestures. In addition, the focus would not only be on elements but in their broader optimization. From the eighteenth century onwards, control became deployed in an elaborated manner, codifying space and

transforming life into a choreography where the control of peoples' time resulted in a kind of power relationship different from previous ones, such as in slavery, vassalage or servitude (or even monasticism, which required specific spaces to display its strategies). These new spaces of discipline would manufacture what Michel Foucault called "docile bodies" that became forced into submission by acting over them. The population would therefore be more productive as well as more obedient.²

The emergence of this new political anatomy shouldn't be understood as a sudden event but as a convergence of several different processes that gave form to a general strategy. These disciplines appeared early in schools or prisons, and then spread to other typologies, such as hospitals, factories or military spaces. In a general way, they responded to short-term demands, caused by changes in the productive system, an upsurge in different diseases, or big military campaigns, but they became inscribed in a general process that involved the microphysics of power which slowly extended itself over

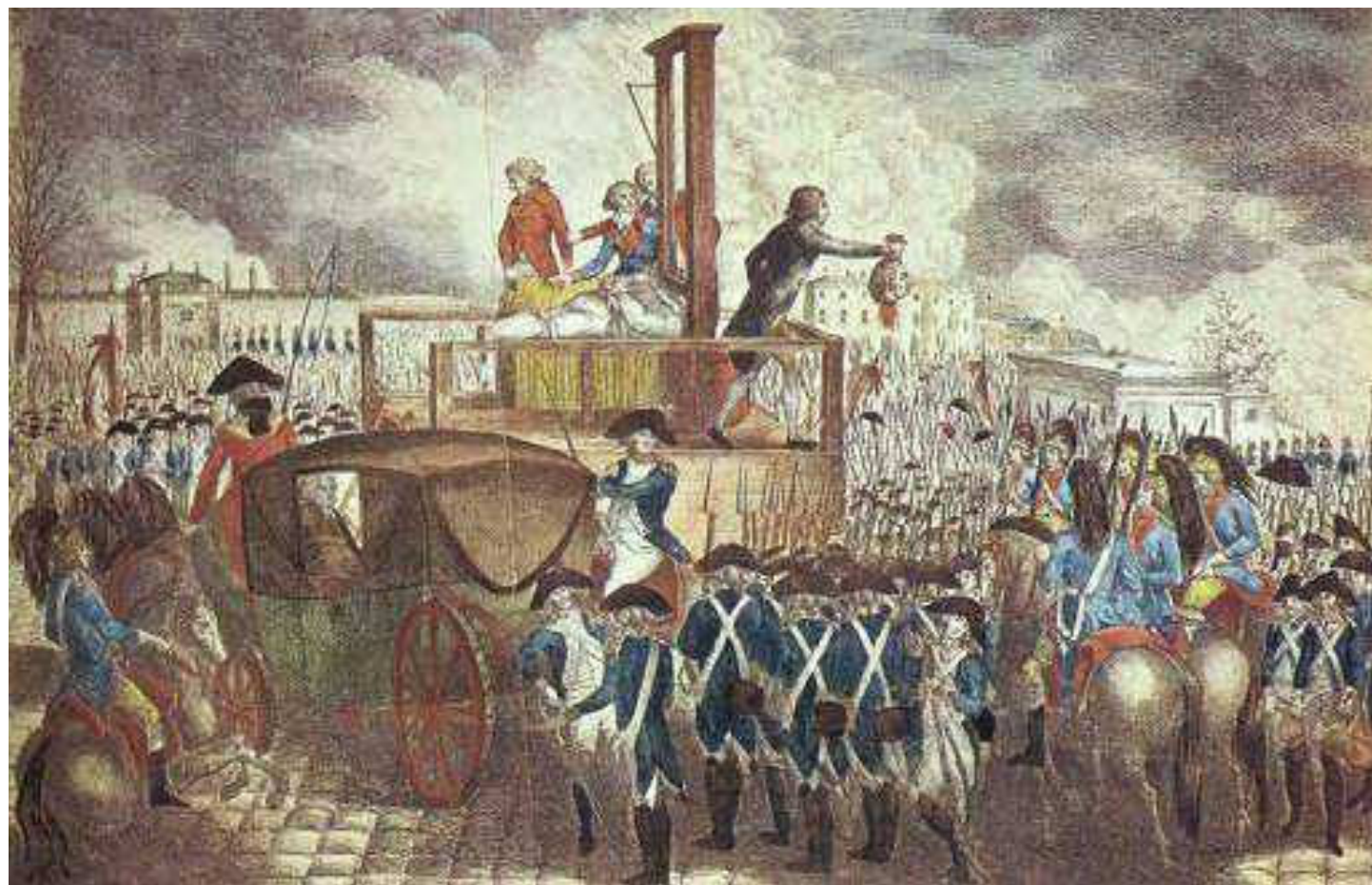


Fig.1. Louis XVI's public execution in Paris, 1793.



Fig.2. Le Creusot, as one of complexes that applied the new disciplinary guidelines.

different spheres of society and affecting the whole social body.

2. The techniques.

As in any other strategy, disciplines are based on a group of techniques that, in this specific case, intended to control individuals. When considering architecture, probably the most important aspect is spatial design, which in this case, was not done randomly but followed precise guidelines that would enable an efficient coercion.

The first move was the possibility of enclosing people and establishing a space detached from the external environment, which would allow disciplinary tightness. Such methods existed before the Enlightenment in institutions like monasteries, or in elements such as the exterior walls of medieval cities. But from the 18th century, enclosure became applied to many other typologies such as factories, schools, or even city-like productive complexes such as Le Creusot or The Royal Saltworks at Arc-et-Senans. If we take a closer look at these enclosing

systems, we can observe that they don't work by simply following a rigid principle, but spaces are designed in a delicate and flexible way. The intention was to create analytical spaces where bodies are visible, so their actions can be surveilled in order to correct them. To achieve these goals, space is divided in different areas depending on the different activities that are going to take place in them. That was a way to mark out individual people, so their abilities and performances could be compared and rated, and eventually corrected, so that production could be optimized, whether material (factories) or intellectual (schools).

At the same time, a growing functionalism existed inside the disciplinary institutions that, apart from surveilling, enabled the possibility of assigning specific labours or uses to every space. That is to say, control strategies could be completely specialised and adapted to the task housed in each space. It became possible inside these buildings to observe and control all the different variables of the productive activities developed, by the worker, for example, so that their skills could be

measured, compared and evaluated both individually and as part of any particular work group. It is important to note that this process of individualisation appears as a consequence of the division of labour, characteristic of the emerging capitalist productive system at the end of the 18th century. When addressing the pros and the cons of these coercive processes, Karl Marx claimed that: "The division of labour supposes for the capitalist unconditional authority over working men that are reduced to mere parts of a collective system that is property of the first one; the social division of work confronts different independent goods producers that do not recognize any other authority than the competence, the coercion exercised over themselves by the pressure of their mutual interests."³

Another key characteristic is the fact that buildings became divided into different spatial elements that are completely interchangeable as they are not defined by spatial nor territorial logic, but by hierarchies, therefore distributed inside an abstract and complex system of relations. This serial organization of space was a great breakthrough for elementary

teaching in schools, for example, as it bypassed the traditional system where the student worked individually with the teacher while the rest were just waiting. This new model enabled the possibility of making the whole group work at the same time through such control strategies. Learning spaces began at this point to be configured as a place, not only to learn, but also as a space to individualise, rank and label.

All these strategies, grouped under concepts such as the cell, define complex architectural spaces whose overall physical appearance is the representation of these ideas. Their design was not determined by beauty, but by complex systems of relation that guarantee both the obedience of individuals and optimal production, and that are external to straightforward building activities. In these architectures, the representation of control is also important in the establishment of routines and the organization of heterogeneous groups of people, these being crucial to the creation of a "microphysics of power" based on cellular coercion.

3. Time politics.

While the organisation of performance in disciplinary institutions, at both a hierarchic and a spatial level, was first based in surveillance and actions over physical bodies, it also introduced the calculation of time as a complement to this scenario, which improved the way power structures of control guaranteed social control.

This first appeared with religious orders such as monasticism before adopted for other typologies. Monastic life evolved through time, testing different models. Initially it was constituted by individual cells that were grouped in a flexible way around a common space, such as a church. This configuration sowed the seed for later forms of discipline and cellular architectures. But it was not just about spatial design and organisation, for the monastery introduced a strict time control over monks. Their life was organized through a strict control of time, where even the smallest details were completely determined, especially

the time of prayer. This model sought a perfect correspondence between time and space, where every room has a precise activity and a precise moment for it to be done, making their rituals an example of the most strict functionalism. Time and space work together such that rituals were made easier to control what is happening, as was done in the Abbey of Saint Gall, for example. (Fig.3)

In addition, the design also shows other strategies that could be found later in different building types devoted to control. In the first monasteries, for example, the central space was defined as the common area (the cloister as an space of observation - as well as meditation), while the small individual cells were placed around it and had a certain level of intimacy,⁴ but they didn't really escape from the curious sights of the other monks, for those "individual" rooms were clearly part of a bigger and general collective mechanism. These principles can be found in later institutions because they constituted the ideological basis for modern means of production that appeared during the 18th century. This control over time became extended later to other architecture using the same procedures: spaces that guarantee rhythms, repetition and the imposition of tasks. This time-space relation also affected bodies, enabling the possibility of controlling not just what happens in each space, but the gestures and movements that were to be performed in them.

However, this straightforward time-space correspondence is its most important feature, something that is visible from the plan of the Abbey of Saint Gall, which aimed to be the plan for an ideal monastery. The organisation of this building proves to be one of an institution that intends to be completely self-sufficient through a coherent administration of time and space, pursuing a way of life and a control of the bodies that were inhabiting it simply by disciplines. These processes were later reproduced in other typologies and institutions emerging in the 18th century that would promulgate the spread of discipline as a control element. When these temporal restraints are extended to other areas, they use the same methods:

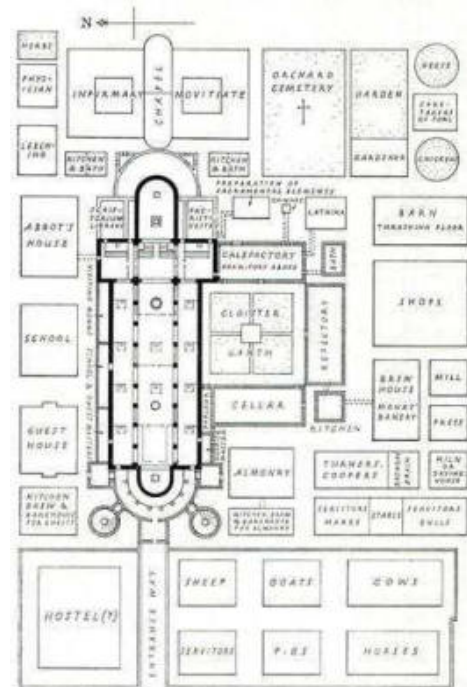


Fig.3

the establishment of life rhythms, repetition cycles and the imposition of precise tasks looking for exactitude and regularity in the use of time in order to make control more precise and effective.

4. Cities and surveillance.

Disciplines, in summary, have as their main intention to produce individualities by using four different strategies: they are cellular (because of its organisation), organic (they act over bodies), genetic (they control time) and combinatory (interrelations with other areas). In order to achieve their objective, these are precisely minor operations - in contrast to the grandiloquence of aristocratic architecture of the previous centuries - which became introduced progressively into the social body. Based on a calculated but constant functioning, disciplines came to accommodate themselves as the main strategy of power, by imposing three mechanisms of action: hierarchical inspection, normative sanction and, thirdly, - one that is a mixture of the others - the examination.

Institutions based on discipline work as devices that coerce by the simple action of observation. These methods intend to make transparent the behaviour of

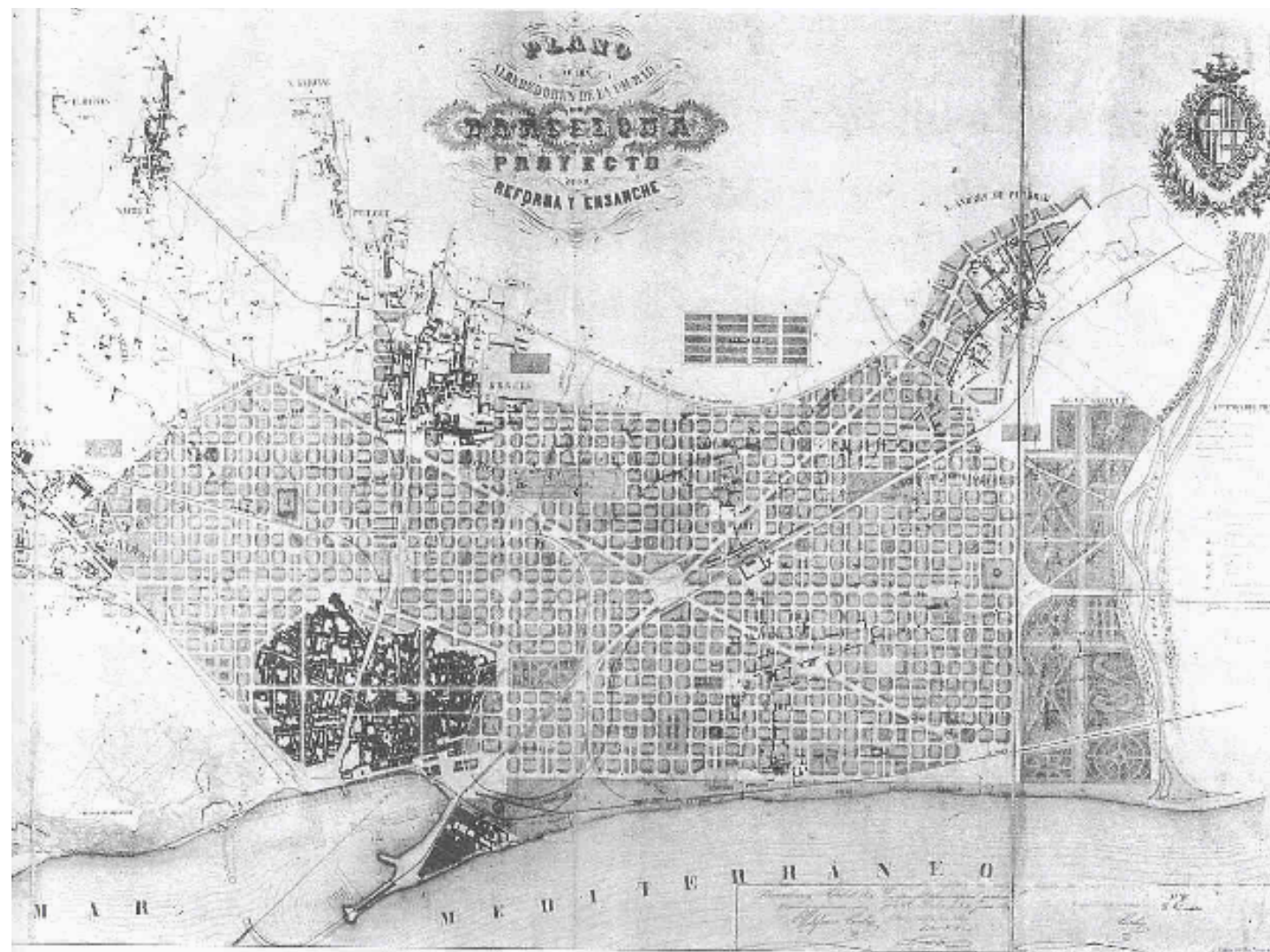


Fig.4. Plan for the city of Barcelona, Ildefonso Cerdá, 1860.

human individuals, proposing in effect observatories of human life. If these places controlled health, they would be called hospitals, and if they were interested in material production they would be called factories. Nevertheless, the ideal model regarding control based on observation was the military camp. As a straightforward demonstration of a controlling power, the squared plan defined the number and location of tents, their orientation, geometry and street dimension constituted a system that worked under a principle of general visibility. Roman camps and cities were one of the first examples of this kinds of operation where, through the use of the grid as the basis of design, an easily reproducible model was achieved. This fact facilitated the effective extension of the Roman Empire, but at the same time enabled control and maximum visibility inside cities, facilitating interior organisation and defensive actions against

external threats.

With an origin in military and urban systems, these devices for controlling visibility were extended as a more common practice in the design of cities at different times throughout history. As part of the process of social changes that occurred in the transition between the 18th and 19th centuries, some examples can be found at an urban scale. For example, Georges-Eugene Haussmann's renovation plan for the city of Paris summarises in a straightforward way how power can affect the design of cities. Facing the chaotic pre-existent urban form, different neighbourhoods were completely demolished and new avenues and boulevards were planned alongside the new infrastructures such as train stations, markets and theatres. From the French Revolution onwards, medieval areas in Paris hosted numerous riots and social protests that, due to Haussmann's plans for the city - the transformation of

narrow and tortuous streets into open and observable spaces - became easily prevented, thereby making urban actions of power and control more transparent. In Jean Starobinski words: "with a mixture of monumentality and repressive purpose, the destruction and reconstruction of mid-century urbanism were one of the causes of the spleen, or exile feeling."¹⁵

At this time, there were several changes taking place in city design with their basis in these new ideas and in the pursuit of a better performance of urban systems. To do this, the same strategies were applied that were used in disciplinary institutions, but at a different scale: the possibility of surveillance and obtaining information out of people, their classification and evaluation through observation and the opportunity of controlling their lifetimes. The culmination of this evolution was the emergence of the concept of urbanism in 1867, with Ildefonso Cerdá and his *Teoría general*

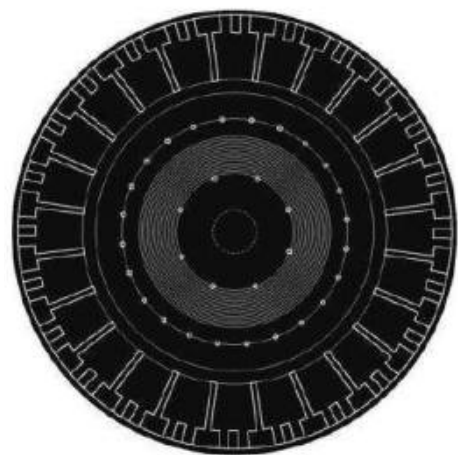


Fig.5. Jeremy Bentham's Panopticon Plan.



Fig.6. Paimio Sanatorium Plan, Alvar Aalto.

de la urbanización. This text appeared later than his famous plan for the city of Barcelona, which is considered the first example that applied scientific and statistical criteria systematically to urban design. Its main intention was to apply control to urban design in

order to improve the performance of the final object, the city; it aimed for a homogeneity in the rent distribution and for a reconfiguration at the urban scale of government policies in order to guarantee the welfare, security and good economic conditions for the working class. It is a

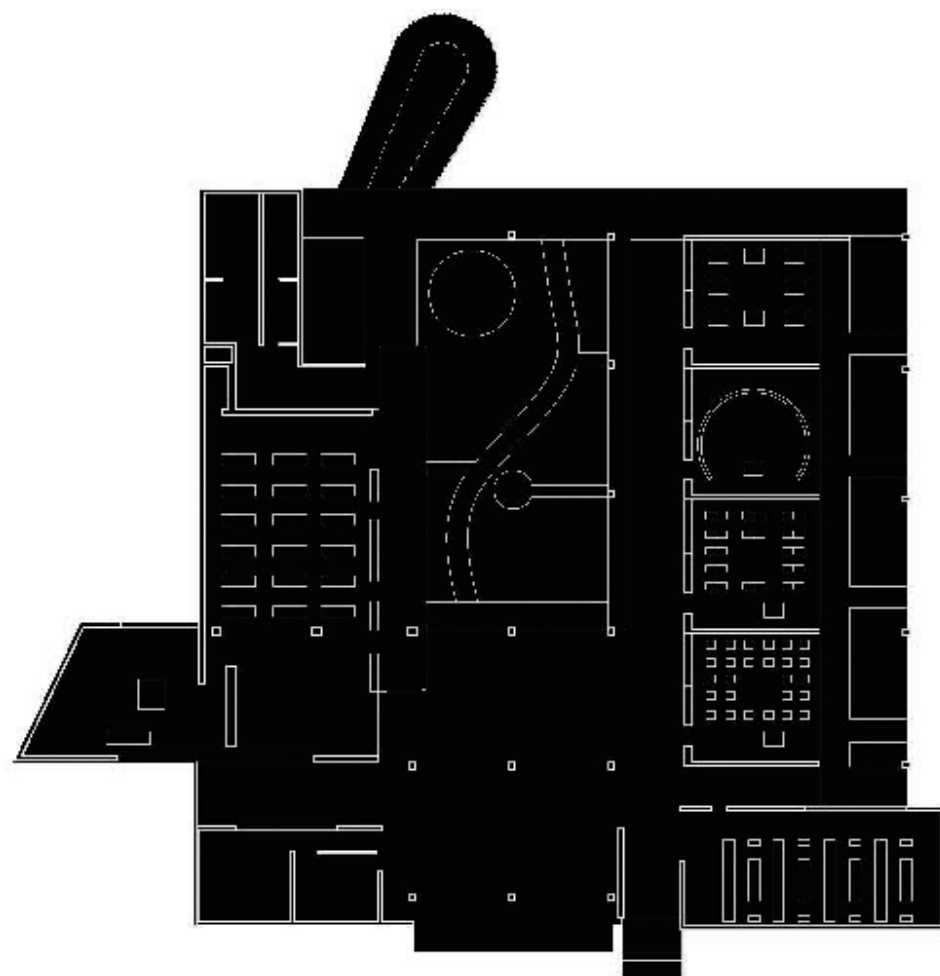


Fig.7. Sant'Elia School Plan, G. Terragni.

product, then, of the instrumentalization of urban design that, as was the case with the disciplinary architectures described previously, was used to observe how people live and act so that power can adapt actions and decisions to get the best possible outcome.

5. Architecture as a control device.

The strategies studied in this paper were both initiated and established as a way of ensuring social control during the change between the 18th and 19th centuries, turning architecture into an essential and decisive operator in surveillance and control processes.

Buildings such as the Royal Saltworks at Arc-et-Senans, designed by Claude-Nicolas Ledoux, are particular manifestations of the extension of the concept of surveillance towards architecture. Conceived as a complex that must reflect the hierarchy of production control, it is one of the different examples of circular surveillance architecture, including the Panopticon designed by Jeremy Bentham (Fig.5) or la Petite Roquette by Harou Romain.

However, this way of controlling through architecture is still present, even if it isn't looking just for control but also for profit. The main strategies that were described previously (cells, the possibility of enclosing, time-space correspondence and the principles of visibility) can be found in many buildings that exist today. If we look, for example, at the plan of the Panopticon, and we compare it to Alvar Aalto's Paimio Sanatorium (Fig.6) or Terragni Sant' Elia School (Fig.7) we can observe that all of them include "cells", common spaces that are part of a time-space routine and mechanisms of spatial individualization and observance, even if they have different objectives. We can conclude that architecture has established itself as a device committed to control, at the service of production, health or education, repeating and appropriating those strategies that were initially invented and extended during the Enlightenment.

Notes

1. VIDLER, Anthony, *The Writing of the Walls. Architectural Theory in the Late Enlightenment*. Princeton Architectural Press, Princeton, New Jersey, 1987. The Historicist Postmodernism defined by Charles Jencks gathered buildings characterized by a certain abstraction of the past, as for example some ones designed by Kisho Kurokawa, Kiyonori Kikutake, Eero Saarinen or Robert Venturi and Short.
2. FOCALT, Michel, *Vigilar y Castigar: Nacimiento de la prisión*, Editorial Biblioteca Nueva, Buenos Aires, 2012. p.160.
3. MARX, Karl, *El Capital, Siglo XXI* Editores, Méjico D.F., 2011, Tomo I.
4. AURELI, Pier Vittorio, *Menos es Suficiente*, GG, Barcelona, 2016, p.31.
5. STAROBINSKI, Jean, 1989. *La Mélancolie au Miroir, Trois lectures de Baudelaire*. Paris: Julliard.

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Biography

Alejandro Carrasco Hidalgo. Architect, researcher and editor, got his Master in Architecture at Universidad de Alcalá in 2018. He is currently promoting his own independent editorial project, Momentum (www.momentummag.info), revisiting the role of images as knowledge holders in the internet era. At the same time, he is conducting his research activity on architecture as a way of controlling and determining personal and social behaviour through history.

Topic 03 / Material Practices.

It refers to those perspectives that reconsider the role that matter plays in the processes of transformation of the world. It pays special attention to agencies, dynamism and intelligence.

The Cybernetic Relevance of Architecture.

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In his article *"The Architectural Relevance of Cybernetics"* (1969), Gordon Pask supported the substantial affinity between the interdisciplinary field of cybernetics and architecture. According to Pask, this affinity is not limited to the diffusion of computer-aided design (which implies the application of a cybernetic method to architecture), but is rather justified on the basis of the new point of view towards machines and organisms carried by cybernetics, with the tendency to equate them on the basis of their systemic nature. If, on the

one hand it is therefore possible to affirm with Pask that cybernetics is relevant to architecture, it is perhaps possible, on the other hand, to overturn this statement and support the hypothesis that architecture has been, and still is, relevant for the development of studies on cybernetics, having represented one of the most effective fields of its application.

Key words:
Cybernetics, Systemic Approach, Adaptive Architecture.

1. Introduction.

In his article "The Architectural Relevance of Cybernetics", published in *Architectural Design* 9 (1969), Gordon Pask supported the substantial affinity between the interdisciplinary field of cybernetics and architecture. According to Pask, this affinity is not limited to the diffusion of computer-aided design (which implies the application of a cybernetic method to architecture), but is rather justified on the basis of the new point of view towards machines and organisms carried by cybernetics, with the tendency to equate them on the basis of their systemic nature (Yiannoudes, 2016): "[...] Architects are first and foremost system designers who have been forced, over the last 100 years or so, to take an increasing interest in the organisational (i.e., nontangible) system properties of development, communication and control. Design problems were coped with as they cropped up, but for some time it has been evident that an underpinning and unifying theory is required. Cybernetics is a discipline which fills the bill insofar as the abstract concepts of cybernetics can be interpreted in architectural terms (and, where appropriate, identified with real architectural systems), to form a theory (architectural cybernetics, the cybernetic theory of architecture)" (Pask, 1969). If on the one hand it is therefore possible to affirm with Pask that cybernetics is relevant to architecture, it is perhaps possible, on the other hand, to overturn this statement and support the hypothesis that architecture has been and is still relevant for the development of studies on cybernetics, having represented one of the most effective fields of application.

2. Out of Control.

In the mid-twentieth century it was commonly accepted that social and urban processes could be assimilated to the functioning of a machine, and this metaphor guided planners' choices for several decades. In the last forty years or so, the Sciences of Complexity have led to a radical shift in the metaphor; in thinking, that is, of cities and societies, not as machines but as organisms. This also represents a transition from the idea

of a city as a product to thinking of it as a system that evolves, grows and changes in ways that could be steered and managed but hardly imposed with a top-down planning. (Batty, 2010)

The first step towards this change in metaphor can be seen in the work of Jane Jacobs, *Death and Life of the Great American Cities* (1961) which launches an attack against the urban policies of the 50s and 60s. In the last chapter of the book, entitled "The Kind of Problem the City Is", Jacobs provides a conceptual basis for her arguments by defining the city in terms of organized complexity, taking into account the definition that the mathematician Warren Weaver postulated in 1948: "Cities happen to be problems in organized complexity, like the life sciences. They present 'situations in which a half-dozen or even several dozen quantities are all varying simultaneously and in subtly interconnected ways.' Cities, again like the life sciences, do not exhibit one problem in organized complexity, which if understood explains all. They can be analysed into many such problems or segments which, as in the case of the life sciences, are also related with one another. The variables are many, but they are not helter-skelter; they are *interrelated into an organic whole.*" (Jacobs, 1961, p. 433)

Ideas about complexity in science were new at the time, and Jacobs promptly realized their importance for understanding cities through her successful association with the theory formulated by Warren Weaver (Bettencourt, 2013). In the boundary between total order (mechanical) and total disorder (chaotic), she identified the proper field of the urban problem.

2.1. Systemic approach to the urban problem.

Planning has always been motivated mainly by the need to mitigate urban problems, such as poverty, disease, violence, congestion, etc. From this need, a tradition was born that sees cities more directly as a set of problems to be managed and, if possible, to be completely redesigned. Its problem-solving strategies are largely defined by the ideas of Control Theory elaborated within General

Systems Theory (Bettencourt, 2013). Through the 1950s and 1960s, various disciplines, including architecture and urban planning, each developed their own range of systemic approaches as a basis for consolidating their structure and practice. The systems were conceived as having subsystems linked together by interactions, thus invoking the idea of a network, but recursively ordered, invoking the idea of hierarchy. The processes that act through the interactions of the subsystems keep these systems in equilibrium through a controller, a specific subsystem responsible for coordinating all the others (Batty, 2010). Transferred to urbanism, this systemic approach sees the city as a system to be ordered thanks to the controller (i.e., planning) that acts to rebalance the system that has moved away from its objectives. What this approach does not take into account, however, is that the city is never a balanced system, because it grows and changes continuously in an unpredictable way. It is a complex system, in turn made up of co-evolutionary systems, whose transformations over time are determined by local interactions of the individual agents that compose them. Planning, as an expression of the "system of institutions", is no longer seen as the solution to the problem, but is itself part of the problem.

2.2. The role of designers.

So, the Science of Complexity tells us that the city is an expression of essentially spontaneous bottom-up processes that traditional planning cannot manage. While, on the one hand it is easy to recognize the failure of the latter especially in our suburbs, on the other it is obvious to question whether a "spontaneous" growth would not give rise to an uncontrollable and indefinite proliferation of slums. Much of the character of diversification and heterogeneity of the cities is given precisely by the fact that, in the pre-industrial eras, they grew in a gradual and stratified way. Today, however, the processes of urbanization take place at exponentially more sustained rates and require an infrastructural support of which only the community, in the form of

the institutions, can take charge as they provide an overview. What then is the role of the designer in this perspective?

"For those involved in planning practice it may look like the complex systems perspective on the spatial city leaves too much unspecified. In particular, it says nothing about some of the elementary choices in planning such as the shapes of streets or neighbourhoods, houses and buildings, specific uses of space, zoning, etc. That planning should leave many of these choices unspecified, to be developed locally by individuals, organizations and communities, is an altogether more radical statement. However, both urban history and fundamental scientific concepts about how complex systems are created and evolve suggests just that." (Bettencourt, 2013, p. 11). So, designers are asked to lose control over their works, or rather to change the way in which it is exercised. That is to say, that the project should be aimed not at producing a finished object but rather at triggering a process that welcomes and benefits from the creativity of the community, which the project itself will host. A project, therefore, should be no longer prescriptive but aimed at guiding the spontaneous evolution of the city system, which makes flexibility (or rather, adaptivity) and indeterminacy the strengths of an open and shared design. Actually, as we shall see, this research in the field of architecture began long before the question of Complexity was formalized in the scientific field. The first ideas about the possibility of a user-driven architecture were affirmed with the Modern Movement, in the context of the research conducted in those years on function, flexibility and seriality.

3. From Flexibility to Adaptation.

The twentieth century witnessed continuous research, in the architectural field, of ideas, techniques and strategies to make buildings flexible - in particular domestic spaces - and able to adapt to changing needs and conditions. The most common application of the concept of flexibility in the Modern Movement involved the use of sliding walls and

folding furniture. This kind of flexibility - defined by Adrian Forty as being driven by technical means (Forty, 2004) - is actually extremely deterministic or, as Schneider and Till define it, "hard", because it makes use of technical elements that specifically predetermine the uses of spaces (Schneider and Till, 2007). It therefore represented an extension of functionalism, as it gave architects the illusion of extending their control over the building even after the period of their real responsibility, i.e., the design phase. (Forty, 2004)

3.1. The architectural relevance of cybernetics.

Starting from the period after World War 2, this research led an ever-increasing number of architects and researchers to experiment with the application of cybernetics to the built environment, using concepts related to it, such as indeterminacy, information feedback, self-regulation and adaptation, all in order to imagine "open" architectures susceptible of modification by users.

The term Cybernetics was introduced by Norbert Wiener who called it "the scientific study of control and communication in animals and machines" (Wiener, 1948). The possibility of equating organisms and machines, according to a cybernetic perspective, was justified by the fact that both entities could be seen as self-regulating machines, able to control (or better reduce) entropy through information feedback.

This systemic approach to architecture allowed the recovery of the concept of function in the work of many

architects and researchers interested in cybernetics, at a historical moment when currents of opposition and rejection of modern functionalism (led by the Italian Tendenza) gained more and more ground. But from a completely different point of view. According to the cybernetic perspective, flexibility was no longer an extension of functionalism, but a property of architectural systems. Starting from the 60s, the concepts of flexibility and function became progressively replaced by those of adaptation and behaviour. As Pask states: "The concept of functionalism can be usefully refined in a humanistic direction. (...) a building cannot be viewed simply in isolation. It is only meaningful as a human environment. It perpetually interacts with its inhabitants' (...) structures and make sense as parts of larger systems that include human components and the architect is primarily concerned with these larger systems; they are what architects design. I shall dub this notion architectural 'mutualism' meaning mutualism between structures and men or societies." (Pask, 1969, p.70)

According to a cybernetic point of view, therefore, the issue of flexibility concerns the mutual interaction between architecture and inhabitants. And it is precisely in the way this interaction was managed, as well as the ability of space to be manipulated by the inhabitant, that it is possible to trace the evolution of concepts related to cybernetics in architectural experiments of the '60s and '70s.

In a first phase (1945-60) in fact, the so-called first-order cybernetic systems were characterized by self-regulation; that is the homeostatic property that guarantees control and stability through negative feedback

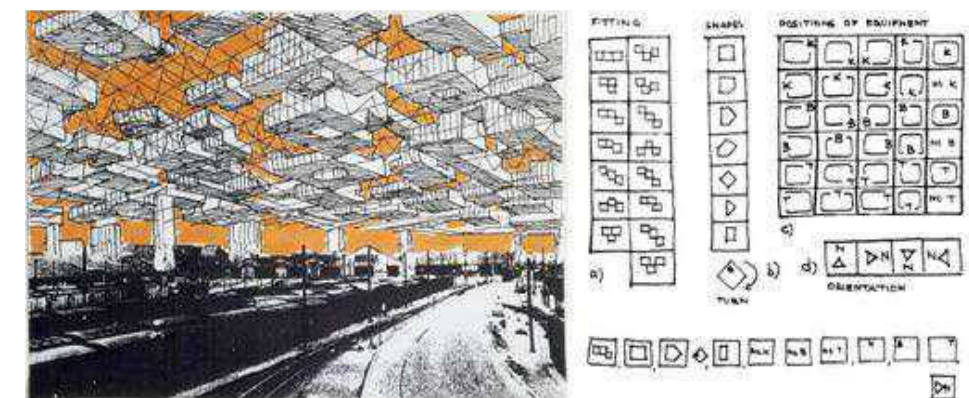


Fig.1. Yona Friedman, *Ville Spatiale* and *the Flatwriter* (keyboard).

cycles, constantly pursuing a target of equilibrium through the elimination of possible unexpected events. We can find these characteristics in Yona Friedman's research, particularly in his text *Towards a Scientific Architecture* (Friedman, 1975). Here, Friedman hypothesized an architectural process where the architect constructs combinatorial lists of spatial configurations aimed at solving the problem of the connection of spaces. Pursuing a user-driven design idea, he proposed the use of a machine, *the Flatwriter* (Friedman, 1971), which would have allowed the end user to access these lists to configure their home within the *Ville Spatiale* (Fig.1). The system, operating on negative feedback loops, acted to correct any "errors"; it was therefore a form of first-order cybernetics. (Yiannoudes, 2016)

The second wave of cybernetic theories (second-order cybernetics), explored the potential of positive feedback and the ability to generate the self organization of systems, approaching an initial conceptualization of adaptive systems (social and environmental). The best-known example of the application of second order cybernetics to architecture is the Fun Palace (Fig.2) by Cedric Price (1961-1974), a mega-structure with recreational and educational functions, consisting of a modular structure within which spaces were defined by mobile and flexible elements. Users could change the configuration of these spaces thanks to a (positive) cybernetic feedback system created by Gordon Pask himself. (Yiannoudes, 2016)

3.2. Computer aided participatory design.

As we have seen, therefore, the concepts linked to cybernetics were extremely useful for defining an alternative approach not only to the topic of flexibility, but also to that of participation in architecture.

Starting from the 10th International Congress of Modern Architecture (CIAM), which saw an explosion of criticism to the functionalist reductionism of the Modern Movement, the proposal of Team X to associate urban and domestic scale in

a relational structure centered on the human inhabitant, became the centre of the debate about the involvement of the user in the process of design that characterized the following years. The idea of a participatory design, which had its roots in the work of Patrick Geddes (1915), was taken up by architects and researchers as a radical design practice during the '60s and '70s, a period of great social struggles and tensions. This period, which had Giancarlo De Carlo as its main protagonist, saw the birth of a design methodology based on dialogue, which involved listening and interpreting users' wishes through the use of questionnaires and interviews. In the same years, however, an alternative methodological approach was developed, more oriented towards an idea of direct participation, seeing in the new digital technologies the instrument, not only to mediate the relationship between designer and user, but also to give the user the ability to transfer his or her own wishes and ideas into a project without the help of an "expert" mediator. In September 1971, the conference "Design Participation" took place in Manchester, during which designers, architects and planners presented ideas for new computational and technological tools and design methods that would allow "wider sections of society to actively participate in the processes of planning and design" (Cross, 1972). Among the participants in the conference was Yona Friedman, in those years one of the most convinced promoters of an idea of architecture where, thanks to the use of digital technologies, the designer renounces authorship in favour of participation, in order to achieve an "architectural democracy" (Friedman, 1975). These technologies are, in fact, the most suitable to manage the indeterminacy and unpredictability implied by the concepts of flexibility and participation.

4. Procedural thinking.

Not surprisingly, the aforementioned researches were among the first examples of computational design; in fact, the application of computational logic to architecture has offered new possibilities for the management of the design

process, redefining the methods of control on compositional systems, improving the integration between different scales and phases, and addressing the issue of unpredictability within the design process. Programming languages have allowed and encouraged a new way of thinking, a procedural thinking with a specific language. The term procedural literature was introduced for the first time by Michael Mateas to describe this potential as the ability to read and write processes and give rise to a procedural aesthetic and representation of the world. "With appropriate programming, a computer can embody any conceivable process; code is the most versatile, general process language ever created" (Mateas, 2008, p.80). So programming is not just a technical tool, it's a way of representing/describing the world through algorithms; as a procedural language it does not offer a unique and unalterable vision of the events it is called to describe, but a range of possible options. The interaction between man and machine can lead to the definition of open compositional systems that would otherwise be unthinkable. The program, developed by the designer to describe the behaviours/processes of the system, is implemented by the computer which returns a potentially infinite set of possible, comparable and unexpected results; a "class" of works. It was this potential that led many artists of the '50s and '60s to prefer computers to traditional media; "With the concept of chance substituted for artistic intuition, programs were written using pseudo-random number generators to create aesthetic objects on early mainframe computers. The defined aesthetic object was seen as a class of works, rather than a concrete graphical outcome. Thus, the first generation of generative computer art pioneers such as Nake, Nees, Noll, and Mohr challenged the art world in a radical way. They fused generative aesthetics with an understanding of aesthetic objects as members of classes of artworks." (Klüttsch, 2012, p.71)

4.1. The Author-Interpreter relationship.

In 1962 Bruno Munari organized an exhibition entitled *Arte Programmata*

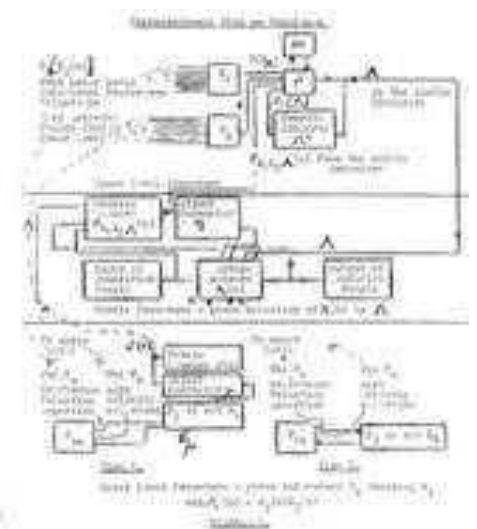
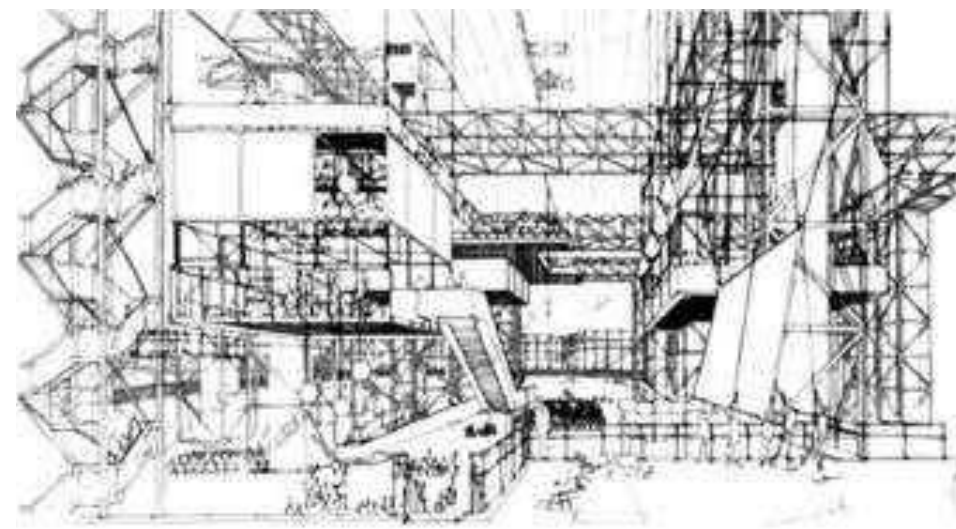


Fig.2. Cedric Price, *The Fun Palace* (1961-1974) and G. Pask, *Fun Palace, Organisational-Plan-As-Diagram*.

(Programmed Art) in the Olivetti store in Milan.

The definition "programmed art" appeared shortly before on *Almanacco Letterario Bompiani 1962* (dedicated to the possible applications of electronic language to creative languages) in a text by Umberto Eco (who wrote the introduction to the exhibition catalogue) entitled "The Form of Disorder" (Eco, 1961).

In this text, Eco emphasized that a work derived from multiple programmed permutations of a basic element is not the best result, but the coexistence of all possible outputs. "Programming" in this context meant something that was not a close derivation from computer language, but was particularly taken into account in its effects on common and artistic language. The word "programming" suggested above all the idea that a programmable premise could lead to an unexpected result (Meneguzzo, 2012). The art critic Filiberto Menna observed that the founding principles of Programmed Art, which accepts the case without sacrificing the pertinent intervention of the artist, can be applied to design and urban planning. He proposed a comparison between the thought of Eco and the one developed by Bruno Zevi during a debate on the theme "Art and society" organized by the Institute of Philosophy in Rome in 1962 (Menna, 1963). Zevi in fact observed that urban planning proved to be ineffective because of its inability to absorb the unexpected transformations of the city and therefore suggested to adopt a

logic of open plan as an expression of a method of continuous planning, which is not crystallized in a definitive design (Zevi, 1963). This idea of an open plan was probably born under the influence of the book *Opera Aperta (Open Work)* written by Umberto Eco and published the same year (Eco, 1962). In this book, Eco saw the integration between scientific and artistic methods as the ultimate reason for the redefinition of the dialectic work interpreter that characterizes contemporary artistic research. According to Eco, "The poetics of the 'open' work tends, as Pousseur says, to promote in the interpreter 'acts of conscious freedom', to place it as the active center of a network of inexhaustible relationships, between which he establishes his own form, without being determined by a necessity that prescribes the definitive ways of organizing the work enjoyed" (Eco, 1962, p.35). An open work is an unfinished work, which is completed by the interpreter when he or she enjoys it aesthetically. Therefore, the aesthetic experience of the work is integrated into the creative process itself, a process that is established by starting from the interaction between the author and the interpreter. According to Eco, every work of art is open, because it is subject to interpretation by the public. The difference between this and the art of the past is that the contemporary artist is no longer limited to being passively subject to this condition of openness of interpretation, but elevates it to a program expressly sought after.

A program that becomes even more

explicit in this sub-category of open works defined as "works in motion", are works that are susceptible of transformation and able to assume configurations not envisaged by the artist as determined by exogenous agents. This does not imply abandonment to total randomness. A work in motion, in fact, is the possibility of numerous and varied personal interventions, but it is not an amorphous invitation to indiscriminate participation. The invitation offers the user the opportunity of an insertion oriented towards something that always remains within the world intended by the author. (Eco, 1962, p.58)

Therefore, a certain amount of control is always present and perhaps necessary. The "loss of control" mentioned above may occur at different times of the design process, implying the involvement of various types of interpreters. The choice of the interpreter and the moment of his or her intervention in the process, define the margin of error (as a deviation from the initial forecast) that the author is willing to accept. Therefore, control is still exercised, but in a different way, that is, creating the system of general rules and constraints within which the potential interpreter is free to act.

4.2. Evolutionary architecture.

In recent years, architecture has studied several new ways and strategies to address the indeterminacy and complexity of adaptive social systems and encourage the involvement of communities as

interpreters. An example of this is the Elemental "Quinta Monroy" project (Fig.3) in which the host community itself is invited to complete the project, becoming in fact the interpreter.

The design solution proposed by Aravena, which responds in the first instance to the problem of the limited budget allocated for the work, finds in the non-finished a strategy of appropriation of the territory and expression of identity. A doubt remains that the non-finished offered by the author is not the best solution to guarantee the best architectural quality, that is, that does not represent that system of rules and general constraints designed to facilitate and maximize the creative abilities of the interpreter. The idea of an evolutionary and adaptive architecture, which accepts the inevitable manipulations by users over time, disrupts the traditional operating modes of design, since it implies a loss of control over the formal definition of the built environment. However, the development of cybernetics and digital technologies has allowed us to define new methods of control over the design process, which is not opposed to, but rather uses, the concepts of unpredictability and indeterminacy, interpreting the new knowledge related to the behaviour of Adaptive Social Systems. As Pask notes, "systems, notably cities, grow and develop and, in general, evolve (...) An immediate practical consequence of the evolutionary point of view is that architectural designs should have rules for evolution built into them if their growth is to be healthy rather than cancerous.

In other words, a responsible architect must be concerned with evolutionary properties; he cannot merely stand back and observe evolution as something that happens to his structures" (Pask, 1969, p.71).

This system of evolutionary rules is in fact a generative system that only digital technologies allow us today to design and manage.

5. Conclusions.

In the last decades, therefore, based on the new knowledge concerning the complex nature of urban processes and social systems and the unpredictability of their evolution, the idea that designers have to take a step backwards has gained ground in architectural research, and come to favour a greater involvement of end users. The scholars of Adaptive Social Systems in fact, not only encourage a bottom-up approach to design, but also state that many of the choices related to the final layout of urban and architectural interventions should remain unspecified so that they can be developed locally by individuals, communities, and organizations, according to their actual targets and needs. Proposals regarding the possible participation of users in the design process have taken place on and off since the early '60s, with results that often betray the intentions. Dialogue, which is the conceptual hub of participatory planning, is often seen simply as communication by recipients of their wishes or needs to the architect/

planner. Yet, as De Carlo said well in advance of the times, it is not just about practical needs, but also about creative needs. A work of architecture, in addition to improving the material conditions of its recipients, must also support their need to communicate by representing themselves. Therefore, the structure of the work must be designed in such a way as to allow continuous adaptations and new transformations, which can be substantiated with the project as a real extension to the project itself. (De Carlo, 1972)

Although in recent years there have been several attempts to welcome the creativity of individuals and communities in the design process (as in the case of Quinta Monroy), it seems that an effective way to reconcile this freedom with architectural quality has not yet been identified, that is to say to identify a design methodology that is capable of guiding and maximizing the quality of creative user interventions. However, the development of digital technologies and the dissemination and application of programming languages in the fields of art and architecture, has allowed not only the appropriation of concepts such as interaction, participation, feedback, unpredictability, interference, indeterminacy and processuality in these contexts, but also the possibility to control and use them to outline a new Aesthetics and creative modality that is based precisely on the (unpredictable) interaction between the work and the public.

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Biography

Claudia Chirianni is an architect, researcher, artist and computational designer. After graduating in Architecture (2010) she worked as designer in international architecture firms, including Miralles / Tagliabue (Barcelona) and Foster + Partners (London). At the same time, she began a research program in the field of Complexity Theory, Cybernetics and Computer Science resulting in a PhD research programme, which she currently conducts at the Department of Architecture of the Federico II University of Naples, and in an artistic production whose focus is the exploration of the aesthetic and design potentials of the concepts of randomness, indeterminacy, self-organization and human-machine interaction.



Fig.3. Elemental, Quinta Monroy, 2003.

Topic 04

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Urban Metamaps.

It refers to research developed in the area of data visualization and interpretation for the study of cities. The data retrieved from visual technologies, such as social networks, web services or other open sources, could shed light on the analysis and diagnosis of diverse urban phenomena.

Architecture and Vacancy.

Empirical maps to read economic phenomena in contemporary cities.

The city evolves thanks to many forces, leading to morphological modifications in the urban structure. These phenomena deposit signs, not always easily traceable on the ground. Reading these traces helps in understanding the influence of external forces on spatial modifications and the connection between built form and development models. The presence of vacancy within the urban fabric is one of these. The presence of vacant units could be a useful indicator to comprehend economic conditions and territorial practices in a city

system. The growing attention on data visualization and big data mapping to describe its evolution is giving us many possibilities in terms of dynamism and layering. The new technological possibilities, traditions of mapping, typical patterns of urban form, and the elasticity of architecture can improve the categories used in urban economics, which would be helpful to better understand such a complex phenomenon.

Key words:

Vacancy, Mapping, Urban Economics.

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A feature of contemporary studies concerning the city encourage foreseeing its development, often through the use of growth models. This process might be related to the growing interdisciplinarity that architecture has been recently pursuing, trying to open-up its boundaries. This "expansion" is not always easy, due to the different methodologies employed in a new field.

The study of urban, social, economic, infrastructural phenomena often passes through a technology that makes use of maps. Indeed, today, the use of big data, IoT, combined with new and old georeferenced graphic representation tools (i.e. Space Syntax, GIS) have made possible the spatialization of non-spatial issues. The use of these tools has been mostly adopted as a diagrammatic revisioning of the data with the aim of a less abstract and more efficient visualization. However, this attitude does not always take the full opportunity that the mapping offers in the description of the phenomena. In fact, the mapping makes it possible to investigate the issues related to the form, not only quantitative - as the recognition of thickening or discarded elements - but also qualitative, linking it to the space which they are in relation to. Moreover, it should not be forgotten that through the reading of the urban fabric it is possible to recognize the consistency and outcomes of a given phenomenon, starting from how these occur, and to modify the space. The morphological analysis made it possible in the past to detect the basic operations and mechanisms of the territory in adapting itself to external forces (Moudon, 1997). This can be pursued using synthesis models, repetitions, aggregations and singularities. Surely, it remains an outstanding question of how, starting from their spatial outcomes, it is possible to recognize and then analyse certain specific phenomena.

The contribution of this paper tries to deal with this specific theme: the relationship between phenomena and space with specific attention to a particular aspect of economics, i.e., vacancy. The intention is to understand which causal links can be identified between the economic and spatial dimension if a

peculiar particular event occurs, which is surely relevant nowadays.

Therefore, the first step will be to define in general what constitutes vacancy. Moreover, also to describe its incidence on the local scale through a literature review. This may help to understand and recognize the phenomena. The second step concerns the presentation of a case study with an attempt to read the vacancy starting from the data collected through official sources and from an on-site survey. The conclusions will insist on two main aspects: firstly, this work has allowed the identification of a different vacancy, not considered by the economic definition; we can define it as "vacancy of use" potential offered by the maps, using examples related to several other studies; secondly, on the value offered by the space as a data collection tool.

1. Observing a specific phenomenon: vacancy.

Vacancy is an economic phenomenon, often used as an indicator able to describe the overall health of a specific market.¹ In real estate terms, it represents the number of unallocated or unrented units in a certain period of time. It can describe the entire market as a unique issue or give a description of different submarkets, as the retail or housing ones. Moreover, the rise of vacancy rate is considered as one of the few numerical markers of possible real estate bubbles. Different from many other sectors in which the occurrence of a bubble does not really become "visible", in large-scale consumer goods branches of real estate, a bubble event can affect not only a large number of people but, consequently, the city and its structure. Due to this, the possibility to detect the bubble before it actually bursts is the goal of many researchers.

However, these phenomena can affect, with different consistencies and consequences, several cities, sometimes within a spread of configurations and at other times into more condensed and easier to be read aggregations.

A reading of the economic bibliography offers a genealogy of

the topic, useful to understand the complexity and evolution of its definition and composition. In particular, the topic attracted the interest of scholars since the '60s when Frank S. Kristof (1965) applied the concept - which nowadays we address as "Vacancy Chain" (White, 1970) - in the New York's real estate urban context. Previously indeed, the concept has been used in the workplace market studies. In his work instead, Kristof used it with reference to "standard vacancies" as a necessity to guarantee families the opportunity to adjust their living condition based on their dynamic necessities. Following the rate of turnover chain in the rental market, he was able not only to better define the needs goal in terms of demand side but also to understand tendencies in house size changes², proposing a series of new policies for the city. Since these first studies, the largest part of literature (Rosen and Smith, 1983) dealt with the definition of the phenomena, trying to identify a common ground in terms of "normal vacancy percentage", quite important if we consider the comparison of different contexts.

More recent work has highlighted the growing complexity of the subject in relation to socio-cultural issues (Struyk, 1988; Hoekstra and Vakili-Zad, 2009) and economical ones. Furthermore, these studies have underlined the increasing relevance of local factors rather than national ones (Granadier, 1995), giving us the possibility to hypothesize a connection between a particular fluctuation with external influences (Gabriel and Nothaft, 2001) and in connection with specific apartment types (Hagen and Hansen, 2010). The topic was also studied in relation to the "shrinkage" of the cities, due mostly to the depopulation of large parts of the city (Couch et Cocks, 2013), pointing out the growing influence on contemporary cities.

This phenomenon has a significant relevance in Europe as well as in America and Asia, particularly in China where its consistency cannot be ignored. Gleaser (2017) has estimated that the quantity of empty houses in PRC, including those built and those sold but remained uninhabited, is around 1.86 billion square meters. This

data has been reinforced by Credit Suisse who, using data from Shanghai University, speak of 49 million houses, equivalent to a 22% vacancy rate³ (Shepard, 2015). This data assumes a further importance if we consider that construction, in the Chinese economic system, is one of the driving sectors and a slowdown of it might strongly influence the overall market.

It's important to highlight that vacancy is not necessarily the same as abandoned, but it is true that "if the vacancy rate stays high for several successive years a part of the vacancy may have developed into structural vacancy" (Remøy, 2010, 48) and might lead to abandoned buildings and areas. This is particularly true in the case of certain buildings type, such as factories, or peculiar issues in relation to a city's shrinkage due to economical recession. Certainly, abandonment turns out to be a quite visible phenomenon, unlike vacancy, in the city's landscape, becoming often the focus of specific policies and local researches. However, it is in relation to property speculation that the effects of the vacancy have had a greater spatial relevance (Marcinkoski, 2015).

However, for the majority of the researches a main point of observation and analytic goal is the use of census and bureaucratic data. Of course, this rarely leads to a precise description of the physical space, as this approach may take into consideration the potential relation of the city structure with the unallocated space. This approach might reveal recurrences in the occurrence of the phenomena, although it is certainly not easy to be detected using data. On the other hand, it can be pursued only using very precise and localised data, such as energy and gas consumption per unit, mail delivery flow, the use of internet services⁴, always easy to be found. Because of this, an indirect methodology based on field observation and mapping might be useful.

Moreover, when we try to observe the presence of unallocated spaces within the urban fabric, the results are sometimes different from those obtained using real estate or property data. This gap suggests the contribution of information that space itself can offer, especially in some contexts, and should not be overlooked.

2. Case study and possible methodology.

Recent studies dealing with the issues of the contemporary Chinese city, as for example the works on New Town and Ghost cities (Shepard, 2015), are an important framework to be considered in the analysis of such economic phenomena due to how widespread it is. Few studies have been conducted in the specific case of vacancy, especially in the Chinese context.

A first trial has been conducted in Nanjing's district of Lao Men Dong. The area is located in the south part of the city and since 2009 has been characterised by many renovation projects both in residential and commercial sectors. This specific settlement has been redeveloped in 2013 in two consecutive phases, changing it from a historical residential zone - mainly composed of courtyard houses dated from the Ming Dynasty - to a shopping district in a so-called "fake antique style"⁵. A second phase not only increased the shopping area but also proposed a residential area characterised

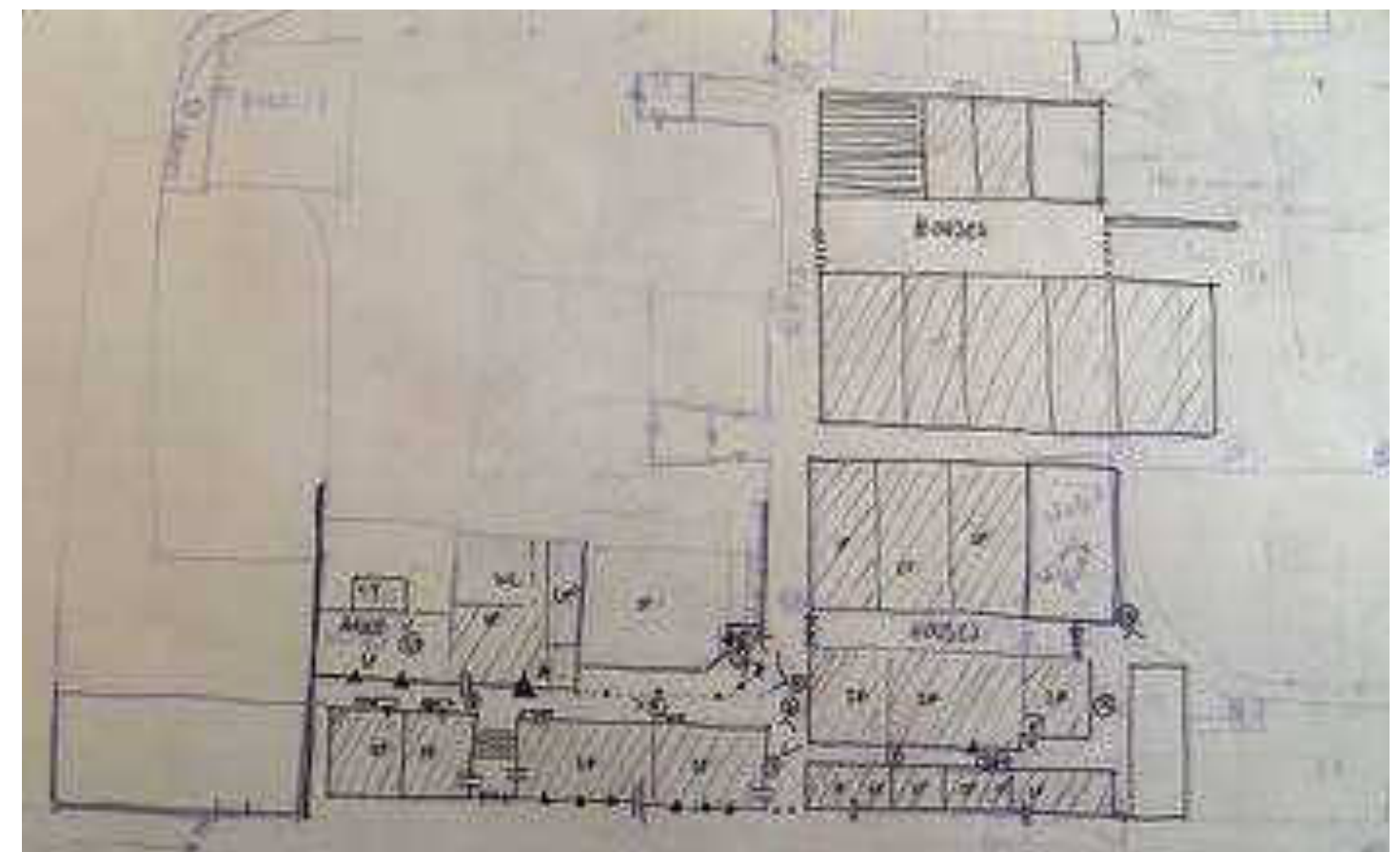


Fig.1

by 80 urban villas in the inner part of it, organised similarly to Shanghai's Lilong.⁵

Lao Men Dong is considered an achievement that provides new touristic possibilities for the city, in continuity with the less recent FuZiMiao.⁷ If the initial real estate operation can be considered a success, at least in terms of people flow, the second phase seems to tell a different story: despite the store signs, the majority of shops have no commercial activity inside and very few people actually visit the area.

Considering this observation, the interest of the work has been to focus analysis in relation to the residential area that, unlike the commercial one, has been enclosed and gated. Non-official data⁹ show this to be completely sold out since the design phase whereas field observation discloses the presence of high vacancy. Probably we cannot refer to this particular phenomenon using the above definition of it; even so, the impact on the city's dynamic is substantial and should be considered.

Due to the impossibility of obtaining additional data⁸, the study has been conducted using site maps and through the analysis of specific constructive elements. A first map, drawn during a number of surveys, searched for all the unused houses in comparison with the ones undergoing renovation (Fig.1), which allows a comparison between data and observation (Fig.2, 3 and 4). In China, the majority of real estate developers sell incomplete construction, complete in structure and facade but with unfinished interiors⁹, so the survey can be carried out from the outside.

To confirm the presence of residents, the first example of a map has been the identification of air conditioning units¹⁰ on the roof of the building (Fig.5) compared with an earlier observation. Unfortunately, not having the possibility to take aerial photos, the highest point of observation has been the city wall, consequently it was impossible to have a complete aerial map. The method, however, may be implemented with the use of a drone, uploaded satellite maps, night light maps giving some interesting confirmation.

Nevertheless, this work has allowed



Fig.2. Position of houses in Lao Men Dong.



Fig.3. Allocated Unit in Yellow based on data.



Fig.4. Vacant Unit, in blue based on field observation.

the identification of a different vacancy, one not considered by the economic definition; we can define it as "vacancy of use" referring to those dwellings allocated but not really occupied. Often this predisposition of a space's use can be observed in a Chinese context, which opens up the discussion not only to the building processes but also on speculative operations and the evolution of contemporary city planning.

3. Mapping as an analysis outcome.

The evolution of contemporary cities has been stimulated by the persistence of different phenomena related to human activities, which can be read as the sedimented layers of those legacies, experienced as resulting from different additions and modifications. This overlapping of signs is the result of

the change in living habits of a specific population, but also of the economic changes. Indeed, the urban fabric is able to record several factors that affect changes in its shape and spatial dynamics. The continual traceability of the maps helps to describe the changes in the urban form and its evolution. Economic and political cycles are, indeed, particularly influential on the city and, on the one hand have been transversally mapped in many morphological types of research



Fig.5. Identification of roof air conditioning.

(Conzen, 1969) without the support of specific data sets. On the other hand, the growing attention on big data and open source statistics, has given us additional possibilities in term of mapping the relationship between the building, its use and its relation to the urban context. Since the '80s, the role of the map in architecture and urban planning has changed and the Space Syntax experience, or model, since the first of Hillier's studies up until now, describes it well. In addition, recent researches used data or images from the web to analyse and suggest new patterns of aggregation in the urban fabric according to clustering methods

applied to amenities distribution (Hidalgo and Castaner, 2015). Furthermore, geomorphological and statistic data were used to study specific urban matters such as Chinese ghost towns (Xiaobin et al., 2017) which created maps using mainly DMSP-OLS night-time light image data. Furthermore, Guanghua et al. (2015) used Baidu positional data and POI to highlight the home location of a number of users¹¹ and describe the vacant parts of the city.

In many studies, a map is used diagrammatically, as a descriptive tool linked with the relevant data. Rarely can the outcome be considered a critical

re-reading of the city's form, aggregated or dispersed. Sometimes the results are clustered but nevertheless this is far from a morphological analysis.

Even more difficult is finding studies that are able to recognise a causal connection between phenomenon, form and spatial consistency. In this regard, the interesting point is to refer not to how phenomena are able to transform the space, but rather to recognise in the space any topological or geometrical recurring events, which are useful to validate possible aggregation or thinning out.

4. Mapping as a spatial analysis tool.

Space, as several scholars have said, is a deposit of signs which are not always consciously deposited by our predecessors (Secchi, 2000). Indeed, it offers information, not only about past, but also current phenomena. What is sometimes difficult to understand is which features make it possible to read a specific issue as vacancy. Sometimes, indeed, despite of the enormous possibilities given by big data, not all the phenomena can be described through official, or informal, data bases. At other times it is also not always possible to obtain certain data useful to analyse a specific phenomenon, because of privacy policies, data already combined from specific information, or national regulation and laws.

In the example of Lao Men Dong, for example, the official data describe a largely sold settlement. However, the site inspection shows a different condition. The reasons for this discrepancy are various. Sometimes it depends upon the aggregated condition of several pieces of published data that makes it difficult to extract specific analyses; but what is really interesting, in this context, is, on the one hand, to acknowledge the value of a direct cognitive approach, based on the observation of some presences and recurrences. On the other hand, there is the gap between the official data and the spatial information; in this case, a spatial approach was needed due to the paucity of data, but these more direct approaches should be considered as an enriching completion of analysis.

Notes

1. The vacancy theory can be applied to many markets such as labour and real estate.
2. As the need of biggest houses or smaller one compared to family and work situation.
3. The "normal" vacancy rate cannot be a global index, it needs to be evaluated per country in relation with the local market and dynamics, anyhow even in Chinese context this percentage it is considered worrying (See Haizhou Huang "Discussion on China's Housing Market: What we know? What we don't" for International Symposium on Housing and Financial Stability in China, Shenzhen, December 2015).
4. These are some of the possible data that can be used to analyse the vacancy and eventually create a map of it.
5. The goal of creating again a traditional atmosphere using an ancient building style in terms of decoration and sometimes type but using contemporary materials as concrete.
6. A specific dwelling that constituted the primary living space in inner Shanghai from 1870 to 1990.
7. A similar shopping/touristic project, realised two kilometres north from LaoMen Dong few years ago, near a famous Temple now transformed in a touristic attraction and museum.
8. We refer to conversation with the area manager and real estate agencies.
9. Without interior finishing as walls, floor, water and energy equipment.
10. An element that is not only recognizable but also always present in Chinese commodity and luxury houses.
11. DBSCAN algorithm based on users position from 9.00 am to 6.00 pm. This system uses a density-based spatial clustering system.

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Biography

Elena Pressacco is a Ph.D. candidate in Architecture History and Project in Polytechnic University of Turin. Her interdisciplinary research deals with Urban Morphology and Urban Economics, with a specific focus on vacancy and real estate speculative events in post-socialist countries. She developed her research also at Tsinghua University (Beijing) and Southeast University (Nanjing) as visiting Ph.D.

Topic 05 / European Urbanization.

It refers to people's movements and materials across Europe and its borders as well as the urban processes that these movements activate or transform. It emphasises how architecture extends and modifies social science research in this area.

The Beguinages Cities within Cities.

Analysis of other hybrid types in the medieval city.

This research explores the paradoxes of domesticity in Beguinages. These organisations can be analysed as a different medieval hybrid type, as cities in their own right as well as cities within cities. They emerged in the European medieval cities in the thirteenth century, and were inhabited by the Beguines for almost eight centuries. This research aims to move towards a more architectural and gender perspective by retrieving, revising and relating this to the work done by other researchers. It is possible to find in the past, the emergence of a new situation where women break with the way of life based on the nuclear family and who have the will to transform the spatial conditions they inhabit - the house and the city that they have inherited from established urban form. This research intends to demonstrate how women were effective in this and the fact that the Beguinage human-space relationship occurred with a gendered perspective. Two issues are analysed which reinforced each other: the changes they made in the spatial properties of the places they lived in; and the multiple-uses that were in the Beguinages. This research shows how women updated the existing domesticity by means of

the Beguinages in the Middle Ages. Some of the architectural strategies employed in the Beguinages contribute to delve into the complex genealogy of the domesticity of the house and the western city, and conclusively to human thought so that it is not only construed from the masculine experience. The Beguinages are a paradigmatic case of transformation of the existing city - becoming more than a gated community, whereby women introduced other ways of inhabiting within the city: the space of intimacy extends from the house to the city, within the city. These complexes might be placed as a precedent for these institutions that emerged in the Enlightenment grouped by the notion of heterotopias, such as prisons and hospitals, which are connected genealogically to monasteries and convents. This paper values its usefulness by perceiving the past as it is, an ocean of knowledge weighed against the illusion of progress that ignores that which preceded it.

Key words:

City, Domesticity, Intimacy, Gender, Middle Ages.

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1. Introduction.

The Beguine communities began to develop in numerous cities during the thirteenth century in the region of the Low Countries, Lage Landen or Le Pays-Bas, an area now occupied by present countries: the Netherlands, Belgium and Luxembourg, areas in the north of France and western Germany. The main cause of their emergence, as explained by Sarah Joan Moran in *Unconventional Women: Religion, Politics, and Image in the Court Beguinages 1585-1713*, was the development of cities in the High Middle Ages which encouraged many women to migrate to them in search of work.

During the first decades of the existence of Beguinages, between 1230-60, the number of inhabitants of these communities rose to hundreds, in some cases they reached a thousand. This figure contrasts with monasteries and convents by comparison at the time, which was much lower, as noted by Walter P. Simons in *Cities of Ladies: Beguine Communities in the Medieval Low Countries, 1200-1560*. Unlike these other communities, the Beguines were accessible to many women as they allowed property ownership rights and the right to work for self-support and finance.

2. The Beguinages: Cities within cities.

The Begijnhof, or Béguinage, in Dutch and French, is the architectural complex which was inhabited by communities of

Beguines. Although the first were built outside the cities and within their own walls for protection, a "short time later they started to settle on the inside, or as the city expanded, they ended up being within the city walls."¹ For this reason, the Beguinages can be analysed from their origin as architectural complexes that emerged within the medieval cities, but even more so, as how this particular human-space relationship occurred with a gendered perspective, a wall that might be analysed as a "hint of condemnation of the present."²

Although these Beguine communities disappeared by the end of the twentieth century, from the three hundred Beguinages that were accounted for in 1566, many still remain. The Beguinages were therefore inhabited by women for almost eight centuries. Ernest W. McDonnell explains in *The Beguines and Beghards in Medieval Culture*, that these complexes were formed without central coordination or a sole founder, and that many were interconnected through medieval pathways. This paper aims to move towards a more architectural and gendered perspective here by retrieving, revising and relating the work done by other researchers.

Therefore, this paper intends to show how women were effective in the transformation of the house and the city they had inherited by reflecting upon two aspects that reinforce each other: on the one hand, by analysing the changes they made in the spatial properties of the places they lived in; on the other hand, by showing how the benefits and challenges

of sharing space by means of the multiple-uses that were in the Beguinages, gave shape to these complexes in serving the needs of the larger community. The hypothesis is that Beguinages emerged as cities in their own right as well as cities within other cities.

3. Domesticity within the Beguinages: Other medieval hybrid types.

The Beguinages were very heterogeneous in their formal configuration, but they had in common diverse mechanisms of how they became set up, and so it is possible to identify the following organisations:

3.1. City Transformation / Type1.

Organised houses around a large central square or garden, with the facade facing the city, this being the rear wall. The Beguinage in Amsterdam founded in 1345 is an example of this configuration (Fig.1, 2 and 3).

In the engraving of the city of Amsterdam from 1572 (Fig.1, zoom), one can see the Beguinage architectural complex in relation to the city. The reversal of the usual access to the houses was the main feature that allowed the complex as a whole, to be used from its interior.

Another engraving of the Beguinage from 1544 shortly before this (Fig.3),

shows an isolated Beguinage. In it, the city into which it became situated or formed is hidden, but the doors of the traditional houses can be seen and although they are not accessible, its condition of a city within a city prevails.

3.2. City Transformation / Type2.

Houses arranged along streets within a separate walled area. Examples of these are the Beguinage in Brussels founded in the thirteenth century (Fig.4 and 5), or the one in Ghent founded in 1271 (Fig.6 and 7). In the engraving of Ghent, one can see that the access door to the interior of the Beguinage is open and inside there are Beguines and laypeople. Even though the Beguinage was constituted as a city within another, it was not always closed off.

The Beguinages transformed the conditions of use of the courtyards and created a meaning to it of interiority, a space of intimacy extending from the house to the city, the space to which all other city inhabitants had access to.

3.3. City Transformation / Type3.

As a counterpoint, it is interesting to analyse the configuration of those smaller scaled Beguinages that were reproduced and multiplied in the same city.

For example, in Cambrai, after the disappearance of the first Beguinage - that of Sainte Ursule founded in 1239 - up to six Beguinages were founded and dispersed throughout the city. The one



Fig.1



Fig.2

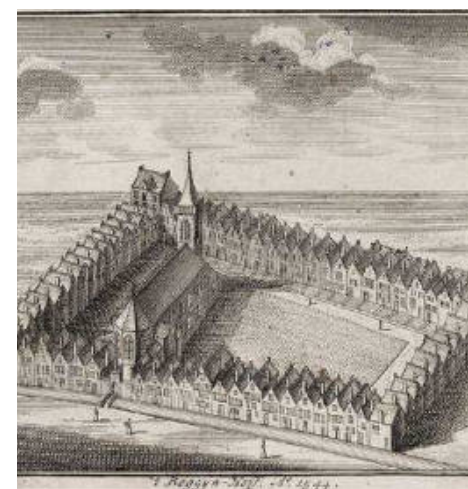


Fig.3



Fig.4



Fig.5

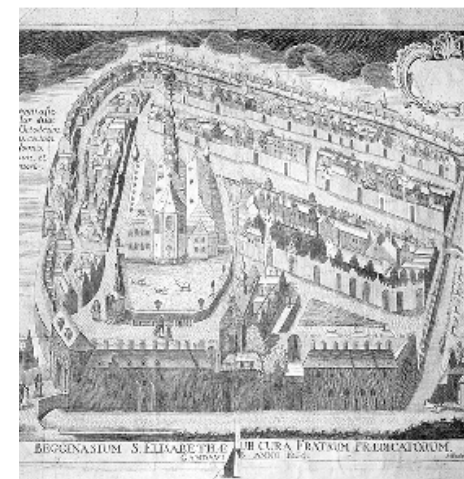


Fig.6

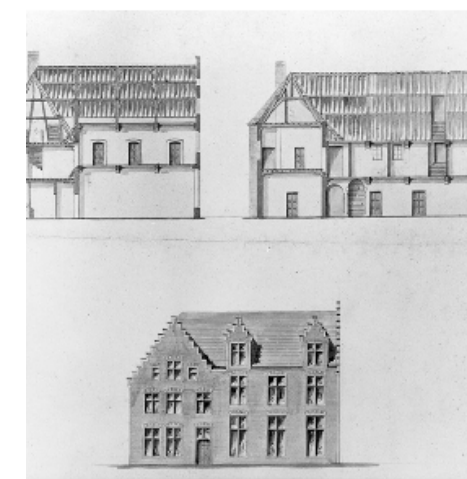


Fig.7

shown here is the Beguinage of Saint Vaast, founded in 1545 (Fig.8, 9 and 10).

These classifications show the diverse configurations of the Beguinages and the fact that all of them were established within an inherited city. The traditional house type is the basis or structure from which the Beguinage is defined, thereby updating the city's traditional

relationship between house and city. It is therefore possible to identify them as a particular form or 'type', and its various combinations to form multiple kinds of developments from topological considerations, hence its particular heterogeneity and mutability. The Beguinages, like the monasteries and the convents, can be considered as diverse types of medieval hybrids. Nevertheless,

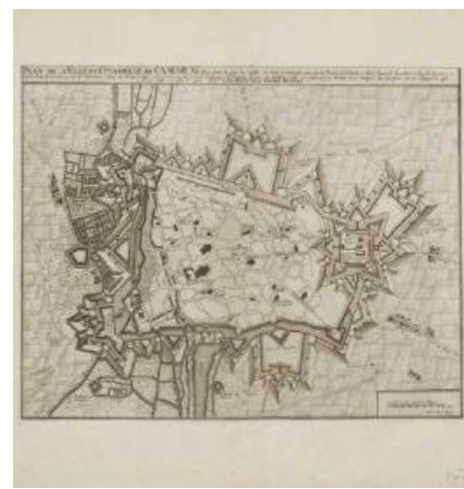


Fig.8

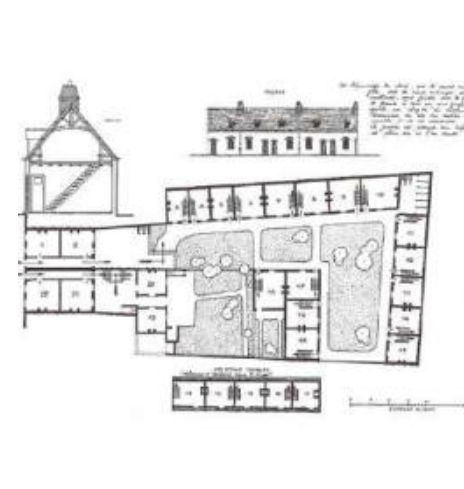


Fig.9



Fig.10

the Beguinages clearly constitute a different type: carried out by secular women and configured from an existing building type that constitutes the city – i.e., vernacular dwellings. The analysis of the Beguinages raises fundamental questions on architectural design issues, specifically about the notion of type within the exiting city. These architectural complexes updated the domesticity by means of the existing house type and the established urban form.

The notion of ‘type’, which has been so used and abused in the twentieth century, regains its definition as structure of the form which is capable of multiple developments; as Rafael Moneo explains in ‘On Typology’, type can be “thought of as the frame within which change operates, a necessary term to the continuing dialectic required by history”, not a mere mechanism of reproduction for “mass production.”³ This definition is closer to that which Quatremère de Quincy gave in the second half of the eighteenth century in the ‘Dictionnaire historique d’architecture’, than the redefinitions made in the 20th century.

The Beguinages were constituted as cities within the existing cities, and in this sense, as in ‘Fragments of an Ideal City’, Dick van Gameren and Pierijn van de Putt describe the Beguinages, or Begijnhoven in Dutch, as an early example of urban enclaves, and placed them as a “precursor for the historical models of ideal cities.”⁴ The authors explore underlying typologies of the urban enclave, and suggest a “collage of utopias” as a suitable model for contemporary city. Beguinages is pointed out as an early example because they achieved the “ideal of a better society”, through the existing house type and the established urban form.

4. Gender and domesticity in the Middle Ages.

This research shows two main configuration modes of the Beguinages in the medieval cities; with these, one can see the variety of compositions that could be adopted within their perimeters. Sarah Joan Moran, in ‘On Locked Doors

and Open Windows’, explains that the houses that constituted the Beguinages go from Beguines to laypeople and vice versa with apparent ease. The Beguines bought adjacent houses or sold them according to their funds. The mixed-use spaces within these architectural complexes, together with the opening of them to the other citizens, were justified by the need to support themselves economically. As specialist researchers have demonstrated, the Beguines worked at washing, cooking, grinding, making beer, textiles, laundering, amongst other tasks. Moreover, as Daphne Spain explains in *The Importance of Gendered Spaces for the Public Realm*, they achieved public importance by caring for the sick, the elderly and the poor, and contributing on the education of the women.

All these aspects gave rise to the radical singularity of the domesticity of the Beguinages, which is that they were constituted as unfinished architectural complexes that could vary by growing or reducing in size. In them, the location of the majority of the elements was circumstantial, versatile and flexible, and therefore in their configuration they far from followed a strict pattern of functional organisation, but rather they took into account other topological variables. Some of these issues point out the virtues and shortcoming of past and current domesticity.

Beguinages might be placed also as a precedent of those institutions emerged in the Enlightenment grouped by Michel Foucault in ‘Espaces autres’ by the notion of “heterotopias”, such as prisons and hospitals, which were configured as cities within others cities.⁵ The Beguinages, as monasteries and convents, may be justifiably added to this list. As Robin Evans explore in *The Rights of Retreat and the Rights of Exclusion: Notes Towards the Definition of Wall*, there exists a genealogical connection between those buildings from antiquity which were destined for the retreat and those that emerged for the exclusion. Both built the “paradoxical possibility of a densely packed nest of isolated individuals.”⁶

Also, Foucault defined domesticity as a way of domination in ‘Surveiller et Punir. Naissance de la prison’.⁷ And Sigmund

Freud in ‘Das Unheimlich’ explored the “uncanny” dimension of the house. More recently, Hilde Heynen point out in ‘Dwelling, Mimesis, Culture’, that the house is the key metaphor that Freud used on his reflection on the uncanny, because “the most uncanny experience occurs in the environment that is most familiar to us.”⁸ Anthony Vidler agrees with this in ‘The Architectural Uncanny. Essays in the Modern Unhomely’. Even more, the etymology of the word domesticity, the domus, is linked to this dimension. So, domesticity in Beguinages might be analysed from the “uncanny” dimension inherent to it. That’s why Beguinages are a paradigmatic case of transformation of the existing city – becoming more than a gated community, whereby women introduced other ways of inhabiting within the city: that space of women’s intimacy was effectively extended from the house to the city, within the city. Even more, the Beguinages are justifiably added to the list of urban enclaves grouped by the notion of heterotopias – prisons, hospitals, asylums, but also convents and monasteries. Because of this obverse of the rite of exclusion, and women was excluded from the city’s public realm, it is the personal right of retreat. That the Beguinages analyses points out the uncanny inherent to domesticity, it unveils that mirror inversion, the possibility of change.

The Beguinages, as in ‘Fragments of an Ideal City’, remains as a source of inspiration for large-scale projects in the city, but even more than that, they might be useful to offer a more in-depth knowledge about the relationship between domesticity and gender, in this case “what has been.”⁹ They enable a deeper understanding of the complex genealogy of domesticity in western culture, so that it is no longer or not only construed from the masculine experience. In conclusion, it has been possible to show how women modified existing forms of domesticity by means of the Beguinages, construed as cities within cities, as are heterotopias, in the Middle Ages. This paper intends to value its usefulness by perceiving the past as it is, an immense ocean of knowledge weighed against the illusion of progress that ignores that which preceded it.

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Biography

Elena Martínez-Millana is currently a Research Fellow -funded by the European Union and Polytechnic University of Madrid Social Council Fellowship- at Delft University of Technology, Faculty of Architecture and the Built Environment, Department of Architecture (2018-19/2019-20). She is a PhD Candidate, her doctoral thesis is titled “Disassembling Domesticity: Inhabiting Heterotopias”, and she is a member of the Collective Housing Research Group at the Polytechnic University of Madrid (GIVCO-UPM) since 2015. This research has been awarded by the Spanish Biennial of Architecture and Urbanism XIV BEAU (2018) –Research Category–, and was included in the Spanish Pavilion exhibition at the Venice Architecture Biennale (2018), moreover, she has participated in several scientific conferences, etc. Elena has been a Predoctoral Fellow in the Architectural Design Department (DPA-UPM) -funded by the European Union and the Community of Madrid-, where she has been Teaching (2017-18/2018-19) and Mentoring (2014-17).

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NAC: Neo-tertiary Airport Cluster.

A New Regional Structure.

In the contemporary territorial context, infrastructural networks of mobility have changed social behaviour and urban structures in a relevant way. Air mobility, along with airport infrastructure, is key in the positioning of city-regions in the global network. In the past few decades the airport has become an urban element capable of structuring the city-region on a local scale. The research in this paper tries to determine the key aspects of this infrastructure and its surrounding territory, based on the analysis of case studies located in different contexts (geographical, territorial-urban and socio-economic). This study brings to light the importance

and capacity an airport can have, not only in the positioning of the region on a global level, but also in the implementation of its local structure. Moreover, these case studies underscore the qualities that can be implemented in the territory surrounding the airport with the aim of encouraging its evolution towards a cluster. Consequently, the infrastructure acquires the implicit qualities of an urban entity identified as a NAC (Neo-tertiary Airport Cluster).

Key words:
City-Region, Airport, Cluster, Neo-Tertiary, Glocal.

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Introduction.

This paper is part of a research at a global scale about the territorial tendencies that take place in certain city-regions connected to airport hubs (NACs).

In the urban context, (physical or digital) infrastructures¹ acquire a crucial relevance when it comes to structuring a territory. Currently, the scope of action of infrastructures in the socio-economic development of a territory is moving towards a regional scale.

The positioning of a region on a global level is linked to the degree of development of its infrastructures and the degree of efficiency of its connectivity. On a global level, competitiveness between regions is evident in various sectors; both being a member of, and being connected to, the global network is an indispensable requisite. The city-region is situated as the main territorial scale in the management of globalisation. It can be considered the point of confluence where the laws of globalisation are intermixed with local realities.²

In this contemporary context, inhabited by the information society, airports play an essential role since they have acquired new functions beyond the

transport infrastructure. New airport-associated functional programmes have consequences for the architecture of airports themselves and the territory that surrounds them, and come to create new territorial structures.

This new socio-economic and territorial behaviour of the airport has become evident over the last two decades. So, in this research the observation of these new territorial structures is framed in a post-industrial context, a moment in which the relationship between the new economy and globalisation, despite its consolidation, still has a margin for development.

To understand the current state, the research retroactively analyses the processes that conditioned the territorial fragment connected to the airport. A key question is to see how the exploration of the potentialities of the new territorial structure linked to the new airport model is capable of assuming and profiting territorially from the great socio-economic potential that a high concentration offers. Additionally, the research studies the importance of the specific local context in the final development and future consolidation of these new territorial structures.

Methodology of a retroactive analysis.

A review of the territory surrounding the airport is carried out from various disciplinary perspectives, identifying the most relevant transformations made in each historic period.

The research examines the processes of European city-region contexts in comparison with the different realities worldwide (Fig.1). Case studies (Barcelona, Amsterdam, Zurich, Frankfurt, Dubai, Singapore, Kansai, Incheon, Dallas-Fort Worth and Memphis) have been chosen that show different situations from urban, geographical, social, economic, political, dimensional and functional points of view.

The retroactive vision is developed through two strategies. Firstly, a regional territorial analysis at different scales of the urban processes and developments is carried out. The territory, urban systems, communication infrastructure, geographical features are drawn and represented with the same parameters and criteria (Fig.2, 3 and 4). Secondly, there is an observation of the territory through a management of statistical data and how it implies transformations in the infrastructure itself and the nearby land.



Fig.1. Case studies.

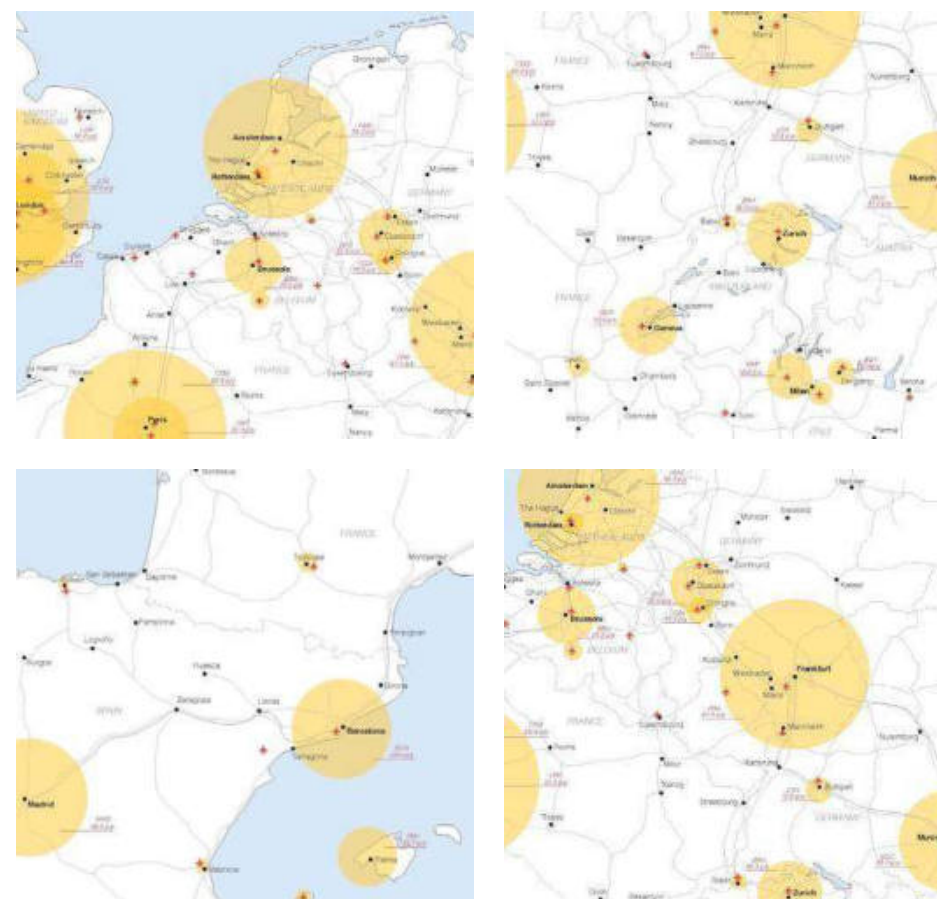


Fig.2. City-Regions, major airports. European Case studies: Amsterdam, Zurich, Barcelona, and Frankfurt (from left to right).

The territorial structures are analysed studying the same parameters in each case and generating a comparative study that then links them all.

The analytical method used in this research is intended to be transversal. References to the regional economy and aeronautical infrastructures support a thesis that should be understood, on a disciplinary basis, as an urbanistic instrument to improve the new city-region as such, but also socio-economically and ecologically, based on the implementation of new Neo-tertiary Airport Clusters (NAC's).

Case studies on airport metamorphosis.

The research studied emerging types of airports capable of structuring the territory of the area to which they belong. As highlighted, this study is based on researching the ten case studies (European and non-European) from a contemporary territorial logic approach. Each of these examples should be able

between the global airport and its regional context.

- Verify and draw conclusions about the typological and morphological diversity that is a result of 20th century airport development.
- Verify and analyse how constantly increasing passenger flows are leading to an overhaul of service areas and the introduction of new neo-tertiary programmes that were excluded from the airport system up until the present.

- BCN / Barcelona - El Prat Airport (Spain).

Airport located in an area that is the focal point of the main logistical zones of the region and protected natural spaces. BCN is in a very good location with respect to the Mediterranean corridor, regional land infrastructures, ZAL and Port of Barcelona. The airport and the port are a model example of interaction between infrastructures. The huge importance of Barcelona as a base for cruises on the Mediterranean is founded, to a large degree, on the number of North-American cruise-goers who arrive from the US via the airport. Furthermore, BCN plays a key role in the development of one of Europe's principal areas for tourism. In this sense,

to respond to the following common statements:

- Analyse the complexity of the relationships and interactions

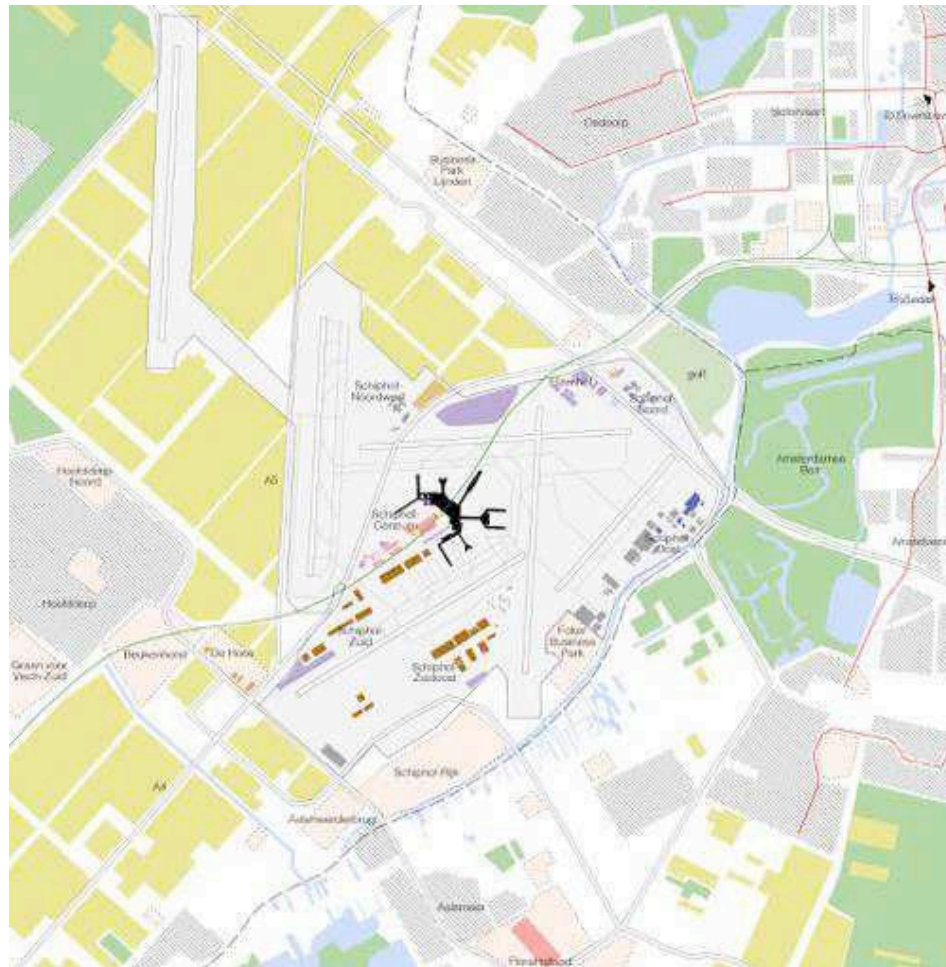


Fig.3. Airport and surroundings' connectivity. European Case studies: Amsterdam, Zurich, Barcelona, and Frankfurt (from left to right).

BCN is one of Europe's most important hubs for low-cost interregional flights, due to both the number of permanent as well as seasonal flights. However, despite the highlighted potential relation with logistics, the airport is maintaining an almost non-existent flow of cargo.

- AMS / Amsterdam Airport Schiphol (Netherlands).

It is Netherlands' main airport. It is located in a hinterland with a strong commercial and export component. The interaction between AMS and its surroundings is influenced by the nearby urban centres (residential and productive), the good connectivity of the airport as well as the productive nature of the same surroundings. AMS and Schiphol Group are pioneers in establishing an airport development strategy that is based on tertiary (and neo-tertiary) activities as a key source of revenue. Logistics plays an important part in these activities. AMS's global ranking is conditioned by its central geographic location (on a local and global level) and the integration of the airport within the territorial structure.



- ZRH / Zurich Airport (Switzerland).

It is a medium-sized airport located near the urban fabric of Zurich, Switzerland's financial capital. ZRH is becoming consolidated as a central element within Zurich's regional structure, especially in the Zurich North area. ZRH's integration into the regional fabric is influenced by the transport's interstitiality and the proximity of the airport (and its activities) to the very same urban fabric. It is configured as a logistic and commercial resource of a city that acts as a global financial centre. To consolidate this behaviour, ZRH's principal projects are based on neo-tertiary development. The new development of The Circle is designed to accommodate tertiary services in the vicinity of the passenger terminals.



- FRA / Frankfurt Airport (Germany).

This airport is located in one of



Europe's main economic regional centres. FRA benefits from a hinterland with a high grade of productive activities. Among these, the financial sector stands out, with an institution of the calibre of the Central European Bank. It is near the city but is integrated into a natural environment. It operates as a very important transit airport on the European scale. FRA has taken advantage of its geographic centrality to position itself as a point of connection between the main European regions and internationally. FRA has a very high proportion of transit passengers; therefore, it has a large number of activities destined for these passengers, such as a significant hotel complex, for example.

This situation concluded in significant tertiary interventions developed in recent years. Additionally, a very good complementarity between passenger transit and cargo transport exists at FRA, which is evidenced by the high number of long-distance flights.

- DBX / Dubai International Airport (United Arab Emirates).

Airport located in the city of Dubai. The model adopted by Dubai as a hub airport is based on an airport-airline collaboration to maintain a steady passenger flow and create a global transit point. However, in the case of Dubai, the territorial complexity of the areas around the hub makes it very different to what could be established in Frankfurt, for example. Yet, although it is located in a sparsely populated region, its passenger and cargo flows are among the highest in the world. Linked to the low demographic growth, DXB is configured as a very active airport system with the aim of reducing dependency on the oil economy. In this sense, Dubai Airport is tending towards becoming a centre of logistics operations able to partially replace, and/or complement, the traditional logistics-maritime relationship that has come to exist between Europe and Asia.

Additionally, a reinforcement of tourism and retail facilities in the city (and the airport) to create interaction with the flow of passengers has been produced,



Fig.4. Programmes in the airport neighbouring territory. European Case studies: Amsterdam, Barcelona, and Frankfurt.

either to strengthen it or take advantage of it. It is the first airport in the region that seeks to position itself as a global hub.

- KIX / Kansai International Airport (Osaka, Japan).

This is a uniquely located airport on an artificial island thus circumventing the lack of suitable space and with good connections to the mainland in Osaka Bay. The geographical position of the artificial island permits very good connections across the bridge by motorway and the Japanese rail system (conventional and high-speed trains). The airport also has a ferry terminal to allow connections by sea to urban centres across the bay, especially to Kobe city and the Kobe airport. The island location allows the airport to be in operation 24 hours a day without causing any particular problems to neighbours, increasing its competitiveness. Also, its positioning on an island resulted in a specific non-aeronautical growth on the mainland. The neo-tertiary area (Rinku Town) is connected via bridge to the airport.

- INC / Incheon International Airport (South Korea).

It is an airport situated on an island specifically tailored to its location. To solve Seoul's growth problems, the creation of a new city/district directly connected to the airport island is being promoted. INC is one of the first examples of an airport cluster linked not only to tertiary activities but also to a massive residential structure (Songdo City). INC acts as a central point for the north Asian area thanks to its geographical position and its territorial and socioeconomic context. Additionally, INC shows good complementarity between the number of passengers and the volume of freight because of exportation (mainly of high added value products).

- SIN / Singapore Changi International Airport (Singapore).

This airport is located in the South Asian region, in the city-state of Singapore.

Its location is key to the development of its global role as a hub. This hub promotes the concentration of innovation and of qualified migrants, which has a direct influence on the economic and social development of the city-state. SIN develops complementary activities that contribute to the global logistics of this city-state that are also based on port activity. SIN is considered to be, alongside the port, a rampart of centrality in South Asia; and a necessary element for the economic, technological and commercial development of Singapore and the SijoRi region.

- DFW / Dallas - Fort Worth Airport (United States).

This airport is located between these two cities in Texas. The central position of the DFW airport, located between two traditionally rival cities that are separated only by approximately 50 km (Dallas and Fort Worth), generates a double interaction (principally of elective affinities) capable of cultivating great activity in this territory. Its effect as a catalyst has directly influenced the regional structure of the territorial configuration. DFW acts today as a complex neo-tertiary cluster with industrial, commercial, cultural, knowledge, leisure and residential activities, perfectly integrated into the inter-regional productive tissue that connects the urban fabric of the Metroplex. It is the largest of all the airports included in this study.

- MEM / Memphis International Airport (United States).

This airport is located in the urban fabric of the city of Memphis. In MEM, the cargo and logistics operations function outside those for passengers; it has a very low passenger flow yet it is the second in the world in terms of the amount of cargo transported. Due to this, MEM bases its operation on cargo and logistics operations management, the urban development surrounding the airport is an industrial fabric. However, the concentration of cargo related activities in MEM (and its surrounding area) does not have a direct repercussion

on the improvement of public transport connections between the airport and the region.

Contemporary evolutionary tendency.

Since the beginning of industrial technology, the infrastructure that has grown the most during the modern-industrial period is probably that of aviation. And it is also that which has undergone the most transformations since the start of globalisation. The airport, understood to be the territorial expression of air transport, has evolved from its military origin, growing in terms of size and complexity.

The territorial and socio-economic equation of airport development has been and continues to be, the effective combination of growing passenger numbers with the quantitative increase and qualitative improvements in the services needed for such increased flows. It is not possible to imagine fields such as knowledge and research, the economy and multi-national companies or tourism, without a highly developed aeronautical sector in the region.

The principal question for this research is whether airport development should allow new types of urban settlements to be established - Airport Clusters- capable of concurrently improving the efficiency of the urban and socio-economic pattern of the adjoining region.

Through the analyses, evolutionary tendency of the airport and the neighbouring territory has been detected. Case studies share a similar evolutionary pattern; however, they show different current states within the global tendency.

Fundamentally, the transformation phases are conditioned by the consolidation of tertiary activities linked to the functioning of the infrastructure, such as the consolidation of great flows, the behaviour as regional centralities, and the influence in the local economy and urban structure.

The evolutionary process undergone by airports from the territorial perspective

can be linked to the following sequence:

- 1) Constant increase in passenger flows.
- 2) The airport generates a transport hub.
- 3) The airport transport hub acts as a key piece in the regional system of mobility.
- 4) The airport is configured in parallel as a technological pole and principal centre of services for the adjoining airport.
- 5) The interaction between the transport hub and the pole of tertiary and expanding services can generate a Cluster - NAC - capable of improving airport efficiency and structuring the City-Region in a greater and more effective way.

This evolutionary process is found mainly in European airports, in cases of infrastructures located in United States, or other territories with an important tradition in air transport. However, if we look at airports located in emerging regions and/or countries, we can easily observe airport infrastructures that start, "from scratch", in the last phase of the highlighted evolutionary tendency; or even that the process of transformation towards the final state of the evolutionary process is developed in a short period of time due to the conditions of the local context.

The findings regarding the transformation tendency allow an understanding and suggestion to intervene in the regional area connected to a major airport in the process of looking for a solution to contemporary and future issues. However, the research highlights the role and potentialities of the local context in addressing these issues.

The research identifies the territorial structure of the NAC as the consolidation of this evolutionary pattern and its final state because of the close collaboration and the synergetic behaviour of the infrastructure and the adjacent territory.

The role of the local context.

Influenced by the new parameters of globalisation, territory is now articulated through networks generated by the global

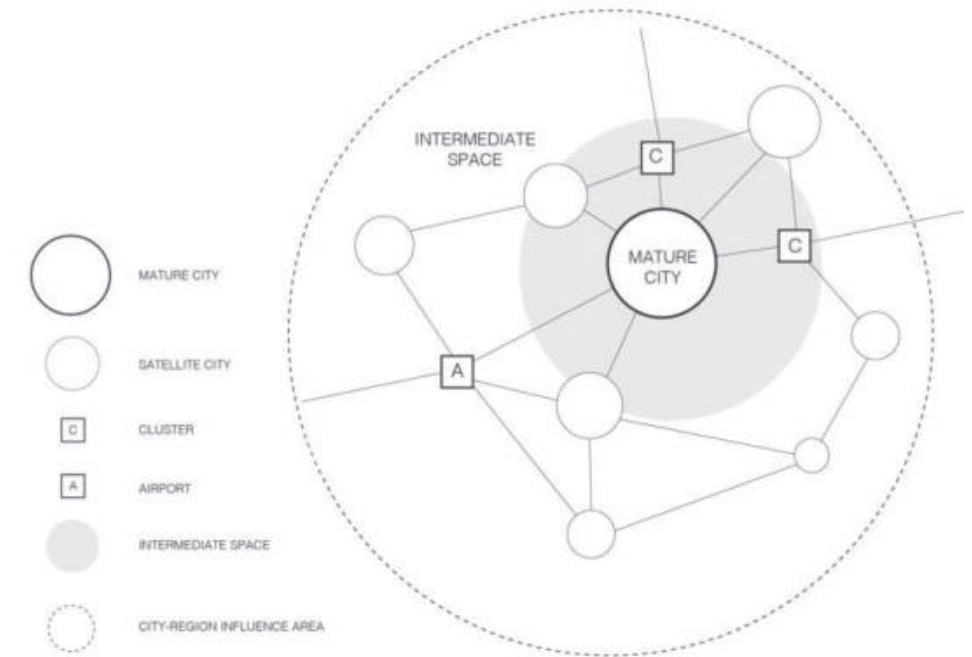


Fig.5. City-region structure diagram.

neo-tertiary economy. In this sense, the national tends to lose importance in detriment to other territorial scales, such as the regional or metropolitan. Hence the need arises, from a global perspective, to return, to some extent, to a perspective that is closer to the local.

The city-region appears as a key player in the new theories of territory, both in terms of structure and management. However, the city-region is not a structure that starts "from scratch."³ Mainly it stems from a restructuring of a territory which is home to a mature city, a series of urban satellites, and a minimum of infrastructural elements that can give cohesion to a new entity of such complexity as to interact as a complex open system (Fig.5).

On a larger scale, maps of flows or activity are not able to clearly define the borders of the country of reference. In reality, these types of mapping are defining a new territorial reality that is a consequence of globalisation, "a great conurbation" associated with one or various cities. The conurbations shown in the maps describe a new type of regional territory.

The behaviour of these new territorial metasystems is highly complex, but there are some elements that are key to their operation. The airport is, in this sense, a

fundamental point both in terms of the perspective of configuration of flows and, due to its capacity, and as a driving force behind local and global activities.

New metropolitan reforms, understood in this research as global city-regions⁴, allows us to discover from the start, three basic developments that have emerged to define the new territorial structure: a marked regional polycentrism, a new ecological regionalism and a new socio-economic regionalism. The theme of urban centrality is no longer exclusively tied to the traditional city centre, and different ways of being central have arisen.⁵ If in the beginning, the centre was directly identified with the traditional (physical) city centre, economic changes have reformulated this situation.⁶ Currently, many of these peripheries have changed to become home to centralities within the whole of the city (recentralisation).⁷ These processes are based on the growth of autonomous centres that initially did not have that connotation (e.g. outer cities and edge cities),⁸ as well as peripheral and rural areas that have gained in prominence. These processes break the mono-centric structure and blur the boundaries.⁹ Urban peripheries no longer have their traditional image and gradually there is evidence of a dispersed concentration with multiple autonomous centres.¹⁰

All the centres and subcentres of a polycentric structure are different and tend to promote their own identity and vocation. But they are also subjected to a certain hierarchy that comes from the differences of identity, historical tradition, and socio-economic efficiency. Even so, the differentiation and hierarchisation of the components of a polycentric regional system neither can, nor should, avoid the existence of a type of reference capable of assuming the external leadership and common regional identity.

For a metropolitan area of dispersed structure - like a region - to be reorganised polycentrally, a certain clustering is needed in reality that would be capable of transforming a dispersed structure into a polycentric one. One of the new clusters could be the NAC developed in this research as an entity that includes the infrastructure and a nearby territory. In a polycentric structure, infrastructures are needed to maximise the networked and unitary behaviour of the whole group. The evolution of this structure will build the territorial foundation for the city-region.

This study aims to react, as much as possible, to this situation, incorporating a specific vision and a new approach to how new global aeronautical infrastructures could positively affect the efficiency of the adjoining territory.

This new urban scenario is inclined to welcome new infrastructural and territorial proposals and constitutes the foundation that stimulates new proposals applied to existing urban systems. In the framework of this investigation, the potential of the airport system beyond its condition as a transport hub should be used to make more dynamic the adjoining regional territory.

NAC (Neo-tertiary Airport Cluster).

From the beginning of the modern-industrial period, the interaction between territory and economic activity has been demonstrated through new types of settlements in the form of industrial clusters.¹¹ Modern theories on centrality promote these proposals, as well as the verification of their advantages resulting

from the interaction between various industrial processes that were carried out in physical proximity.¹²

The NAC arises precisely as a complex urban structure adjoining an Airport (Fig.6), with the potential and complexity to improve the efficiency of the airport system and the city-region's urban and socio-economic template. In this sense, the following concepts synthesise the basic points for the conceptualisation and implementation of a NAC and define its territorial capacities at a regional level.

- NAC's urban nature is not exclusively the consequence of the evolution of an airport. The NAC is a new type of urban organisation and it is designed intentionally to reinforce regional efficiency. The NAC takes advantage of the build-up of strong flows generated by the airport hub and the new territorial isotropy driven by new technologies and globalisation.
- The NAC is a programmatically complex and functionally hybrid cluster. It contains neo-tertiary and service programmes but also can include residential structures. This configuration would have the objective of balancing the proportion of jobs and the ideal number of possible "residents."¹³
- NAC's connectivity and mobility have strong regional connections with direct access from various regional centres and also access via the adjoining airport hub.
- NAC's critical mass and dimensional scale should be optimised in relation to other clusters and sub-centres that make up the regional archipelago.
- NAC's optimum density tends to be high and suitable for the generation of a morphologically compact cluster, in agreement with its free type of structure.
- The NAC tends to configure itself as a new regional centrality. Although its origin lies in taking advantage of large flows created by the adjoining airport, the NAC has a critical mass and a sufficient complexity to operate independently.
- NAC's design and construction should be capable of guaranteeing a high metabolic efficiency.

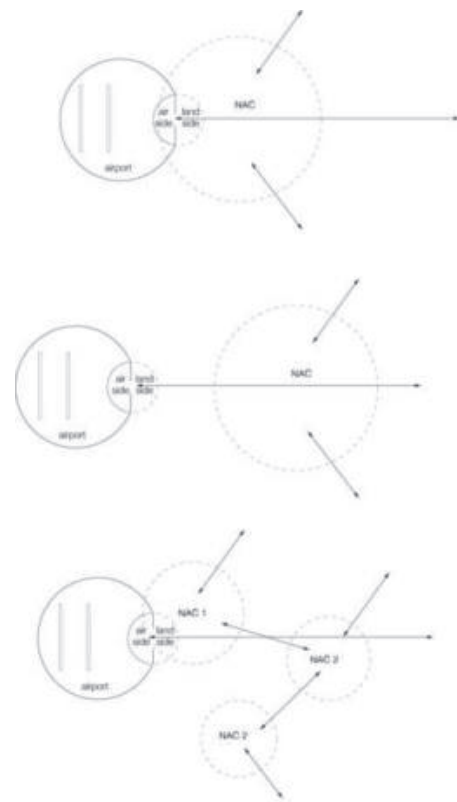


Fig.6. NACs' configuration.

- Airport-NAC interaction can be an opportune territorial instrument for the activation of an unpopulated region with low employment.
- Airport-NAC interaction should become an appropriate territorial instrument to improve urban resilience.
- NAC's architecture should operate as a nexus between the expected iconicity of the Airport, its own local identity and the local context of the region in which it is developed.

It is important to underscore that the points listed above are not apparent in the same way or to the same level of intensity in each case study scenario.

Even though case studies follow a trend towards developing a common tendency, the configuration of a NAC is clearly influenced by the characteristics of the local-regional context. This local territorial-regional reality influences the definition of every one of the NAC's specificities.

(Images created by the author).

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Biography

Nuria Casais. Ph.D. Architect and urbanist involved in practice, research and teaching. She is specialist in territorial and regional strategies, urban design and architecture. She has taught and researched in different institutions such as the Academy of Architecture of Mendrisio (CH), Politecnico di Milano (IT), Barcelona Institute of Architecture (ES), i2a-International Institute of Architecture (CH), ESDesign (ES), and currently at Aarhus School of Architecture (DK). Since 2015 her practice is based in Barcelona developing architectural and urban projects and research in collaboration with Ferran Grau (GRAUCASAIS). Their projects were awarded in several competitions, including the XIV BEAU. She is the co-director of the number 272 of the architectural journal *Quaderns*.

Dismantling and Rebuilding Heritage. What does it Mean in Terms of Memory?

The case of submerged settlements in the study of building restoration, reconstruction and translation of memories.

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This work is part of an international research with a principal aim to study and understand the processes related to heritage caused by the massive construction of dams and reservoirs during the central decades of the past century in Spain and Italy. We studied the repercussions, not only from a building restoration perspective, but also associated fields - such as memory, politics, geography, sociology or anthropology - in order to manage all the "reactions" that engage the topic of *collective memory*. Furthermore, the study constitutes an opportunity to build new concepts with which to analyse (and design) contemporary fields of study for the improvement of strategies for the conservation of the values of villages in areas with high seismic risk or hydro-geological instability.

We present different examples of transferred monuments, or parts

of them, that are significant in understanding the complexity of these processes. One of the main problems has always been to find a proper place to relocate the transferred monuments. Historically, there has always been conflict between the different parties involved, most often the inhabitants of the drowned villages and the authorities. It is important to analyse the arguments of each party in order to understand the significance of these buildings in defining the memory of an entire community. Once the monument has been transferred, it is interesting to study and understand its new significance, not only for the displaced communities, but also for the new population it affects.

Key words:

Building Restoration, Heritage, Submerged Settlements, Memory.

1. Introduction.

This research is part of an international project involving Spanish and Italian researchers whose main objective is to investigate restoration and reconstruction in Spain during the Franco regime and how they are connected to other European countries.

In this context, the main objective of our research is a comprehensive examination of case studies pertaining to a situation common to Italy and Spain: settlements that were submerged as a consequence of the construction of reservoirs in dammed rivers.

These operations, which occurred largely between the 1920s and 1960s, caused a great number of dwellings in mountainous areas to be flooded. Many towns disappeared completely under water which led to different outcomes.

One phenomenon was the construction of new population centres with buildings and structures that replicate the look of the lost villages and ancient buildings, or parts of them. This study reveals important data about why the State and different agents responsible for the buildings' protection believed it was advisable to conserve particular elements. From a technical point of view, it is important to study the experience and the role of the architects involved in the restoration and precedents in the process of dismantling and transferring monuments.

Another phenomenon was destruction and abandonment. When the architectural elements were considered of no patrimonial value, they were submerged and, as happened in many cases, dynamited to avoid the survival of the symbols and values linked to them.

The transformation and affect upon the natural environment and the landscape was inevitable. It involved the creation of new landscapes, with artificial lakes that now are part of our imagery. There is also a more contemporary phenomena, namely the current rediscovery of submerged settlements for tourism purposes.

We study these processes using different source material, such as the construction projects, company letters, newspapers and oral testimonials. We compare this information with the current situation.

On many occasions, communities were displaced from the places they inhabited and were relocated to other localities. In some cases, the displaced citizens were sent to new communities that felt foreign to them.

Whether occupied or empty or consolidated as ruins, the old settlements that these citizens abandoned remained linked to the traditions of different populations.

Precisely with this in mind, reflections have been included from such as those of Piero Bevilacqua and Manlio Rossi Doria that defines the state of the mountain and the interior areas of Italy in the second half of the 20th century as the 'bone' of Italy. This is contrasted with the metaphor of the 'pulp' of the plains applied to the most developed and prosperous agricultural areas.

This 'bone' is characterised by sparsely populated or depopulated lands, a dispersed demographic structure, small urban centres built over infertile and rugged soils, and a lack of communication routes and connections with the cities. They constitute a remote geography of poverty in a world in which the development of capitalism and the processes of modernization were transforming the rest of the territory with a speed never experienced before.¹

So, starting from the monumental restoration and the technical analysis of the dismantling and reconstruction of monuments and their implications, we try to go further, seeking the perceived values of the historic centres that made up this 'bone' of Italy.

The extreme situation of having to choose what to save from the flooded valleys activates the mechanism for selecting future memories; that is, which part of history will be remembered and transmitted to the future.

2. Dismantling entire buildings.

This is one of the most controversial aspects that we analyse. It is well known that all the international Charters of Restoration since that of Athens in 1931 rejected these kinds of interventions unless it is the only way to save the monument, as in the cases we are studying.

Specifically, the Charter of Athens says that "in the event that a restoration is indispensable as a result of degradation or destruction, it recommends respecting the historical and artistic works of the past without proscribing the style of each era, the transfer of works of the place for which they were created, as a principle, should be considered inopportune."²

The 1964 Venice Charter states that "a monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands it or where it is justified by national or international interest of paramount importance."³

Cesare Brandi stated that it is absolutely illegitimate to dismantle and recompose a monument in a different place than the one where it was built. For Brandi, the monument dismantled and rebuilt in another place is degraded and becomes a falsification of itself. The only exception is when salvation of the monument cannot be achieved in any other way; but in that case, it has to be preserved in relation to the historical place where it was built.⁴

In the cases we are presenting, this extreme procedure was the only option to save the monuments.

So, in this work we focus on the different aspects that were considered in order to determine the new location of monuments. Dismantling and rebuilding was a very expensive process that was funded by the companies in charge of the construction of the reservoirs.

Sometimes, it was necessary to declare the building a Monument so that

it would be protected by the different heritage laws.

One of the first cases we can refer to in Italy, is the transfer of the church of San Pietro di Zuri in Sardinia (Italy). Due to the construction of the artificial lake Omodeo, the entire population of Zuri and other near small villages were drowned. The transposition of the church was carried out by the art historian Carlo Aru, who at that time was the super-intendent of historic monuments in Sardinia. The work lasted from 1924 to 1926.

Carlo Aru wrote a book about this important Romanesque monument - published in 1926 when the works were finished - in which he explained all the process. This publication was financed by the company that built the dam, Società per le Imprese Idrauliche ed Elettriche del Tirso.

The first problem to solve was to decide where to reconstruct the new village. Aru explains that the construction company proposed three possible solutions to the inhabitants:

- Aggregate to a neighbouring municipality.
- Move not far from the original village on the same slope in the locality of Seddargious, to which they had been oriented during the long period of negotiations of the expropriations with the company and which had already been chosen by Carlo Aru himself for the reconstruction when he started to plan the translation.
- Move to the Ghilarda platform in the Murreddu area, on the edge of the same slope between the villages of Soddi and Tadasuni. This was the one that was finally chosen.

As Aru explains in his book, the primary objective was not to alter the environment surrounding the monument or the "point of view" from which it could be observed. It was also important for him to keep the church close to the population of Zuri "whose inhabitants had seen it submerged before a superior and essential requirement of civility, their own people and the territory that was for so many centuries."⁵

According to Aru, it was about

conserving an almost unchanged image of the "natio loco."⁶ He stressed the difficulty of solving the problem of relocation since "every inhabitant had his project to be asserted. It seemed that every family wanted the church on the doorstep."⁷ There was also the possibility of having the church relocated in the reconstructed town that had an elliptical square with an area of 1,500 square meters. Although it had been a conciliatory approach between the diverse opinions, Aru was opposed outright; in his opinion the monument would have been completely sacrificed among the narrow circle of the house - all regular - both from a generically picturesque point of view and from that specific perspective.

So instead he chose an area near to the front of the new town on a slope towards Lake Omodeo, at the end of one of the streets on the outskirts of the new town. With this new solution the façade remained centred on the axis of one of the radial ways, so it would be visible from the square. The church would thus dominate over the vast, now submerged, Campeda, which was the centre of the Zuresi economic activity. In that way, from many points of this vast basin, especially approaching the road to Soddi, it is possible to have different points of view.

The criterion of looking for the best aspects for the reconstruction of the monument was very much in line with the principles of the monumental restoration that were reflected in the later Charter of Athens of that time.

"The Conference recommends that, in the construction of buildings, the character and external aspect of the cities in which they are to be erected should be respected, especially in the neighbourhood of ancient monuments, where the surroundings should be given special consideration. Even certain groupings and certain particularly picturesque perspective treatment should be preserved."⁸

Furthermore, in the process Carlo Aru designed a stylistic restoration of the church, according to the tendencies of that time in which he eliminated non original parts in order to 'restore' the Romanesque aspect of the church.

Pilar García Cuetos has studied similar translations of monuments in France and Spain.⁹ According to her researches, the church of l'Assomption in Ambrières, Marne in 1926 - moved because of terrain movements that would had led to its destruction - and the church of San Pedro de la Nave in Zamora, Spain - for the construction of a dam between 1926 and 1928 - were other examples of stylistic restoration made during the transfer.

Also, in the case of the reconstruction of San Pedro de la Nave, we can find different news in the press of the time about the controversy that followed the decision on its location. On the one hand, the provincial council of Zamora proposed its transfer to the capital, Zamora, taking charge of the costs of transferring the monument. However, in the face of the discontent of the inhabitants of the town, the Church enforced the regulations under which the churches had the right to acquire, retain and administer temporary assets; they could not be denied the right to retain their temples, unless overruled by the Apostolic See. Therefore, the monument was moved two kilometres from its original location.

In the absence of sufficient resources of the parish, a popular subscription raised funds for the reconstruction. This is an important fact that enables us to understand the importance of keeping the church close to its original population.

The dismantling and rebuilding of San Pedro de la Nave was carried out by the architect Alejandro Ferrant, who developed a precise technique that he later used in 1957 in dismantling the apse of the church of Fuentidueña, Segovia, Spain. The apse was transferred to New York thanks to a bilateral agreement between the Metropolitan Museum of New York and the Prado Museum in Madrid to recover the twenty paintings plundered from the church of San Baudelio de Berlanga in Soria.

The technique he developed - numbering carefully the disassembled pieces that would later be reconstructed - was also used in the dismantling of several Spanish monuments affected by the construction of dams, such as the exceptional case of the medieval town of

Puertomarín in Galicia.

The construction of the dam of Belesar in Chalada was to prevent the drowning of this entire historical village and other nearby monuments. In 1946 the town was declared *Conjunto Histórico Artístico* so that it could have government protection to safeguard its historical value. The construction of the dam was carried on by the *Company Fuerzas Eléctricas del Noroeste S. A. (FENOSA)*.

The architect who planned the transfer of the historical monuments and the reconstruction of the new settlement was Francisco Pons-Sorolla, architect restorer who was the director of the *Dirección General de Arquitectura (DGA)*, an organization associated with the *Ministerio de Vivienda*.

As Pons-Sorolla wrote in his article "Traslados de monumentos en España. Puertomarín",¹⁰ the translation of a monument "supposes a radical transformation and falsification of all the technical, geographical and historical circumstances that have given rise to the birth of the building in a certain place." The architect continued in his article enumerating four categories he identified in order to explain the system of dismantling, translate and rebuilding of monuments. Those categories are:

- Transfer of ruin with minimal restoration.
- Total transfer of monument with the simultaneous restoration necessary but without the introduction of new elements.
- Partial or total transfer of the monument with important contribution of modern parts of the new project.
- Transfer of different monuments belonging to a set and their setting in a new urban situation.

The architect explained that in the first case - transfer of ruin - the operation deals with elements of archaeological or artistic value no longer of functional use. In the following two cases, the operation tries to keep the monuments "alive" by keeping its possibility of use. In the latter case - multiple transfer to a new group - the two previous cases can be reunited, but the essential aspect of the problem

is constituted by the fact that the new city must be a living museum in where the new houses conserve the important pieces relocated.

His work in the historical town of Puertomarín was an example of the last case. He also transferred two isolated churches San Juan de Coba and San Esteban de Chouzán, Romanesque monuments of the XII and XIII centuries.

In the first case, San Juan de Coba (transferred in 1952-1953), the new location was chosen next to a small inhabited nucleus located at 87m above the old one, and in a place that allowed good visibility and orientation of the church. It was necessary to construct an inclined plane for carrying the material. The architect considered this translation as one of the second type, i.e., where he doesn't introduce new elements. However, minor actions were taken, such as removing the lime stucco from the walls, the elimination of the altarpiece, and the rearrangement of the liturgical furniture. A new sacristy was built in the south facade and a hollow that existed in the original apse to communicate with an attached chapel was eliminated.

On the other hand, in San Esteban de Chouzán (transferred in 1955-1966), due to its poor state of conservation, the architect built a practically new church that conserves the elements of archaeological value of different epochs of the original monument, housing the old apse, and using forms and materials in accordance with the regional tradition, but using a contemporary architectural language.

The new chosen site - just about 100m from the old one - presented greater difficulties of foundations and more contentious issues than San Juan de Coba, because it was a church of greater proportions placed in a mountain of steep decline. The choice of such a rough site to rebuild it was justified for the following reasons:

- Necessity to approach the church from the inhabited nuclei that will remain after the reservoir and that belong to the parish.
- Proximity to the roads and sidewalks of access and intermediate points

between the town and its cemetery.

- Use of wasteland for cultivation in order to avoid further loss to the inhabitants, since the reservoir submerged areas of greater agricultural value thus greatly reducing the sources of wealth of the town.

For the project of transferring the entire village of Puertomarín Francisco Pons Sorolla worked with Manuel Moreno Lacasa.

The new Puertomarín was built on a mound next to its old site, called "Monte del Cristo." A good orientation had been sought in relation to weather conditions and an easy link with the Lugo highway, as well as with that of Sarriá, which crosses the river Miño by a new bridge, built in the same place 30m higher than the old one.

The first important problem the architects faced was the impossibility of transferring the medieval quarters as urban set pieces. This was as much for the poverty of materials in most of the buildings as for the anachronism that implies forcing the displaced inhabitants to live in an artificial village with the unacceptable conditions of the 14th or 15th century, hence all ideas of reproduction of its configuration were rejected from the beginning. As Pons Sorolla said " this would have constituted a reprehensible life-size model-pastiche condemned to death from birth."

As a result, a New Puertomarín Planning was projected, after a statistical study of the needs, life and work habits of its inhabitants, which proposed an appropriate layout to the current rural conditions of the region, its possible extension and good communications.

The construction of the town itself has focused on the program of needs of the different types of inhabitants, public services, official buildings, etc.; and in terms of stylistic criteria, seeking to achieve a regional character adapted to climatic conditions and traditional materials; stone, tile and wood.

In the design of the urban planning of the new town, they studied the possible location of the monuments that were susceptible to be transferred, in order to

maximize the potential of its perspectives and to add value to the new centre. So, the fortress-church of San Juan (XIII century) was placed at the end of the main entrance street, which leads to the Plaza Mayor where they plan to locate the surroundings buildings related to the church: sacristy, rector's house, catechesis and parish dependencies, joined to the church by a minimal annex in order not to mask part of its decorated or important walls.

These buildings, with their public and private gardens, plus the orchard of the rectory and the homes of teachers, complete the triangular urban block and is surrounded by the streets of greater importance in the new Puertomarín, which will be processional routes in the great religious ceremonies.

From the church of San Pedro, only moved was its front and the mausoleum Pimentel. This decision was based on the low value of the rest of the elements and for economic reasons, i.e., due to the high costs involved in the work. It was located at the end of the main street to create a privileged axis, without subtracting the leading role of articulating the town to the church of San Juan, which was located in the Main Square.

Another interesting case in Spain was the transfer of the church of San Juan Bautista of Villanueva del Río (Palencia) to the city of Palencia. Due to the construction of the Dam of Aguilar del Campoo, the church was dismantled by the diocesan architect Antonio Font de Bedoya and rebuilt by the architect of the *Dirección General de Bellas Artes*, Alberto García Gil.

From the dismantling to the reconstruction in 1973 took more than ten years. In that time, the church was stored waiting for its new location. Finally, the *Dirección General de Bellas Artes* decided to locate it in a park in a residential area on the periphery, Huerta de Guadián, where at least they keep the canonical orientation east-west, but which is a clear example of estrangement of the ambiance of the monument, in this case used to create a kind of contemporary romantic garden.

3. Dismantling parts of buildings.

We find many examples of this phenomenon in the study of drowned towns. Due to the high cost of transporting an entire monument, often only the most significant parts were chosen to be conserved. Sometimes these parts were re-positioned in existing buildings, in other cases they were used in the project for a new building.

At this point, it is important to distinguish between planned interventions to save symbolical parts of the monuments from that of the re-utilization of materials of the buildings to be drowned for new ones - in a practical sense (in order to save money and transportation cost). There is also another phenomenon; so many displaced people from drowned villages take with them parts of his own houses (doors, windows) for putting them in their new homes. That was a way to take with them, at least one small part of their houses embodying a memory.

One of the elements that authorities seem to seek to conserve are the portals of the churches. The entrance to a church has always had a strong symbolism, so they were usually a part given great artistic interest. Maybe both for the artistic and the symbolic values, they were frequently dismantled and rebuilt as we can see in the cases of Borgata Chiesa di Pontechianale¹¹ in the Italian Alps, and in Cenera de Zalima in Palencia, Spain. From this church a Romanesque portal was rescued and installed in one of the rooms of the Monzón de Campos castle.

Still, we can find other examples that show us the importance of reusing parts of the submerged monuments - as is the case of the campaign carried out by the old inhabitants of the submerged Walser town of Agaro (drowned by the homonymous dam in 1939); when in 1995 the lake dried up, two columns of the old chapel of Agaro were recovered using a helicopter. Finally, the columns were repositioned in the church of Ausone, near to its original location.

This could be considered a new

concept of reimpiego widely used in the ancient times, especially during the Middle Ages, where parts of ancient buildings where reused in new constructions for different reasons. One of the most outstanding was to recover the symbolic value, or the roots of the population, especially when, as in the Italian case, they were part of a former large empire. Parts of monuments were trophies that acted as reminders of the glorious past. For the inhabitants of the submerged settlements, those parts have a meaning; they constitute a material link with the vanished village.

In the introduction to the published proceedings of the congress "Il reimpiego in architettura: recupero, trasformazione, uso" held in Roma in 2007,¹² we find a key idea about the re-utilization of parts of former architectures. This process saves these objects from oblivion, but at the same time, isolates them. Even if this process creates a sort of "metamorphosis" of them, the fact remains that these metamorphoses are life-saving both for the missing building and the memory of the place. As tenuous as they are, these remains still retain the memory of an original monument in which is an echo of remembrance or we see as a memorial. Preserved, these fragments are relics.

4. Conclusions.

The disassembly of buildings could be a metaphor for the reverse; the retrospective journey that this research has taken through the field of architecture. From the more technical and specialized part, this research brings us back to its own fundamental concept; why architecture is not only a construction, nor a technical matter. Architecture which is dismantled and reconstructed tells us about its original meaning. Transferring monuments or parts of them became the explanation of the need to respond to a social need of the inhabitants of the submerged settlements.

As the construction of dams is always located in mountainous regions, the people affected by this artificial flooding were people who historically came to the mountains and accepted the harsh living conditions that this entails. When



Fig.1. The reconstructed village of Borgata Chiesa di Pontechianale (Italy). The actual church contains the portal of the submerged one.

the flood happens, they spring back, abandon their land for the benefit of that which we have defined as the 'pulp', to which this renunciation will provide water for cultivation and electric energy. While these interventions will create new job opportunities in the mountains and entail a certain type of economic wealth, the trauma of seeing one's roofs and roots submerged will always be a constant, as evidenced by the diverse attitudes of these inhabitants with respect to their old houses, which tells us about the social and the memory role of architecture.

Nowadays we find many novels that uses this argument as a scenario of the action or as the main subject itself. Among those that come to mind are: "Resto qui",¹³ "Distintas formas de mirar el agua",¹⁴ "Todo lo que sucedió en el valle."¹⁵ In all of them, the narrative of flooding and reconstruction is treated as a process that allows us to consider deeply the theme of the uprooting, resignation and the vital links that are established with the buildings and with the territory itself. In addition to this, there are important studies in the social field, among which we must highlight the recent exhibition "Region (Los relatos). Cambio del Paisaje y Políticas del Agua" held from December 2017 to May 2018 at the Museum of Contemporary Art of Castilla y León

curated by Bruno Marcos and Alfredo Puente. This included research on the transformation of the territory produced by the construction of large hydraulic works, with special attention to reservoirs in the northeast of the Spanish province of León (Porma Reservoir and Riaño Reservoir).

The results of this research not only allow us to increase the historical knowledge of what happened and the processes that enabled them, but also is useful for the design of new project strategies for the future. We have seen that in all the cases studied, the population showed an active interest in having the monuments moved as close as possible to their new homes. On the other hand, we can acknowledge that the transfer of monuments was seen as an opportunity to restore them, returning them to their original state. But above all, their new location also raised the problems of procuring the best possible views and perspectives. We find, however, a range of positions when relocating them, from the construction of a sort of "museum city" to house them - as was the case of Puertomarín - to the most careful study of Carlo Aru for the San Pietro di Zuri Church and, at the other end of the spectrum, to the total estrangement of the church of Villanueva del Río in Palencia.

Inverting the analysis of the detailed study of the conserved and moved parts, could be a way to understand which of the most outstanding parts of the pre-existing architecture were, and those that the various bodies in charge of their management decided to maintain in order to preserve the collective memory. Those 'saved' parts are the new milestones that this exceptional situation creates. Even if they totally lose their *genus loci*, they continue to have a value as an image, as material 'saved' from the flooding. They isolate themselves from the history of the rest of the architectural elements among which they were constructed and which remain submerged. They become the only surviving witnesses to the existence of the rest. In this process, they become charged with a strong meaning, with a significance and added value for those who knew them, which allows us to research fields such as memory, politics, geography, sociology or anthropology. All 'reactions' that engage the topic of collective memory are an opportunity to build new concepts which we can use to analyse (and design) very contemporary fields of study that go beyond the field of architecture, themes and topics extremely relevant to Italy, such as those related to villages in areas with high seismic risk or hydro-geological instability.

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Biography

Irene Ruiz Bazán (Saragossa, Spain 1983) is a post-doctoral research fellow at the Department of Architecture and Design of the Polytechnic of Turin (Italy) for the international research involving different European countries: The 'osso' of Italy. The case study of the submerged settlements: restoration, reconstruction and translation of memories.

Turin as Exploratory Field of Migration flows and Multi-ethnicity.

Urban design case study exploration.

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With migration flows, cities receive an increasing number of newcomers who bring with them different cultures and backgrounds, and who have urgent needs for housing, language training, schooling and jobs as ways of becoming inserted into their new environment. In the case of Turin, migration history is strong and at the present time the number of foreigners living in the city represents 15% of its total inhabitants (Istat, 2017). This paper aims to understand the insertion spaces that newcomers have, within a multi-ethnic area where many foreigners are concentrated. The research combines the physical dimension of the city - its form and materiality - with the social dimension which recognizes the city as a mixture of communities, interactions, places and common

facilities. The study area chosen for this research holds 40% of foreigners as residents and, within it, a problematic site is identified. What type of projects can contribute, fit and help the insertion of foreign newcomers into the city? An urban design exploration is proposed as a response to the site and its inhabitants' needs. For this exploration, concepts of typology and collage technique are developed as tools or ways of approaching a design assignment. The resulting project has the potential to consolidate the area with the generation of new spaces needed for cultural and social exchange.

Key words:

Migration, Multiethnicity, Informal-Spaces, Regeneration.

1. Introduction.

We share spaces in cities with others who in many ways are not like us, and we need to find ways of co-existing in these spaces (Sandercock, 2000). Current and crucial social phenomena like migration, represent a force of social change that cannot be ignored or taken for granted, since it also brings new values and new habits to the city. With inward migration flows, cities receive an increasing number of newcomers that bring with them different backgrounds, and who have urgent needs for housing, language training, schooling and jobs as ways of inserting themselves into their new environment. The study of migration flows is an imperative aspect for understanding the transformations of the physical and social dimensions of cities. In the case of Turin, the city has a long migration history; it has always been a destination city for migratory flows. These flows and reasons for human movements have changed over time and the city has responded in different ways: from the generation of peripheral "borghi" and "borgate"¹ to the building of industrial infrastructure and housing projects, including the current development of regeneration policies that involve re-designating urban areas - "case del quartiere"² - and cultural associations that help the city to become a hybrid inclusive place. Even though inclusive areas are available, the demand for welfare spaces is higher than ever.

This demand makes studies relevant that deal with and generate welfare spaces. Spaces that propitiate encounters help make the multi-ethnicity of the city evident and brings opportunities to ease the process of integrating newcomers. For the development of the research presented here, two phases were taken into consideration: the first one dealt with demographic research and mapping, the second one dealt with a design exploration developed in response to the findings of the first phase.

2. Migration flows and Multi-ethnic area in Turin.

The city of Turin has always been a destination for migratory flows due to its history, geographical position and economic situation. One of the most important migration flows the city experienced happened after the capital of Italy was moved to Florence in 1864. A few decades after this change, Turin became the leading city in terms of progressive financial and manufacturing systems. These new resources required a very large workforce. Inhabitants of the surrounding valleys started to move into the city's suburbs, gradually changing the appearance and fabric of the urban environment. A second flow of newcomers came after the First World War when industry recovered and workers from the

region of Veneto and other regions in the north-east of the country started to fill the city. The Second World War was followed by another period of economic recovery that brought hundreds of thousands of immigrants, especially from the south of the country. As for the last 25 years, the globalization of population flows has become very common. Large numbers of people are leaving their countries due to war, political unrest, or in seek of brighter futures. In this sense, the city of Turin has been characterized by a profound change in its demographic structure. The first immigrants to arrive to the city from the latest flow were mainly from Africa, China, the Philippines and South America. A second flow brought people from Albania, East Europe, including countries from the former Soviet Empire (*Osservatorio Socioeconomico Torinese*).

At the present time, the number of foreigners living in Turin makes up 15% of its population (Istat, 2017). Within the 92 administrative zones of the city, the areas with the highest number of foreign inhabitants are Borgo Dora, Borgata Aurora and Monterosa, with more than 5,000 inhabitants per area, representing 40% of their respective residents (Fig.1) (Comune di Torino, 2017). The research presented in this paper, analyses an enclave defined by the three administrative zones aforementioned. This analysis aims to understand an area of the city that has an apparent complex morphology and that has received an

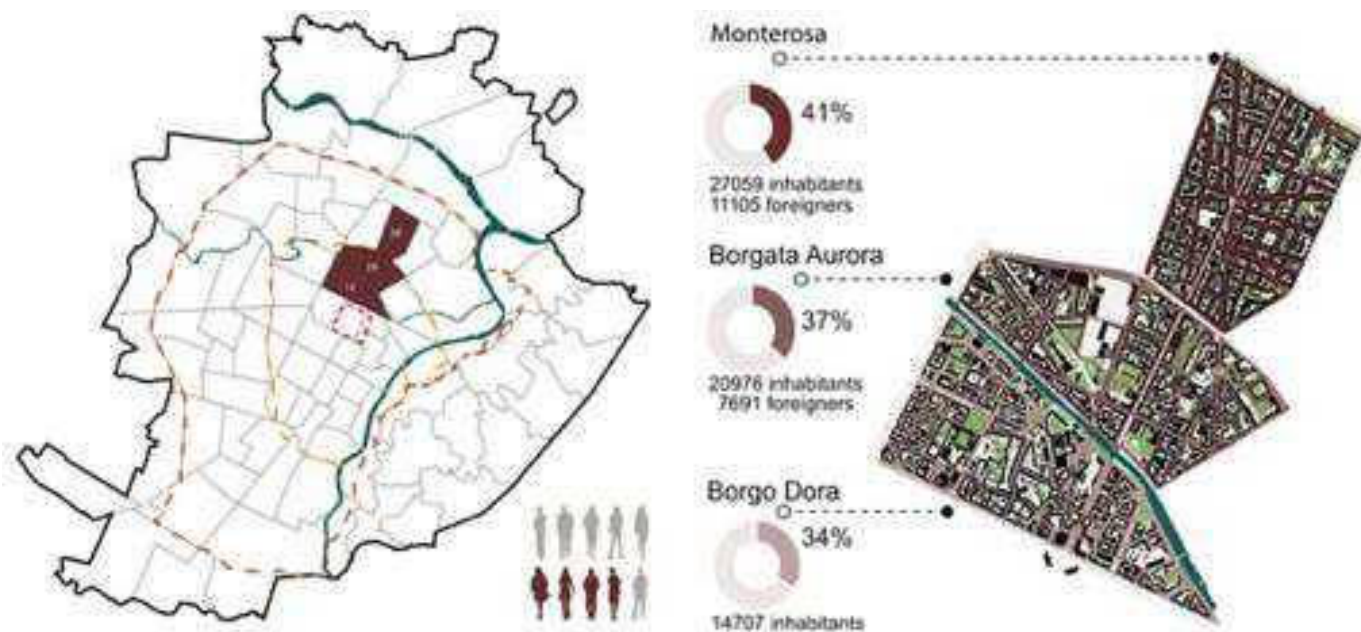


Fig.1. Areas with the highest number of foreign inhabitants in Turin.



Fig.2. Religious and cult spaces in study area.



Fig.3. Cultural associations spaces in study area.

Fig.4. Educational spaces in study area.



Fig.5. Markets and small ethnic businesses in main commercial axis.

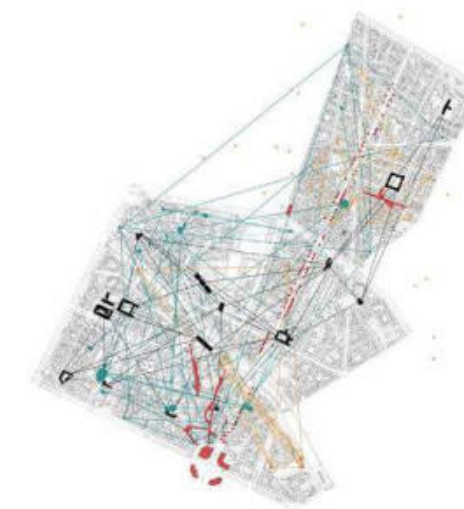


Fig.6. Spaces used as ways of insertion in the study area and recognition of intervention site.

increasing number of newcomers that now generate the social phenomenon of multi-ethnicity. The study uses maps to clarify, or dissect, the general physical characteristics of the area and links them to the activities that serve as ways of inserting migrants into the city. (Fig.2 and 5) The most recognizable ways found of insertion are: use of common open spaces; participation in cultural and religious events; enrolment in educative institutions; opening of local businesses; and use of welfare spaces. The use of open mapping sources for the analysis was crucial.³ The decomposition of this piece of the city takes into account the fact that every form (of the territory, of the city) is the result of a process of progressive association of parts, and that it makes sense to break it down and investigate its components, but only if its substantial unity and indivisibility is taken into account (Conzen, 1988). The analysis of field data recollected and synthesized with the maps, gives a starting point for the development of the second phase of the research, the urban and architectural design exploration that addresses the problematic situation recognized in the area. (Fig.6)

3. Urban Design exploration.

The second phase of the study involved identifying a problematic site within the analysed area. This site represents a void in the context and in the social history of the neighbourhood. It presents many challenges related to its morphology, social history and use, since it has been abandoned for more than 20 years. Even though it has been used informally as a common space, the current spatial condition has made the place used by people dealing with drug trafficking, insecurity, homeless occupation, delinquency and a perception of insecurity. Since the site lacks a defined use, the area is considered an informal space (Fig.7). Informal spaces are seen as empty and meaningless due to their temporary absence of an attributed function. The current physical conditions of the site are the result of various events that changed its morphology in time (Fabbian, 2015). The reconstruction of



Fig.7. Current situation of intervention site.

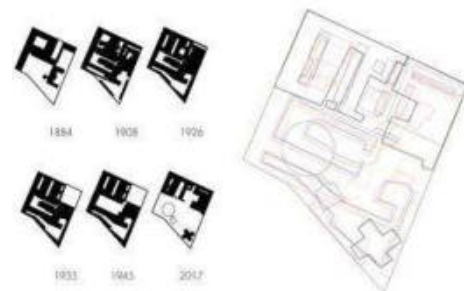


Fig.8. Site's morphological transformation and superposition.

these changes is evident when historical maps are compared. The temporal scan of the development of buildings on the site shows how the number of constructions, their form, their uses and their responses to the context changed in the last 130 years. The diagrammatic superposition of the compared morphologies (Fig.8) helps to understand what morphological elements have been constant during these years and what elements have suffered greatest changes. In general, the constant elements that appear are: the composition of the site's border and the consolidation of the northern corner of the site with volumes that respond to the city's typological development. Moreover, the superposition of two elements stand out for its contrasting characteristics of form: the circular concrete area in the western side of the lot; and the cruciform building at the south. Both elements appeared in the latest development periods and represent the current and pre-existing condition that have been taken into consideration for the development of the project in the next stages of this study.

The dissection of this piece of city and gaining an understanding of its immediate context, helped the development of ideas that would unify the elements of the site while respecting the identity of what was generated over time. With its physical and social needs, the site offers

the opportunity to generate spaces that allow social interactions. A project on the site adding needed spaces, can work as a way to generate a sense of belonging. Interventions in this type of spaces need to be a two-way process in which spaces are created and modified as they are lived in and used.

Ways of approaching an architectural design assignment are infinite. For this study, and taking into consideration the contextual analysis explored in the first phase of the research, the design strategy dealt with building typologies and the technique of collage. This strategy involved the recognition of how far functional types correspond to morphological types. This exploration worked as an attempt to use form, not as a fixed representation, but rather as a field of possibilities where internal forces of chosen morphological types meet with exterior constraints of the context. The result of the study materializes into a complex building project that responds to morphological, functional and social needs. The project foresees public open spaces and a community garden, residential buildings, media library and classrooms, a headquarters for cultural associations and an auditorium. The complex has the potential to develop over time into an inclusive space for existing citizens and new comers. (Fig.9 and 10)

To sum up, in order for a city to

evolve, differences in its demography need to be incorporated, accepted and enhanced. Multi-ethnicity should be addressed and the generation of projects that establish a dialogue with the needs of new-comers as well as those already living in the area, serving as a platform of insertion into the city. The current conditions of the area studied are the result of various events that changed it over time. The reconstruction of these changes becomes evident when maps and demographic data are analysed. The findings of the study show how the spaces are currently being used in the area and how newcomers introduce themselves into the city through common activities. The understanding of the site's conditions as a sequence of events makes the proposed solution specific for this particular case. The response to the site's conditions needed to be a sensible one. Sensible to the local differences found in its demography, while maintaining an overall stability with the context where it was proposed (Allen, 2009). In this sense, the site offers, with its physical and social requirements, the opportunity to generate spaces that would allow changing experiences and interactions between the different groups living within its surrounding context. The project presented has the potential to consolidate the area with the generation of new and necessary spaces for cultural and social exchange.



Fig.9. Rendering of the proposal.



Fig.10. Rendering of the proposal.

Notes

1. Borghi and borgate refer to the terms "borough" and "township", usually used as synonyms to describe peripheral areas of a city. In the case of Turin though, Borghi refer to ancient settlements formed in a rural context and borgate originated after the placement of the toll fence of the city. (Davico, 2014).
2. Turin has invested in the generation of projects that could make the city an inclusive environment. The "case del quartiere" are examples of this urban regeneration efforts. These projects develop in diverse social contexts and offer services destined for specific citizens that live in the surroundings. (Devoti, 2015).
3. GEO portale of Comune di Torino, Google Earth open source and site visits were used to map the spaces.

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Biography

Ana Ricciardi. Architect born in Ecuador in 1991. Has carried out professional and training activities in Ecuador and Italy. Teacher at Universidad San Francisco de Quito (USFQ) from 2014-2016. MSc. Graduate and current PhD candidate at Politecnico di Torino. Research interests include urban morphology, urban and social sciences, landscape and urban regeneration and comparative studies. Her work shows strong commitment to proving that the integration of social, historical and cultural perspectives into design helps to produce the most suitable development of a project. Interested in the development of studies and projects that generate an interface between the physical and the social dimensions of cities.

Topic 06 / Citizen-Centric Smart-Cities.

It refers to research aimed at humanizing the initiatives of smart cities that relates to the citizen as a receiver of actions upon them. Actions that improve quality of life and / or serve to transmit information for planning and designing smart cities.

BI & Data Science for Architects.

'The Building Data Library': an online platform to share and analyse building data.

Data-driven design processes have been increasingly implemented in the training of new generations of architects and have been focused on BIM (Building Information Modelling) both to create and manage building documentation and in parametric design tools to generate complex geometries.

At the same time the ability to collect data across the building life-cycle is exponentially growing but, although this digital data management could improve the design quality of buildings in terms of operational performance and user experience, there is still a lack of architects trained in integration and data analytics.

'The Building Data Library', an online platform of analytical 3D models of buildings, tries to solve this issue by applying Business Intelligence (BI) and Data Science (DS) tools to promote digital data management in order to make informed decisions beyond our own expertise and intuition.

These kinds of databases will play a paramount role in the near future where Machine Learning (ML) will lead to the automation of many design processes.

Keywords:

Data-Driven Design, Machine Learning, Business Intelligence, BIM, Design Process.

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Fig.1

1. Improving the quality of buildings and cities in terms of data.

The AECO Industry (Architecture Engineering, Construction, Operations) is aware that making inappropriate decisions at early stages of architectural design has a huge impact on the social and financial value of buildings.¹ Because of that, a lot of resources and investment are aimed at developing tools and processes that minimize risks in the early design stages.

Building Information Modelling (BIM) and Geographic Information Systems (GIS) are methodologies that have emerged as a logical consequence of these huge efforts. In spite of that, as architects and urban planners, we know that these useful software implementations minimize errors and speed up design and documentation processes but do not guarantee the design quality of a smart building or city.

To talk about design quality is to focus on how our buildings and cities serve their occupants in terms of operational performance and user experience. Therefore, we need methods to verify the starting design goals in order to correct shortcomings or implement better solutions in our next designs. Collecting and analysing data throughout the building life-cycle can provide a useful benchmark in order to make informed decisions beyond our own expertise and intuition.

supporting decision-makers throughout the building life-cycle

Other business areas and industries have achieved great advances in Big Data analysis. In our field, when we talk about a full portfolio of projects and their performance - sensor data, occupancy data, energy data, or even purchase data - we are starting to talk about a large amount of data. And in this scenario, Business Intelligence (BI) and Data Science (DS) emerge as suitable methodologies for architects and urban planners.

2. Architects have always worked with data. What's new?

Experts in databases have been overwhelmed by the success of the term 'Big Data', an area that they have been studying for more than 40 years under the name of 'very large databases'.² We have the ability to calculate and accumulate information that could hardly have been predicted a few decades ago and storing and conveying information in real time is increasingly affordable.³

This ability to collect data via smart buildings, smart cities and the Internet of Things (IoT) and the speedy advances in Artificial Intelligence (AI) will lead to the automation of many design decision-making processes. Here 'smart' is not only domotics, it is about managing data because software and device technology change rapidly, but data persists. Hence,

it is needed to inform our design decision-makers about integration and data analytics.

As architects, we are used to working with data as a start and end point. We do not produce buildings or cities. We produce instruction documents from pre-existing condition data. In fact, our layouts are documentation views of a digital database: the BIM/GIS model. Although we know that analysis is not enough to produce outstanding proposals because our creative process is proactive, the quality of our answers will be determined by our capacity to formulate the best questions. And these merge better from an accurate management of a large amount of unstructured data.

3. 'The Building Data Library', a collaborative platform to share and analyse building data.

How can we implement this digital data management to improve the design quality of buildings in terms of operational performance and user experience?

First, by using BIM software to build databases of spatial 3D models that work as data repositories throughout all phases of a building life cycle (design, construction and operational). Second, by integrating and analysing data with BI tools. And third, once the volume of data is significant, by developing predictive models based on Data Science methods.

To contribute to spreading this workflow among architects we are launching 'BILI. The Building Data Library' (Fig.1), an online collaborative platform of analytical 3D models from exemplary buildings that visualize their most relevant data, space planning, performance and key design features, through BIM and BI tools.

Applying spatial analysis of outstanding building samples that have been tested by the passing of the time, expert opinions or optimal post-occupancy evaluation, can be a useful starting point to introduce a design process based on digital data management.

4. How BILI applies Business Intelligence & Data Science methods.

A methodology based on BI and DS should take into account the following steps: collecting, processing, analysing, predicting. Our work-flow redefines them:

- Extracting: scraping tools, text mining, sensors, websites, post-occupancy surveys, social networks...
- Processing: data wrangler tools and data integration (ETL).
- Modelling: databases design and analytical BIM modelling.
- Visualizing: BI dashboards and maps, BIM viewers.
- Improving: Genetic Algorithms based on Neural Networks.⁴

Our online platform: 'thebuildingdatalibrary.com' develops this methodology by defining two sets of building data: 'Datacard' and '3D Model'. (Fig.2)

'Datacard' gathers building attributes in five categories: Identity, Description, Performance, Spreading and Opinion. '3D Model' is produced using an automated process called 'Model Generator' and it is based on room spaces with semantic attributes. At the moment we analyse: Usage, Core, Circulations, Volume, Public, Evacuation and Shape.

Both 'Datacard' and '3D Model' can be mapped with new data categories at any time, for example, to collect post-occupancy evaluations.

Finally, we could benchmark the

design quality of the building with aspects defined by the Design Quality Indicator (DQI)⁵: Build Quality, Functionality and Impact.

5. Our 3D Model approach: spatial modelling vs constructive modelling.

It is important to clarify that if we use BIM software to model the samples we analyse, we are not interested in modelling the constructive elements of these buildings.

As architects, we know that in our design process the spatial model plays a paramount role as a framework for the constructive model, and its conceptual

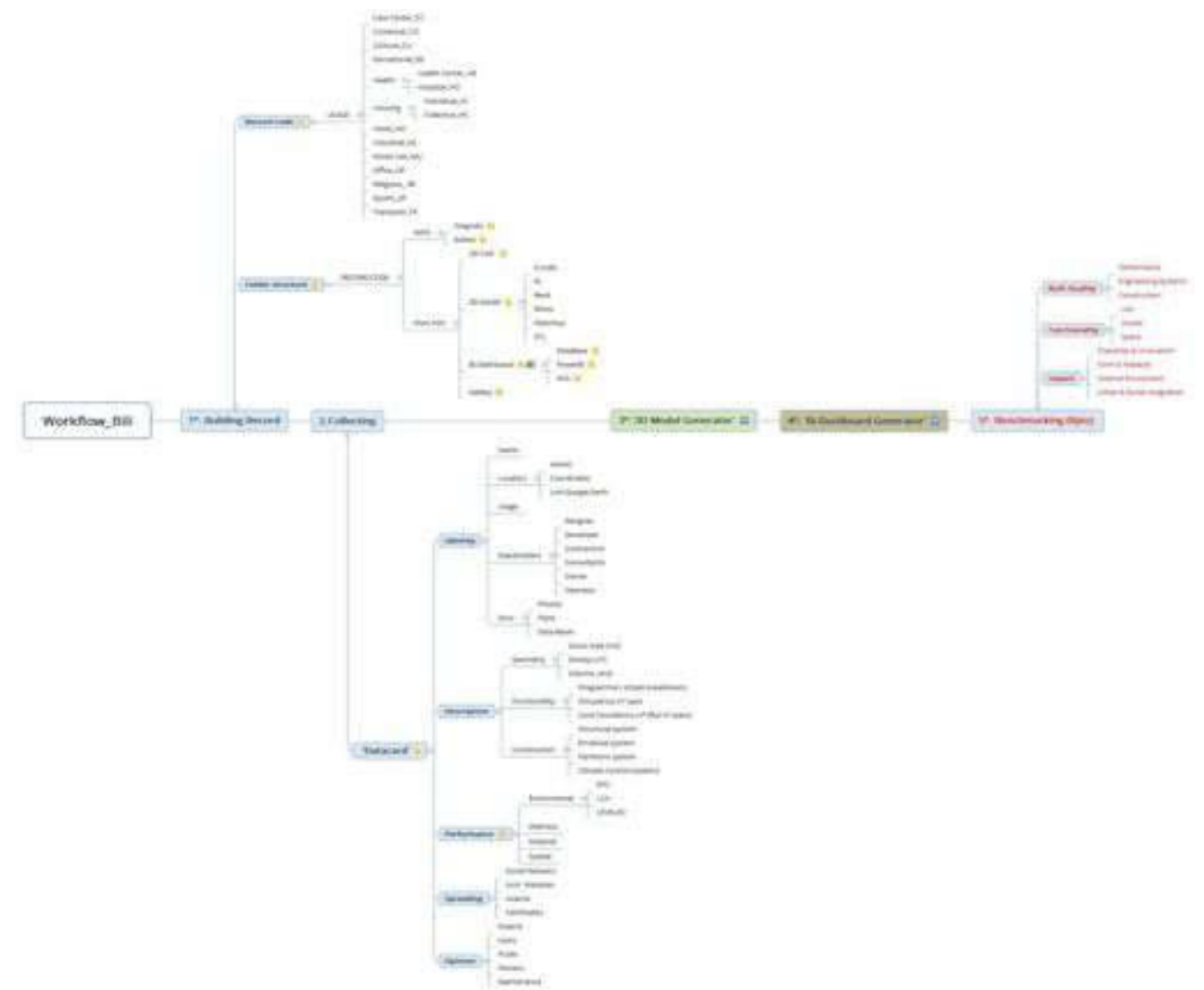


Fig.2

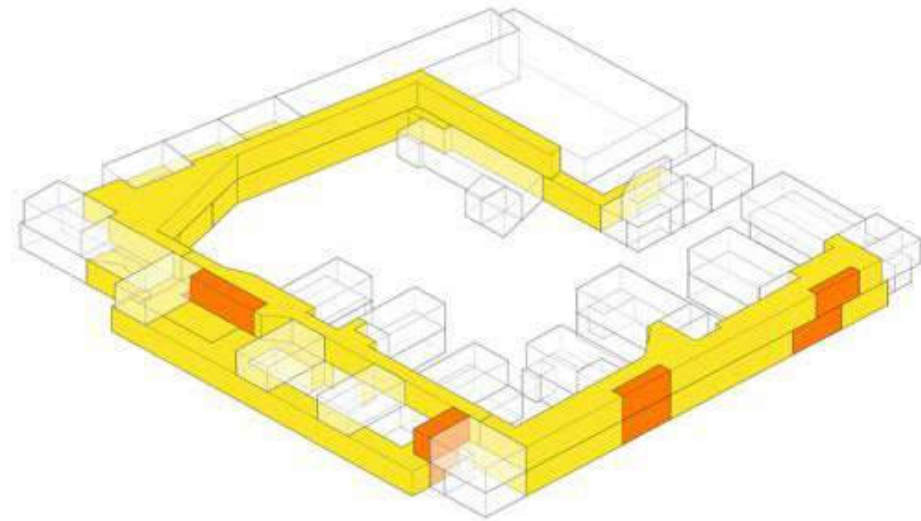


Fig.3

feature endows a great flexibility to the architectural process. This means that for the spatial planning stage it is not necessary to define the materiality of its boundary elements.

The main BIM software brands are developed on 'object-based programming' and define every constructive part of a building as an entity. These constructive entities are the boundaries of other spatial entities named in different ways depending on the software used: room, local, space, etc.

Spatial entities are very useful for the management and the visualization of the spatial data because they are defined as a compound of geometry and associated attributes, but they have limitations in a spatial modelling workflow because BIM is not mainly focused on a buildings' spatial analysis. Even taking into account their limitations, our 3D spatial modelling

proposal is based on BIM spatial entities due to its widespread use. In our particular case we use the object 'room' from Revit™ and we visualize our four dimensional spatial analysis with different colour codes:

- Circulation: marks vertical cores and circulations. (Fig.3)
- Usage: assigns the same colour to spaces with similar usage.
- Space Type: differentiate space types depending on their boundary faces.
- Volume: marks masses and voids.

This BIM Spatial Model will provide us with data of its spaces related to their geometry, dimensions, topology or typology in an alpha-numeric data table, so that we can process this segmented or aggregated information in the way that we think is most convenient. Business Intelligence tools such as PowerBI™ can be very useful in defining 'dashboards' and

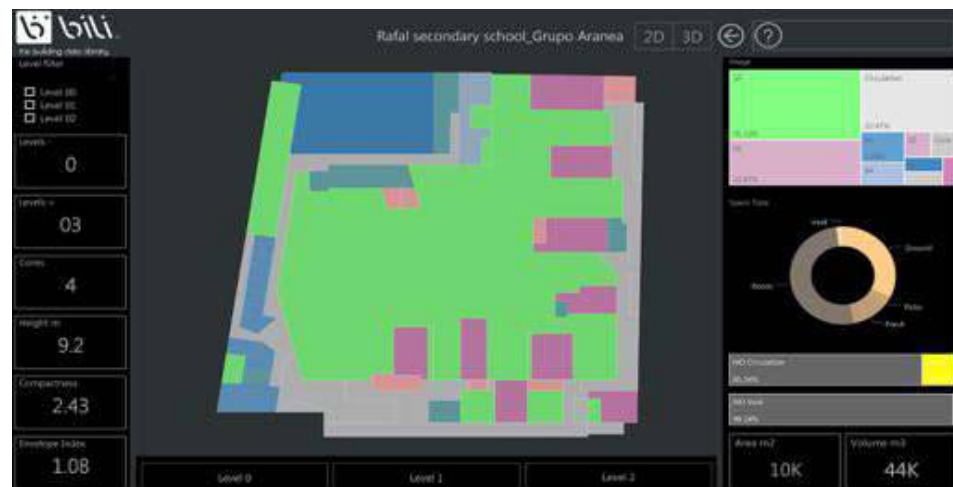


Fig.4

indicators that allow us to compare our proposals with other reference models in order to assess the quality of the design of our buildings.

It should be noted that for the type of 'benchmarking' proposed, the precision of the modelling and the data is not relevant, since ratios are more useful than absolute measurements.

6. Laying the groundwork for an ML-based architectural design.

We must delve into the enhancing of the quality of buildings through the improvement of their spatial framework since this gives support and coherence to all the elements and systems of the building.

The development of a library of buildings based on BIM spatial models - even more if they are used as a data repository - can be very useful either as a catalogue of reference projects, as a didactic resource for spatial analysis or, in an advanced stage, as a database for training Machine Learning (ML) models applied to the generative design of buildings.

Machine Learning (ML) is a subset of Artificial Intelligence (AI) that can provide us with the ability to transform learned data into architectural proposals by using algorithms. If we focus on the branch of Reinforcement Learning (RL), we can find tools oriented towards this design optimization in the family of Genetic Algorithms (GA) where a 'fitness function' could determine among thousands of possible solutions which of them might have better design quality.

Fortunately, the community of programmers in this field is growing increasingly faster and ML does not require much-advanced programming learning on behalf of architects, only a large amount of data to work from. And here is where a platform of 3D models like 'The Building Data Library' could play a paramount role.

Notes

1. See: The MacLeamy Curve: https://www.researchgate.net/figure/The-MacLeamy-Curve-9_fig1_315359204.
2. Conference on Very Large Databases VLDB 2018 will be held this year in its 44th edition.
3. In 2015, the storage capacity of public cloud data centres stood at 170 exabytes worldwide.
4. There are a lot of interesting experiences about space planning optimization: see 'Autodesk MaRS Office by The Living Studio. <https://vimeo.com/193915345>
5. <http://dqj.org.uk/>

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Biography

José Juan Fructuoso (Elche, Spain 1970). With an accumulated know-how of 20 years developing architectural and urban design programs, several projects awarded and published in architectural media, broad experience in architectural competitions and more than 15 years using BIM methodology, nowadays I am involved in an innovative web platform: 'The Building Data Library', in order to develop my passion for technology and Architecture.

1995 - Master of Architecture (M.Arch) Universidad Politécnica de Valencia.

2004 - Research: 'Between Kunst and Bauen'. Universidad Politécnica de Valencia.

2004/06 - Lecturer. Proyectos Arquitectónicos. Universidad Politécnica de Valencia.

2009 - Paper: 'Thinking the housing. Building the city'. Congress: Housing, Business and City. Elche.

2009/12 - Submissions: 24 architectural competitions. Spain, Portugal, Switzerland, México.

2014 - Unfinished PhD Thesis: 'Rules for an Ideas Competition'. Universidad Politécnica de Valencia.

2016 - Self-published: 'Half a dozen. 6 retail projects for MTNG by 5151'. Issue.com

2017 - Business Plan: 'The Building Data Library'. Universidad Miguel Hernandez.

2018 - Executive Programme: 'Big Data & Business Analytics'. ENAE Business School.

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Symbiotic Data Platform: 'Prototype 1'.

A Receptive-Responsive Tool for Building Thermal Comfort Optimization.

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Regarding our on-going research project, 'Symbiotic Data Platform', the main objective is to combine the existing technologies (Building Information Modelling and Internet of Things). The proposed platform uses the existing building information model to formulate an upgraded network of information and make use of the floating real-time data for optimizing building energy performance, user satisfaction and ambient quality, as well as enhancing productivity, energy efficiency and sustainability. While proposing the platform, the objective is to empower the user with their 'own' data flow.

The main aim is to create 'Real-Time Information Models' that takes reference from data collected by sensors and use it with the existing information from BIM. The real-time data and the BIM data can be monitored, or used as a control factor for decision making, as well as

automation for the smart systems used in the built environment. Even though the platform can address various fields on a conceptual framework, to simplify the testing of its functioning, this paper will only focus on the thermal qualities and user comfort regarding the temperature data.

In this paper, the research focuses on the theoretical background of the research project by considering the content within the literature review, as well as explaining the project itself by the data collection from 'Prototype 1'. The project is currently at the development stage of the interface, and the implication phase of the 'Symbiotic Data Platform'. However, in this paper we also discuss further stages of the project.

Keywords:

BIM¹, IoT², Responsive Architecture, Interaction, Building Thermal Comfort Optimization.

1. Introduction.

'Symbiotic Data Platform' is an interdisciplinary research project, which includes Building Information Modelling, interaction, computation, data mining, sensor technologies, modeling and simulation, architectural and engineering vision and social studies' insight.

The main focus and objective of this paper are to analyse occupant behaviour & needs regarding their real-time energy usage and thermal data; while the aim is to optimize their satisfaction, comfort level, energy efficiency and the ambient quality of the space, by 'taking advantage of the existing BIM data of the building'.

The platform proposes 'Real-Time Information Models' to create interactive environments; human-machine interaction for comfort optimization. As the term 'Interactive Architecture' indicates, those models "include contributions from the worlds of architecture, industrial design, computer programming, engineering, and physical computing" (FOX & KEMP, 2009). The design thinking behind the project, uses as a reference to the 'interactive architecture' concept, by aiming to enhance this theme while combining two existing technologies.

The significance of the research is to take advantage of the massive existing data on material, location, energy analysis, cost and function information for further interactive use. This objective addresses both lean construction³ and sustainable environment concerns related to energy efficiency, material and digital means. Moreover, the inspiration behind the project is the BIM regularization and adaptation that has been carried out worldwide for the last decade. Referring to this global BIM adaptation and regularization process, this technology is becoming a mandatory tool to be used in AEC⁴ industry. As a result of this regularization and adaptation, in the coming years building models that are based on data will be the only legal documentation for the construction industry.

Thanks to BIM software, the architectural models and construction details are documented digitally in

databases. The initial idea of the 'Symbiotic Data Platform' comes from the excitement that big data is also open to access upon request. Regarding this practical shift in documentation technique, it allows architects, engineers and other related designers to access the information on the built environment with real values, and allows the use of that information for further changes in the operational phase of the building. Last but not the least, BIM is an advantageous process for AEC industry by creating an efficient and sustainable solution for the project workflow by being interoperable between various disciplines, as well as being easy to use and also making the documentation internationally valid. Proposed as the ultimate documentation software, and giving the possibility to foresee the optimum material / workforce / economic savings, BIM has great potential when its data is combined with interactive tools to give more accurate documentation. For enhancing the potential use of BIM, 'real-time data' should be embedded in its technology.

2. The Theoretical Background.

Since the project is an interdisciplinary piece of research, the theoretical background of it is also wide. Yet in this article, only 3 important contexts will be focused on, so as to cover the foundation of the literature review; that is the *Fourth Industrial Revolution, Sustainability and Energy Efficiency and Lean Construction*. Apart from the technological backgrounds, which are the BIM and interactive technologies, there are strong theoretical ideas that lay behind which cannot be underestimated.

2.1. "Fourth Industrial Revolution."

Throughout history, generations have developed several industrial revolutions, within their capabilities and addressing their needs. Building upon the first and the second industrial revolutions, Jeremy Rifkin⁵ coined the term "Third Industrial Revolution" in 2011, by blending the digital revolution with energy efficiency

and the economic changes based on the new developments. Rifkin, specified the 5 pillars of the new revolution as following: "The five pillars of the Third Industrial Revolution are (1) shifting to renewable energy; (2) transforming the building stock of every continent into micro-power plants to collect renewable energies on-site; (3) deploying hydrogen and other storage technologies in every building and throughout the infrastructure to store intermittent energies; (4) using Internet technology to transform the power grid of every continent into an energy internet that acts just like the Internet (when millions of buildings are generating a small amount of renewable energy locally, on-site, they can sell surplus green electricity back to the grid and share it with their continental neighbours); and (5) transitioning the transport fleet to electric plug-in and fuel cell vehicles that can buy and sell green electricity on a smart, continental, interactive power grid" (RIFKIN, 2011).

Building upon the third industrial revolution, recently we are now experiencing the "Fourth Industrial Revolution", the term coined by Klaus Schwab.⁶ However; the first and the second industrial revolutions lasted between 50 -100 years and within a span of a century respectively; the time between the third industrial revolution and the fourth industrial revolution was extremely short when compared to the first two. The main reason behind the shortening of the time between the last two industrial revolutions has been mainly caused by building upon the great development of the previous industrial revolutions, but accelerated by the digital transformation and globalization. "Digital technologies that have computer hardware, software and networks at their core are not new, but in a break with the third industrial revolution, they are becoming more sophisticated and integrated and are, as a result, transforming societies and the global economy" (SCHWAB, 2017).

In Schwab's book, the revolution is defined as following:

"The fourth industrial revolution, however, is not only about smart and connected machines and systems.

Its scope is much wider. Occurring simultaneously are waves of further breakthroughs in areas ranging from gene sequencing to nanotechnology, from renewables to quantum computing. It is the fusion of these technologies and their interaction across the physical, digital and biological domains that make the fourth industrial revolution fundamentally different from previous revolutions" (SCHWAB, 2017).

'Symbiotic Data Platform' is a research project that takes some references from the last industrial revolution. Because of The Fourth Industrial Revolution, we are living in a world that is surrounded by efficient and sustainable technologies that have vast potential to create better futures. The technology is developing faster than ever, and tools and devices are more accessible for research and development. As a result, interdisciplinary projects such as 'Symbiotic Data Platform' are in demand, thus such new technologies that are built upon existing tools are enhancing the productivity of daily life and proposing better results relating to concerns about energy efficiency and advancing sustainability.

"The concept of embedded intelligence in buildings is not new; rather what makes it currently possible are cheap digital sensors, computer power to handle big streams of data, and the development of software specifically developed for on-going operations and maintenance of buildings" (KENSEK, 2014). Since the technologies of sensing and data collection became available and accessible - thanks to the third and fourth industrial revolutions - the design research that corresponds to digital data collection has been also augmented. Additionally, by the eligibility of accurate data collection, the research quality also shows a significant increase.

2.2. The Sustainability and The Energy Efficiency.

Our planet is facing climate change and a crucial energy risk in the current century. "The global energy system is in danger of falling short of the hopes and expectations placed upon it", stated by the International Energy Agency (IEA) in

The World Energy Outlook 2014 Report (INTERNATIONAL ENERGY AGENCY, 2014).

The majority of the world's energy sources are concentrated in a few geographical locations, and the human population is growing, as is both the waste of and the demand for energy. Towns from 100 years ago have become major cities and big cities become mega-cities that constantly attract more immigration, while increasing new industries and constructing more and more buildings in the urban environment. As a consequence of this growth and this development, cities need more and more energy sources, in direct relation to the consumption of the enlarged population.

On the other hand; "every day, global energy production, distribution and use is becoming more efficient as a result of countless routine actions, such as households replacing light bulbs with more efficient ones, or using internet-enabled devices, motorists upgrading to more fuel-efficient vehicles, businesses replacing old boilers and municipalities insulating public buildings. Backed by a reinvigorated policy focus on energy efficiency and driven by relatively high-energy prices, these actions are helping to lower the growth in global energy demand. Energy efficiency offers an effective way to reduce the need for additional capital expenditure on energy supply, tackle environmental concerns and sustain economic growth" (INTERNATIONAL ENERGY AGENCY, 2014).

Without energy efficiency measures and cost-cutting development in new energy technologies, the global energy system and economy would be under even more stress. However, new proposals for greater efficiency and developing the conscience of new generations towards sustainability will make a huge difference.

As a consequence, the changes in global trends, the shift towards becoming more conscious users, and the collaboration of academic research and industry; will develop new tools and platforms.

'Symbiotic Data Platform' simply uses existing tools and creates a new generation simulation, by creating an

interactive platform. "Simulation is the process of using or operating a model (often a mathematical model encoded in a computer program) to learn about the behaviour of the reality being modeled. But simulations can be performed to learn about the unpredictable behaviour of a reality being modeled, such as molecular or weather phenomena. Similarly, simulations can be performed to visualize imaginary scenarios, such as art and movies. These simulations allow us to see beyond reality and to experiment with imaginary structures and processes" (TERZIDIS, 2015).

The proposed platform is based upon energy analysis and thermal data simulations, as well as the occupants' behaviour and desire. Visualizing and simulating the energy usage of the occupant of the building gives significant references for the projection of energy saving.

2.3. Thinking Beyond "The Lean Construction" Theory.

Lauri Koskela⁷ coined the term "Lean Construction" in the early 1990's. Lean Construction is a "way to design production systems to minimize waste of materials, time, and effort in order to generate the maximum possible amount of value." This approach tries to manage and improve construction processes with minimum cost and maximum value by considering customer needs (KOSKELA, HOWELL, BALLARD, & TOMMELEIN, 2002).

In the article where Koskela was searching for a transition from the conversion model to alternative models, he described the paradigm shift under the title of Lean Construction, and explained the term as following:

"In Lean Project Definition, representatives of every stage in the life cycle of the facility are involved, including members of the production team that is to design and build it. Alignment of values, concepts, and criteria allows transition to the Lean Design phase, in which a similar conversation occurs, this time dedicated to developing and aligning product and process design at the level of functional systems. During this phase, the project

team stays alert for opportunities to increase value. Consequently, the project may revert to Project Definition. Further, design decisions are systematically deferred to allow more time for developing and exploring alternatives" (KOSKELA, HOWELL, BALLARD, & TOMMELEIN, 2002).

With regard to the definition and practice of Lean Construction and the Lean Project Definition, the on-going research project 'Symbiotic Data Platform' represents the design thinking of Lean Design principles, by aiming for optimum energy saving and sustainability outcomes for the environment during the life cycle of the building. Even though the initial theory of Lean Construction is dedicated to the construction phase of a building, the outcomes are projected through the operational phase. Therefore, further examination of lean design theory has brought an aspect of the project to reality by creating a tool that sets a precedence by being as lean and as sustainable as possible. At the end of the day, it is all about innovation. Thinking beyond the Lean Construction is to create the Lean Lifecycle for the constructed environment.

3. The User.

'Symbiotic Data Platform' is not a design tool. The focus is to switch the potential use of BIM from not only being just for the practitioners of construction industry - both in design and construction - but also for the occupants of the building by empowering them with their own data, without the need for knowledge of construction or modeling/simulation tools & technologies.

By combining two existing technologies and creating an interactive network, which would be operated by the 'occupants/citizens', a new stage for BIM will be created, which is 'the 7th stage: Interaction'. This highly detailed model of the built environment will be used in daily life by the occupant, without requiring design or engineering or modeling knowledge. People would be able to access the necessary information through the platform thanks to the existing BIM Model, for their own benefit of energy efficiency and comfort optimization. In a

further stage, the platform would link the collected data from citizens, and create a more advanced network for urban usage, thus addressing public issues.

As mentioned previously, the main aim is to create 'Real-Time Information Models' which takes reference from collected data from a sensor combined with using the existing information from BIM. The real-time data and the BIM data can be monitored, or used as a control factor for decision making, as well as automation for smart environments. Even though the platform can address various fields on a conceptual framework, to simplify the testing of its functioning, this paper will only focus on thermal qualities and user comfort regarding the temperature data.

The significance of the research is to take advantage of the mass of existing data on material, location, energy analysis, cost and function information for further - interactive use. This objective addresses both comfort optimization and sustainable environment concerns in relation to energy efficiency, material and digital means (BIRGONUL & COCHO-BERMEJO, 2018).

As well as creating human to machine, machine to machine, and machine to human interactions by giving real-time feedback, and automatically modifying the building operating systems to achieve the desired environmental conditions, the proposed tool also enhances productivity, energy efficiency and sustainability.

In contrast with the previous Industrial Revolutions, the Fourth Industrial Revolution is potentially related to empowering mankind, creating more free space and time, as well as prompting the user to be more conscious of the consequences of their personal decisions on energy and material use. The world is constantly developing because of globalization, by being more and more connected every second. Due to all the concepts of the digital revolution, big data, open data, users are easily accessing their own data flow, and new technologies are developing solutions by taking advantage of this open data for addressing small daily problems to solve big scale problems in global terms.

4. The Prototype.

The proposal is the creation of a new tool, by combining two existing technologies, which are BIM and IoT (real-time data). This also can be described as: 'interactive // occupant - operated BIM Tool'. Our first attempt is to test this with the 'Prototype 1'. This prototype collects body temperature data and to compare it with the real-time relation to the existing thermal condition of the inhabited space. With the hardware, the sensor collects the body temperature of the user 'passively, during some time periods,' and the algorithm checks if any change is needed to stabilize the desired & personalized thermal comfort level. The aim of the prototype is to visualize occupant behaviour and control the optimum comfort of the occupant as well as enhancing energy efficiency and productivity.

The main objective of designing a personal data collection device is to define the 'real-time data tracking' stage and to create 'human to machine', 'machine to machine', 'machine to human' and 'human to environment' interactions. The prototype is focusing simply on thermal comfort. Collecting the data - which is 'thermal qualities' in the stage presented in this paper - is processed by the 'Data Tracking Device' Prototype 1. The collected data is used for personalizing the thermal quality of the occupant's space within the real-time cross check that is provided by the IoT system, and the BIM data verification by the custom-made code.

Hardware of the prototype includes (Fig.1): Arduino Lilypad Main Board, Arduino LilypadXbee Shield, (2x - XB24C - ZigBee Connection), MLX90614 Non-Contact Infrared Temperature Sensor Module, 2x - Xbee Explorer Modules, cables, battery holders and coin cell batteries. And the 'Receiver' device consists of a main Arduino Uno Board, 2 Servo Motors (which symbolize the heater and cooler devices), a main computer and a smart phone.

The application will collect real-time data of body temperature. Following the data collection, the program will analyse the environmental comfort qualities, and

adapt the personal real-time data to the existing ambient situation. The variables are BIM - material data of the building, body temperature, environmental thermal analysis, HVAC types and efficiency, daily energy analysis. The output of the algorithm is the users desired thermal quality, and the modification of the HVAC according to an automated platform through the integration of BIM and IoT in real-time.

The device has been designed as a smartphone cover, yet it could be used like any other wearable when it is detached since it is lightweight and simple. This device can also connect both with a smart phone and the main computer by the XBee Bluetooth Shields via the application, so that the mobile phones' GIS information is also available for the network of the platform.

The device simply collects the users' body-temperature at 10-minute time intervals. Every time the user holds the smart phone, data is collected passively by

the platform; data is constantly uploaded to the system, and in addition, the user can monitor and visualize the collected data, the energy usage datasets, the 3D BIM of the private space, and also the real-time mapping of the energy analysis. The prototype and the algorithm working conversely, will stabilize the energy usage, enhance productivity, optimize occupant satisfaction, create a sustainable solution and act as a responsible factor in the contemporary world.

5. The Platform.

Through this interactive device (Prototype 1) and the platform, the building can 'feel' and react to the current thermal condition and respond to the occupants' body by means of adjusting the thermal comfort. Since the data-flow constantly updates the HVAC system, without the user giving commands or making manual changes, the house can adjust the optimum thermal state for the user. In further stages of the research

project, the platform will be developed as an interactive mobile app (Fig.2). As can be seen in the mock-up examples of the application proposals for 'Symbiotic Data Platform', the simulations and the energy usage visualizations assist in guiding the user to develop a conscience for energy efficiency and sustainable use, as well as automatically modifying the thermal condition in real-time by the automatized / personalized code.

6. The Interface.

As is explained in the BIM Handbook (EASTMAN, C, TEICHOLZ, SACKS, & LISTON, 2011), BIM enables the designer and the engineers to 'virtually' construct the building. Through this new way of working, the AEC industry has an advanced technique for the analysis, documentation and management of the project. Currently in Europe all countries have the BIM adaptation procedure and BIM regulation in order to construct and legally register a building. Taking into consideration

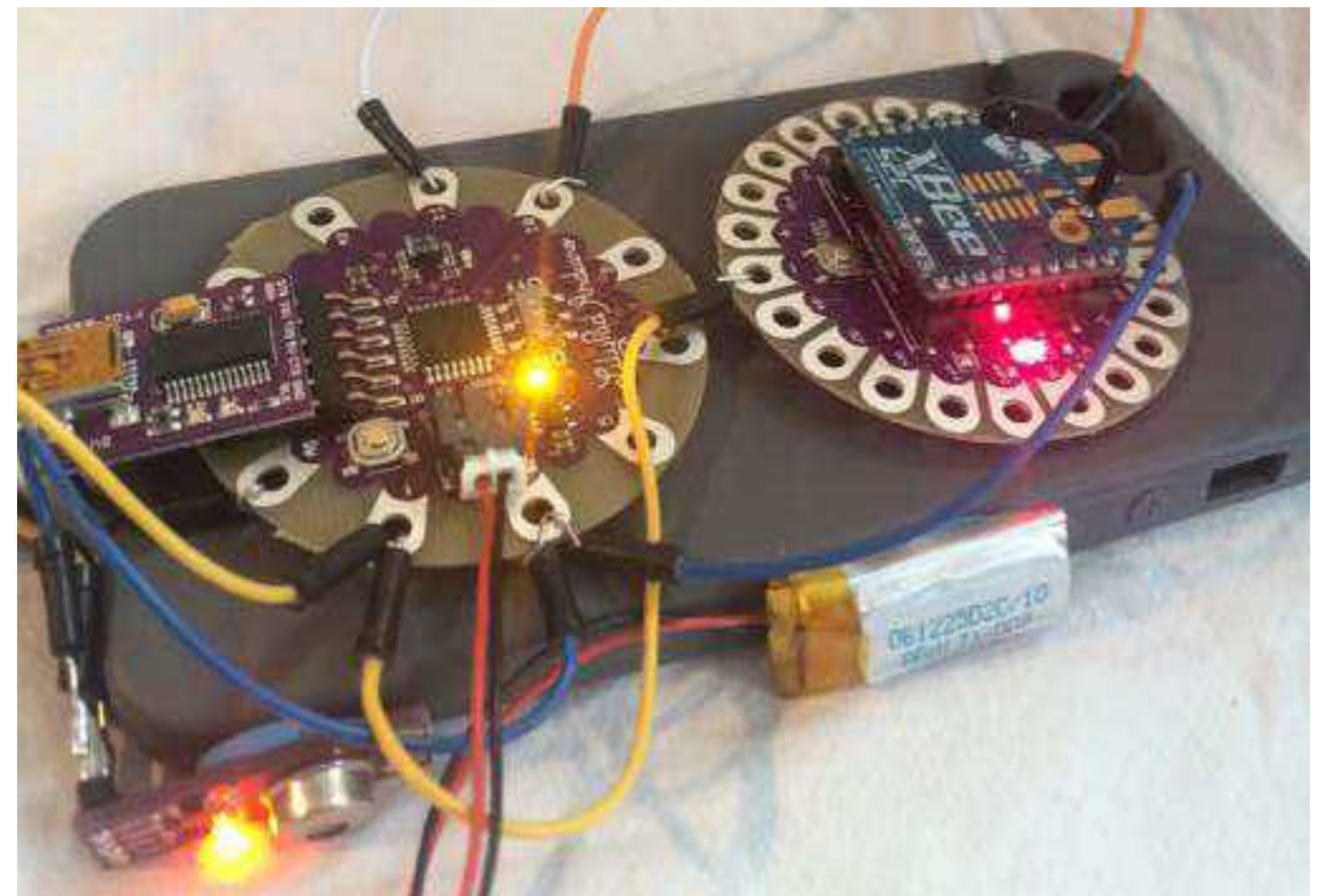


Fig.1

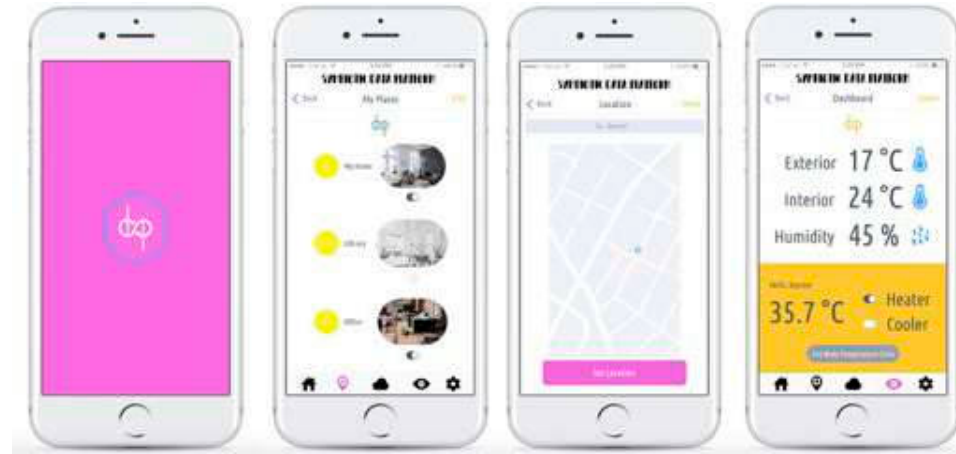


Fig.2

the fact that by the mid 2000's, the AEC Industry will fully apply such a shift in design thinking, and will adapt to BIM, consequently the documentation of the built environment will be available for further use. Municipalities will have the documentation as BIM Models, and this data will be available upon request by all practitioners when needed.

Because of this, BIM models hold vast amounts of information digitally, but this data won't be used actively when a building is simply completed. 'Symbiotic Data Platform' aims to fill this open

gap by creating a link between existing material and construction information and real-time data, during the 6th stage: the operation phase of BIM, in which the occupant is active, and living in the building.

The main research objective of the interface prototype of the platform, is to investigate how to make use of already existing BIM files to extract construction details and information for a new algorithm that will blend real-time weather/thermal information and also the users' body temperature data by sensor

interaction. The customized algorithm of the platform aims to interlace these variables to create a real-time time energy analysis, which thereafter optimizes the thermal comfort and energy savings by making the physical adjustments in the HVAC System of the specified space.

The Variables of the flowchart are as follows (Fig.3):

1. BIM Extracted: Construction materials, opening details, location and orientation and insulation materials coefficients' data (R-Values and Area & Dimension information).
2. Global Information System (GIS) data: Global weather data, Global location data, Outdoor Thermal / Weather Information.
3. Real-time ambient (interior) temperature data: Indoor thermal information from the infrared thermometer 'Prototype 1'.
4. Real-time body temperature data of the user: Users' body temperature data form the 'Prototype 1'.
5. Location (local - indoor): Users' current location from 'Prototype 1'.

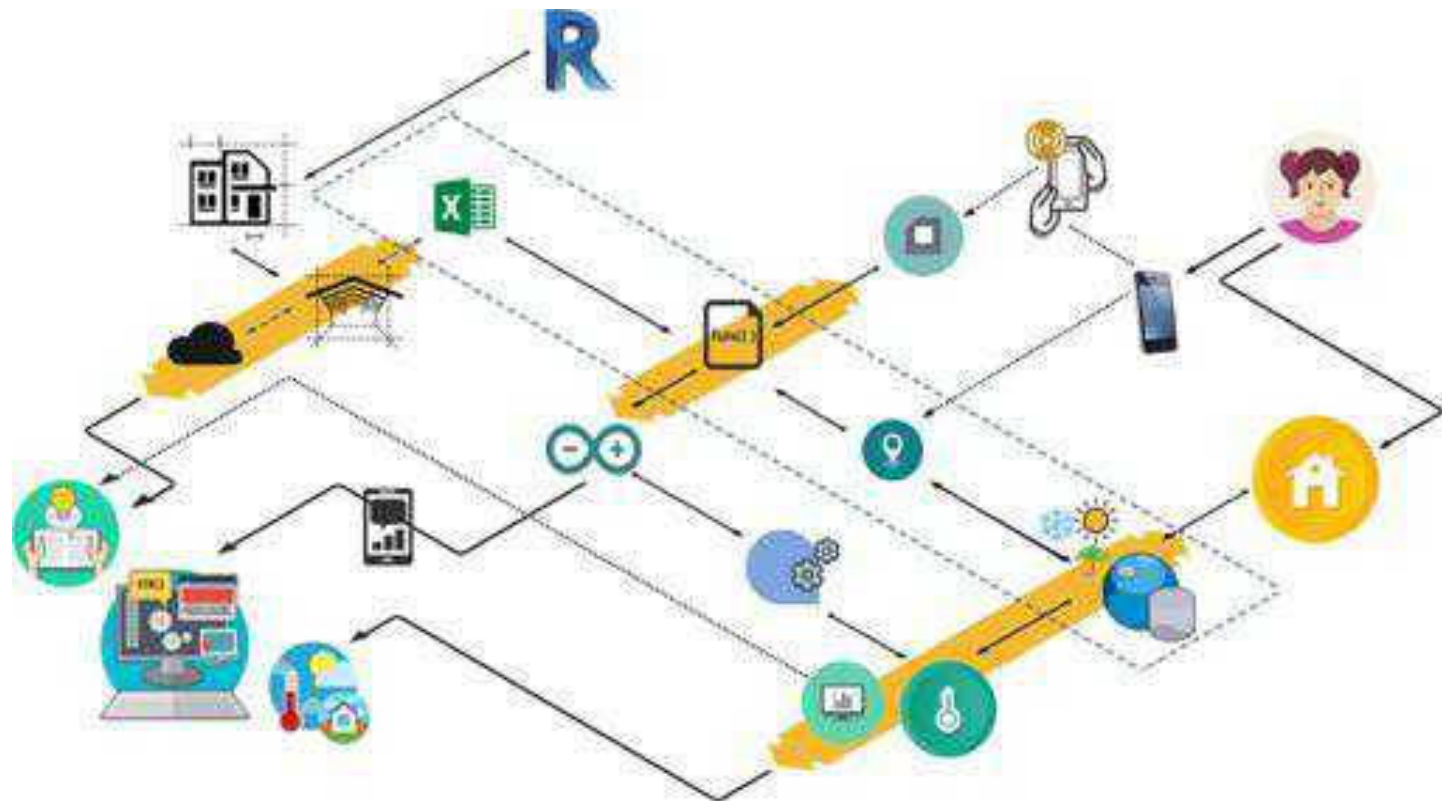


Fig.3

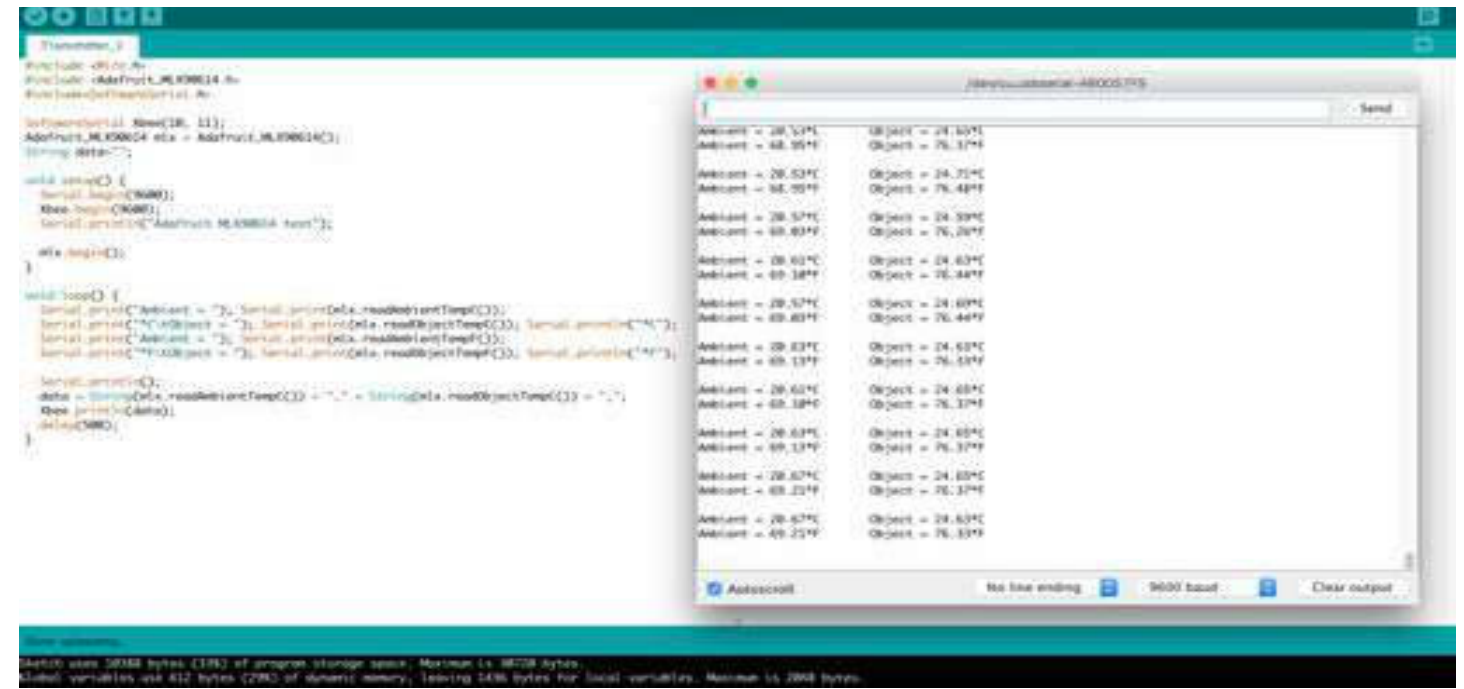


Fig.4



Fig.5

7. Results & Discussion.

By programming the Prototype by Arduino IDE, the following results of the interaction has been successfully achieved. Apart from the IoT prototype, the BIM Integration is still in progress. Unfortunately there are some technical deficiencies of the prototype at this moment of the research which are; the GPS Module cannot give very precise indoors/outdoors information regarding the exact coordinates of the user, making

it hard to locate the user in the rooms, and the X-Bee Module is very sensitive for daily use and the wireless (Fig.4) connection is generally problematic and not constant.

Additionally, the code for the transmitter device and the receiver device (Fig.4 and 5) and the results of the HVAC operation (Fig.6) are documented.

In our current situation, the importance of digital and technological transformation is incontrovertible when designing and developing projects with

added values. Since the platform has a receptive hardware and responsive software, it offers a personalized environment control for the user and it determines the ideal comfort situation as well as setting the ideal energy usage for daily life.

8. Further Research.

On a larger scale, the project could be developed as an urban interface, to create

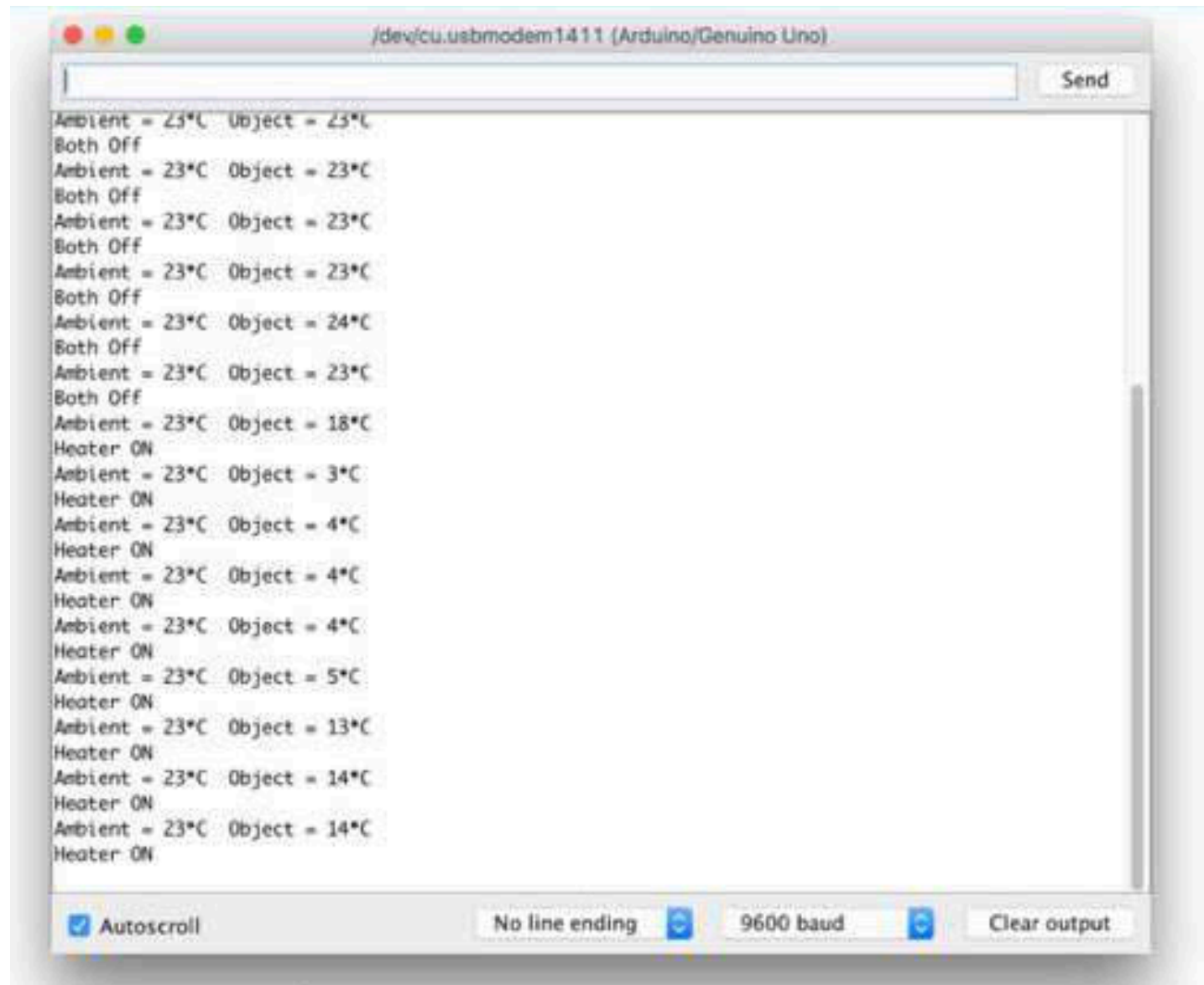


Fig.6

an information cycle/network between the smart homes to the smart cities by a new understanding of citizen participation. That project has a bottom-up theory, which is "not making the city 'smarter' but making the user more active and the environment 'responsive'."

Within the 'Responsive City' context, the Symbiotic Data Platform is explained by its possibilities for future research. The extension of this platform is explained in a symposium, under the title of 'Active Public Space' (BIRGONUL, COCHO-BERMEJO & SARRABLO, 2018). The objective of the proposed platform at an urban level, is to create intelligent awareness in society regarding urban values and empower citizens with collective values. Sharing data through the platform will create a stronger

community network, promoting an increase in productivity and efficiency in the daily life of the citizens, and will also raise their participation in the urban field. It is a promising project in the way of introducing a responsive city system with multi-ended outcomes. Simplifying and monitoring the existing data through the platform, could become the new solution for productivity, efficiency and sustainability in urban development.

The final product will be to propose a collective interface that addresses the contemporary concerns of society. The approach of this research proposes the platform to achieve a new generation of urban understanding, utilizing existing theories & computer programs to provide a new way to use BIM data.

9. Conclusion.

Taking the results achieved from the Prototypes, the research is being developed by investigating the possibilities of adding BIM data to the prototypes' code, for mutual data interaction through the BIM database and real-time information.

In future stages of the project, the objective is to reach more accurate results by modifying the code, and by calibrating the prototypes capabilities.

To conclude, Symbiotic Data Platform, is an on-going research project that creates a new possibility to take advantage of real-time data to optimize comfort level during daily life and by blending existing separate technologies with each other.

Notes

1. Building Information Modeling.
2. Internet of Things.
3. See chapter 2.3 in this paper.
4. Architecture – Engineering – Construction.
5. Jeremy Rifkin is an economic and social theorist, writer, public speaker, political advisor, and activist.
6. Klaus Schwab is the executive chairman of the World Economic Forum.
7. Lauri Koskela is a Lean Construction expert and his research has focuses on the theories of production management as well as project management. He is a founding and continuously active member of the International Group for Lean Construction.

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Biography

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Topic 07 / Sustainable Multi - functional Landscapes.

It refers to research issues related to planning or project strategies in which landscape has a multi-functional role as well as meeting sustainability criteria.

High Altitude Urbanization.

Developing Strategies for New Territories.

High altitude urbanization in Europe refers to alpine architectural or infrastructural projects and territorial scenarios developed over the altitude limit where the natural environment enhances permanent living conditions.

This research starts from the first human's approach toward Europe's highest mountains, in its earliest, primitive and temerarious phase. It is analysed here as an anthropological and phenomenological phenomenon, covering the basic human needs for orientation and shelter. It follows the slow development of high-altitude mountaineering culture, from the heroic climbing era, onto when it ultimately turned into mass altitude tourism.

Through tourism the paradigm changed; the highest European summits became development catalysts under the mirage of adrenaline and adventure in a still virgin and extreme environment. High altitude summits have turned into touristic brands ready to be consumed. These hostile and extreme zones have been transformed through new infrastructural and building

technologies into a safe, reachable and exciting global playground for everybody's entertainment.

The relation between humans and mountains - and analogically to any other remote and unknown territory - has fundamentally changed. The extension of anthropic built elements beyond the existing limits seems to be inevitable as the economic criteria have become determinant. Alpine high-altitude urbanization has recently intensified and modified the landscape, introducing the need for new sustainable territorial strategies. Even though the further invasion of high-altitude landscapes can be reduced or controlled through planning and policies - as proposed in the following paper the conceptual vision of humans towards the highest summits has irreversibly changed. This transformation will continue to raise questions concerning the ethics, opportunities and rules of producing architecture at high altitudes.

Key words:

High Altitude, Tourism, Urbanization, Infrastructure, Global Playground.

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1. Premises.

High altitude territories, where permanent living is no longer possible because of extreme natural phenomena, such as low temperatures and lack of oxygen, have revealed a new and challenging background for mass tourism and consequently for architecture. In Europe, the highest summits have recently become magnets for an intense development of tourism, as new high potential entertainment providers, ready to be consumed.

Europe's well-known summits of Mont Blanc or the Matterhorn/Cervino are particularly interesting places that have polarized opinion about their surrounding areas as many new anthropic elements have been built, from architectural objects to infrastructure. In these zones, an unprecedented phenomenon of urbanization and temporary intensive colonization at high altitudes has started.

2. Short History of High-Altitude Architecture Tourism in Europe.

In Europe, reaching high altitudes is a rather recent phenomenon. The only ancient trace at high altitude has been the prehistoric hunter, Ötzi, found in the Alps. Nevertheless, it is considered that the climatic conditions more than 5,000 years ago were different from the present.

Until the 18th century, the Alps didn't raise any interest for Europeans. They were seen only as "horrendous mountains,"¹ a source of danger for the inhabitants of the valleys, sending down catastrophic natural phenomena, or they were a territorial obstacle on Europe's commercial routes linking the Northern to the Southern part of the continent. At the time, there was no reason to go beyond the glacier limits. Ancient maps didn't include any information on high territories, leaving blank areas for these totally unknown and uninteresting areas.

The Romantic Movement transformed the way high mountains were perceived. For the first time the beauty of their landscapes became disclosed. Writers

like Albrecht von Haller, Jean Jacques Rousseau or Salomon Gessner changed the image of Alps through their poetical descriptions into idyllic and beautiful landscapes. Scientists and idealistic artists were the first to reach and discover high altitudes, long before mountaineers or tourists. The first built shelters, used for observation and contemplation, were called "temples of nature."

A determining event for the development of tourism took place in 1786, when the mountaineers Jacques Balmat and Michel-Gabriel Paccard became the first to reach the summit of Mont Blanc. Their achievement marked the starting point of the heroic mountaineering era.² From this moment, rudimentary shelters were built on the route to the Mont Blanc summit.

Through mountaineering, a first mutation occurred at the conceptual level of relating to the mountains. Reaching the summits had not a scientific or artistic goal anymore, but had become a challenge for humans involving courage, effort and endurance. The purpose of the alpine adventure had a glorious significance.

In this incipient phase of mountaineering, high altitude architecture was rather a primitive gesture, a basic relationship between humans and an unknown, hostile territory.³ From a phenomenological point of view, alpine architecture enabled at this point an existential foothold; the basic human needs to relate to the territory, providing protection and orientation.⁴ High altitude shelters were positioned in strategic and naturally safe locations, covering and controlling large areas, as a support and



Fig.1

reward for the first temerarious climbers.

Mountaineering slowly became popular and new constructions appeared at high altitudes. Climbing had transformed into an organized activity and National Alpine Clubs were founded in France, Italy and Switzerland. These alpine associations analysed the phenomenon and delivered the first strategies for the development and control of alpine tourism.

At the end of the 19th century the Swiss Alpine Club (SAC) began to discuss the possibilities of building in high mountains and the impact of anthropic elements on the wild landscape. They also questioned, from an ethical point of view, the opportunity of bringing any comfort through architecture at high altitudes. SAC created the first set of rules in 1886 for building in the mountains, specifying building materials, dimensions and planning principles.⁵ In 1890, during a reunion of SAC at Neuchâtel, it was stated that alpine shelters were meant only for the few that could reach them, a reward for the most adventurous.⁶

In 1923 the Italian Academic Alpine Club (CAAI) broached the same concerns as the SAC regarding high altitude tourism. Italian mountaineers made a first attempt to find a territorial strategy in order to limit and control further human access into the high-altitude zones. Their proposal focused on equipping all classic routes with small shelters, built with prefabricated elements, called bivouacs, in order to eliminate the necessity for any other buildings (Fig.1 – Bivouac Fiorio Cesare or del Dolent 2,800m). CAAI also warned that mass tourism at high

altitudes would produce safety issues, both for professionals and amateurs. The basic shelters were also meant to discourage large numbers through their Spartan conditions.

Despite the few new small shelters, either huts or prefabricated bivouacs that facilitated the access to high altitude, summits remained dangerous and prohibitive. Mountaineering was limited to those who accepted the intrinsic risks, and who trained hard and could endure rough conditions. Sir Leslie Stephen published a prophetic article in the Alpine Journal (1868), the journal of the first established Alpine Club in London. After observing the new mountaineering phenomenon and the popularity of alpine tourism, the author named the Alps "the playground of Europe." More than a century later, his vision turned into reality, and the Alps became an important provider of entertainment not only for Europe, but for the entire world, becoming literally a global playground.

3. High Altitude Architecture and Mass Tourism.

The evolution of society changed once again the relation between mountains and society. The brief Expressionist Movement considered high altitudes as being sacred and virgin territories, a perfect background to build the utopian crystal architecture for a new purified humanity, as depicted by Bruno Taut's sketches.⁷

Then the Modern Movement marked a significant phase for the development

of alpine architecture. Modernists had seen mountains as perfect laboratories⁸ for experimenting with their new theories. Alpine areas were considered as a source of entertainment and health. Winter sports were discovered, intensively promoted and quickly became very popular. This new alpine activity brought about an intensive development of alpine resorts, consequently the problem of urbanization and densification appeared for the first time in lower alpine zones.

Many architects were involved in building in the mountains, and remarkable Modern projects have been produced. Still, high altitude areas weren't touched at this time by this trend and were ignored by mass tourism.

Winter sports and resorts had a long, consequent and intensive development till the beginning of the 21st century when the social paradigm changed again. The concept of leisure and health through sports slowly lost popularity and mutated into the compulsive desire for glorious but safe personal achievements, as efficient self-esteem stimuli, to be praised by their peer groups.

A 2005 study on Swiss Alpine resorts at the Eidgenössische Technische Hochschule in Zurich, revealed stagnation in alpine tourism, showing that mountains, particularly winter sports, had lost their attractiveness for tourism.⁹ This stagnation was quickly followed by a significant decline in winter sports activities. Surveys showed that the use of ski facilities decreased in Switzerland by 19.6%, from the winter of 2005/2006 to the winter of 2014/2015.¹⁰



Fig.2

While resorts lost their magnetism, a brand-new trend emerged; high altitude safe adventures. This innovative type of entertainment ensured the survival and also the further development of alpine resorts, and introduced the first step towards building at high altitude. Infrastructure and technology played a key role in making possible this new approach. Transportation facilities, from cable cars to helicopters, suddenly made high altitudes very accessible to the public and eliminated any risk. The highest European peaks became commercial brands and catalysts for mass tourism.

Mountaineering, supported by new clothing, equipment and safety solutions, professional rescue teams, pre-equipped routes and well-trained alpine guides, also developed intensively. The summit of Mont Blanc became an almost compulsory destination and personal achievement for any individual once in a lifetime. A Petzl survey reveals that 35,000 mountaineers climb every year on Mont Blanc.¹¹

The new tendencies awakened also the interest of famous architects for high altitude projects. They found a perfect territory to create iconic objects and experimenting with the latest technologies. A typical example and a turning point in high altitude architecture was the Monte Rosa Hut, built in 2009. The project was designed by a multidisciplinary team of Swiss engineers and architects and was based on complex conceptual and technological research. It was the first high-altitude project that involved a significant financial investment and scientific support. The result changed the concept of living at high altitudes; the basic need of protection mutated into an agreeable dwelling. The hut provides all necessary facilities and transforms high altitude survival into a comfortable and pleasant journey.

The idea of a comfortable hut was soon extrapolated to bivouacs. The original meaning of bivouac, a rudimentary and temporary shelter, paradoxically changed into a cosy, small designed space. The Gervasutti Bivouac (Fig.2) built in 2011 by the Italian architects Stefano Testa and Luca Gentilcore, closely followed the idea of providing pleasant living conditions at high altitudes.

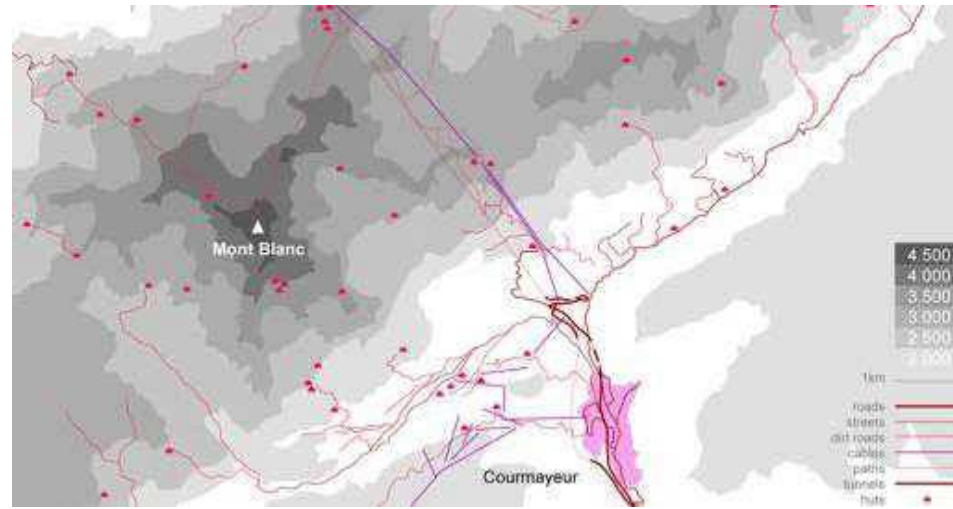


Fig.3



Fig.4

Both projects are remarkable architectural and conceptual achievements solving such contemporary issues as sustainability or self-sufficiency. Critics praised their aesthetics and technological qualities. The debate around the opportunity of building at high altitudes lost its importance in front of the autarchy of the architectural object.

4. High-Altitude Urbanization.

The initial phase of high-altitude urbanization was constituted by single isolated architectural object connected through paths rather than through infrastructure placed on classical routes. Still, these facilities were made only for mountaineers, even though they opened the door for less professional users.

But mountains alone, despite their fame, couldn't provide enough entertainment for the new type of mass

consumer. As long as contemplation was long forgotten and sports could not provide enough motivation to reach the mountains, new functions and facilities were invented to attract the tourist, with the safe image of adrenaline: the Tissot Peak Walk, a bridge connecting two 3,000m peaks; the Glacier 3,000 alpine coaster; or the Pas dans le vide, a suspended glass box at 3,840m at the Aiguille de Midi cable station. All new entertainment functions were complemented by urban, low altitude, function such as shops, cafés or restaurants, conference halls, or even museums like The Crystal Museum, at Pointe Helbronner, 3,462m.

Transportation is one of the keys to this massive development. In the Mont Blanc area, cable already reached the scale of a territorial complex network (Fig.3) connecting different valleys, resorts, regions and even countries (Fig.4 - Tunnel connecting Torino Hut and Pointe Helbronner; Fig.5 - Mont Blanc Panoramic

cable car; Fig.6 - Skyway Monte Bianco, Pointe Helbronner Cable Station, 3,462m). The infrastructural nodes concentrate touristic functions and become incipient settlements at high altitudes, as at the Aiguille du Midi touristic complex (3,842m), Goûter Hut (3,835m), Pointe Helbronner (3,462m) or Torino Hut (3,329m) in the surroundings of Mont Blanc's peak.

Once the infrastructural network is established, the essential premise for urbanization, the densification at high altitudes has slowly but constantly advanced. The new artificial adventures, in a perfectly safe environment, combined with the well-known names transformed into brands - Mont Blanc; Matterhorn; etc. - provide the perfect circumstances for building at high altitudes.

Architects became very quickly involved in this new challenge. Building in an extreme, famous and monumental natural landscape had offered a perfect background to create the iconic and famous objects any architect dreams of. Architecture had found the optimal conditions for experimenting the latest concepts of self-sufficiency and sustainability with substantial economic support. All efforts went in the direction of recreating a comfortable environment. Familiar elements that humans are used to from low altitude urban life have been reproduced at high altitudes. Architecture has managed to satisfy the desire for pleasure and entertainment.

From a conceptual point of view, the relation between humans and mountains had arrived in a totally different position from its beginnings: danger was replaced by safety; endurance by entertainment; and sufferance by pleasure. High altitude has become literally a "global playground," not only for Europe, but worldwide. The question asked more than a century regarding the possibility and ethics of approaching the mountain remains open, and still very much alive. It touches upon an issue common to most remote natural places that have slowly lost their inaccessibility and intangibility through the same mechanisms: infrastructure, safety, and comfort. Mass tourism in exotic or extreme locations has become a global phenomenon.

5. Territorial strategies.

Alpine resorts have already faced a massive urbanization and densification problem. Mountains absorb a large number of tourists in a process of temporary colonization. Consequently, different territorial concepts have been studied for lower alpine areas in order to control the impact on the landscape.

As long as the development of infrastructure was the first and necessary step towards large scale access into the mountains, it can also provide a series of solutions to reduce the impact on the landscape, without blocking the further economic development. A study by the Swiss architect Fiona Pià, from 2012 at the École Polytechnique Fédérale de Lausanne, proposes a linear strategy that concentrates all touristic facilities along the road infrastructure and connects them directly to cable transportation. All tourists would have direct access to the mountains. The goal was to stop the uncontrolled sprawl into the landscape and avoid crowded resorts, while still giving the possibility of building in areas already affected by the anthropic elements of infrastructure.

In the meantime, the interest from lower resorts moved to higher altitudes. The densification and colonization phenomena have consequently also extended from lower alpine zones and now put pressure upon high altitudes territories.

As long as high altitude mass tourism represents, at least for the moment, a very profitable and popular activity, critics stand on both sides; the trend shouldn't be stopped as it is a profitable activity, but a solution for a sustainable approach towards the wild landscape should be found.

Climbing mountains, despite the improvement of clothing and equipment, well-trained alpine guides or efficient drugs, cannot become an activity for everybody. Nevertheless, still many, many people desire to participate. The journey itself becomes unimportant to them, because the journey includes risks that nobody wants to take. The new type of tourists mainly wants continuous



Fig.5



Fig.6

entertainment, safe and exciting high-altitude artificial adventures, combined with an urban lifestyle in a wild landscape (Fig.7 - Pointe Helbronner, 3,462m).

Infrastructure and technology have enhanced safe and direct access to any area on Earth, including high altitude territories. Mobility therefore



Fig.7

plays an essential role in the invasion and colonization of high altitudes. It brings along with it the urbanization of the highest summits. Transportation technologies are the catalyst, but could also be the antidote to the expansion phenomenon.

The easiest way to visit high altitudes is through air transportation. Air transportation is nowadays a field that constantly develops in order to increase speed and mobility, with less discernible environmental impact. Therefore, anyone could fly directly to or around Mont Blanc instead of physically landing and crowding the summit surrounding areas.

As long as high altitude peaks are the ultimate and only touristic goal, alpine resorts could be avoided in a further expansion. Resorts have been transformed into temporary cities that duplicate urban life and urban entertainment next to a natural feature as pretext and as a selling brand. High altitude urbanization also develops in imitation of a city, only closer to the summit and at higher sea level.

Any city, as long as it gets connected through air transportation with the

summits could become an alpine resort. Cities have already all types of the desired entertainment facilities and can also provide access to the mountains.

Current research proposes a future strategic scenario to convert large cities around the main European mountain chains into multi-entertainment resorts. From their own airports, the new type of alpine tourists could fly directly to Europe's most famous and iconic summits, see them or eventually even briefly visit them and afterwards return to the already consecrated providers of entertainment, the cities. As theoretical possible examples, Milano, Torino, Grenoble, Genève, or Zürich could become alpine resorts for Mont Blanc or the Cervino / Matterhorn (Fig.8). By air, Mont Blanc and Matterhorn are positioned close enough to any of these cities.

Electric airplanes and helicopters, balloons or dirigible airships could provide a less invasive and disruptive, but agreeable type of air transportation adapted to high-altitude wild landscape tours. The time spent on the mountains and in alpine areas would be significantly reduced.

The need for building new facilities could be reduced to the few specific high-altitude artificial adventures, to satisfy the need of new experiences, adrenaline and personal achievements, as long as consumers want them. Nevertheless, the opportunity for such inauthentic or prefabricated adventure remains highly questionable.

6. Conclusions.

The perception of high-altitude landscape changed and evolved over time, closely following the values, criteria and economic interests of society. The image of alpine territories had been converted from awful mountains to beautiful, heroic and sacred summits, impressing people with fear, respect and admiration. They have become ultimately famous entertainment brands ready to be consumed. The highest summits are nowadays only a profitable global playground.

Influenced by trends in society and the economy, and supported by technology, high altitude wild and monumental landscapes began to alter. As long as mass tourism development at high altitudes reflects the evolution of human behaviour, the further colonization in new territories seems to be inevitable. This paper proposes a strategy to limit the impact on the landscape, without blocking the economic and anthropological tendencies. The strategy is based on the same tools that have produced high altitude urbanization - infrastructure and mobility -and using the new technologies in order to eliminate the necessity of building anthropic elements in the natural landscape by using the existing facilities at lower level cities and transforming them into alpine resorts.

Nevertheless, although colonization and urbanization of high mountains could be limited or coordinated, the ancient meaning of high-altitude landscape obviously has suffered a fundamental and probably irreversible alteration. This profound change leaves open the questions about the opportunity and ethics of building at high altitudes and, analogically, on any other of the Earth's virgin territory.

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- All pictures and drawings © Ana-Maria Machedon.

Biography

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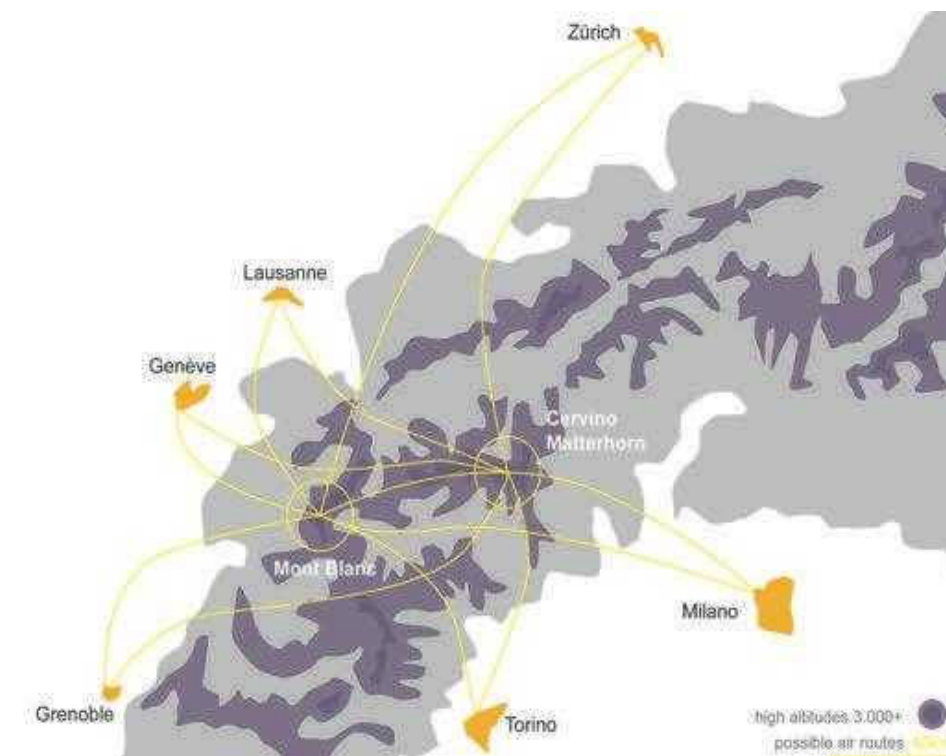


Fig.8

Designing for Territorial Revitalization.

A diffused art exhibition to foster Northwest Italian inner areas.

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Design for territories considers lands not only as a spatial context but also as a design object that has to be approached with definite strategies. The use of design methodologies for territorial purposes could lead to innovative products, services, policies and structures, with the aim to stimulate new activities and local relations. This contribution sheds light on the role of design discipline in building and implementing methods to support the development of a territory. The paper presents an actual case study carried out by a group of systemic design researchers from Politecnico di Torino, who worked on a multi-layered action plan for the Piedmont Region, in the north of Italy. For this plan, the designers were required to set up a series of guidelines to improve or activate well founded territorial policies. The research was carried out in the areas of culture, local economy and tourism promotion through the

project of a diffused art exhibition entitled *Il Rinascimento di Gaudenzio Ferrari*.¹ The exhibition also resulted in the development of participatory services, the enhancement of local economies, and the strengthening of the relations between districts. The paper analyses the supportive role of design, with investigations on emerging design, design for territories and systemic design. It describes the main phases of the project, underlining its outcomes, the positive impacts on local communities, its limits and possible future developments. It further suggests possible perspectives for an evolutionary process in the design sphere, with distinct guidelines for creating new diffused events.

Key words:

Design For Territories, Systemic Design, Diffused Art Exhibition, Inner Areas, Local Development.

1. Introduction.

The objective of the paper is to present the contributions of design in tackling territorial issues, working on new strategies addressed to develop and strengthen local economies and interconnecting governance policies. This is illustrated by the validation and assessment of theory through the implementation of a project. Currently, the design discipline is undergoing a transformation in its identity and competencies. The centre of the discussion is on how design can pursue its original purposes with regards to changes over time, societies and attitudes. The capacity to transform reality through better or new solutions may, in fact, assume different shapes and using various ways of acting, without changing the original scope. Designers have dealt with the concept of project (vb., from Latin "pro-iacere", to throw ahead) from widely differing perspectives. Researchers, academics and experts in several fields are realizing the increasing complexity of our reality. Therefore, design should no longer operate by distinct sectors, but become more inclusive and connect to new values and perspectives. Designers are required to develop a marked capacity of interpretation and comprehension, that includes complexity as a world-shaping force, and develop a sensitivity towards that dynamism (Fry, 2009). Design approaches are shifting their goals toward more comprehensive impacts and no longer deal with single or pre-defined needs. Design is starting to extensively explore the world in its broadest sense, tending towards topics such as economics, social sciences, territorial planning, artificial intelligence, big data and the environment, as a result of a global and irrepressible phenomenon of immense challenges. At the core of this contribution is the developing role of design to consider and include the multifaceted needs expressed in diverse territories. The design discipline is called upon to mature a strategic ability to act on more aspects, and on multifaceted complex scenarios at the same time. The reading of these signs, and of the linked future perspectives, is the source from which a systemic diffused project originates. The research conducted

by the Department of Architecture and Design at Politecnico di Torino² is based on the holistic territorial analysis of an inner north western area of Piedmont, in order to define and break down a set of occurring problems, and to identify interconnected multi-level strategies that can be adopted for reaching the desired change.

2. Design toward multidisciplinary: An emerging identity.

The design discipline boasts an established old and elaborate history from the early twentieth century when it developed as a specialized activity in Europe. At that time, it largely dealt with mass-manufactured products, but since then many things have changed and design has shifted away from "objects" toward "ways of thinking and doing" (Manzini, 2016). A decisive leap that boosted its evolutionary processes occurred as a result of the rising complexity in the dynamics of the world. It is in this cultural framework, that design has approached wider and manifold issues, trying to seek solutions to complex matters, whether social or environmental, economic or territorial, while broadening its disciplinary boundaries. The design of processes is no longer intended as the exclusive priority and competence of an individual professional: it is instead collaboratively conducted by a variety of expert stakeholders, which may even include the end-users. Design is, therefore, not assignable by nature to a unique area of study (Deserti, 2010), but it has always been at the intersection of multiple fields. As Victor Margolin (1992) observed, design does not refer to principles that specify its aim, but is defined each time the profession is put into practice. What characterizes an emerging design is a space of action that is fluid and that receives influences from miscellaneous kinds of knowledge. Design is becoming a multi-faceted science for the use and the implementation of other studies, a sort of toolbox that gains significance on the basis of its applications, and not a discipline that lives by itself.

As design widens to more fields of

application, it is necessarily undergoing a learning phase about methods and activities from other areas, especially the conceptually closer ones. Design contaminates – and is contaminated – every time a new context has to be investigated, or a project area defined. This occurs from the first steps up to the final outcomes, within a continuous process of understanding. As a matter of context-based knowledge, where all the involved disciplines are not ranked on a hierarchical scale but rather lie in a miscellany of intersections and mutual influences, design assumes a particular role. This role lies in the ability to see all these subjects from the top, not with any dominant role, but as the discipline which is able to grasp their connections and meanings. "Design is now becoming more about listening, asking, understanding, and drafting new possibilities and alternative realities" (Muratovski, 2016), and it is progressively turning into a cardinal way of thinking, where interdisciplinary and transdisciplinary practices can no longer be separated.

3. Design embraces systemic thinking.

Different areas of the design discipline have been affected by rapid changes in perspectives and mindsets. Meanwhile, other domains have carried out long-established activity with well-known and even more consolidated competencies. It is in these conditions that a new way to conceive design, with a diverse conceptual sense has developed. What is identified as systemic design is one of its under explored wings that deals with complex issues, systems of relations and intertwined functions, where the focus on solution-oriented approaches moved toward more integrative practices. Thus, systemic designers consider design as an advanced practice of rigorous research and form-giving methods, of critical reasoning and creative making, and of sub-disciplines and deep skill sets (Jones, 2014).

Systemic thinking has arisen from the urgency to recognize and deal with significant societal and global concerns. Design scholars and educators started

a fruitful reflection on the role of design for these kinds of issues, which has led to the delineation of systems theory and systems studies in the second half of the last century. Systemic design implies an orientation to advance design practices in complex problems. The orientation and the methodology through which this happens are also reflections of a changed identity based on collaborations and the interplay with diverse figures. The interaction and the co-design process that involves other figures is not only an internal priority but a necessity deriving from the discipline's current role of mediator (Celaschi, 2017). Thus, emerging design and systemic design rarely deploy vertically specialized abilities; they involve instead enabling capacities aimed at increasing the interoperability among several areas of study. In this way, new and additional research environments have been integrated with design. An interesting field is represented by territorial planning and regional studies. Territories are wide objects of investigation because of the variety of sub-elements and internal dynamics. Therefore, design can be used as a tool to inspect and operate on them, embracing territorial issues as some of the most multifaceted fields of design.

4. Design for territories: Goals and ambitions through experimental research.

Design for territories means designing for a territorial scope, with a focus both on small and larger scales. Interventions may imply the realization of products, the rethinking and configuration of production processes, the envisioning of new activities, or the outlining of strategies. Design has been dealing with territories in many ways, for example by studying and reinterpreting specific traditional products for selected geographical areas. However, designing for territories also means putting services into place. Even though the design discipline has often regarded territories and spatial contexts, a proper identifier label to define this relevance had not been clearly determined previously. Only recently, the

design community has come to feel the necessity to recognize and gather, under the same field of inquiry, the various studies that are working on territories. The literature on this topic is still limited and lacks a substantial theoretical reference framework. In spite of this, a relevant dialogue within the scientific community is emerging.

Practitioners are also seeking to contribute to this theme with new ideas and projects. The beginning of this interest can be traced back to the end of the '90s, along with the cultural debate about the transformation of big cities. At that time, multiple studies went into more depth on this matter by developing new fields of study such as territorial marketing, cultural marketing and economy of experience. Since then, a radical shift has occurred, and the territories once considered as the design context are now considered to be the design object (Parente and Sadini, 2017). The design approach to the territory is, in any case, a strategic one. For that reason, it is hard to detect a specific knowledge in which it can be identified. Design for territories includes a group of disciplines in relation to an objective and is not a discipline in itself (Lupo, Parente and Sadini, 2017).

Designing for territories definitively includes a set of heterogeneous actions with a common aim; that is the transformation of potential resources into effective implementation, within an overall perspective of sustainability and well-being for territories, people and socio-economic systems. In accord with these premises, this paper presents a design project that incorporates various types of intervention, with the accent on its outreach over time and triggering causes for activating further processes.

5. A diffused art exhibition in Piedmont.

Il Rinascimento di Gaudenzio Ferrari is the title of an art exhibition spread over the three towns of Varallo Sesia, Vercelli and Novara, from March to September 2018. Ferrari was an Italian painter and sculptor, and he is considered the leading representative of the Piedmontese Renaissance. His early pictorial style was

mainly influenced by the well-known artists Leonardo da Vinci and Bramantino (Agosti and Stoppa, 2018). However, his work was distinguished by strong animation, as shown beyond doubt in his most memorable religious works in the chapels in Sacro Monte and the fresco in Santa Maria delle Grazie in Varallo Sesia. The long-planned exhibition became an occasion to rediscover the magnificence of Ferrari's masterpieces, while promoting a wider initiative aimed at fostering cultural tourism and local economies. Most of the showcased paintings and sculptures were already present on the sites, while some of them were lent by other Italian and foreign museums, local churches and prestigious private collections. The event was made possible through the close cooperation between several public and private local and national stakeholders. It was promoted and sustained by the Piedmont Region, Compagnia di San Paolo, Fondazione CRT, and Intesa Sanpaolo. It was organized by Associazione Abbonamento Musei³ (an association that manages the accessibility and the presentation of most of the cultural sites in Piedmont and Lombardy), the municipalities, and in collaboration with Politecnico di Torino, Department of Architecture and Design among others.⁴ The actual exhibition took place at Palazzo dei Musei and Sacro Monte di Varallo, where the early stages of Ferrari's career were presented, while at Arca in Vercelli (former St Mark's Church) the artist's more mature masterpieces were showcased. Broletto in Novara accommodated the latest products of his artistic career (Agosti, Minonzio and Stoppa, 2018). Due to the multiple geographic locations across which the artist lived, the exhibition could not have happened in just one place. A diffused art exhibition was therefore the proper way to re-explore heritage while combining art, history, territory and people.

With the final aim of fostering the mentioned goals, the Politecnico di Torino was engaged at different stages, from the communication plan to the arrangement of the strategic development. The contribution of the Politecnico has been supportive of other measures driven by the Region, the municipalities, the tourism agency and Abbonamento Musei.

To handle the project, three conditions were outlined to provide and engage such bordering areas as: activities as incentives for territorial productivity (what); creation of a thick relational tissue between territories (how); and actions with impact on the long term (when). Subsequently, the territories were holistically scrutinized, and the project was approached following these steps: identification of places, holistic analysis, evaluation of critical issues and motivations for change, definition of guidelines, project execution, direct/indirect results from mapping, impact analysis, and definition of new guidelines.

The outcomes led to, and are still producing, answers regarding the levels of economic profitability, quality of life, perspectives of growth and governmental cohesion. Most of the gathered data has been elaborated to gain qualitative insights in support of the project development.

6. First design deliverables.

The research group led the aspect of visual identity and the communication of the exhibition, in collaboration with Abbonamento Musei, and the curators Giovanni Agosti and Jacopo Stoppa.



Fig.1. Design phases of the logotype.

Starting with a selection of the most representative paintings to advertise each venue, the design team came up with a range of graphic products, intended not only for the exhibition, but also for promoting the territory. The logotype Gaudenzio is designed to be reminiscent of a personal seal and can be inscribed in a square (Fig.1). The use of the sole personal name and the hyphenation of the syllables imparts a strong and unusual identification. By insisting on the facility of pronunciation and informal communication, the intent was to ideally shorten the distance between the artist and its audience. The dark background is in strong contrast with the white lettering, resulting from an analysis of the irregular serif typefaces, typical of the 16th century. The body copy, the advertisement (Fig.2), the banners and other visual artifacts were designed to attract people toward

new places and create interest in the less conventional aspects of little-known places. Banners were placed in the towns in which the exhibition took place but also in Turin, the regional capital.

With regard to digital media, more focused work has been made along these lines; firstly by defining the official website, and secondly in particular, by designing the digital platform - an open-access App to guide tourists to the exhibition sites, which provides them with accessible audio guides and augmented reality contents, share trip tips and engages them with the community of users (Fig.3). The development of the platform was made possible thanks to Ulixé Group, an innovative ICT company based in Turin, and is available to download for free both on AppStore and Google Play. The promotion of Gaudenzio has been surprisingly effective and the

logo has been used even beyond its original purposes, to identify local artisan products and gastronomical produce. The following paragraph provides a deeper insight into the project outcomes and its impacts on local communities, while illustrating some of the several artifacts that have been realized. Visual and graphic elements were, in fact, only the first design deliverables for the exhibition. Designing for a territory means dealing with many aspects including organization and communication, scenario building, participation and other kinds of interaction (Parente and Villari, 2010).

7. Project outcomes and impacts.

Over a period of around seven months, the exhibition involved more than 37,000 visitors, in three venues. Most of them came from Piedmont and Lombardy, with a lower percentage from Emilia-Romagna, Veneto and Liguria. The presence of foreigners was limited (less than 3%) (Associazione Abbonamento Musei, 2018). This indicates the local scale of the event and its territorial relevance. Despite the advanced average seniority of the tourists (55 years old), more than 6,000 of them downloaded the App, taking advantage of its easy-to-use features and listening to the ad-hoc recorded audio

guides. Fostering the connections among the main actors, including designers and governance agencies, opened promising perspectives of cooperation. As mentioned above, the event acted as a catalyst for the organization of related initiatives, connected to the local territories and the topics of the exhibition. The initiatives included thematic guided tours, conferences, trekking excursions and child-friendly activities, in order to include all citizens (Osservatorio Culturale del Piemonte, 2018). Together with these several activities, it is worth mentioning the busy schedule of events (concerts, conferences, tours) that took place in Varallo Sesia, and the realization of two murals in Varallo and Novara, by the street artist Andrea Ravo Mattoni (Fig.4). Several new territorial relations have also been created with public and private institutions, local activities and communities. The Gaudenzio logo has been particularly appreciated. Apart from the institutional advertising material, it has been spontaneously adopted by producers and business owners for the branding of some traditional products, or new ones created for the occasion. The logo has appeared on 10 different types of products on sale, with a greater emphasis in Varallo, where 11 businesses became involved. This has been possible due to Varallo's touristic vocation, a little town in which tradition and historical heritage

are still particularly relevant and part of people's identity. By using the logo, the community demonstrated the willingness to enrich the narrative of its own territory and the necessity to revive it continuously over time. The brand Gaudenzio has been diffused in other contexts to promote the location and different kinds of local products like toma (a typical ripened cheese, Fig.5), biscuits, bread (Fig.6), miasce (a traditional dough), beer, honey (Fig.7), jams, ice creams, agendas, soaps and shoes (Fig.8).

In most cases, producers and sellers decided to maintain the logo after the conclusion of the event, transforming it into a permanent mark of their identity. As evidence of its popularity and effectiveness, it has also been introduced for the sign posting of local hiking trails supervised by CAI (Italian Alpine Club), and for the religious itineraries at Sacro Monte di Varallo (Fig.9). The municipality also decided to give visibility to their new and refreshed identity with a large painting at the entrance of the town (Fig.10). With respect to the advertising banners made of PVC, the local NGO Di.A.Psi. based in Vercelli - that supports individuals with mental illnesses and their families - had the great initiative to give them a second life; rather than being trashed, the banners underwent an upcycling process, utilizing local craftsmanship



Fig.2. Visual advertisement of the diffused exhibition in Vercelli and in Torino, the regional capital.



Fig.3. The App Gaudenzio downloadable from AppStore and Google Play Store.



Fig.4. Andrea Ravo Mattoni, graffiti artist, proud of his artwork in Varallo. The painting reproduces a portion of the renowned Ferrari's work titled *Adoration of the Child with a bishop*.



Fig.5. The producer Cerini Farm showing the Gaudentian toma.



Fig.6. Traditional bread produced by the local bakery Il panificio di Varallo.



Fig.7. Honey from Apicoltura Sategna.



Fig.8. Scapin, a traditional local footwear, is realized in a special version as a tribute to Gaudenzio Ferrari.



Fig.9. One of the explanatory plaques situated in front of a chapel at Sacro Monte di Varallo.



Fig.10. The large-scale reproduction of the logo Gaudenzio painted on a wall at the entrance of Varallo.

skills and becoming unique colourful bags and pencil cases. The products can be currently bought in local thrift shops. These signs are clear evidence that the exhibition has been a driving force for the enhancement of local activities and related economies, even if with limitations and, in some cases, limited results. These effects are qualitatively important to accentuate the sense of belonging of the citizens to the entire process, the cooperative atmosphere between those who participated, and the perception of unity. The long-term goal revolves around the will of perpetuating these feelings and positive vibes, even after the temporal and spatial end of the exhibition.

8. Limitations and future steps.

In qualitative terms, the exhibition has been the pretext to revitalize a decentralized area of Piedmont, through a carefully planned cultural operation aimed at discovering more about an extraordinary artist of the past. Furthermore, it has been an occasion to foster the collaboration between contributors and beneficiaries and to create powerful work groups that could cooperate side by side toward common shared goals, even in the future. Undoubtedly, quantifying direct

and indirect impacts on territories and economies could be challenging. More detailed mapping of the reverberations of the event is still ongoing and will require the expertise of economists, sociologists, engineers and institutions to assess socio-economical macro results in the short, medium and long terms. The analysis will include a comprehensive report of the products sold, the revenues and the percentage of local GDP increase. The evaluation will be conducted together, but not exclusively, with local shops and producers, and will include face-to-face interviews and surveys, in order to define other possible influential KPIs. Further joint academic research on the role of design for territories would be desirable. However, it is of primary importance to continue creating and strengthening relationships between stakeholders, inculcate new processes and motivations for territories and municipalities to collaborate for the benefit of the region. A periodical update of the Gaudenzio App could transform it into the driving force for the promotion of local areas, aside from the specific event it was originally designed and published for.

9. Final comments.

The project of the diffused art exhibition introduced in this paper is

a valuable experiment for the design community. The event attempted to act on several levels by rethinking design as a multifaceted, multifold activity of thoughts and actions that are combined together. The observed impacts have certainly left positive traces in terms of a fertile terrain for the future growth of other initiatives.

Further verifications are however necessary to confirm and validate the suitability of this approach in different contexts.

A critical inspection of the suggested guidelines is opportune in order to reach a higher degree of applications. From a methodological point of view, enriching and extending the dialogue among the network of experts and researchers is a fundamental requirement.

The current case study and the research that has been simultaneously carried out, demonstrated an increasing and encouraging interest not only among the design community but also between public institutions and local speakers. Trialing this approach in other environments will enable design to define, with more clarity and awareness, the mix of different competencies needed. All these are incentives to take the discussion forward and to inspire the search for unresolved questions.

Notes

1. The title of the exhibition means *The Renaissance of Gaudenzio Ferrari*. Ferrari was a great Italian artist from the 16th century and the most important exponent of the Renaissance in Piedmont. His artistic works depicted some areas of Piedmont and Lombardy, where he lived between 1475 and 1546. He left important traces of a relevant artistic and cultural contribution that were worth to be told through a uniquely inclusive event. This was one of the assumptions that led to the design of a diffused event that could join territories which share common traits.
2. The team that carried out the research project, titled *Design for Arts: Design of a coordinated visual identity system for The Renaissance of Gaudenzio Ferrari*, was composed of Pier Paolo Peruccio (Associate Professor of Design), Paola Menzardi and Maurizio Vrenna (Ph.D. candidates in Management, Production and Design), Riccardo degli Emili and Lorenzo Saracino, (former M.Sc. students in Systemic Design).
3. The team of Abbonamento Musei that directly worked with Politecnico di Torino was composed of Dino Berardi (President), Simona Ricci (Executive Director), Eleonora Serra (Manager and Project Developer), Roberto Mautino (Organization and Communication Project Manager), and Lia Passadori (Responsible for the Sales Network and Tickets).
4. A complete list of the partners involved can be found at <https://gaudenzioferrari.it/partner/>

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Biography

Pier Paolo Peruccio. Ph.D. in History of Architecture and Urban Planning; Architect and Associate Professor of Design at Politecnico di Torino. Peruccio is WDO/ICSID Board Member, co-director of SYDERE (Systemic Design Research and Education) Center in Lyon and Turin, Coordinator of the II Level Specializing Master in Design for Arts. He is currently working on research projects concerning history of sustainable design, systems thinking and innovation in design education.

Paola Menzardi. Ph.D. candidate in Management, Production and Design at Politecnico di Torino. Her research explores how design is entangled in digital cartography aimed at developing augmented experiences of traveling and new collective forms of territorial narration. She studies new travel practices, ways of exploring and experiencing the backcountries to drive forward processes of revitalization and local development.

Maurizio Vrenna. Ph.D. candidate at Politecnico di Torino who operated in China for more than two years. During his professional and academic career in Europe and Asia, he became aware of the importance of a sustainable development, which cannot be realized without a profound change in the current politic/economic patterns. His career objective is to serve as an expert in the field of sustainable design through targeted research that aspire at concrete real-world applications.

Urban Rests and Green - between.

Connection design strategies for stable waste and health treatments for contemporary cities.

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This proposal aims to contribute to the exploration of the role of architectural and urban projects by proposing actions to improve the health and well-being of the life of city dwellers and the health of the cities themselves. Through an experimental project on a specific fragment of the city of Naples – the former Provincial Asylum "Leonardo Bianchi" – some principles and criteria are referred to and drawn upon in order to direct urban

transformations towards more health-friendly approaches. Within contemporary cities, the linking up of residual green spaces represents an opportunity to take care of the city and consequently something to be taken care of by the city in a truly sustainable development.

Keywords:

Drosscapes, Green, Health,
Infrastructure, Re-Cycle.

1. Sustainable behaviour and new perspectives on re-cycling in contemporary cities.

In this time of global crisis, "Society, Environment and Landscape" have become the most important issues at the centre of ethical, economic and political thinking and, progressively, also in the urbanistic and architectural field, causing a change in objectives and in value systems at the basis of planning actions and urban transformations.

Over the past decades an important part of the culture underlying the project has been focused on the themes of ecology, sustainability, waste disposal, and the urgent need to use recyclable materials and resources. This has led to defining a new paradigm of intervention capable of determining a radical transformation of architectural thought. The transformation of "what exists" has been the centre of reformulating a different way of working, based on the recovery of what remains, saving what has previously been rejected, in order to find a delicate balance aimed at the re-composition of a fragmented, complex, and variegated reality.

2. Materials and strategies for contemporary design thinking.

2.1 Re-Cycle.

Architectural artifacts, parts of cities, fragments of territories, can be re-activated through new life cycles, responding to considerations of the eco-efficient recycling of the 3Rs - Reduce, Reuse, Recycle - the key-concept of the green economy - and the 3Es - Economy, Equity, Environment - the ground of ethical-political positions oriented towards economic growth combined with social equity and respect for, and protection of, the environment. The practice of re-cycling - insisting on the "re-use" of rejected or

abandoned architectural materials and also on the activation of a whole life cycle for the city system or the territorial system - makes it possible to reconsider how we work on "what exists", considering it changeable, variable, adaptable to other new meanings.

This is not a new idea in architecture, for it acknowledges that great masterpieces endure over time, as well as more ordinary constructions and that materials can be preserved resulting from continuous transformations made possible because of their spatial, material or symbolic features. What is innovative from the perspective of contemporary research in Re-cycling is the consideration of the cultural and scientific achievements, together with ecological and environmental awareness. Today, the task of Re-cycling materials of the city and territory formerly rejected or abandoned aims to overcome the weakness of current restoration activities, as well as the merely defensive logic of preservation. Therefore, Re-cycling recognizes mutation (Boeri, Koolhaas, 2001) as a value, against a concept of conservation that tends to paralyse architectural space. Re-cycling means making it impossible for architecture to pursue something permanent and, at the same time, according to Koolhaas (Piscopo, 2012), creating a contact between the two worlds we live: one defined by fast changes brought about by modernity, the other caught in the grips of the immobility of conservation. It concerns the fulfilment of an idea of preservation that supports discontinuity and plans for change - a concept distinct from improvement, so as to preserve and not merely conserve. The majority of strategies and norms to conserve architecture, however, limit transformation: Koolhaas strongly believes it is necessary to establish new connections with the field of conservation, in order to find models that include and validate new architectural interventions upon what already exists - as the result of his CRONOCAOS studies, presented at the Biennale of Venezia in 2010, clearly show (Amore, 2016).

Re-cycling "what exists" by changing its meaning is a global necessity and at the same time a local opportunity for

re-signification that can affect single objects as well as entire parts of the city, triggering highly interrelated multi-scalar processes. The field for the application of this type of intervention is represented by so-called "waste" places, liminal spaces, spaces in the margin, waiting for a propulsive transformation capable of reinserting them into urban practices.

2.2 Waste.

Waste is what no longer has any use or value: it is what is rejected or discarded, what produces degradation and abandonment.

In "Wasting Away" Lynch talks about the idea of waste, highlighting the plurality of meanings enclosed in this term, which refers both to an idea of rejection but is also linked to a sense of permanence and "residuality."

Waste is what remains as a result of a transformation process, it is exhausted matter deprived of its energy as a result of a long and continuous process of mutation: "waste" is what has embraced change but has also suffered its effects, becoming inactive residue. This concept is therefore linked to everything that seems to be unable to be reintroduced into a virtuous life cycle: it can be space awaiting some response, blocked on the temporal and physical margins of the city.

The wide range of meanings in the concept of waste expressed by Lynch, is taken up by Alan Berger in his Drosscapes theory, which extends its meaning to include polluted and devastated places, as well as decommissioned built fabric, but also obsolete fragments of the city. With reference to the urban context, therefore, we can use the term waste when we refer to the residual parts of urbanization, landfills, but also materials and outcast people.¹

The contemporary city, following its uncontrolled transformation process, it's hungry for the new and immediate, is under constant construction, generating "spaces and occasions for refusal", as in the image of the imaginary city of Leonia narrated by Calvino: "This is the result: the more Leonia expels goods, the more it accumulates them; the scales of its past

are soldered into a cuirass that cannot be removed. As the city is renewed each day, it preserves all of itself in its only definitive form: yesterday's sweepings piled up on the sweepings of the day before yesterday and of all its days and years and decades."²

It is therefore clearly necessary to recover the city's ability to reuse what it discards, restoring a type of balance once typical of the historical city. This equilibrium seems to be lacking in contemporary territories, where it appears impeded, and the occasions for decay, degradation and pollution are frequent. The meaning and role of waste spaces must therefore be re-read and transformed into a resource, an opportunity for redemption.

This observation of the city starting from its waste, from the fragments of reality that represent its marginal aspects, offers an insight into the contemporary world, the current condition of environmental pollution, consumption of resources and land, economic crisis and social exclusion, and asks for a response in a global call to Re-cycle.

2.3 Fragment.

The essence of contemporary cities is the fragment, a multi-scalar portion, rich in meanings and narratives. The articulation of the contemporary city shows, in its complex variety, the discontinuous processes at the basis of its development. It describes the different phases of its historical evolution and is shaped by the continuous transformations that have occurred over time with different rhythms and for responding to varied needs.

Today's urban territory presents itself as an unordered set of parts that constructs its structure, but at the same time confuses and deconstructs its identity, being incapable of an effective interaction other than the condition of contiguity. The separation of fragments, the ungovernable diversity contained in the portions of the city, is effectively expressed in the Koolhaas utopia of the Generic City, where the physical consistency of the boundaries of every

"other" urban condition is regarded as similar to the image of a waterfront, a vision of concrete transition from a dimension linked to the territory, to the mainland, and, at the same time, to a fluid dimension, linked to water. A really distinct transition, a change of environment, of context, a perceptual and sensorial variation, deep, sudden, tangible.

This is the nature of the scenography of the contemporary city, devoid of an *ex-ante* prefigurative design - as was typical of the historical city - and characterized by fragments that are welded together in retrospect.³ Therefore, it seems urgent to identify the nature of the fragments of the city, in order to make an interpretive category capable of keeping together different layers of inter-scalar readings. The fragment is an essential element of interpretation in order to understand the contemporary urban context, an instrument for decoding complexity, a means of investigation which, at the same time, offers opportunity for interaction with the transformation process of the urban fabric.

"Thanks to its 'incompleteness', it will

represent the object that, more than any other, will present, in the urban context, margins of operability."⁴

It is therefore necessary to try to interact with the urban reality through the transformation potential included in each of its parts, regarding the fragment as an opportunity to re-signify the project.

3. Naples' fragments as a case study.

"... the skill of "do it yourself" (of the Neapolitan) and the promptness of spirit with which, when facing a danger, the same manages with ridiculous simplicity to derive from a defect a salvific advantage [...]. In him there is the supreme inventive wealth of the child."

This kind of thought, expressed by Rethel in *Das Ideal des Kaputten - ÜberNeapolitanische Technik*, could be extended not only to the inhabitant of Naples, but to the entire city endowed with an inventive spirit and an ability to absorb diversities, an inexhaustible capacity to re-write and re-invent itself.



Fig.1. Naples and its palimpsest.

In this new perspective, the "waste" commutes its value, it renovates its meaning and transforms itself into an essential material, an overriding aspect of the project. The city of Naples can be considered as a case of exceptional interest in this respect, where the nature of dross takes on a strong inter-scalar dimension, due to its peculiar orographic configuration, as well as to its secular historical stratification (Fig.1). The structure of the city is founded on a delicate balance of "juxtaposed and not composed" fragments that build its heterogeneous architectural palimpsest and are embodied in its articulate urban fabric. In this complex process of assembly, the fragments of the historic city, over time and by "remaining pathologically linked" to the city's life cycle, have progressively taken on a role of "waste", changing into dross resulting from the metabolization of more recent urban construction, in a paradoxical reversal of roles. The different epochs characterizing the constitutive parts of the city - through the continuous renewal of the most recent fragments against the fixity affecting the metabolism of the ancient urban fabric - have resulted in a lack of homogeneity, a real sequence of "waiting spaces", a network of waste areas, real urban remains, which can be considered as strategic opportunities to trigger beneficial aspects for the reactivation of the city.

In the dispersion and fragmentation of the spaces of contemporaneity, which result from actions that did not always take into account the physical and human relationships founding the city, it is necessary to consider the possible interactions that connect different fragments. Working on a network of public spaces, with the aim to improve existing structures through a transformation process capable of responding to human needs, means building urban and social interactions as well as relationships between individual buildings/parts of cities and individuals. These interactions have a different and multi-scale nature: between fragments and parts of the city; between enclosed spaces and open spaces; between pre-existing and new elements; between interior and exterior; between subjects and different disciplines.

Through projects with multiple relational dimensions, urban pieces can be "re-circulated" in connection either with their nearest surroundings or with other complex parts of the city, producing a territorial scale of a new vital urban landscape in which the utmost attention is paid to environmental, economic and cultural quality and sustainability.

The key to understanding the Neapolitan case study, is to see it as work on a network of links made up of pedestrian paths and public spaces, at the same time as looking at the historical centre and the outer suburbs, including marginal areas, discarded or abandoned, awaiting transformation. The case study interprets the theme of waste at several levels of reading: decommissioning, abandonment and destruction are not the only factors driving wasteland, as there are uses which are not well accepted in every settled community, but essential for the broader territory. The latter implies that the accommodation of people living on the edge of society is treated as waste.

Accepting the challenge cast by the extreme complexity and variety of meanings contained in the term waste, prompted the aim of the study to be an experimental project on the former Provincial Asylum of Naples "Leonardo Bianchi." This offered, and at the same time was confirmed by, the reading of it as a critical and multifaceted territory as is that of the city of Naples itself.

Today, the ancient mental hospital, appears a shuttered and enclosed fragment of the city unable, due to its nature, to establish relations with a context greatly changed over time, representing an interesting opportunity to verify possible urban interactions "in vitro."

3.1. The Modern Mental Hospital and the Provincial Asylum "Leonardo Bianchi."

The "modern-shaped" mental hospitals, once psychiatric hospitals, represented the materialization of the Foucauldian heterotopia: other spaces, rigidly separated from external reality, "containers" of a social dysfunction

built for clear purposes of exclusion. Decommissioned for several decades, they often lie in a state of ruin and abandonment. Reading the contemporary city by layers, new superimposed and subordinated layers can profoundly modify the traditional urban dynamics, greatly increasing the variables to be taken into account. The infrastructural networks constitute a new level that expands the territorial dimension of reference: what was previously considered a resource for the district or the city becomes a potential resource for a much more extensive geography. These "big containers" - such as former asylum complexes - are situated in the infrastructures intertwined with the complex territory in which we operate today, compact cores and widespread settlements. These spaces are, at the same time, interlinked with the city whilst also being part of it, seeking a relationship with a potentially inter-scalar context. The network of green areas is also interpreted as an infrastructure, capable of holding the different spatial and temporal scales together - from the regional one to the single lot, and from the short to the long term.

"Leonardo Bianchi" is one of 70 former psychiatric hospitals in Italy. These "modern asylum architectures" originate from the need to bring together the ex novo edification of mental institutions after the unification of Italy. The history of the architecture of psychiatric structures in Europe and in Italy is strongly intertwined with the history of the individual city, its environment and territory, as well as the developing condition of psychiatry, legislation, society and economics. This type of functional architecture represents a prominent urban, territorial and architectural heritage and it originates, develops and ends within specific temporal limits. We can trace a short history of these architectures: the modern mental hospital was an evolution of a proper and specific hospital structure; born in the 19th century, it was different to previous forms of asylum for mentally unstable patients and saw its decline in Italy in 1978, due to the Basaglia Law.

The psychiatric institution attempts to adapt to two different lines of thought,

social and medical, which both result in the idea of guarding and giving shelter, therefore isolating the psychotic patients in a sort of "innocent prison", and treating them at the same time, as if in a hospital but without the possibility of temporary convalescence. The new psychiatry of the 19th century strongly believed in the therapeutic benefits the in-patient could receive from a state of isolation. The tormented mind was considered capable of purifying itself through calm and silence, thus turning it into a psychological tabula rasa ready to be filled with sensible thoughts transferred by the physician. The mental hospital was the place (Kom) where insanity (mania) could be treated, a place effective per se as it was strictly separated from the external world. Accordingly, psychiatric hospitals were built on the outskirts of the cities, satisfying conditions then required by medical personnel working in this field. The features of mental hospitals are conceived as constructing a strong link between function and form: they are instruments for psychiatric aid, moral remedies par excellence.

Almost always on the outskirts of the cities, at a safe distance from the inhabited areas so as to keep the insane isolated, mental hospitals are independent cells replicating the idea of a "normal life"; a scaled-down city in the suburbs of the healthier cities, provided with walls, doors, paths, recovery and office buildings, services, productive structures and green areas, thus achieving the urban heterotopia theorized by Foucault.

The criterion leading to internment was not mental illness but "dangerousness" and "public scandal": mental hospitals started to face up to a series of problems amongst the population, such as the mentally insane as well as the seriously disabled, social outsiders, the marginalised, alcoholics and homosexuals.

In 1978, law no. 180 Voluntary and mandatory inspections and health treatments was promulgated, based on the theory that the rehabilitation of the mentally ill could not exclude social re-integration. This law initiated the closing down of psychiatric hospitals. After the Basaglia Law, mental hospital complexes



Fig.2. Leonardo Bianchi's main entrance - picture by G. Fiorito, 1995.

underwent a long period of dissolution. Isolated and partial actions were made to the former Italian psychiatric structures, and we can safely say that, in political and administrative structures, as well as in common sense, there was not (and there still is not), any awareness of the material and intangible values of these places. Nowadays, they still represent something different, far from the city: their potential fruitfulness is prohibited and relationships with nearby communities are suspended.

"Leonardo Bianchi" is a colossal, almost entirely abandoned complex that stands on a tableland North-West of the ancient city centre in its

nearest suburb, an area delimited by Albergo dei Poveri, the slope of Parco di Capodimonte and the international airport of Naples "Capodichino"; it represents an established element within the city, separate from the urban fabric. The area of the original structure occupies an area of 370 square meters; the symmetrical square plan consists of a central service centre and two lateral rectangles that once housed recovery pavilions. Symbolically, this outline represented a "ritual" path marking the boundary between the "city of the healthy" and the "city of the sick", the outside and the inside of a unitary system. The main building of the neglected complex (Fig.2) includes the



Fig.3. Leonardo Bianchi's master plan project, 2014.

scientific library and the archive centre; while the "Michele Sciuti" pavilion hosts some offices and a parking area for ambulances in the courtyard.

Many other psychiatric hospital complexes like the "Bianchi", were surrounded by twentieth-century architectural structures of various densities expanding into the suburbs due to urban growth. Today these structures appear as huge black holes at a complicated scale with much

changed contexts, thus taking the shape of enclaves separated from their built enclosures.

This isolated condition is often made worse by the hilly terrain of the places designated for the construction of the complexes: the confinement of the former mental hospital of Naples, disconnected from the surrounding urban fabric precisely because of its function, is exacerbated by a significant difference in height compared to the road layout.

3.2. Re-linking the Provincial Asylum "Leonardo Bianchi" through salubrious green infrastructures.

The former Neapolitan Psychiatric Hospital, which was built in what were then virgin suburbs, has been absorbed into urban growth by ribbons of buildings realized during the twentieth-century expansion with variable density, indifferent to its huge presence (Fig.3), reinforcing its appearance of an enclave



Fig.4. Collage 1. Green strategies to link the hospital to the city.

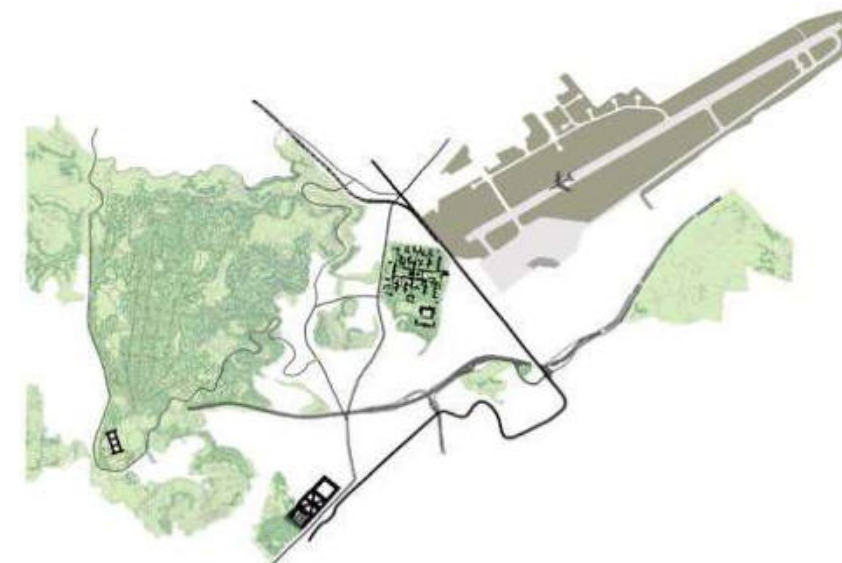


Fig.5. The green as an urban infrastructure.

and a fragment. The Bianchi recycling project, structured for different periods and phases, has been a new opportunity to integrate architecture and city in a single operation (Fig.5), both territory and community, in a vision of an organic architecture capable of absorbing more and more resources in order to produce others, in a retroactive process. The project has not only been tackled on the physical level - measured against the aim of preserving the identity of the fragment and the goal of reaching a new dimension

of wide usability - but also in relation to the social and cultural fabric that could enable the transition from the past to the future.

Given the impossibility of defining an integral and/or univocal restoration project, the logic underlying our intervention pursued the aim of disassembling the rigid original plan of the "Bianchi" and using it for health purposes in the broader sense, thus suggesting a sequence of development phases that are



Fig.6. Green healthy spaces of the Leonardo Bianchi complex in detail.

compatible with completion times and economic resources.

Three operations were delineated to put this modification into practice: reinventing the idea of health care; inverting the "full-empty" correlation; dismantling the hierarchical logic of the original plan. This paper does not dwell on the third intervention.

Because of the difficulties in imagining generic dismantlement for this complex, we looked for as close a dimension as possible to the original. While selecting a new function, we speculated on placing the structure in the network of medical-healthcare facilities again. Taking a wider perspective, we proposed a type of facility that is oriented towards wellness and psychophysical health, through therapeutic, recreational and social work activities. Our aim is to transform a mental hospital complex into a new form of healthcare structure: a "city of health", which addresses a series of diversified disabilities and not exclusively mental ones.

After taking photographs of the "Bianchi" in its current condition, we prioritized interventions on the open spaces and temporarily attenuated the role of the building per se (the vegetation now completely dominates the architecture, whereas there used to be well-kept green gardens that disorder under control - Fig.4).

The entire complex could be reinvented through the use of its external areas for different purposes: from social agriculture to therapeutic gardens, from games to sport (Fig.6). The promotion of a healthy lifestyle that includes physical activity as well as healthy eating, a specific task for the Health Authority, which can then combine an urban and social dimension.

Besides, retrieving the flora of the "Bianchi" - thus reconnecting the urban complex with the surrounding area that includes Bosco di Capodimonte, the Botanical Garden, the Vallone San Rocco of Parco delle Colline - turns out to be more economical compared to an intervention on the whole complex, although the green areas occupy a broader area.



Fig.7. Rescue and Reuse of two pavilions of the Leonardo Bianchi.

As a consequence of the re-use of open spaces, there is good potential to reuse part of the construction as well.

For the pavilions, we chose to intervene first on those belonging to the original structure. Furthermore, we distinguished between two ways of converting the green areas, based on their intended use. (Fig.7)

The first is about "re-functionalizing" them and placing compatible – for instance, residential – functions within pre-existing architectures, so that the buildings close to the border delimited by Via Umberto Maddalena can also be reused. The second one involves minimal intervention operations in order to

support the innovative use of these spaces – taking the Matadero in Madrid and Parco Dora in Turin as the main models. It also offers a new interpretation through new project proposals in relation to what already exists, making use of available material that is no longer tied to history. For example, one pavilion inside the urban garden area could be designated to function as a terminal market and/or warehouse: the recovery action is again perceived as "reuse" and the pavilions are interpreted as expansion of the open space, thus making them available for further contemporary and/or temporary uses. They are "open" and yet indoors, without window/door fixtures or air conditioning.

To sum up, the project to restore the former psychiatric institution "Leonardo Bianchi" pursues the aim of change, which is inserted in the Neapolitan urban context through the idea of porousness: porousness in the treatment through activities in the garden areas, as well as physical porousness in the architectural complex in the fragmented city, porousness in the economic and social aspects, already (or to be) involved in the phases of the research work continuing later.

4. Open conclusions.

A green, wide and pluralist reconnection, linked to the network of non-built-up residual open spaces and small and large parks, based on continuity, porosity, permeability and functional integration, represents the instrument through which the potential of the fragment-scrap can be both expressed and be connected, not only with the other drosscapes of the city, but even with its most consolidated green areas and public spaces.

This process may transform the separate, individual elements into a whole new green system. (Fig.8)



Fig.8. Collage 2. "Green" as a device capable of producing well-being and health care.

Notes

1. The text refers to the dictionary entry "Waste", written by R. Pavia in: *Recycle theory: Dizionario Illustrato/ Illustrated Dictionary*, edited by S. Marini and G. Corbellini.
2. CALVINO, Italo, 2018 – *Le città invisibili*. Milano: Mondadori. ISBN 978-8804668-02-2.
3. The text refers to the expression used by A. Aymonino in "Più spazio, meno volume: un racconto in movimento", chapter in *Nuovi Paradigmi*, RICCI, Mosè, 2012.
4. The text refers to "I frammenti della città e gli elementi semplici dell'architettura" written by Giancarlo Motta and Antonia Pizzigoni, *Città studi edizioni*, Torino 1992, p. 64.
5. The project description is taken from the article "The former psychiatric hospital 'Leonardo Bianchi': a project for a complex heritage", written by Maria Pia Amore for *FAMagazine* n.41, 2017.

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Biography

Maria Pia Amore. Architect and PhD in Architectural and Urban Design, she is actually Adjunct Professor at the Department of Architecture DiARC of the University of Naples "Federico II." Her broader research interests focus on the design strategies of intervention, both at the architectural and urban scale, on existing building and territories, considering the underused or abandoned built-up spaces as a resource, and looking at modification/mutation as an instrument for reaching duration in a perspective of sustainable development. She is also interested in the narrative communication of the architectural project. She has participated in several academic researches, national and international design workshops and conferences.

Francesca Talevi is an architect, graduated summa cum laude in Architectural and Urban Design in 2015 at the University of Naples Federico II. She held a post-graduated Master in Excellent Design of the Historic City in 2016. Since 2017 she is a PhD student in Architectural and Urban Design. Her PhD research questions the role of heritage conservation, both on the architectural and the urban scale, focusing on the potentially pathological drifts induced by the subtraction of historical permanences from the active time and space of the contemporary city. She is presently working as teaching assistant for the Architectural and Urban design Laboratory. She also took part in several research projects, conferences, national and international workshops on the redevelopment of marginal areas and the investigation of the role of the heritage in the contemporaneity.

A Poetic Landscape for the Next Millennium.

From architecture to art, poetry and philosophy.

When asked to deliver the Charles Eliot Norton Poetry Lectures at Harvard about the future of literature, Calvino came up with six qualities depicting them through several literary examples. He titled them "Six Memos for the Next Millennium."

Similarly, we recognize several architectural sensations resulting from a composition of expressive qualities that are common to several works of architecture, independently of their typologies, construction techniques, or materials, although these elements enter into the aesthetic composition.

Central to our argument is the link established by Deleuze & Guattari

between territory, matters of expression and the composition of sensations to define what we name a "Poetic Landscape," following the idea of the becoming-expressive of the territory and how the territorial marks and the territory-house system are at the origin of art. We will analyse a landscape located in a cold and icy land through the presentation of works by Peter Zumthor in order to contribute to the notion of Poetic Landscape addressing the values and qualities for the next millennium.

Key words:

Poetic Landscape, Aesthetics, Sensation, Zumthor, Deleuze.

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In his poem "Six Significant Landscapes" (1916), Wallace Stevens invites us to see several landscapes, among which one is usually represented by Chinese painters, in particular of the Southern Song (or Late Song) school, which flourished between the end of century XII and the XIII century. In the poem, an old man quietly sitting in the shade of a pine tree, observes the flowers at the edge of the shade and how they move with the gusts of wind (like brushstrokes), while the water slides through the weeds.

An old man sits
In the shadow of a pine tree
In China.
He sees larkspur,
Blue and white,
At the edge of the shadow,
Move in the wind.
His beard moves in the wind.
The pine tree moves in the wind.
Thus water flows
Over weeds.

"The poem, like the Chinese painting it represents, portrays a single impression: consciousness of the unity of all created things,"¹¹ says Zhaoming Qiang. Moreover: "The man who sees the larkspur moving in the wind suddenly, in the flash of a single thought, is no longer aware of himself. He is that larkspur, the larkspur that reveals universal reality."¹² In his poem, Wallace Stevens creates a landscape, simultaneously poetic and visual (one of his many examples of ekphrasis - the literary representation of a visual representation), which allows the reader not only to see the landscape (which is the representation of that other painted) before his eyes while reading, but also to feel the landscape gradually unfolding him. As the seating man, he/she becomes flower, pine tree, wind and water, double singularities of the Chinese landscape and painting, which evoke the unity between man and nature.

In 1998, the Detmold's Literature Group, coordinated by Brigitte Labs-Ehlert (who later wrote the preface to Peter Zumthor's book *Atmospheres*), invited several writers and poets, such as Peter Waterhouse, Michael Hamburger and Yoko Tawada, to write a poem to a place they would select in the rural landscape near Bad Salzuflen, Germany, a landscape



Fig.1. (Courtesy of Peter Zumthor Büro).



Fig.2. (Courtesy of Peter Zumthor Büro).

characterized by its smooth and wide humid green hills, rolling lines of trees on the horizon and dense forest areas, where glades pay tribute to the sky and the stars. Poetry, as Stevens exemplifies, in the rhythm that belongs to it, in the words and the sounds that echo in emptiness and thought, appropriates, perhaps like no other form of artistic expression, the force and the singularities that compose nature, allowing the one who intones it to penetrate the landscape and feel it in his or her body, which is transformed, in its turn, by the words. The rhythm of the voice, of the air that rises and descends through the vocal chords inside the body, joining the lungs to the brain, turns into a gust of wind, into blue and white and the perfume of flowers, in a moist soil and water. Poetry reacts immediately to the singularities of the landscape, transforming its qualities into sensations. If we are so visceral about a landscape created by poetry, can other forms of art also compose poetic landscapes?

After the selection of the places by the writers and the poets, the literature group invited Peter Zumthor, the Swiss architect, to design a building for each one of those

places, where the poem would be kept and where it could be read: a house for a poem. A particular place in the landscape was doubly interpreted: by the poem and by the work of architecture, and both could be experienced in the place that gave birth to them. The various places, accessible on foot, would form a Poetic Landscape, which in turn would imply an intensive drift between the various places.

Not unexpectedly, the poets with their unique sensibility selected singular moments in the landscape - where three trees align geometrically in the plain (Fig.1), where a large horizontal plane is covered with leaves in the autumn and turns into a hill, where several paths split the dense forest, meeting in a glade - in a work that Zumthor called "seismographic" - as if these places corresponded to points of energy, points of ecstasy of the body of the landscape, which then "traced and brought the form" of the building into being. However, as Zumthor writes: "The text and the building do not touch. The poem is not in the building, the building says nothing about the poem. The poem does not know the building and does not talk about it. But both the text and the



Fig.3. (Courtesy of Peter Zumthor Büro).

building speak of the same place."³

The buildings designed by Zumthor for the Poetic Landscape marked the origin of the poem in the landscape, while simultaneously interpreting the place through architecture, through form and materials, which aimed to intensify, like the poem, the experience of the place in the landscape. Looking at the drawings and the models he made, the buildings emerge in moments of tension, on a steep slope, defying the laws of gravity and those of the underground aquifer flows (Fig.2), or on the threshold of a plane where the landscape changes its character and two meadows meet, or between an open meadow and the beginning of the dense forest, in which part of the building hides itself. (Fig.3)

Unfortunately, the local government changed and the Poetic Landscape was not fulfilled. However, it is from that moment that Zumthor changes his own thinking about the relation between landscape and the work of architecture as expressed in the essay "Architecture and Landscape," published in a second edition of *Thinking Architecture*, in which Zumthor, implicitly referring to Caspar David Friedrich's painting *The Monk by the Sea*, writes of: "An aesthetic experience: I see a man looking at the horizon line of the ocean with his back to the painter. Like the painter and the man in the painting, I look at the landscape, at the painted horizon, and feel the grandeur and vastness. A certain melancholy comes to the fore, imbued with the sense of a world that is infinitely bigger than I am but offers me sanctuary. In addition to the feeling that nature is close to me

and yet larger than I am, landscape also gives me the feeling of being at home."⁴ Curiously, in this excerpt we find echoes of Qiang's commentary on Stevens' poem about the unity existing between man and nature (which is present in both Chinese painting and philosophy), despite nature often presenting itself as the unknown, the immeasurable and the unpredictable, displaying its indomitable forces. Aware that the work of architecture transforms the landscape, Zumthor seeks to understand it from its mysteries and its invisible matter. "First I have to look hard at the landscape, at the woods and trees, the leaves, the grasses, the animated surface of the earth, and then develop a feeling of love for what I see - because we don't hurt what we love. Secondly, I have to take care. That is something I have learned from traditional agriculture, which uses the soil but is, at the same time, sustainable. It takes care of the things that nourish us. Thirdly, I must try to find the right measure, the right quantity, the right size, the right shape for the desired object in its beloved surroundings. The outcome is harmony or possibly even tension. (...) But how do I find the right measure? I venture to claim that we all immediately sense if the relationship between the landscape and the building in which it has been placed is disrupted, if the landscape is not enriched through the architectural intervention but simply threatens to disappear. Besides, this kind of sensing is not a theoretical task; first and foremost, it means having faith in sensual perception."⁵

The sensual perception, which Zumthor refers to, resembles the molecular sensibility defined by Gilles

Deleuze, a type of sensitive perception or attention that allows us to penetrate the landscape, the chemical animism of its components, and to follow its invisible fluxes, determine the singularities that punctuate it and give name to vastness and the infinite, to understand the ruptures and fissures of the earth, the thickness from which life is born, and, most important, to become landscape, as in the poem: to loose one's consciousness while becoming flower, earth, the cosmos.⁶ Zumthor reveals to us: "I have to love the earth and the topography. I love the movement of the landscape, the flow and the structure of its forms; I try to imagine how thick the humus is; I see the hard bump in the meadow and sense the big boulder underneath all the other things I don't know very much about, but that give me a wonderful feeling. (...) And when I build something in the landscape, it is important to me to make sure my building materials match the historically grown substance of the landscape. The physical substance of what is built has to resonate with the physical substance of the area. (...) Without a delight in topography and the synthesis of materials, there is no form."⁷

This process is indeed quite similar to the Land Art that arose at the end of the '60s and '70s, who Zumthor praise, in the practice of such artists as Mario Merz, Robert Smithson, Joseph Beuys or James Turrell, to whom the architect turns several times in his work (The Summer Serpentine Pavilion of 2011, for instance, is clearly influenced by James Turrell's *Skyscapes*, and when talking about materials and their infinite combination, Zumthor refers several times to Mario Merz, Joseph Beuys or Meret Oppenheim).

Although not in reference to Zumthor, the projects for the Poetic Landscape remind us of the photographic series *Mimesis* (1972-73), by Barbara and Michael Leisgen, a German couple of artists who noticeably pay a homage to Caspar David Friedrich in their work, his painting *Morgenlicht* being the main starting point to their series. In *Mimesis*, the silhouette of Barbara Leisgen appears in the middle of the photograph, mimicking the landscape's features through the simple gestures and postures of stretching her



Fig.4. Steilneset Memorial, photograph: Susana Ventura, 2014.



Fig.5. Vardø's structure for drying fish. Photograph: Susana Ventura, 2014.

arms in different positions, sometimes to hold the sun around her arms, at other times to create a vessel for the clouds, in other photographs to emphasize the point where two mountains meet at the horizon, or to follow the contours of the undulating countryside. The body becomes a territorial mark within the landscape, intensifying its expressive elements. As they mention: "In a time without words, the coercion to behave mimetically was enormous. Reading clouds, stars, the sun, mountains and dance is reading beyond language."⁸ Their several works resembling and mimicking the landscape comes from a reading beyond language that resembles Zumthor's words about the required sensual perception (which he states is not a theoretical task) in order to understand the landscape's expressive components ("The faculties to resemble and to behave similar are faculties of man. The attempt to imitate is always magic, too."⁹) When one looks at the Leisgen's photographs and at Zumthor's drawings and models for the Poetic Landscape projects, the resemblance becomes evident, not because Zumthor might be familiar with the formers' work, but rather because of their related understanding of landscape and nature. Where the body of Barbara Leisgen stands, we may easily imagine a Zumthor building (we may suspect that Zumthor's particular reading of nature's elements might come from his admiration of Wolfgang Goethe as well).

In a different way, we also find resonances between Robert Smithson's work and Zumthor's approach. For the construction of Spiral Jetty - the 460m long and 4.6m wide spiral made of

black basalt that extends out into the Great Salt Lake - in Utah, Smithson had carefully selected the place because of the unusual reddish-pinkish tone that water acquires due to the presence of halophilic micro-organisms that inhabit the lake's very salty water. "On the slopes of Rozel Point I closed my eyes, and the sun burned crimson through the lids. I opened them and the Great Salt Lake was bleeding scarlet streaks,"¹⁰ wrote Smithson. After completion (Smithson built it during a drought), the Spiral Jetty was submerged for decades and when it was rendered visible again, the black basalt rocks exhibited beautiful encrusted crystals of white salt (an effect of the passage of time of which Smithson was possibly aware, for he mentions crystals as part of the material composition of the work and at that time the Spiral Jetty didn't have any crystals in its rocks). Time and nature act as artists transforming the Spiral Jetty's composition through the seasons and fluctuating water levels. It is likely that Smithson was conscious of the future of the Spiral Jetty, as he would be aware of the climate changes and the resulting increased periods of drought that would probably leave the Spiral Jetty waterless and, consequently, losing its expressiveness of a blood lake where a vortex is always changing one's perception (Smithson emphasized the power of the spiral as symbol); sometimes it seems to dissolve the surrounding landscape into a vanishing point. Although the particular environment might retain the necessary properties to support the living bacteria responsible for the colour of the water for a few years after the drought,

it will eventually disappear and turn the landscape into a white, almost icy desolate land. This awareness shows Smithson's interest in entropy as the spiral's change across time, from past to future, will crystallize the very process from order to chaos (Smithson had also investigated the place's past and the marks that time leave imprinted in the landscape).

However differently, Zumthor's Steilneset Memorial in Vardø (Fig.4) may provide important pointers to the future use of resources and promote sustainable use of the ecosystems and endogenous processes as a building that stands in a landscape with unique natural characteristics and extreme weather conditions. For it is clear that Zumthor proceeds in a similar way to Smithson and other Land Art artists with several excursions to the site, walking, collecting and documenting the landscape's expressive singularities (which includes the passage of time and the chaos that nature embodies in itself) that become metamorphosed into the work's composition in order to compose certain spatial sensations. Just as the poem composes, through words, the sensations of a landscape (it's only through the sensation, that one becomes), so the work of architecture also composes sensations, although each artistic form proceeds differently - as we have noticed for the Poetic Landscape project following Zumthor's thought. A spatial sensation is created through the combination of matters of expression that act beyond the functional order, as for instance, when a certain material is combined with other elements in an inventive way,

defying its very physical properties (or augmenting, intensifying these in a way that the material reaches its very limit) that it donates to the space a quality that is extrinsic to the combined elements. We see this in several of Zumthor's works. In the Bruder Klaus Kapelle, for example, where his reflections made after the Poetic Landscape project is also evident; in order to compose the desired atmosphere as the black colour from a fire of the bamboo structure wasn't dark enough, Zumthor decides to make a second fire inside it. This action is only justified by the composition of the sensation when an intensity of black induces in our body a stillness that makes us remain in silence. Our body starts to slow down, our consciousness of the exterior starts to vanish and, as the old man, seated inside the Kapelle we are one with the space, the light and the ground of informal rust patterns that water creates upon the lead floor (that seed of chaos and unpredictability that is left to nature and time to create). Sensations have a direct action and impact on our nervous system, ordering our bodies to mould themselves to space as we are invaded by the power and effects of sensations that we feel by the differences in intensity.

My understanding of the Steilneset Memorial started with an expedition,¹¹ repeating the method of reading and understanding the landscape, developing a sensual perception of the site, a relation between my body - which transforms itself into something like a resonance box in a landscape - the landscape and the work of architecture. Vardø is an island located above the Arctic circle in Norway, where the land meets its end and we feel earth's curvature and nature's power so strongly. During the summer, the day is endless while during the winter the sky is of the darkest blue, as a constant night, only punctuated by the lights on the streets and in the houses. Every house has a light suspended in the frame of the window (a gesture Zumthor will repeat inside the Memorial). The island's terrain is a continuous mantle of rock, grass, flowers, with the buildings standing in between. There are almost no fences and the houses have a direct relation with this geological stratum. Some of the buildings even have informal green

roofs. The community is mainly occupied in fishing and related industries, and while walking around the island to enjoy its extraordinary nature (in the way of Nordic people), we may still find the old structures used to dry fish (Fig.5), similar to the wood structure of the Steilneset Memorial. The Memorial is placed above the terrain with the natural untouched landscape flowing underneath, its little flowers, rocks and stones, empty sea urchin shell houses, and it recapitulates this movement of walking through the landscape (Fig.6): it is a sheltered passage or a tunnel, a dark one, in the middle of the northern icy landscape. But above all, the memorial is a territory in the Deleuzian sense, where all the

components and singularities of the landscape are metamorphosed into matters of expression in order to compose specific sensations: one of silence and another one of contemplation (however, we will focus here upon the composition of silence).

In the composition of the sensation, there are always thresholds of intensity - when a sensation reaches a limit and changes its nature (for instance: the perfect balance or its immediate fall) - and, in the present example, they coincide with the ones of the building itself, of the entrance and the exit, as a long walk through the Northern landscape already taken place (we are totally immersed in



Fig.6. Steilneset Memorial, photograph: Susana Ventura, 2014.



Fig.7. Steilneset Memorial, photograph: Susana Ventura, 2014.

the landscape). Albeit being apparently symmetric, from whatever side we reach it, the sensation changes by the very act of crossing the space of the structure. The entrance, independently of the side, is marked by the heavy door and once we enter the dark corridor, we know that we can't go back. (Clearly understanding the door as a threshold, Zumthor always pays great attention to the doors and all their details, from how our hand grasps the handle, to the movement that the door describes when we push it or close it, to feeling its weight or to its aesthetic expression, the texture of the materials mixed with the time of use and the time of nature). (Fig.7)

Once inside the Memorial (Fig.8), the atmosphere is quieter, but it is also of concentration, of pure saturation prompted mainly by the black canvas, (an artifice that Zumthor would create again in the Summer Serpentine Pavilion, and some former projects where we may identify with the double wall or corridor that envelops space to prepare the body before inhabiting). The silence, however, only becomes expressive because Zumthor kept the presence of nature's elements inside the tunnel: we hear and feel the wind, the Arctic's icy cold, the cries of the seagulls and the birds flying in circles, the waves crashing against the rocks. The tunnel is crossed by nature, by all its elements. However, it's a silent landscape, as if in John Cage's 4'33" all the subtle differences of sound in the interior increase the attentive listening of our bodies, because the space forms an envelope for the body, at the same time making the body concentrate on all the subtle sounds coming from the exterior, in their intensive bodily presence. This dichotomy between exterior and interior space - and we should notice that many of the openings are unreachable to our eyes, so the presence of the exterior elements happens mainly through hearing - is thus extremely important in the composition of silence as a spatial sensation (This is similar to the dissociation between seeing and hearing that Deleuze recognizes in the films of Danièle Huillet and Jean-Marie Straub). Moreover, we murmur the names of the presumed witches who were burnt, even if we don't know how to read them as they belong to a foreign language.

However, this murmur creates a rhythm of its own which resembles a prayer. And this rhythm pairs with another one, of our steps through the space, increasing the silence (as in music, it's the silence between notes and tones that gives music its expressiveness). The components of the surrounding landscape (and especially those, like the reddish-pinkish water of the Great Salt Lake in Utah, that are singularities of an extreme landscape) are transformed into matters of expression in the work of architecture.

The texts and the work of Zumthor, as well as his closeness to the Land Art artists, allow us to deepen our understanding of the relation that Deleuze & Guattari establish between territory, matters of expression and the composition of sensations. Usually they move from the empirical experience (in this case Zumthor's built and written work) to the composition of the philosophical concept (in their view that philosophy is an inventive and creative labour whose principal task is to create concepts). One of their favourite examples to explain the philosophical concept of territory is the story of the Stagemaker Bowerbird, a bird living in the mountain forests of northeast Queensland in Australia. "The brown Stagemaker (Scenopoetesdentirostris) lays down landmarks each morning by dropping leaves it picks from its tree, and then turning them upside down so the paler underside stands out against the earth: inversion producing a matter of expression. The territory is not primary in relation to the qualitative mark; it is the mark that makes the territory."¹²

Deleuze and Guattari believe that the territorializing factor comes from the becoming-expressive of the components that make up the milieu. In the case of the little bird, the bird performs a mise-en-scène involving certain postures of its body, the colours of its feathers, its singing and smell. This performance isn't a matter of function, such as attracting the female or the male, defending the territory from possible enemies, or even competing for the best singing composition, which allow Deleuze (& Guattari) to state that a territory is born only when it is expressive. The two authors will again tell the story of the Brown Stagemaker to reinforce

these ideas: "Perhaps art begins within the animal, at least with the animal that carves out a territory and constructs a house (both are correlative, or even one and the same, in what is called a habitat). The territory-house system transforms a number of organic functions - sexuality, procreation, aggression, feeding. But this transformation does not explain the appearance of the territory and the house; rather, it is the other way around: the territory implies the emergence of pure sensory qualities, of "sensibilia" that cease to be merely functional and become expressive features, making possible a transformation of function."¹³ The Zumthor Memorial is the Stagemaker's leaf, the gesture that allows it to capture nature in its most intense expressiveness and display it in a different way (nature as ready-made, as Deleuze & Guattari would point out). It's the song of the bird, a musical composition of nature's occasional sounds of despair. It's a performance when we cross the tunnel, perpetuating a continuous movement through the landscape that binds the island together. If we close our eyes inside the Memorial, as Smithson did when he arrived at Rozel Point, then when we open them, we would see the end of the earth.

When asked to deliver the Charles Eliot Norton Poetry Lectures at Harvard about the future of literature in the upcoming millennium, Italo Calvino came up with six values or literary qualities entitling the collection "Six Memos for the Next Millennium": lightness, quickness, exactitude, visibility, multiplicity and consistency. In each of the lectures (except the last one as he died before finishing the manuscript and delivering the lecture), he depicted each quality through several literary examples from different authors and epochs. In the end, through architecture and the depiction of how specific architectural sensations are composed such as to transform the landscape's components into matters of expression of those same sensations, we are able to contribute to the philosophical, architectural and artistic concept of Poetic Landscape, addressing the values and qualities for the next millennium: to poetically inhabit the world (a form of resistance).

Notes

1. Zhaoming Qian, Chinese Landscape Painting in Stevens' "Six Significant Landscapes." *The Wallace Stevens Journal*, 21.2 (Fall 1997), p. 124.
2. Idem, *Ibidem*, p. 125.
3. Peter Zumthor, lecture presented at the 9th Literature Meeting, Schwabenberg, 21 January 2001.
4. Peter Zumthor, "Architecture and Landscape," *Thinking Architecture*, upcoming re-edition.
5. Idem, *Ibidem*.
6. The process of becoming (devenir, in French) as defined by Gilles Deleuze is an a-parallel evolution between two ideas, an encounter between two heterogeneous entities that form a bloc irreducible to either of the terms. As he explains to Claire Parnet, in *Dialogues*: "Les devenirs ne sont pas des phénomènes d'imitation, ni d'assimilation, mais de double capture, d'évolution non parallèle, de noces entre deux règnes. (...) La guêpe et l'orchidée donnent l'exemple. L'orchidée a l'air de former une image de guêpe, mais en fait il y a un devenir-guêpe de l'orchidée, un devenir orchidée de la guêpe, une double capture puisque "ce que" chacun devient ne change pas moins que "celui qui" devient. La guêpe devient partie de l'appareil de reproduction de l'orchidée, en même temps que l'orchidée vient organe sexuel pour la guêpe. Un seul et même devenir, un seul bloc de devenir, ou comme dit Rémy Chauvin, une "évolution a-parallèle de deux êtres qui n'ont absolument rien à voir l'un avec autre." Il y a des devenirs-animaux de l'homme qui ne consistent pas à faire le chien ou le chat, puisque l'animal et l'homme ne s'y rencontrent que sur parcours d'une commune déterritorialisation, mais dissymétrique. C'est comme les oiseaux de Mozart: il y a un devenir-oiseau, les deux formant un seul devenir, un seul bloc, une évolution a-parallèle, pas du tout un échange (...)," Gilles Deleuze in Gilles Deleuze, Claire Parnet; *Dialogues*. Paris:

Flammarion, 1996, pp. 8-9.

7. Peter Zumthor, "Architecture and Landscape," *Thinking Architecture*, upcoming reedition.
8. Barbara und Michael Leisgen: *Mimesis*, Catalog, Neue Galerie - Sammlung Ludwig, Aachen, 1974.
9. Idem, *Ibidem*.
10. Robert Smithson in Jack Flam (ed.), *Robert Smithson: the collected writings* Berkeley et al.: University of California Press, 1996, p. 148.
11. The first expedition to Vardø took place at the end of summer of 2014, after being awarded with the Fernando Távora's Award to realise a journey through several works of architecture.
12. Gilles Deleuze & Félix Guattari, *A Thousand Plateaus*. London, New York: Continuum, 2004, p. 348.
13. Gilles Deleuze & Félix Guattari, *What is philosophy?* New York: Columbia University Press, 1994, p. 183.

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Biography

Susana Ventura is an architect (graduated from Coimbra University in 2003), curator and postdoctoral researcher in Theory of Architecture and Aesthetics based in Lisbon. She holds a Ph.D. in Philosophy-Aesthetics from the Faculty of Social and Human Sciences of Nova University Lisbon (2013) with a thesis about the deleuzian body without organs. In 2014, she integrated the Official Portuguese Representation at the 14th Venice Architecture Biennale. In 2017, she curated (with Pedro Gadanho and João Laia) *Utopia / Dystopia* for the Museum of Art, Architecture, and Technology of Lisbon (MAAT). Recently, she curated *The House of Democracy: between Space and Power*, for Casa da Arquitectura (House for Architecture) in Matosinhos. She is a member of the current editorial team of *Jornal Arquitectos (JA)* of the Portuguese Architects Association (2016-2018) and a regular collaborator of *Contemporânea*, a Portuguese magazine about Contemporary Art. She has been lecturing in several national and international Universities and publishing in specialised magazines.

Syria: From Destruction to Reconstruction.

Use of War Demolition Materials in Rural Housing Construction in Syria.

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After years of destructive war that caused enormous damage in different sectors, Syria needs innovative solutions for rebuilding. The amount of waste materials that came out of destruction created a big problem to manage and to solve in the post-war reconstruction era. This paper aims to investigate the effect of using the destruction materials in the reconstruction process of building housing for internally displaced people and refugees willing to return to Syria.

The need for creative architectural approaches forces a new mentality in the science of construction materials, reconstruction management and urban planning; hence this paper is suggesting to build housing modules in rural areas of northern Syria using materials from the rubble. This project will achieve different goals: recycling the materials (because construction materials are rare and expensive), manage the

reconstruction of cities effectively, and giving space to community healing.

The impact of this architectural interactive approach on a range of different scientific sectors and research disciplines is here studied and analysed. The research discusses how architecture can motivate and work as a vehicle for other professionals to question their solutions, and modify their methods in order to serve the higher goal of providing the IDPs and refugees with a better quality of life.

This is an alternative approach proposed for a retroactive interaction with diverse scientific and social disciplines towards a holistic vision and solution to the post-war reconstruction in Syria.

Key words:

Reconstruction, Waste Materials, Rural, Planning, Syria.

1. Introduction.

The debate about post-war reconstruction has been ongoing during the last seven years of the continuous Syrian war. The increasing volume of destruction in different big cities has created a need for new ideas and innovative building solutions. Many studies have suggested solutions comparing other countries ruined by wars. The case studies have considered similarities and differences, demanding innovative ideas and non-traditional solutions for the reconstruction of large Syrian cities such as Aleppo and Homs (Cammack, P., 2016).

Due to the war in Syria, the direction of migration, which formerly was from villages to cities, has reversed for many reasons. The main reasons for migration to rural centres are due to the relative safety of rural areas and the less damaged infrastructure compared to the destruction in the main cities. People originating from the rural areas surrounding the cities have also returned to their home villages and towns due to losing their city jobs and have also found the possibility to work in agriculture to secure their minimum needs for living, i.e., water, energy and food (Haj Ismail S, Morishita N, Cetin R, Dilsiz A., 2017).

Moreover, rural communities in Syria were traditionally presented as self-sufficient societies, economically, demographically, socially and even culturally. However, rural areas have had poor regional planning. Development efforts have concentrated upon urban areas. The dramatic gap in available services between rural and urban areas released a wave of migration to cities. The number of inhabitants in rural areas decreased by 17% from 1960 to 2010 (Ismail, S. H., 2010). This requires new demographical and geographical studies about migration in Syria, to understand and analyse this phenomenon of reverse migration to rural areas in this time of war.

For example, a village such as Dabiq in Northern Syria has grown from a population of 4,800 inhabitants in 2011 to 8,945 in 2015. With the liberation of

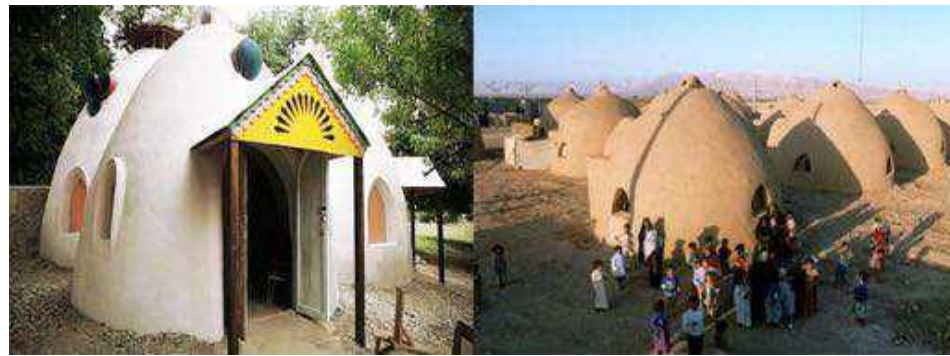


Fig.1. Completed "Konbit Shelter" house in Haiti(left), Baninajar Refugee Camp Emergency Shelter, Khuzestan, Iran © CalEarth (right).

the village from the control of ISIS, the population has increased as refugees return from Turkey and other areas in Syria and reached a total population of 12,568 in January 2017. Syrians are similarly returning to the 1,476 villages and 1,312 farms in the areas that have intact infrastructures and services in good condition. The number of people migrating to the rural areas is consequently causing a housing problem.

The afore mentioned conditions demand alternative innovative solutions to secure transitional houses for those IDPs and returning refugees to rural areas, involving different sectors to deal with the problem and triggering multiple studies tackling the issue from different points of view.

This paper presents a project which proposes to provide transitional housing in rural areas for the returning Syrians, responding to the growing demand and aligning with the United Nations 2030 Agenda for Sustainable Development in rural areas as outlined in Agenda points 24 and 34, as well as Goals 2a and 11a. Assuming, for example, that approximately 20% of the Syrian exiles from the Aleppo region currently residing in Turkey would like to return to Syria and do not have a residence, if evenly distributed, 70 people will need new houses in each rural centre meaning that eight to ten houses will be required per rural centre.

The difficulty of importing and transporting building materials into the region favours the use of locally available materials and traditional construction and building techniques. The design concept presented here aims to integrate

the local rural vernacular architecture of Northern Syria for transitional housing while considering the contemporary needs of the new and previous residents of the rural centres. To achieve this goal, the project studies, analyses and experiments with different possible design concepts based upon the local adobe building tradition.

The research shows the influence of an architectural project on other disciplines of research, how it changes the vision, increases the limits and opens new research lines in other scientific or professional fields. The retroactive approach in the paper, reflects how architecture is affected by other fields of science, but it represents clearly, on the other hand, the impact and the role architecture can play in re-orienting other researchers to conduct important multidisciplinary studies, mainly inspired by architectural projects.

2. Related work.

Analysing post-war intervention in the literature highlights two fundamental approaches for reconstruction: "technology-based approach" and "community-based approach." While technology-based approaches using housing imports from developed countries, the community-based approach is based on the principle of taking advantage of local resources in the reconstruction process (Pantuliano, S., Buchanan-Smith, M., Murphy, P., 2007).

As a response to the major 2010 earthquake in Haiti, for example, Konbit Shelter has been rebuilding housing using "Super-Adobe" construction, a design



Fig.2. Ikea Foundation's © "Better Shelter" (left), "Hex House" by © Architects for Society P.S.C (right).

developed by Nader Khalili and Cal-Earth (Fig.1) (Mok K., 2013).

Fourteen disaster relief shelters for the Baninajar Refugee Camp in Khuzestan, Iran were commissioned from CalEarth in 1995 as an initiative of the United Nations Development Program (UNDP) Tehran, in cooperation with the United Nations High Commissioner for Refugees (UNHCR) Tehran. The structures are visible in Fig.1. It is assumed that the structures have been destroyed after the dismantling of the camp.

"Better Shelter", Ikea Foundation's flat-packed refugee shelter project developed in conjunction with the UNHCR, is designed to last up to three years. The shelters are an alternative to tents and are designed as temporary shelters. (Fig.2)

Hex House, by Architects for Society, is a modular housing unit composed of galvanized steel and insulated metal panels. Similar to the Better Shelter, the housing units are to be shipped for assembly on site.

None of the above projects proposed a new design based upon an existing regional building tradition. Only Konbit

Shelter has utilized local vernacular elements. Half of the projects propose self-assembly housing kits with fully imported materials. The others use earth tubes with local soil for building material.

All previous studies and efforts have focused upon humanitarian support of meeting minimal survival requirements. In Syria, reconstruction plans have focused upon redevelopment of large and major cities. Rural vernacular architecture was not even investigated as a possible solution in similar cases (Morishita N., Haj Ismail S., Cetin R., 2017). Looking at historical studies, we find that historians have focused on recording the destructive events in Syrian history, while the reconstruction process was not fully analysed or documented. For instance, according to historical studies, Aleppo has been destroyed at least fourteen times by war and natural disasters, but none of these studies has explained how the city was rebuilt and became an important city again following these destructive events. This suggests to researchers looking at history, a new line of studies focusing on how reconstruction historically took place instead of just recording the history of destruction in Syria.

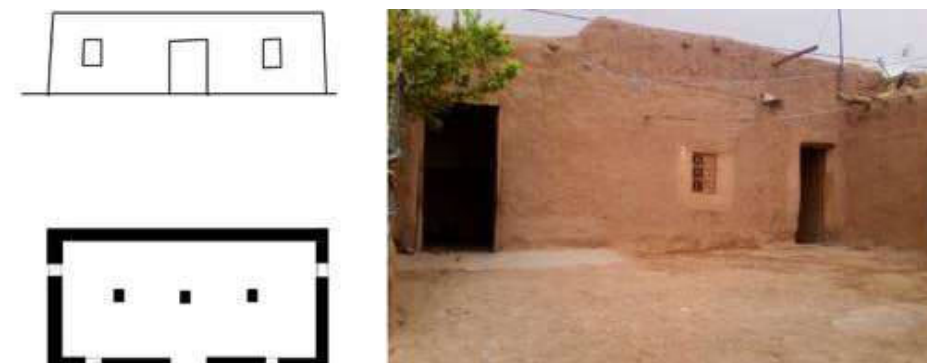


Fig.3. Basic rural Syrian house: exterior view (left), plan and elevation (center), and interior view (right). Source: CORPUS Project.

One of these studies, which was conducted to help understand the mechanism of the reconstruction in Syria historically, shows many interesting common procedures (Haj Ismail S., 2010). In the 14 destructions of Aleppo, a common act by the survivors, was to move to rural areas and build transitional temporary houses, establishing a basic agricultural economic system. Another common practice was the use of debris from the destroyed buildings in rebuilding their houses in the city, while living in rural areas.

3. Learning from Syrian rural housing tradition.

In Syria, rural vernacular architecture was not studied before or during the war. CORPUS, is a project financed by the European Union to document traditional Mediterranean architecture. It has documented some traditional forms and typologies of rural buildings in Syria. The existence of such studies documenting rural Syrian heritage, construction technology and building technique, opens a wide range of studies in urban planning, civil engineering and material sciences.

The typology of rural houses in Northern Syria is similar to that of Southern Turkey. The housing is classified in four main types: a basic house, a house with a porch, a house with "Iwan", and a house with a courtyard.

3.1 The basic house.

This is the most elementary typology. The house consists of four walls of stone or mud, an earth roof covering binds joists and beams, and posts are inside arches. It is a single room and represents the most basic original and traditional Syrian home. (Fig.3)

3.2 The house with a porch, Riwaq.

This house is developed upon the basic house by adding an arcade gallery, which opens to the outside. It also has a main furnished area that serves as an access point to the house and the other

rooms. The Riwaq (porch) is added to the front façade of the building, or within the volume of the house. Each room has a window or another opening to the outside in addition to the Riwaq. (Fig.4)

3.3 House with an Iwan.

The Iwan is a central space formed by a very large arch. The arch plays a central role in the organization and distribution of the various rooms in the house. This central space is in open to the outdoors on one side, and is flanked with two rooms, Fig.5. The Iwan originated from Persia and can also be found in some houses with courtyards.

3.4 House with a courtyard.

This house is characterized by a layout of rooms built around a courtyard. Each room is variable in size and geometry. This typology is found in all traditional villages or rural environments (Fig.6). It is a simple model adapted to the local environment and answers the social and practical needs of a rural population. Two different social groups can use the house such as simple farmers and wealthy landowners. These large houses are equipped with many architectural elements.

This typology is found in the vicinity around Aleppo in the Alsafira area. The dominant building material is a clay structure with roofs composed of wooden beams covered with mud, or mud domes spanning uniformly sized room, normally 4m x 4m repeated around a central

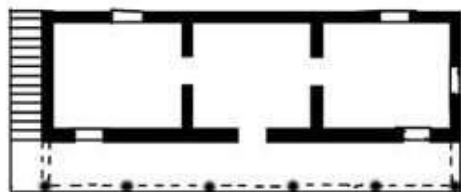
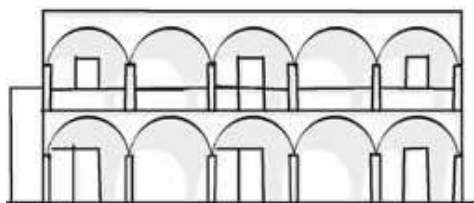


Fig.4. Rural house with Riwaq: exterior view (left), plan and elevation (center), and view from the Riwaq (right). Source: CORPUS Project.

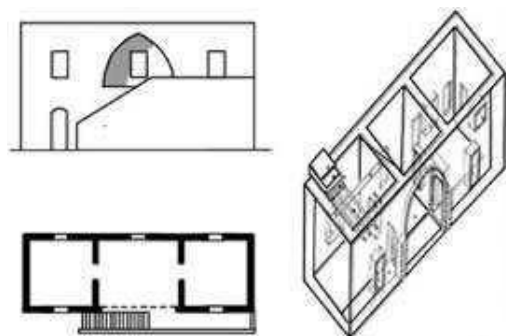


Fig.5. Rural house with Iwan: exterior view (left), plan, elevation and 3D section (center), and interior (right). Source: CORPUS Project.

courtyard forming the well-known beehive houses.

of an alternative design concept of a transitional housing for IDPs and returning refugees to Syria.

4. Proposal of a rural house in northern Syria.

Understanding local historical approaches of reconstruction, and learning traditional techniques and materials, enabled the following proposal

4.1 Design Concept.

The proposal is to use the beehive house as a basis because it is dependent mostly on the availability of local material that is adapted to the environment. The

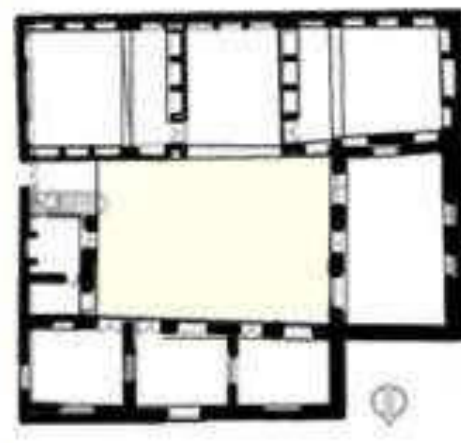


Fig.6. Rural house with courtyard: exterior view (top left), plan (bottom right), interior courtyard (bottom left), bird's eye view (top right), and cross-section. Source: CORPUS Project.

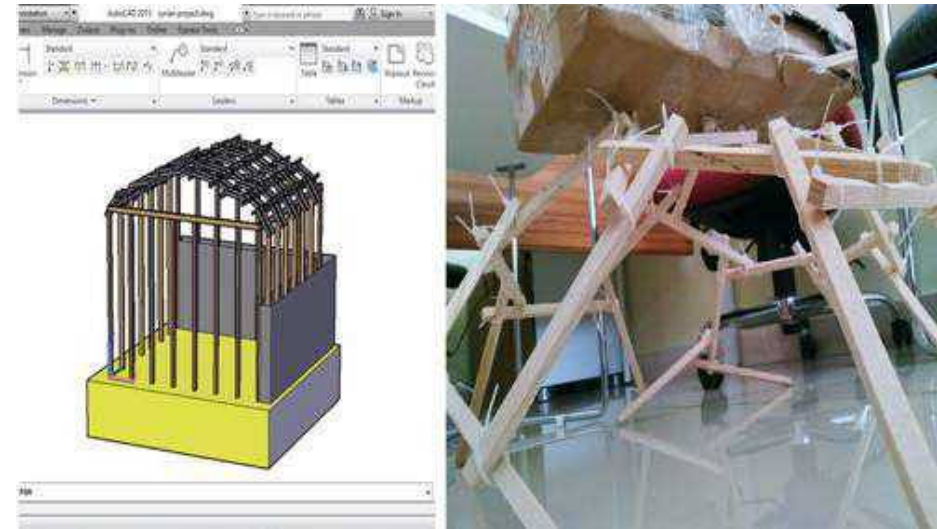


Fig.7. 3D concept model (left), scaled roof test model (right). Source: Author's own photos.



Fig.8. Destroyed concrete buildings in Aleppo, Syria (Aljazeera, 2016).

design incorporates the utmost respect for the modern users' needs, and the modules can be built with minimal construction knowledge. The building plan has a simple rectangular form of approximately 4m x 4m. The wall structure will be supported by a wood construction in order to reinforce the building against earthquakes instead of only being composed of adobe bricks as is built in conventional housing. The main building material will be earth mixed with water and straw. The composition may differ using dung, sand, silt, clay, small pieces of gravel, or even recycled rubble from destroyed buildings. A reciprocal structure and construction will be employed for the roof, since it allows larger spaces to be built with smaller dimensioned building elements. These locally available and appropriate building materials will reduce the need to import prefabricated elements and/or non-native construction materials. The use of smaller timber members will make transportation and assembly of the roof material easier.

4.2 Methodology.

The process involves many stages: firstly, sourcing of destruction materials from big cities such as Aleppo, where on-site sorting starts to choose building elements and construction materials, which can be used directly in construction. Fig.8 shows destroyed concrete buildings in Aleppo city.

Secondly, transporting sorted materials, to construction sites directly or to treatment plants that can produce construction materials to be used in rural house construction. This includes preparing and the testing of traditional adobe blocks which includes 10-15mm diameter aggregate.

Finally, the remains of the waste materials will be taken to landfills prepared between the source areas and rural construction regions. This process will decrease the environmental impact of the waste material, and find economical local alternative uses for the imported construction materials. Fig.9 shows the

proposed process. The suggested process challenges many research disciplines, including environmental engineering, waste management, and even the food industry since one of the traditional components of adobe is pistachio shells. This requires new plans and procedures for the management of food industry waste and recycling for reuse in construction material production.

5. Social involvement.

Throughout the history of Syria, women have contributed to construction in various aspects. The Arabic Idiom says that men usually start war, and women do the reconstruction. Thus, one significant contribution of women is arguably in post-conflict conditions, especially in the case of post-war Aleppo where women form the majority of the population. This remains true in the ongoing war in Syria that has caused both physical and psychological damage.

It is noteworthy that in the current status and statistics of Syrian women refugees, a significant percentage is pursuing or holding a construction related profession in refuge countries, and they can, and will contribute in reconstructing their homelands. The project proposed here offers an adequate level of preparation for female refugees to apply the aforementioned process and build their homes by themselves in rural areas. This fact requires both social studies to understand this phenomenon, and planning of education programs suitable to prepare refugee women for the reconstruction phase. However, specializing in reconstruction needs further education. Furthermore, there are challenges they will meet while starting and practicing their profession. In addition, further studies to define the potentials of overcoming these obstacles are required, and the methods to prepare and train the refugee women.

A Masters program of post war recovery was established in Ankara, Turkey, which aims to provide this knowledge to refugees from different backgrounds, not only architects or engineers.¹



Fig.9. Proposed process.



Fig.10. Women constructing adobe rural house (left). A woman preparing recycled construction material from rubble (left).

A pilot project involved women in the construction of the designed beehive house modules, but the aim is to open the door for a bigger debate led by women themselves, since they are not only the vehicle of reconstruction in rural areas. For we believe that their role is not the construction and maintenance of the house in a physical way, but also from economical, administrative, and even psychological point of view. Fig.10 shows the participation of refugee women in the building process.

6. Conclusions and Future Work.

Developing the beehive clay houses to use local and recycled materials from destroyed buildings is a proposed solution to overcome the scarcity of building material and construction machinery. It also helps to solve the problem of clearing war-produced waste materials in the long-term. As mentioned earlier, Aleppo has been destroyed 14 times throughout

history and rural areas were the traditional refuge for those escaping from the city. This will clearly be repeated in the current Syrian war, opening the possibility for rural communities to participate in social reconstruction efforts.

The new single-family houses in Syrian villages will have the advantage of secured places with existing infrastructure systems and less war-damage. In a more integrated society with similar culture and traditions, an additional benefit of building houses in villages is that the settlers can benefit from the land in terms of agriculture and livestock, re-establishing their economic and social self-sufficiency. The modular design of the new homes will allow the occupants to enlarge their spaces depending upon their needs.

This project has challenged and extended the research limits of different scientific and social disciplines, including historical studies and historians in order to introduce local reconstruction using traditional practices. The documentation of traditional building technologies and materials is an urgent task for the field of history of architecture. Also, it has triggered a new line of immigration studies to explain the reversed internal migration in Syria.

Moreover, it has shown the need for new education systems and programs, or modifying existing institutions, to provide reconstruction education in innovative methods of thinking and practice. Additionally, it requires new social studies to analyse the role and importance of female refugees in the post-war reconstruction era in Syria, and their training and preparation to fulfil the requirements and demands of that phase.

Further investigation to find the best design, not only for the residential needs, but also to conduct further analysis during a future phase of the project is required, focusing on the structural and seismic performance, energy performance, annual energy demand and cost-effectiveness.

The design will be refined according to test outcomes, establishing guidelines for best practice during the resettlement and construction periods.

Notes

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Biography

Salah Haj Ismail. Born in Aleppo, Syria. Architect since 2002, Master in Architecture 2004, Master in civil engineering 2006, PhD in Cultural Heritage from Politecnico di Torino, Italy 2011. He has worked as architect/engineer in different countries, designed and constructed many buildings in Syria and outside, winning design competitions. Academically, he has worked as assistant professor in Aleppo University, Faculty of Architecture from 2011-2015, published many researches and books in Arabic, English and Italian. Because of the war in Syria, he was forced to leave his country and worked in Universidad de Cantabria, Santander, Spain. Recently he continues his work as a visiting professor in Ankara yildirim Beyazit University, Architecture Faculty, Turkey.

Topic 08 / New Retroactive Topics.

The following articles expand the limits of other disciplines through architecture.

Construction of Non - existent, Unknown, Surprising, Creative Volumes using Flat Patterns.

Application of Accidental Cutting Methodology.

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On certain occasions, creative processes of volume genesis are fed exclusively by technical processes. The elevation of the technical process *as integral to the creative process in the field of material and volumetric research* has been experienced by prestigious designers who were also architects, or had studied architecture: Paco Rabanne, Gianfranco Ferré, Tom Ford, Pierre Cardin, Pierre Balmain, Gianni Versace and Josep Font, among others. In this sense, from interdisciplinarity, there comes the *possibility of influencing and modifying a foreign field*. In this paper, the focus is on a very specific area: *experimental*

pattern cutting, and a particular method - Accidental Cutting (which is the intellectual property of the author - an architect - of this article). The method is focused on obtaining original and previously unknown volumes from abstract patterns and without a volumetric reading, which has applications in fashion and other fields, including architectural design.

Key words:

Serendipity, Experimental Pattern Cutting, Creative Pattern Cutting, Experimental Design, Experimental Pedagogy.

1. Architects - fashion designers and the three-dimensionality.

Certain fashion designers such as Paco Rabanne, Pierre Cardin, Gianfranco Ferré, Gianni Versace, Pierre Balmain, Tom Ford and Josep Font were, or are, architects or studied architecture.

Paco Rabanne finished his architecture studies in Paris with commendations. Later, however, he started to design accessories for different fashion brands such as Christian Dior, Cristóbal Balenciaga and Hubert de Givenchy. In the construction of clothes, he used materials more typical of architecture than of fashion, such as metals, plastics and paper and ignored the usual ways garments are constructed through sewing to use welds, vulcanizations and rivets (Seeling, 2000, 376; Vigué 2012, 63). Pierre Cardin, who used marked geometries in garment structures, was considered one of the most innovative fashion designers of the '50s and '60s (Seeling, 2000, 372). Pierre Balmain gave up architectural studies in order to work in fashion (Seeling, 2000, 218). Gianfranco Ferré had graduated in architecture at the end of the '60s and, like Paco Rabanne, he introduced himself into fashion through the design of jewellery and other accessories (Seeling, 2000, 529). For Gianfranco Ferré, architecture and fashion and their processes are comparable: "I apply to fashion design the same approach that I applied to the design of buildings. It is basic geometry: you take a flat shape and turn it into volume" (Fischer, 2009, 25). Gianni Versace also studied architecture before moving to Milan to work in fashion design (Seeling 2000, 530). The versatile Tom Ford, considered one of the most influential contemporary fashion designers in history, studied interior design at Parsons School of Design (Taylor, 2008).

In every country, there are similar examples of fashion designers that studied architecture or interior design. For instance in Spain, José Luis Devota, of Devota & Lomba and Jesús del Pozo, who at his death was described by the newspaper *El País* as a "Fashion Architect"

(Torriente, 2011). *Vogue* magazine, after the passing of Josep Font, who was the creative director of the Del Pozo brand after the death of Jesús del Pozo, praised his creativity and gave a special mention to his work of volume genesis: "... sculptural forms that are fed on his own training as an architect and that have finally become a hallmark..." (Luis, 2018).

In some cases, fashion designers felt a fascination for architecture. Christian Dior wanted to be an architect, but it was not possible; he studied at the School of Political Sciences in Paris, pressed by his parents, who wanted him to be a diplomat (Vigué, 2012, 39).

Other great fashion designers, without being professionals of architecture, were also acclaimed architects of shapes and volumes, such as Cristóbal Balenciaga, who is considered the architect of haute couture since his sober volumes remind us of architectural forms. For Balenciaga, fashion was an art: "The designer must be an architect to know how to cut, a sculptor to give shape, a painter to choose colours, a musician to find harmonies and a philosopher to create style" (Seeling, 2000, 214). Coco Chanel once said: "Fashion is architecture, it is a question of proportions" (Fischer, 2009, 11). André Courrèges was not an architect, but started civil engineering studies. The influence of architecture in his work is remarkable, for he decided to apply the technical skills he had learned and his vision of modernism with the architectural application of Le Corbusier (Stevenson, 2011, 182).

At the same time, famous architects do not hide their attraction for fashion. Frank Gehry said, "As a young architect I was fascinated by fashion", which led him to design shoes for J.M. Weston in Los Angeles (Almeida, 2009). Similarly, Zaha Hadid, dared to design footwear in a limited series in her collaboration with Lacoste (<https://www.zaha-hadid.com/design/lacoste-shoes/>).

In general, architecture and fashion can nourish each other. It is possible that the understanding of the union of art with technique, as well as the knowledge of space through geometry and technical drawing, helped some

architects to dedicate themselves to become prestigious fashion designers and architects simultaneously (Seeling, 2000). The interdisciplinarity originated by the training in another field, opens up new possibilities and allows a language of its own to be articulated, since a new and fresh vision into certain aspects is possible, importing solutions from other architectural matters, as in this case, to the field of fashion design (Iszoro, 2016).

For architects, it is usual to appeal to the three-dimensionality in different phases of the creative process. However, in fashion design, the process of the approach to volume, in many cases, is generated in the flat, and, only after, tested in a toile. In fact, for hundreds of years, both flat pattern cutting and draping methods, were considered as valid, but the first one is used more extensively in the actual industry and fashion system. In general, both traditional ways of constructing volumes determine predictable results, directed by the human mind.

2. The technical creative processes. Experimental pattern cutting.

The elevation of the technical processes to creative ones can occur in experimental pattern cutting methods, based on experience, and can produce radically new and innovative solutions.

The experimental pattern cutting methods, at present, are nourished by some processes more in agreement with architecture than with fashion design, as they are essentially the understanding of volumetric relationships through three-dimensional constructions and not in a plane. The introduction of three-dimensionality into the creative processes is a common denominator of the experimental pattern methods such as: Kinetic Garment Construction, Subtraction Cutting, Accidental Cutting, etc.

In some cases, pattern cutting becomes the indissoluble phase of the creative design process, and the pattern cutter and designer are necessarily the



Fig.1. Rickard Lindqvist modeling on a human body. Workshop organized by Work Experience Fashion, Matadero Madrid, April 2018, Photography: Eva Iszoro.

same person. In addition, the realization phase is fully integrated into the design phase. In these cases, the design phase is not followed by the realization phase, and in certain cases, the first one does not exist. This is a common characteristic of many of the creative pattern cutting methods and especially the experimental pattern cutting methods.

In the experimental methods of creative pattern cutting, experimentation can be understood in different ways; in some, a concrete result is pursued, while in others it can be unknown and surprising. So, the construction of the volume could be understood in different ways.

For example, in Fig.1 we can appreciate the volumetric approach to the human body by Rickard Lindqvist, the author of the experimental pattern cutting method: Kinetic Garment Construction. This method is focused upon functional purposes, such as generating clothes that are more comfortable for the human body in movement. In this case, the mind has an active participation in the experimental creative process, but the experimentation is necessary to achieve the objectives.

In the traditional way of constructing volumes in any kind of design, the mind has an active, intentional input

into the processes. In the experimental methodologies, sometimes, making could be more important than reflexive thinking. The volumetric constructions can imply variable degrees of consciousness of the use of the human mind.

Serendipities, understood as lucky discoveries or finds, valuable and unexpected, can occur accidentally or causally when we face the unknown, and some methods allow it, beyond the opinion of Federico Soriano that a method is a project (Soriano, 2013, 4-6). Some methods allow you to discover what is non-existent.

"In this vision of pattern cutting, it is about generating new possibilities, experimenting, creating new interesting things that can unexpectedly surprise" (Roberts, 2013, 31-32). As a symbolic image of what Roberts expresses in these phrases, there are two clips of the video 'Cutting Backdrop' in which a collaborative experience of The Cutting Circle was recorded, shared by the designers Timo Rissanen, Julian Roberts and Holly McQuillan (Fig.2).

This image involves obtaining a pattern by drawing the outline of a person. In this case, the one that draws is Julian Roberts and the one that serves as the "outline" of the pattern is Timo Rissanen. These images are significant because they symbolize that in experimental pattern cutting design projects anything goes, any shape is likely to become a pattern, and reinforces the idea that the pattern should be more human, for man and not a mathematical science. Both patterns, the cut and cut out, can reach volumes, but we do not know in what way or what volumes they can generate. It is unknown if they are going to unite with each other or with other different patterns, nor are union marks perceived, so in the beginning everything is unknown.

The apparent formal relationship with the human figure is simultaneously symbolic, and totally uncertain and random. These two patterns can result in a volumetric design not previously imagined by the mind. Processes of this type can lead to new solutions, since designs based only on our imagination

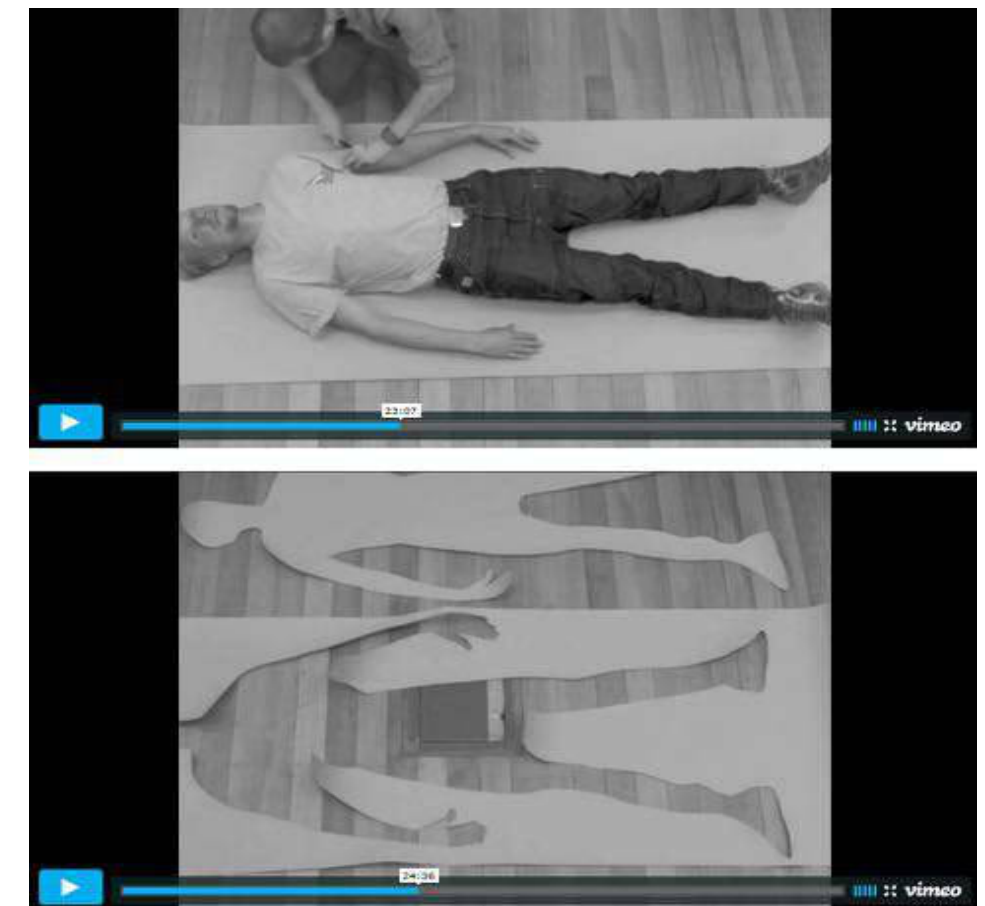


Fig.2. Julian Roberts draws the silhouette of Timo Rissanen, Cutting Backdrop - video (Roberts, 2014).



Fig.3. Subtraction Cutting, Julian Roberts masterclass at UWL-University of West London, <https://subtractioncutting.tumblr.com/>

can inevitably tend to copy, even if unconsciously (Rissanen, 2013, 151).

Some of the experimental pattern cutting methods are based in serendipities, such as Subtraction Cutting invented by Julian Roberts, or Accidental Cutting, the intellectual property of Eva Iszoro, architect and fashion designer.

In Fig.3 we can observe a garment obtained by applying the Subtraction Cutting method.

2.1. Accidental Cutting.

Accidental Cutting is one of the experimental pattern cutting methods where uncertain results, serendipity and uncertainty are possible. In this procedure, the method of experimental pattern cutting and design method is developed.

The method enables the generation of unknown formal results: it is focused in finding, and not looking for, the non-existent. Accidental Cutting refers to the constructive and projective method of obtaining complex volumes as well as being a pedagogical and research methodology.

One of the principal characteristics of the method is that it is unnecessary to use the mind, the reflexive thinking, in the initial stages of the design process. The next section will examine aspects of the

method, which is based on abstraction, that enable the genesis of uncertain results.

2.1.1. Origins of the method.

First, it is important to discuss the origins of the emergence of this method, which arose precisely from the interdisciplinarity between architecture and fashion. The author of the method is an architect, and has no continued academic training in the field of fashion design. During the time in which she studied at college, there was no official and public institution where one could study for a degree in fashion design in Madrid. Despite having a strong concern for fashion, she studied Architecture at ETSAM-Architecture School (Escuela Técnica Superior de Arquitectura), UPM - Polytechnic University (Universidad Politécnica) in Madrid.

Feeling a strong passion for fashion, in 2004 she intuitively began to develop her own methodologies of research in volume construction, based on abstract and random modular patterns. The results of these processes were applied to specific

garments and exhibited in two exhibitions, the first at the Círculo de Bellas Artes in Madrid in 2005 and the second at the Foundation of the Official College of Architects in Madrid in 2007. (Fig.4)

Undoubtedly, the exploitation of modularity and the repetition of standardized elements is a much more utilized resource in architecture and construction than in fashion. In this sense, there is clearly an architectural influence that is exported to the field of fashion and in particular to pattern cutting. It is at that moment when a consciousness of the possibilities of modularization and its application in the field of design in general is acquired. Fig.5 illustrates a pattern of simple abstract form with different volumetric models resulting from a modular treatment of the initial flat module, and a garment in which one of the models previously obtained has been used.

In 2006, for the second time, the author of Accidental Cutting made use of modularity, but this time applied this resource to an architectural design project, specifically the realization of an international architectural competition



Fig.4. Images of the opening of the exhibition "Lost" ("Perdidos"), Foundation of the Official College of Architects in Madrid, October 2007. Photography: Eva Iszoro.



Fig.5. Versatility of the flat pattern in terms of volume conformation. Pattern in the form of "x", models obtained with it, and an application in clothing, 2004-2005, photo: Eva Iszoro.

promoted by the Ministry of Housing of Spain, for the construction of avant-garde protected residential buildings in the area of Aguas Vivas in Guadalajara. On this occasion she did not do it alone but with two other architects: Clara Moneo and Valerio Canals. Modularity allowed the development of a project of 2,400 houses with internal distributions, in only four days of work, with the use of three different modules repeatedly configured in different ways. This proposal was awarded the first prize, in three sites of the seventeen initially proposed, with a total built area of 75,244m² (Fig.6).

In this sense, we are facing a clear case of formal profitability by exploring flat elements repeated and joined in different ways, so that in the final volumetric result no modularization is appreciated at all, it is camouflaged in some way, as can be seen in Fig.7, where the model corresponding to parcel RC-17, one of the three sites developed as result of that competition, is exposed.

Later, Iszoro went back to explore modularity in architectural design, as well as in the field of pattern cutting and its application in fashion.

Although in the case of the architectural competition, the volume was produced by the extrusion of the forms formed in the plane by the union of only three modular flat pieces, in pattern cutting the rules of the game are different.

In the architectural project, the joint was possible since all the modular pieces had straight edges of the same length. However, in the field of pattern cutting oriented to creating volumes, the unions of the edges of shapes can be differentiated from each other because the fabrics and textiles are not rigid. For example, it is possible to join a straight line with a curve, a curved line with a broken line, or a curved line against another curved line, and those joints are particularly interesting. Volume lifting actually occurs when the lines are different.

Some of the general characteristics of the Accidental Cutting pattern cutting method, whose point of origin is modularity, will be briefly described below.



Fig.6. Three modular pieces that generate the project for the construction of avant-garde protected housing in Aguas Vivas, Guadalajara; modular geometric conformation scheme in a horizontal section of the sites; the development with interior distributions of the three housing plots. Schemes and drawings: VEC-Valerio Canals, Eva Iszoro and Clara Moneo.



Fig.7. Model of avant-garde protected housings (the RC-17 plot) in the extension of Aguas Vivas in Guadalajara. Photography: SEPES.

2.1.2. General characteristics.

The key to the method is to treat all patterns in an abstract way, whether they have a clear volumetric reading or not. This concept refers to the capacity of the observer of the flat pattern to distinguish the volume that it is capable to create. In the image of the Fig.8, the first pattern, on top, would probably be identified as a cube by most observers. The second pattern corresponds to the volume of a sleeve, which would probably be identified by people with an educational or professional base in fashion design and fashion pattern cutting, but its volumetric reading is not clear, for most people, as in the first case. The third flat pattern is abstract, and even a pattern cutter or fashion designer would not be capable of distinguishing the volume that it is capable of generating. The unknowns that exist are: is this pattern joined with itself or with other patterns; what kind of garment or object can result; where can it be situated in a garment or another object?

In general, the relation of this flat pattern with the human body, or any other object, is uncertain. The volumetric reading of the first two is clearer. However, it is not known to what the third pattern corresponds, nor what volume can be constituted by joining with itself or with other patterns. This pattern, therefore, has no clear volumetric reading. In the

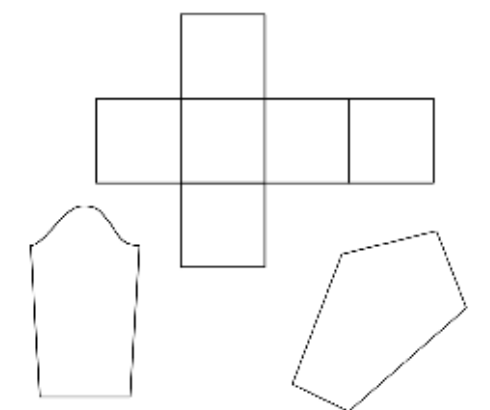


Fig.8. Patterns with and without volumetric reading. From left to right, a flat pattern that corresponds to a cube, to a sleeve and to an abstract flat pattern.

Accidental Cutting method, it is essential to understand, not only this, but also all the patterns in this way, including the first two, the cube and the sleeve. It is essential to eliminate any volumetric reading of the patterns at the beginning of the creative process.

In general, any pattern is basically composed of two elements:

- A Concrete surface.
- B Volume construction marks.

When any of these two elements is altered, a new pattern arises; that is, two patterns with exactly the same surface and different construction marks, constitute distinct patterns, since they are likely to give rise to distinctive volumes. In Fig.5, on the left, a flat pattern with the form of an "X" is able to generate different volumes by joining this form with itself. On the right is an application of one of the volumetric models into a garment, assigning a determined scale to the experimental volume that was repeated twice in a symmetrical arrangement into the garment which was then embedded into a conventional volume for the human body.

Any flat pattern can include, in itself, points or lines that can be interpreted in different ways, with cuts, gatherings, or folds, etc. The interpretation of abstract drawings induces or allows a relative interpretation of the flat patterns.

The Accidental Cutting methodology involves the knowledge and exploration of some specific concepts of the method which makes it possible to obtain a greater quantity of differentiated volumes applicable to fashion design or other kinds of design. The patterns can be relative to each one, hierarchical, complementary, interior/exterior, or positive/negative, etc. By exploring this terminology, the possibilities of generating new volumes increase. The relationship with the format of the tissue or other material and the patterns is important. It is possible to consume a perfect rectangle of the width of conventional fabrics, and then to explore the zero waste philosophy of design. This can be one of the sustainable approaches of the Accidental Cutting experimental pattern cutting method: to obtain patterns without any waste of

fabric. However, it is not the main purpose of the method which is the possibility of obtaining very different volumetric results. However, this is one of the most remarkable features of it (Fig.9).

3. Conclusions.

Experimentation and interdisciplinarity are two factors that can enhance the discovery of the new and nonexistent. The interdisciplinarity between different subjects allows a new vision on an existing determined field, but the new findings would not occur without the application of experimentation, which in turn enables the discovery of serendipities.

In particular, the interdisciplinarity between fashion and architecture has been manifested, throughout history, in great achievements, that have affected both fields in a reciprocal way. Fashion designers of international prestige are or were architects or studied architecture. Possibly, on some occasions, they would not have triumphed in fashion if their training had been different, as they had a special vision on different aspects of a matter alien to their training.

Fashion design and architecture have many common elements such as three-dimensionality and the need for technical definitions for the possibility of materializing designs and projects. In both cases, in the conventional design, technical drawings are the result or are subordinated to projective developments directed by the human mind in advance. However, occasionally there is a possibility of elevating the technical fact to a purely creative and artistic one. Sometimes the elements are apparently only technical, such as flat patterns, used as a necessary means before the three-dimensional elevation of objects can participate and be part of the same creative process. In this way, the unexpected can occur in the three-dimensional construction from these elements.

In particular, in the field of experimental pattern cutting, a new interpretation of the technique and of the patterns, together with the experimental methodology itself, makes it possible to



Fig.9. Toile, applying the Accidental Cutting methodology. Student: Clara Villalba, Subject: "Experimental Design. Textile creation and pattern cutting." Professor: Eva Iszoro, third and fourth year of studies at ESDM Design School of Madrid, 2018-19, Photo: Eva Iszoro.

obtain innovative and original volumes. This new look could have its origin in the interdisciplinarity. A clear example of this is the experimental pattern cutting method Accidental Cutting, founded by Eva Iszoro, an architect with a particular and different vision of the field of fashion, having been self-taught in this field. The influence of architecture and architectural thinking affect this method. Specifically, modularity, a resource widely used both in architecture and construction in general, was precisely the theoretical and practical basis of this method in its origin. In addition, the influence was in both senses, reciprocal, between fashion and architecture, which even helped to win an international architecture competition.

The introduction of the resources of interdisciplinarity and experimentation made it possible to have a new vision on the technical drawings of surfaces, lines and points, and to treat them in a way that is not conventional.

Almost certainly, it can be said that, if the author of the method were not an architect and had a different education, the investigations that were carried out would not have taken place and the theoretical foundation of a new method of experimental pattern cutting and design would not have been possible

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Biography

Eva Iszoro Zak is a fashion designer and architect. She is the author of Accidental Cutting which outlines an experimental design and pattern cutting method, based in abstract, accidental and random cuts, with applications in fashion design as well as product and interior design. She has written a Ph.D. thesis in the field of creative and experimental pattern cutting: Direct methods of creative pattern cutting. Pedagogy and experimentation. The thesis has been distinguished with the Extraordinary Prize for a Ph.D. Thesis at UPM- Polytechnic University in Madrid (Universidad Politécnica de Madrid). She is an associate professor at URJC-King Juan Carlos University in Madrid as well as a professor at ESDM-Design School in Madrid.

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Designing a Post - Occupancy - Evaluation (POE) Tool for Hospitals.

Addressing users' functional and emotional needs in hospitals.

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This paper describes the methodology used for designing a Post-Occupancy Evaluation (POE) Tool for hospitals in Spain. The methodology followed consists of a literature analysis, a three-month hospital placement in Dénia (Alicante), study trips to reference hospitals and a three-month placement at the "Centre for Healthcare Architecture" Chalmers University of Technology in Sweden. The aim of the tool is to evaluate specific areas of an acute hospital

according to design requirements based on Spanish and international guidelines, best practice, intuition and evidence-based design. The ultimate goal is to bring this existing knowledge closer to architects so that it is easier to identify improvement actions.

Key words:

Healthcare Architecture, Hospital, Evidence-Based Design, Post-Occupancy Evaluation, User Experience, Qualitative Research.

1. Introduction.

This paper describes the methodology used in a PhD thesis on the evaluation of architectural design criteria that influence the physical and emotional needs of hospital users. The area of interest is the influence of Architecture on Health. Architects have a too little-known "superpower" which is the influence of the built environment on people's health.

The aim of this work is to develop an assessment tool that will rank existing hospitals according to their quality and will facilitate the decision-making process during the design stage.

This project is being funded by "Ayudas para la formación de profesorado universitario FPU, Ministerio de Educación Cultura y Deporte de España", "Beca DKV Arte y Salud" and "Fundación Margit y Folke Perhzon."

1.1. Hospital environment.

Architectural quality is especially influential in places where the most vulnerable are found. It was in the nineteenth century when the nurse Florence Nightingale (1820-1910 United Kingdom) wrote about the relationship between the physical environment of a military hospital and the recovery process of the patients (Nightingale, 1863). What started as her knowledge from experience was verified by science at a later stage. In 1998 two neuroscientists, Fred Gage (1950 USA) and Peter Eriksson (1959-2007 Sweden) overturned the assumption that the number of brain cells in humans was determined at birth. On the contrary, they proved that new brain cells are created throughout life and this neurogenesis is influenced by the environment. Their conclusion was that the environment changes our brain which in turn determines our behaviour. In Pallasmaa's words (Pallasmaa, 2014) "When designing physical spaces we are also designing mental spaces."

This finding is particularly important in healthcare settings where the environment may promote the healing process. Moreover, it is not only relevant for healthcare outcomes but also as

a business case that helps hospital administrators achieve financial profit by supporting their design decisions on reliable evidence (Durmisevic & Ciftcioglu, 2010). Hence, evidence-based design (EBD) blossomed at the end of the twentieth century, derived from its older sister evidence-based medicine. EBD is a developing field that integrates multiple professionals: architects, designers, engineers, researchers, clinicians, nurses and environmental psychologists among others.

"Evidence-based design is a process for the explicit use of current best evidence from research and practice in making decisions, together with an informed client, about the design of each individual project." ¹

1.2. Spanish context.

The "Instituto Nacional de la Salud" INSALUD, created in 1978, was the national institution responsible for the design and maintenance of public healthcare facilities. This institution had its own architects specializing in healthcare architecture. Due to the decentralisation of the national healthcare administration to every region of the country, the INSALUD disappeared in 2002. Since then there has been a lack of coordination, knowledge and expertise in healthcare planning, functional programming and hospital architecture, which has a direct

impact on the conservation status of many hospital facilities nowadays.

Hospital design is one of the most difficult challenges for architects due to the complexity of its functional program, the wide variety of users and the strict norms and regulations. Despite the global proliferation of evidence-based design since the late twentieth century, little of this is applied by Spanish architects. There is a knowledge gap in the architecture curriculum that produces a shortage of healthcare architects. This limitation might have a direct impact on the quality of care delivered by the Spanish National Healthcare System.

Healthcare architecture has received little attention from the Schools of Architecture in Spain, which very rarely include hospitals in their curriculum (an example of this exception is the School of Architecture at Universidad de Alcalá de Henares). Hospital design is a complex and difficult task that needs to be addressed by a multidisciplinary team. Users become of paramount importance and architects need to consider the functional and emotional needs of a wide variety of roles (clinical staff, non-clinical staff, companions and patients).

Poor architectural design results in impoverished environmental conditions in vital places like a childbirth room where the only view is of a clock hanging on the wall, an intensive care unit with no



Fig.1. Labour room at Hospital Universitari i Politècnic La Fe.

daylight reference, or a patient hospital room with light glare from the bed.

1.3. "Well is the new Green."²

On a climate change paradigm, not only do we need more energy efficient buildings but also places that perform better on a human scale. Hospitals should be buildings that help us heal and promote our health, hence architects should deal with these demanding requirements.

1.4. Research question.

My research question is: how could we learn from existing hospitals to improve future designs?

I am interested in learning about the environmental conditions which are either quantitative or objective aspects (sound levels, temperature, etc.) as well as qualitative or subjective (greenery, views, music, etc.).

Because hospitals are very complex buildings, I am narrowing my analysis to some in-patient units (neonatal unit, paediatric unit, maternity ward, internal medicine unit and intensive therapy unit) plus the circulation spaces.

The reason behind this is to study the areas where patients of all ages stay the longest, as well as the circulation routes

that are related to the patients' healthcare process and to the flow of all the different users in the building.

2. Methodology.

The diagram below (Fig.2) represents the methodology followed for creating the tool which consists of a literature analysis, a three month hospital placement, study trips to reference hospitals and a three - month research placement in Sweden.

2.1. Literature analysis.

The tool content has been taken from the analysis of the following source types:

1. Technical reports, regulations and guidelines:
 - Spanish "Standards and Recommendation for Hospital Units" documents written by the "Ministerio de Sanidad, Política Social e Igualdad," in collaboration with "Agencia de Calidad del Sistema Nacional de Salud" and expert groups.
 - Health Building Notes, Department of Health. United Kingdom.
 - Australasian Health Facility Guidelines.
2. Scientific journals:
 - HERD: Health Environments Research & Design Journal.

- Building Research & Information.
- Journal of Interior Design.
- Journal of Advanced Nursing.
- Journal of Environmental Psychology.
- Building Research & Information.

3. Existing tools:

- BUDSET: Birth Unit Design Spatial Evaluation Tool.
- EVOLVE: A tool for evaluating the design of older people's housing.
- Patient Room Design Checklist and Evaluation Tool.
- PLACE: Patient-Led Assessments of the Care Environment.
- PHEQIs: Perceived Hospital Environment Quality Indicators.
- ASPECT: A Staff and Patient Environment Calibration Toolkit.
- The Environmental Audit Tool.

4. Other sources:

- The Centre for Health Design.
- AIA Academy of Architecture for Health.

2.2. Three-month hospital placement.

Architect Steen Eiler Rasmussen in his book *Experiencing Architecture* (Rasmussen, 1959) argues that architecture is not only an aggregation of plans, sections and elevations. He says that architecture should not be analysed only by sight; rather we need to imagine a multisensorial experience that can only be achieved by living in the spaces. The best text to learn architecture, he continues, is architecture itself. With this idea in mind, I spent three months (April-June 2016) living and working in an acute hospital. This immersive experience was organised in three stages.

2.2.1. Stage 1: Preparation (January-March).

The study was conducted at *Hospital de Dénia* (Spain), which has a hospital art commission that promotes artist residences exploring the relationship between art and health. Firstly, I studied the graphical material (plans, elevations and other representations) of this acute hospital. Secondly, I held several

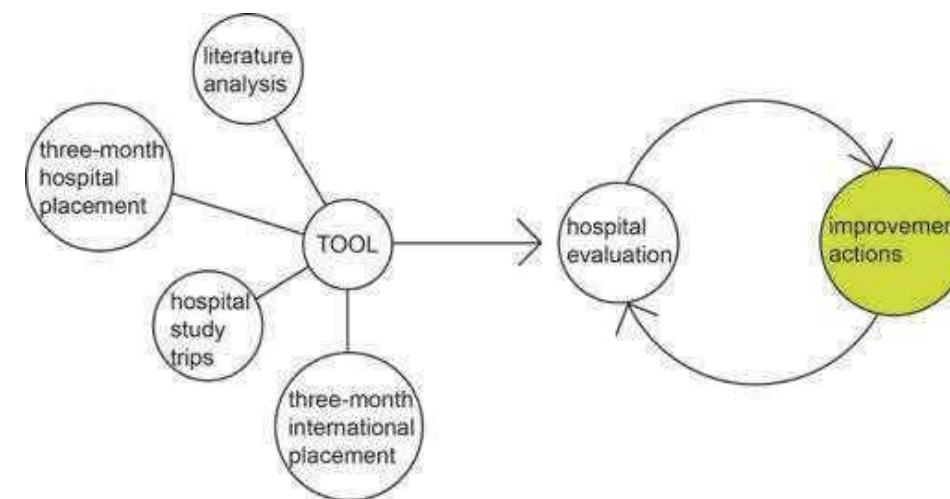


Fig.2. PhD methodology.

coordination meetings with the hospital art commissioners, the head nurses and the quality department.

2.2.2. Stage 2: Learning by drawing/diagramming (April-May).

During stage 2, I resided permanently (excluding weekends) at the hospital. Since my training relied mainly on architecture as a physical object, I started with the tasks that involved the least interaction with occupants. These tasks included: identification of the areas to study, in situ observation of user behaviour, and analysis of the hospital by producing graphical material like the hospital functional program diagram, diagrams of the units, pictures and sketches.

2.2.3. Stage 3: Learning by talking (May-June).

At this stage, I continued working and living in the hospital and collaborated with the Hospital Quality Department. The goal was to identify how they measured quality and to agree on the types, extent

and content of the interviews with staff, patients and their companions.

In the past, this department had been conducting biannual studies on patient satisfaction surveys. In these surveys there was a list of specific questions that patients could rank according to their experience. Even though this quantitative system was enough for an overall impression, it did not allow the department to understand the reason behind their satisfaction or to identify the most valuable aspects for the patients. Thus, they introduced the patient experience map method in which they identified key points in the healthcare process: seeking for assistance, admission, nurse care, clinical treatment and exit. In these interaction nodes between the patients and the healthcare service, the department asked them about what the most important aspect at that point was and how they would rate their experience with the aspect they chose. This procedure included on-site and phone interviews. When processing the data, they organized the responses into categories such as time, empathy, communication or expertise.

I decided to use this same strategy. The idea was to add a physical background to their experience map. For the interviews, I asked users about the architectural design criteria they considered more relevant to the key points of interaction between them and the building (entering, keeping personal belongings, working, waiting, resting, eating, etc.). I interviewed 28 members of staff and 12 patients or companions.

2.2.4. Stage 4: Merging drawings with words.

Stage 4 consisted in merging the graphical material generated during stage 2 with the literary material generated in stage 3 to know what users felt in which places.

2.3. Hospital study trips.

I visited several hospitals of reference in Spain to analyse a higher level of hospital complexity (compared to the hospital in Dénia). The key information of these visits in Spain are summarised in Fig.5.

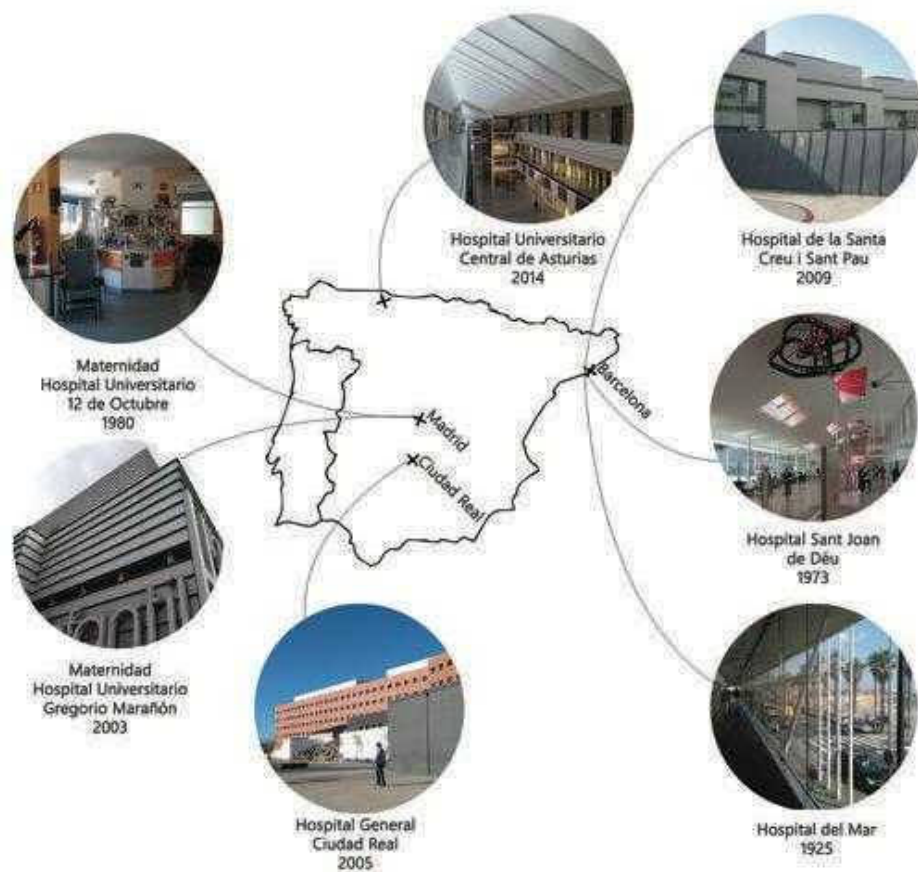


Fig.4. Reference hospitals visited in Spain.



Fig.3. Interviewing staff.

2.4. Three-month international placement.

One of the reasons why I chose to study in Sweden was because of their Healthcare System. Fig.6 shows some general indicators and their comparison with Spain.

The other main reason was because of the "Centrum för vårdens arkitektur" (CVA or Centre for Healthcare Architecture in English) at the School of Architecture, Chalmers Tekniska Högskola in Göteborg.

This centre offers a national platform for the interaction between academics and professionals in the healthcare sector. Thus, government decisions on healthcare facilities are founded on research-based knowledge which improves the long-term social investments.

Architects, nurses, environmental psychologists and occupational therapists conduct research and training for the exchange and dissemination of knowledge about healthcare architecture.

The aim of my visiting research placement at the CVA was to broaden the

perspective of my work at a prestigious international institution and to expand my network of contacts for future collaboration on research and academic activities.

The objectives I set out to fulfil during the three-month period were:

- To understand the CVA role within the academic and professional healthcare sector.
- To visit and study Swedish hospitals.
- To receive feedback on my ongoing work.

I managed to fulfil the previous objectives in my stay. The Swedish hospital visits were:

1. Göteborg:
 - Sahlgrenska Universitetssjukhuset: Bild och interventionscentrum (BOiC) + Thorax Intensive Care + Post Operation + In-patient Wards + Cancer Centre Klinik.
 - Östra Hospital: Acute Psychiatry Ward (Fig.7) + Intensive Care + Queen Silvia Children's Hospital.
 - Angereds Närsjukhus: whole building.

2. Malmö:
 - Skånes universitetssjukhus: Intensive Care Unit + Emergency Department + Department of Internal Medicine + Department of Infectious Disease.
3. Linköping:
 - Linköping University Hospital: Översikt förlossningen + Neonatal Intensive Care + Ortopeden Ward.
4. Stockholm:
 - Nya Karolinska Solna + Aula Medica + Nobel Forum + Science Park + Karolinska Institutet.

3. Results.

The result of the method followed is the evaluation tool. This tool consists of seven checklists (one per unit: childbirth unit, obstetric ward, neonatal care unit, paediatric ward, internal medicine ward, intensive care unit and circulation area).

In each checklist the information is organised in the following columns:

- Number of items.
- Area: circulation, access, patients, nursing control, other staff and support. The circulation checklist is structured in a different manner yet to be defined.
- Room: depends on the area, for example the patient area has the patient bedroom, patient toilet and rest room for patients.
- Design element: layout, light openings, installation, equipment, flooring, ceiling, wall, door, furniture, signage and art.
- Requirement item, example "The corridor has natural light." "The corridor has handrails on both walls." (Fig.8).
- Need type: functional or emotional.
- Goal: patient safety, worker effectiveness, patient experience and organizational performance. These categories have been taken from the "Patient Room Design Checklist and Evaluation Tool" developed by "The Center for Health Design."
- Reference: source where the requirement sentence comes from.
- Reference type.

CITY	HOSPITAL	AREA OF INTEREST
Barcelona	Hospital de la Santa Creu i Sant Pau	Circulation, out-patient and in-patient areas.
	Hospital Sant Joan de Déu	Paediatric in-patient wards, childbirth unit, emergency unit and circulation areas.
	Hospital del Mar/ Parc de la Recerca	Circulation area, in-patient wards, intensive care units, research building.
Madrid	Hospital Materno-Infantil 12 de Octubre	Neonatal Intensive Care Unit.
	Maternidad Gregorio Marañón	Circulation area, paediatric and obstetric in-patient wards, childbirth unit, neonatal and paediatric intensive care units.
Oviedo	Hospital Universitario Central de Asturias (HUCA)	Circulation, out-patient and in-patient areas, childbirth unit and intensive care units.
Ciudad Real	Hospital General de Ciudad Real (HGCR)	Circulation, out-patient and in-patient areas, childbirth unit and intensive care units.

Fig.5. Areas of interest in the Spanish hospital visited.

INDICATOR	SWEDEN	SPAIN	UNIT
Population (2014)	9,747,000	46,512,200	Persons
Life expectancy at birth (2015)			
♂	84.1	85.8	Years
♀	80.4	80.1	Years
Health expenditure and financing (all functions 2016)			
	11	9	% Share of Gross Domestic Product
	5,487.5	3,248.4	Per capita, current prices, current purchasing power parities (PPPs) US Dollar
Total hospital beds (2015)			
	23.88	138,368	Number per 1,000 population
	2.44	2.98	
Average length of stay (in-patient care, hospital aggregates 2015)	5.9	7.3	Days

Fig.6. National Statistics on Healthcare Systems. Source: <http://stats.oecd.org>

Each item scores points according to the reference type and each design element has an associated number for

its cost. For example, it would be more expensive to change the whole layout of a room than the furniture.

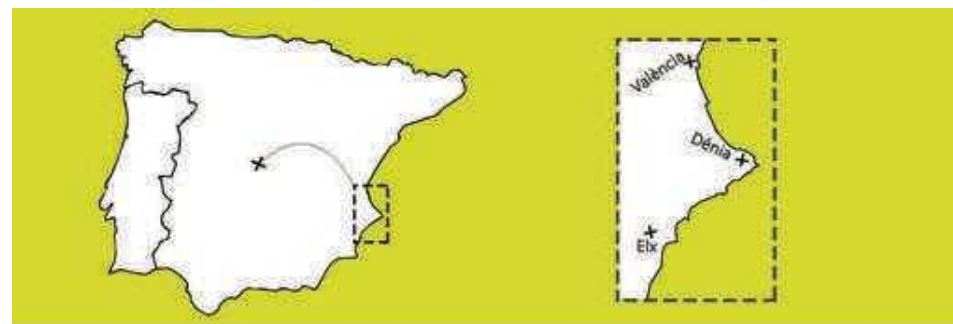


Fig.9. Hospitals under evaluation.



Fig.8. In-patient ward corridor. Hospital de Dénia.



Fig.7. Östra Hospital: Acute Psychiatry Ward.

The evaluation tool has been evolving during the progress of the thesis and remains unfinished. From December 2017 to February 2018 I collected data with the POE tool from four different hospitals (Fig.9).

When I finish these evaluations, I will be able to give a mark for each area and an overall grade for the unit. Moreover, I will hand in a list of requirements that could be addressed to improve the result.

4. Conclusions.

Thanks to this POE tool, more architects in Spain could have an easier way to access information about best practice, research knowledge and lessons learnt from other hospitals.

Thus, they might be able to make better informed decisions when designing hospitals and, hopefully, hospitals will perform better on a human scale.

Notes

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Biography

Laura Cambra-Rufino. Born in Ontinyent (south-east coast of Spain), Laura graduated from Architecture at the Universitat Politècnica de València in 2012. After finishing her MArch, she worked for almost three years at the multidisciplinary consultancy Arup in London. In September 2015 she started her PhD at the Universidad Politécnica de Madrid and since September 2016 she has been working at the same university as a predoctoral researcher. Her research focuses on the influence of the built environment on people's health. In order to understand hospital performance from its user perspective, she has spent a large amount of time at hospitals: three months working and living in Hospital de Dénia, several study trips to reference hospitals in Spain and three months in the "Centre for Healthcare Architecture" at Chalmers University of Technology in Sweden. Despite her short academic career, she has been recognised by different institutions with the following grants: "Fundación Margit y Folke Perhzon", "Beca DKV Arte y Salud" and "Ayudas para la Formación de Doctores del Programa Nacional de Formación de Profesorado Universitario del Ministerio de Educación, Cultura y Deporte."

The City in the Frame.

Intersections between comics and architecture.

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Comics, purely a two-dimensional spatial medium, represent the point where *words, sequences* and *images* meet, possessing a great potential to build powerful stories about people, places and emotions. The flexible, hybrid graphic medium of comic strips, which combine in their structure, a *narrative element, space* and *movement*, have always had a strong connection with the notion of the "city." Functioning as a narrative generator, the urban landscape is an important plot element, as well as atmospheric, and a symbolic

protagonist, remaining ideologically associated to the original story of the comic. A rich and varied manner of expression, not only used as an amusing artistic medium dedicated to children and teenagers, but comics can also be a stimulating way of rapidly promoting the political, cultural and aesthetic particularities pertaining to the country of its origin.

Keywords:

Comics, Sequence, Narrative Element.

The relationship between architecture and comics, is not a recent phenomenon, for it began from the moment when Le Corbusier manifested his interest in Rodolphe Töpffer's comics. In the 11th issue of the L'Esprit Nouveau journal (1921), the architect Le Corbusier published the article, "Toepffer, précurseur du cinéma", in which he analyses in detail the work of the artist Rodolphe Töpffer (1799-1846). Perhaps the father of modern comic strip, Rodolphe Töpffer, whose satirical stories in images, emerged in the mid 1800's, was the first to join drawing and text in Europe. Sixty years before however, the comic strip appeared in American newspapers. Rodolphe Töpffer illustrated the first comic books, naming them "[his] little carryings-on." Having William Hogarth, the pioneer of illustrated and moralizing stories, as a model, Töpffer created his own manner of graphic expression almost a century later. The schematic images of the Swiss illustrator were completely different from the paintings and narrative engravings that abound in Hogarth's art. Still considered remarkable today, are Hogarth's series of paintings, A Harlot's progress (1731) and A Rake's progress (1733), presented either in the original individual paintings, framed separately, or, the version that has been more successful, printed as a series in publications.

Le Corbusier himself chose to use a graphic narrative in the "Lettre a Madame Meyer" (1925) for one presentation made to his client, for the unexecuted project the Ville Meyer, in Neuilly-sur-Seine, Paris. Exploring the degree of variety that can be achieved in a single family home, Le Corbusier illustrates the envisioned architectural proposal, using both image and narration, in a sequential presentation. The presentation consisted of fluid sketches, unframed, having similar proportions, depicting the indoor and outdoor space of the house and inviting the client to examine the proposed sequence step by step.

Comics represent the point where words, sequences and images meet. The flexibility of this hybrid medium of graphic representation combines narration, space and movement, possessing a great potential to build powerful stories about

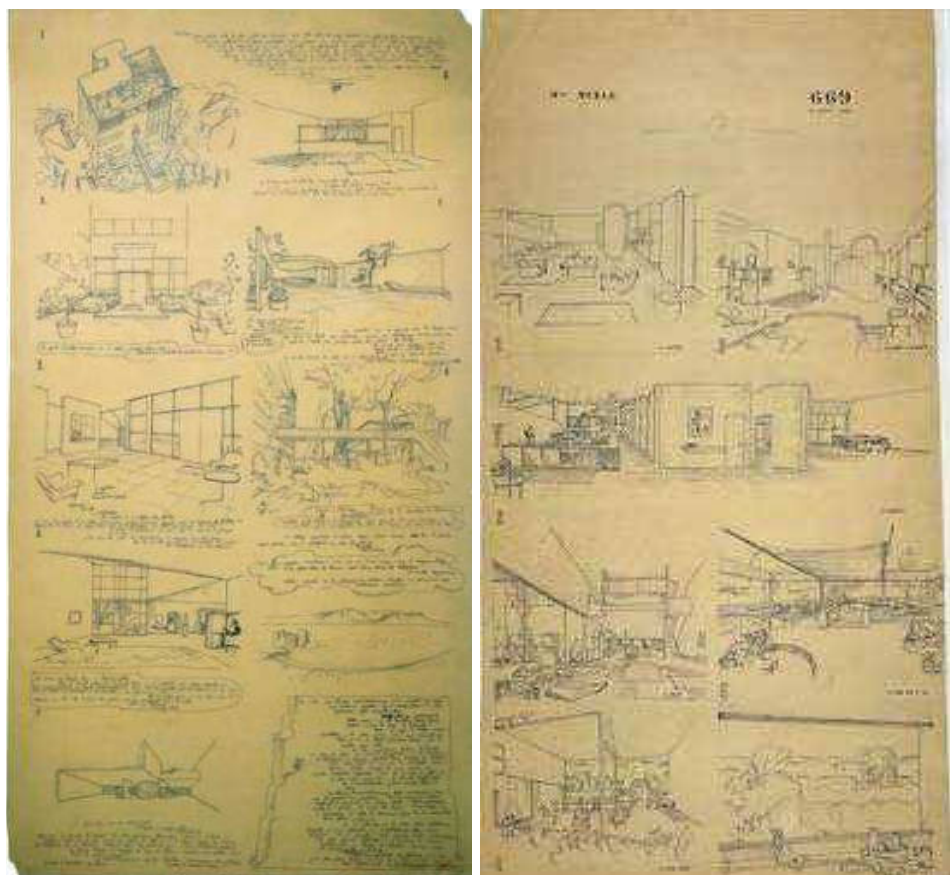


Fig.1. Images from "Lettre a Madame Meyer" (1925).

people, places and emotions. A rich and varied manner of expression, not only used as an amusing artistic medium dedicated to children and teenagers, comics can be a stimulating manner of rapidly promoting the culture of the country of its origin.

Since time immemorial, sharing a story is deeply rooted in humans' social behaviour, stories being a channel to impart knowledge, to discuss moral principles or to satisfy various curiosities.

The fact that sequential art was used for centuries to tell stories is analysed by Scott McCloud in his book "Understanding Comics." The comic artist and author are the successors to makers of a series of artistic manifestations, starting in prehistory, using sequential art. Examples would include: cave paintings; paintings on the tombs of Egyptian Pharaohs and dignitaries (i.e., the grave of the Egyptian scribe Menna); scenes engraved on the surface of jewellery; Japanese medieval parchments; silhouettes painted on Greek



Fig.2. Illustration by Rodolphe Töpffer, published in "Le Docteur Festus", in 1840, Paris.

vases; scenes depicted on the surface of heroic and religious monuments; paintings found on the interior and exterior walls of churches and monasteries, etc. Evolving rapidly into paintings and engravings, (for example Hogarth's, Töpffer's, Lynd Word's, Frans Masereel's, and Max Ernst's art), comics became hugely popular with the development of the printing press¹, which made them accessible to the general public.

The first contribution of illustrators in American newspapers such as the New York Times (1851), New York World (1860), and New York Journal (1895), marked the explosion of this type of artistic expression.² Although it was initially presented only as content in American newspapers, the natural evolution of things led to when comics became an independent publication. We can juxtapose the American comics with the ones produced in other cultures, such as the French and the Japanese, to form what might be called the "golden" triad of the domain. But others should be mentioned of less global importance - Australian, Canadian, Korean - to highlight the complexity of the field, as well as the dependence of the comic strip on the economic, social, political, cultural and architectural context.

The increasing popularity of comic strip as a way of reflecting upon everyday life, cannot be understood without an understanding of the architectural framework in which the action takes place. The desire to see the city is present in many comic books. Any main comic character has a corresponding city, whether fictional or real, whether we are talking about Spiderman's New York, Superman's Metropolis, Madman's Snap, Batman's Gotham or the post apocalyptic Neo-Tokyo, in which Akira lives in.

Metropolis, the shy Clark Kent's city, named after Fritz Lang's futuristic urban dystopia, appears in the Superman comic strip starting in 1938. Presented almost always in the light of day (and in the rare situations in which he is depicted in the night, a brightly lit urban landscape is outlined, a safe place, in which fear makes its appearance difficult) Superman's Metropola, The Big Apricot, as it is

nicknamed, has New York as its source of inspiration. The resemblances do not stop there; New Troy, the island covered by skyscrapers of dizzying heights similar to Manhattan, is an effervescent space dedicated to trade and business, which houses Emperor Building, Newstime Building, LexCorp Tower and, of course, the headquarters of The Daily Planet. With an optimistic vision of the future, the buildings were the result of the technological enthusiasm for skyscrapers, which in comic strips have surprising heights, representing everything that was valuable to people at the time. These positive features characterize Superman for, like in the case of the dark Batman, the super hero is the image of the city he defends.

The emblematic city of the Batman superhero, Gotham, plunged into obscurity, dominated by tensions, corruption, conflicts, and last but not least of crime and a deep sense of decadence, is inspired by the American cities of Detroit, Chicago and New York. The fictional city is inseparable from the narrative of the main character, being not only a framework for the unfolding of many episodes, but also a necessary condition for Batman's battles against the number of crimes. In fact, the story of the origin of the main character is closely related to this city and can only exist in a changing, frightening and shadowy setting. If during the day, Bruce Wayne seems to be overcome by the problems caused by poverty and corruption faced by Gotham (despite of the charitable activities of the Wayne Foundation), during the night, his dark alter ego manages to win over the many conflicts he has with villains like the Joker, The Penguin, Poison Ivy or Ra's al Ghul.

Different comic books and graphic novels from the late 1930s explored the city as the framework within which everyday life runs, but also have been important in the origin of modern myths. In such examples a more careful study of the aesthetics can be noticed in the atmosphere, and in how writers explored possibilities in superheroes or detective stories. There is a famous joining of fictitious cities with which were dedicated to particular superheroes: Superman

fights crime in the luminous Metropolis; Batman lives in the violent Manhattan in 1939, but from 1941 in Gotham City; Marv, Dwight McCarthy and Jon Hartigan explore the dark Basin City (which becomes Sin City); Judge Dredd is a policeman in Mega-City One, etc. The city, considered as an atmospheric element, is also the support frame of the entire action, a key element for the manner in which events run in a comic book, enabling transition from the role of a symbolic protagonist to the center of attention.

We also should mention the strong connection between the comic strip and the contemporary city. Comic strips imitate the cities we live in and the effect they have on our lives, as well as the cities we portray in our imagination. The city, the support framework in which the whole action takes place, is a key element in the way the events unfold in a comic strip, shaping the environment to become the center point of focus. In addition to illustrated fictional cities, many modern metropolises in the world has hosted a comic book action: Berlin, Paris, London, Tokyo and, on many occasions, New York.

In Jacques Tardi's graphic novels, Paris becomes more than just an architectural decoration, it becomes over time the most prominent protagonist. The illustrator uses the capital of Paris repeatedly, constantly searching for new ways to explore it, whether rainy, foggy or snowy, mostly discovering it gradually on drowsy nights with pavements shining in the light of the lamps. Using these means, Tardi outlines a graphic style characterized by the repetition and variation of the contoured space. In the series of nine novel novels Les aventures extraordinaires d'Adele Blanc-Sec, Tardi recreates the image of Paris from the beginning of the 20th century. In the first issues, the action is placed before the First World War, then in the 1920s, when the cynical hero Adele Blanc-Sec lives a series of fantastic adventures in the famous, rainy and crowded city.

Tokyo, the former Edo village, perhaps more than other Japanese city, has inspired the imaginary architecture of the manga, most of the time shaping an apocalyptic future. Japanese comic strips authors like Katsuhiro Otomo,

explore in their art, themes such as social isolation, corruption, power, violence. The framework of the whole action in the graphic novel Akira underlines the antithesis between the ruins of the old Tokyo destroyed during the Third World War (which began on December 6, 1982, with apparently a nuclear explosion) and the new city, built at the limit of the ruins, on an artificial island in 2030, Neo-Tokyo, which grew uncontrollably, oppressively, far too large to be controlled. Both the old and Neo-Tokyo cities are conceived as negative environments, claustrophobic spaces of social and technological degradation.

Surely the city that has been most commonly encountered in American comics was New York. It is the birthplace of the modern comic strip industry that first appeared in the newspapers founded by William Randolph Hearst and Joseph Pulitzer, to become a self-publishing publication in the 1930s, being the place where Superman, the first super hero created by DC Comics, appeared in 1938. Important comic strip characters were born in this city, like Stan Lee, or graphic designers like Jack Kirby. In addition, it was the area in which the most important publishers, DC Comics and Marvel Comics, were located. As a matter of fact, it is common in the Marvel universe, to place the super heroes within the framework of flagship buildings or key areas in New York. The city hosted "civil wars", "secretly blame", "dark gentlemen" of heroes and villains, the comic strip designers choosing to outline it in an emphatic way, not being the center of the world but the center of the universe. New York is the backbone of the world created by Marvel, a close connection with the outer environment, creating a framework for its iconic characters.

A strong inspiration for my research, has been the visionary architectural groups, who made an important contribution in joining sequential presentation with traditional architectural representation. In a tumultuous decade dominated by the moon landing, The Beatles and Pink Floyd, the music festival Woodstock, the hippie years, the Vietnam War, architectural groups were also formed. These groups of young architects



Fig.3. Image from Tekkonkinkreet comic strip (1993-1994), by Taiyo Matsumoto.

with creative thinking and an optimistic view about technology, created poetic proposals defined by a strong enthusiasm for technology, and explored the evolution of machines, embracing or questioning the technological utopias. They involved social aspirations, were deeply concerned about the rapidly changing needs of society and how they might affect the architectural process. At the end of this effervescent decade, their enthusiasm began to diminish, but not before leaving a graphic legacy that combined visionary architecture, pop culture, art and rebellion. This made their works known beyond circles interested in the history and evolution of architecture and urbanism. Largely due to the exceptional aesthetic quality of their hypothetical projects, some remain fascinating; groups such as Archigram, Archizoom, the Metabolist Movement or Superstudio.

Members of Archigram³ introduced some of the defining elements of comics into the process of representing the architectural project, including the presence of people, (which, up until then was included in architectural presentations only to give scale), the mobility or flexibility of the object (Walking City, Ron Herron, 1965) and fiction (as means of exploring utopian scenarios in order to test the design's limits). The collective work offered a seductive vision of a brilliant era of machines, but the graphic way in which projects were

presented is what has remained the emblem of the group. Over 900 works, each illustrated using a whole range of techniques, where for the first time, people populate the architectural images to convey a sense of its use. The force of an architectural drawing can move beyond a two-dimensional representation of the construction and can express the power of the building that will be born, or the life that it will inhabit it.

Essential for this research has been the fourth issue of the Archigram manifesto-magazine, that returned to the concerns of the first manifesto, namely seeking new ways to revitalize a stagnant architectural scene. For the issue titled Zoom!, Archigram found inspiration in the world of comic strips, arguing that their new architectural proposals were appropriate to the period of great change. Elements such as the spacecraft and capsule now ceased to exist only in the fantastic universe of comics, and their characteristics could potentially be transferred to reality in a new age of buildings. Archigram's architects considered that one of the weaknesses of urban space was that only existing mobile objects could move rapidly and freely. Of course, the imaginary space of comics gives the freedom to create such elements.

Using the bold language of the comic strip and architectural elements borrowed from science fiction for the realization of



Fig.4. "Space probe" by Warren Chalk is published in Archigram's Zoom! magazine.

hypothetical projects, became a valuable example of the intersection between narrative graphics and architecture. Zoom! uses sequential art in the architectural discourse and became the most popular of Archigram's researches, gaining a strong presence across Europe. Refusing to accepting the limits imposed by traditional architectural representation, Archigram members chose the comic strip as a means of presentation, perfectly aware that they would disturb the architectural community, which had much stricter limits regarding architectural design and drawing. The graphic narrative used in this manifesto-magazine, became further used by Peter Cook in the "Adcox Strip" and in "The Metamorphosis of an English Tower" projects.

Architects who choose comic strip techniques as a means of presentation, critical analysis, or the characteristics of comics as a method of designing, may face hostility, not only in professional circles (often, architects consider that the seriousness with which architecture is treated, may be contradicted by the jovial nature, that was wrongfully associated with comics) but also from comic artists and illustrators, who didn't want their own field invaded by outside specialists without a clear understanding of what this artistic medium offers. In an interview with the anthropologist Mélanie van der Horn, the comic artist François Schuiten - the creator of the series Les Cities



Obscures - indicated that he is afraid that the use of comics in architectural presentation and design, could have a negative influence, underestimating the complexity of its means of expression. He adds that one should not commit this injustice, the comic strips being a mature and complete artistic expression, not just a simple replacement, which has its own rhythm, follows a script, gives its readers the opportunity to experience strong emotions, not needing sound, motion and sometimes not even colours to tell a powerful story. Schuiten defends his position on this by describing his fascination for the expressive quality of early architectural drawings, arguing that his personal experience⁴ determined him to reach this conclusion.

But architects who chose comics as an alternative manner of expression have a great respect for sequential art in fact, and a deep knowledge about the concepts and structure of this art, recognizing the complexity of its creative process. Far from considering it free expression, used to attract another category of public, comics require serious research. This allows the architect who draws upon comics, because of its hybrid character, to present analytically and critically the narrative of an architectural proposal. All of a comic's elements can produce different graphical results (in terms of composition, dynamics, colour, the rhythm of the narrative, etc.) differing

from traditional comics. Clearly, we should not forget, when we approach a sequential presentation of an architectural project, that the essence of traditional architectural representation, is that it can provide as much information about the architectural proposal as an architectural drawing.

Workshop experiments carried out during this research aimed to highlight the advantages of comics' elements when we explore an architectural project. Using the attributes of this type of graphic representation, we can create a narrative around the architectural proposal, bringing into it at least one character, that can help the process of understanding the building or of the architectural ensemble which we aim to design. Once the narrative has been created, the next step would be the graphic representation of the architectural project. The workshop participant had the freedom to experiment with the limits of designing, without the constraints imposed by contemporary methods of building. Including in the sequence in-between spaces, compelled the presentation to tell the story of the architectural objects, built in time, so we could add new perspectives from which we observed the built space.

MicroArchitecture workshop: SuperSimetry Project, Namibia.

In 2012, along with another fellow architect, I spent six weeks in a school campus, in the North part of Namibia, near the Etosha National Park. Our project consisted in developing a different kind of comic strip workshop. For almost two months, we had the chance to work with twenty five children aged between six and fourteen. The whole process was conducted in a range of techniques, based on a story populated with real and also fantastic characters, focusing the participant's attention on the specific architectural objects of that part of the world (their own house, the house of the village witch, the white man's house, or mukua's house, the sifwe - a word, locals used to describe people like us, the



Fig.5. Taimo, one of the students who participated in the SuperSymetry workshop, in Namibia, Africa.

school, the cemetery, etc.).

Wishing to continue the experience we had with children in Namibia, we decided to continue the experiment of telling stories through architecture. In the autumn of 2013, choosing the narrative element as part of the comic strip structure, my architect colleague and I did a two hours weekly microarchitecture workshop for children with the minimum age of six. We started by creating a character (a pirate, a princess, or even the workshop participant) trying not to impose a certain typology, but inviting the children participating in the workshop, to imagine a one-day route for their character. And on this route we tried to underline the architectural objects

that they usually encountered: schools, kindergartens, restaurants, museums, the neighbour's house, etc. We tried to draw, analyse and discuss general ideas about the neighbourhoods, cities, services that they created. In addition to the spaces and stories they imagined, we could add some theoretical information about the structure and functions of a city, without eliminating the functions that don't exist in the real world. Some of my favourite examples of imaginary spaces, created during the workshop were the school with a suspended beach, the kindergarten with a windmill room, leading to a lookout with a telescope and a cat which was trapped in a maze that was the center of a portal which was able to send you directly to summer camp.



Fig.6. The result of the photographic experiment in TeiDorms.

Reading the architectural space: Tei Dorms, University of Architecture and Urban Planning "Ion Mincu", Bucharest.

The architecture of a building brings people's lives together. When an architect designs a house, he or she simultaneously shapes the life of its occupants. The moment the client starts using the created space, he or she also shapes the architecture, so the house starts living along with the ones who inhabit it. Thereby, the inhabited construction is constantly gaining a new meaning with every transformation it goes through.

Starting from this basic idea, and trying to understand the space of a building, which goes through a number of changes with each inhabitant it encounters, I thought about the dorms building of the University of Architecture and Urban Planning "Ion Mincu", in which I lived for three years, while I was a student. I tried to photograph each room, from approximately the same point of view, to observe the similarities and also differences that resulted in the interior space, after different people occupied the same type of surfaces.

Looking at the photographs, we can clearly observe that the same space was interpreted in a number of ways, according to the many inhabitants and their ever-changing needs. It's worth mentioning the following: the completely different floors; the variety of wood types used; different shades of carpet; linoleum, old rugs, that were gifts from parents or grandparents; rooms with one coloured wall, with two different coloured walls, or with each wall having a different shade of colour; with photos, vinyl, projects, or origami animals and flowers glued on walls; which are also covered with pencils and marked up drawings, drapes, blinds, linen or lace curtains framing the windows; beer bottles hanging from purchased or improvised lamps, colourful hammocks, a variety of bicycles, skateboards and parts of broken models, etc.

Notes

1. Although the comic strip appears at the beginning of the nineteenth century, its predecessors have been prefigured ever since the Middle Ages. The emergence of printing in Europe is certainly an important moment in spreading information so, what until then was only available to the rich and powerful, would soon be available to anyone. Prior to the appearance of the printing, there were illustrations, paintings and other works of art for the public, but they were harder to reach.
2. The production and popularization of modern comic books knows an important moment in the early 1900s, along with the inclusion of this type of art in American newspapers. Using an elaborate, thorough style, originally edited in black and white, then coloured, the satirical, humorous illustrations of the magazines Puck (1877), Judge (1881) and Life (1883), the predecessors of modern comic strip approached political and social themes that still exist in today's American society and ridiculed the prominent political characters of the moment.
3. Archigram architects (architectural avant-garde group formed in the 1960s with a futuristic approach to projects) were strongly inspired by technology to create a new approach to architecture, which was only expressed through hypothetical projects. The members of the group came closest to the simultaneous revelation of the act of creation in a story about the design and use of the architectural project. The founding architects of the group, Peter Cook, Warren Clark, Ron Herron, Dennis Crompton, Michael Webb and Davis Greene, had an intense activity while trying to promote their ideas. Between 1961 and 1974, nine articles from Archigram appeared, the BBC broadcast two documentary films, the members of the group attended numerous conferences (including one opera by Archigram collective was put on stage), but the, most importantly, they have made an impressive

number of sketches and models.

4. The artist indicates with delight, in the interview with anthropologist Melanie van der Horn, the process of achieving a good architectural drawing, talking about one of his father's project proposals: "Then he produced his pastel crayons and began to talk to the client. [...] and then my father began to draw the house and - very smart - he introduced the dressing table of the lady of the house, the favourite chair of the man of the house, the dog, and drew it all probably four times as large as it would ever turn out to be. Then he sprayed fixative over the pastels, pulled out a passe-partout, framed the drawing and set it on the dresser of the lady [...] He drew their dreams, he opened a window on what could be their future." Mélanie Van der Horn, "Sensing the Comic's DNA. Excerpts of a conversation with Francois Schuiten," Mas Context 20 (2013): 132-143.

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Biography

Geņțiana Dumitrașcu graduated from The University of Architecture and Urban Planning "Ion Mincu" and has currently finished her doctoral thesis at the above mentioned university. With experience working as a teaching assistant for Design Studio classes at the Faculty of Architecture and Interior Design Faculty, University of Architecture and Urban Planning "Ion Mincu", Bucharest, her research interests focus on the intersection between architecture and comics.

Architecture for a New Efficiency.

Architecture without occupancy.

21st century society is proving to be addicted to instant gratification and permanent comfort. In the search of this new outlook, we have become technology-dependent in almost every field of our lives, the logistic industry being one of the most influential at all levels. Urban planning and architecture are not unaffected by this phenomenon, both in cities and the countryside. One of the most significant examples is the central belt in the USA, where technology applied to logistics is dramatically changing the physical environment, the principles of architecture and, by extension urban development. New vast ghost cities are emerging, establishing an architecture, not for the people but, for an army of robots. A technology created by humans has expelled humans from architecture. Thermal or acoustic conditions, for example, are no longer the design principles, but rather maximum efficiency with minimal resources. This new typology is ruled by a special concern about the protection of the environment, the rational use of the technical and energy resources, as well as economic and material savings.

Simultaneously, this phenomenon has affected cities; these are being deprived of productive and distributive functions, producing a large deficit of resources and implying logistic complications. At an urban level, it has also generated empty spaces that need to be filled with uses that improve the quality of life of the inhabitants.

This is a two-speed phenomenon; productive technologies inexorably speed up in the digital world, whereas transportation systems are yet analogic-dependent. This duality is negatively affecting both the operation of the cities and the configuration of the countryside. Ultimately, architects need to confront both the urban-architectural challenges and socio-economic issues emerged from this new reality and respond to the irrelevance of human scale caused by this and the constant changes in the social and environmental requirements.

Key words:

Technology, Automation, Efficiency, Logistics, Architecture.

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1. Introduction.

The present research tries to analyse the impact of technology on the living conditions of our society: from costumers' habits to the architectural response made to the new requirements and technological improvements. Moreover, the research addresses the related ethical and even physical consequences of our decisions as architects.

The research is motivated by reflections made by Rem Koolhaas on the transformation of the countryside in the West due to the implementation of technology in the agricultural and production sectors. Following his perspective, the research explores the "re-evolution" of the countryside, the emerging dystopic panorama, and the paradigm shift around the concepts of "city versus countryside."

Within this context, the research goes deeper into the development of the logistic industry worldwide through the work of researchers such as Clare Lyster (Principal at CLUAA, Chicago, Illinois) or Jesse Lecavalier (University of Minnesota). Focusing on specific cases, such as *Walmart* or *Amazon* in USA, and *Alibaba* in China, the research analyses the effects of the implementation of technology in architecture and urbanism, as well as the effects upon the affected socio-economic environments.

2. Twenty first Century's demands.

Today society is addicted to comfort. We become instant "consumers": we expect instant rewards or the instant provision of services, and we even expect "home delivery." In this new online shopping paradigm, consumers expect ever-faster delivery of the products they order. With the help of technology, the sophistication of product handling has improved such as to fulfil consumers' expectations of delivery from several days to the "next day" or even to the "same day." These instantaneous expectations are putting a strain on the current distribution/logistics model.



Fig.1. Grandview feedlot (30-65,000 head of cattle), Idaho. Source: OMA.

In this supply chain, Distribution/Fulfilment centres have acquired a high level of efficiency. However, there is still a challenge with the inefficient transport of goods: "It is an archaic distribution model built on a fragmented and inefficient network that cannot meet the increasingly tight time frames for delivery to consumers" (NAIOP, 2013).

Consumer expectations for ever-faster delivery times might require the Distribution Centres of the future to be located closer to those consumers and/or to logistics partners within the logistics chain. However, the spatial requirements of these new DCs seem not to meet these requirements, due to their large scale, their infrastructural needs and the elevated degree of automation. This is where we confront our first dilemma as urban planners and architects.

Nevertheless, as intellectuals, we might confront a prior dilemma; should architecture promote and encourage these values that are installed in our society? Some prominent figures such as Rem Koolhaas, one of today's foremost thinkers and with architectural foresight, consider that "comfort is overrated." He has declared that security, comfort and sustainability have substituted the values of "Freedom, Equality and Fraternity" that promoted the French Revolution (*El País*, 2016). His provocative statements seek to generate reflection upon the principles that might govern our society and how architecture can contribute to resolve the conflict.

3. Technology to fulfil those demands.

There are two specific sectors where the incorporation of technology to the production processes has generated major changes, affecting even the configuration of the landscape and architecture itself.

The first sector is agriculture. In the last decade, farmers have been diversifying and using more and new technology in their processes. Land husbandry is now a digital and computerized practice; farmers today can work on their laptops from anywhere in the world. In terms of the way of working, the countryside is becoming very similar to the city. Dairy farming and animal husbandry are also increasingly automated. Agriculture is being increasingly subordinated to the market economy and landscape is being digitalized (Fig.1). This new digital frontier is changing the way we understand even the most far removed environments. For instance, there is a software, *Helveta*, which enables people in the *Amazon* to identify and track every single tree. Tribesmen have turned into digital informers who are able to make an inventory of their land. A new order of rigour is appearing everywhere; a hyper-cartesian order is being imposed on the countryside, as was previously imposed on the cities. As Rem Koolhaas explains: "In spite of our active disinterest (and perhaps because of it) the countryside



Fig.2. Alibaba's Headquarters, Huiyang, China. Source: Quicktron.

has become the most radically changing part of our physical environment, through our own massive interventions, multiplied by the colossal transformation that global warming is already imposing" (The Economist, 2018). Radical transformations are no longer happening in the cities, but in the countryside, which appears as a white canvas with no rules or limits for interventions.

The second productive sector is the logistic industry. Over the past 20 years

there has been a huge proliferation of cartesian boxes (more than 14 million square feet) arranged in strict and rigid grids. The efficient management and distribution of products to consumers all over the world demanding almost immediate response has led to the implementation of technology in Distribution Centres. In these centres, many of the tasks are already being undertaken by robots (such as searching for products, transportation, inventory), whereas human workers stand at the



Fig.3. Amazon Distribution Center, Phoenix, USA. Source: AP Photo/Ross D. Franklin.

end of the productive chain as "pickers." Although it's too early to tell the ultimate role of this industrial revolution in the warehousing industry, it is expected that these technological improvements might progressively take away most of the "human" jobs (Fig.2). Future DCs are predicted to rely upon minimal human presence: only for supervision, surveillance and occasional maintenance.

One of the most radical examples is the Alibaba's warehouse in Huiyang, China. With 20,000 m², there are 100 robots (AGV: automated guided vehicles) that receive instructions via Wi-Fi. They can travel at speeds of up to 1.5 meters (5 feet) per second and carry up to 600 kilos at one time. In a traditional warehouse, a worker might be expected to sort through 1,500 products during a 7.5-hour shift and fetching each item might require them to walk 27,924 steps during that time. "Now, thanks to the mobile robots, the clerk could sift through 3,000 products in the same shift, while only taking a significantly fewer 2,563 steps a day," said a statement made by the Alibaba Group company. Of course, the reduced number of employees needed is almost insignificant (Fig.3). This creates a new challenge for architects, as the design parameters shift drastically: the uninhabited architecture.

4. Landscaping as a result of technology.

But not only architecture is influenced by this new paradigm, it also affects the landscape and the territory where it is implemented. This phenomenon is being studied by renowned think tanks in both the USA and Europe.

Clare Lyster is the principal at CLUAA, a research-based design practice in Chicago operating at the intersection of architecture, landscape and planning. Recently, the office has been researching the issue of logistics. She states that, in the twenty first century, the processes of globalization are playing a prominent role in urban planning: "systems and flows are more critical than form in generating space (...). While economics, transportation, information and technological continuity conceive the globe as a singular and unified construct,

at the same time globalization has wielded a de-centering and discontinuity of the global spatial field" (ACSA, 2011).

This de-centralization is noted by other authors and it will dramatically change the conception of "the city versus countryside." One of the most significant examples is Rem Koolhaas, whose increasing interest in the processes developing in the countryside has led his think tank AMO to launch a research project on the subject with his students at the Harvard Graduate School of Design that will culminate in an exhibition at the Guggenheim Museum in the fall of 2019.

In the words of its curators "Countryside: Future of the World will present speculations about tomorrow through insights into the countryside of today. The exhibition will explore the effects of genetic experimentation, artificial intelligence and automation, political radicalization, mass and micro migration, large-scale territorial management, human-animal ecosystems, subsidies and tax incentives, the impact of the digital on the physical world, and other developments that are altering landscapes across the globe" (Guggenheim news release, 2017).

Koolhaas's concern on this issue first emerged more than 15 years ago. He considers that there is a technological revolution taking place in the countryside that has been historically neglected by architects. In the exhibition "Cronocaos" at the 12th Edition of Venice Biennale (2010), he exposed the issue of preservation and the impact that globalization has upon territory. There are two opposing processes taking place at the same time: there are massive migration flows from the countryside to cities, especially in Southeast Asia; whereas in North America and Europe, production and related industrial tissue is more and more being located in the countryside producing a dystopian panorama.

The radical transformation of the countryside has largely gone unnoticed by architects, who, over the past 20 years, have been focusing their analysis and efforts in urban environments. But globalization and technology have affected not only production but also

have dramatically changed agriculture. "Agriculture in America is more and more concentrated on a central belt that runs from the south to the north," said Koolhaas. "And there is a kind of seasonal operation where larger and larger machines that are used for harvesting are so big that no individual farmer can actually own one. They become like armada of machinery that is so expensive that it has to function 24 hours a day. (...) That is concentrating a large percentage of all the production in America in a central zone" (The Economist, 2018).

In the central belt of USA that Koolhaas refers to, traditionally agricultural areas are suffering a radical transformation. The new technology that emerged in agriculture can only be afforded by big money farmers, whereas small farmers are confronting a dramatic impoverishment and are being forced to change their livelihood to the production and distribution industries that are simultaneously emerging in their area.

As the former farmer Philip Alfano explains "Historically we've been an agricultural-based economy. With our proximity to the Port of Oakland and rail lines, we're now emerging as a logistics and supply chain hub" (The California Report, 2017). This article explains the transformation suffered in the Central Valley in California, where the agricultural sector has been left in the hands of a few large landowners, while the distribution and business sector are burgeoning, in part due to the growth of Amazon or big national companies such as Walmart, CVS, Whole Foods, Albertson, etc. Local governments have welcomed the boost in employment and are even investing in training programs but, at the same time, many specialists are questioning this new structure in the long term, as the working conditions are usually uncomfortable, salaries are low, as are work or career expectations. This also means a threat to employment at traditional retail companies.

In addition, many specialists conclude that the initial employment boom of these distribution industries might decrease rapidly fuelled by a growing concern about the potential impact of automation.

Rem Koolhaas considers that one of the factors that might explain Trump's victory in the 2016 presidential election is this progressive impoverishment of the rural working class in USA and the effective decline in the quality of life and expectations: "I was not completely surprised when Trump won. (...) I'm not saying that Trump was inevitable but the scale of upheaval in the center of America made it very understandable for me that something else was going to happen" (Dezeen, 2016).

Koolhaas also addresses the issue of the effects of globalization and technology upon the internal regions in North America and he is especially critical about the role of Silicon Valley: "As an architect, I am fascinated by the physical effects of Silicon Valley's virtual propaganda. A new scale is emerging in data centres and distribution centres. Buildings are becoming bigger and bigger, the largest so far being Tesla's battery-making Gigafactory near Reno, Nevada. As they are increasingly automated and robotized, none of these buildings has large human populations. The human scale could become irrelevant" (The Economist, 2018).

He is concerned about the size these "server farms", fulfilment centres or battery factories are reaching, as the surface area they occupy is as big as a city, but they will never have its density of population, which leads to a brand new urban and architectural typology emerging in front of us. As architects we must take part in this transformation.

5. Architecture as a result of technology.

In summary, there are two fundamental issues to address as architects: the location of these huge macro-structures and the immediate effects on the landscape; and the architectural approach to this new condition.

Regarding the location of the DCs (Distribution Centres), there are different opinions on the issue, relying on the production technologies and the means of transportation. This was particularly evident in the competition launched in



Fig.4a+b. 2013 NAIOP Winners, Distribution Centres of the Future, USA. Source: NAIOP.

2013 by NAIOP (one of North America's largest, most prestigious and valuable commercial real estate organizations). The competition sought concepts for the Distribution/Fulfillment Center of the Future. Several architects were to conceptualize and design the physical "goods exchange" structure that will accommodate distribution, fulfillment, and retail functions in the year 2020. Surprisingly, the two winners had radically opposite proposals, which gives us a clue of the challenge this issue brings to architects and urban planners.

The Ware Malcomb concept proposes a structure with the typical large footprint of Distribution Centres; its innovations are focused on spatial redistribution and

materials handling within the building in order to obtain the maximum efficiency possible with the current technology. The idea proposed was to locate the DC outside the cities. (Fig.4a)

In contrast, Riddell Kurczaba envisioned a vertical Distribution Center suitable for an urban setting (Fig.4b). Its "Swarm" concept moves the storage and distribution functions into the core of a 25-storey mixed-use building, which also houses residential, office, and retail space and integrates goods movement that makes use of existing transit systems such as metro and light rail. This proposal announces itself with a strong statement: "Distribution is broken. In an era of liquid digital communication, the



Fig.5. Facebook server farm (91,440 m2), Lulea, Sweden. Source: OMA.

traditional structure and roles of physical warehousing and retail distribution exist in a state of flux. New modes of consumption (e-commerce, m-commerce, and s-commerce) have challenged the role of the traditional retail storefront and put strains on the infrastructure and distribution systems which support it" (Industrial Building of the future, 2013).

A second important issue is the *typological response* to the new needs emerging. It is important to examine more deeply about the consequences that the above-mentioned factors (globalization, artificial intelligence, automation, political radicalization, digital era, etc.) have, not only on the landscape but also upon the conception of space and the new architectural typologies that might emerge.

There are some interesting issues to develop, such as: "how architects should confront the design of a space that would be inhabited by robots rather than humans" or if "the future architecture might not need human presence anymore."

Contrary to what has happened in the countryside, many architects are fascinated by, and/or "anxious" about, infrastructures. Rem Koolhaas is no exception, for he talks about a paradigm shift. It might seem as the future of these Distribution Centres is not so much about finding "cheap" workers, but actually becoming institutions without workers. In his own words, "In some of today's giant greenhouses light is not admitted for the pleasure of humans but reduced to that narrow part of the spectrum that promotes growth in plants. It is a return to extreme functionality. Given the massive building in the countryside and the reduction of human presence, architecture can become more radical. Today, humans need the colour beige: we cannot stand stark contrast or colour intensity. In the new technological spaces, however, you get a shock of intensity. Coding is creating its own aesthetic. We are witnessing the emergence of a new sublime. And this will have repercussions not only for architecture but also for citizens more broadly. It has a beauty that is in itself really amazing" (Fig.5) (The Economist, 2018).

The radical character of the interior of these boxes has become unpredictable for architects. They are characterized by such a high level of abstraction and codification, and such a distance from human scale or any conception of spatial articulation, that we would be unable to comprehend it. Definitely, these new Distribution Centres are not designed for the humans that might inhabit them, but rather for the robots, in order to increase the production rate exponentially. This is the description of one of Amazon's fulfillment centres (Fig.6): "As soon as you pass into the building, you are enveloped in sound. Noises made by human workers and machines ricochet off concrete and metal into an indistinguishable industrial din, punctuated occasionally by the beep of a forklift backing up. Conveyor belts compose the base of this droning. They snake around the entire building, taking abrupt turns, spiraling from ceiling to floor, alternating from metal rollers to long treadmills, speeding up, slowing down, crisscrossing and finally converging like lanes on a large and complex freeway. An endless stream of brown boxes rides these pathways, traveling from human - the pickers who fill them with items - to the bays of trucks waiting outside" (The California Report, 2017).



Fig.6. Amazon Distribution Center, DuPoint, USA. Source: Amazon.com

This condition of ubiquitous big boxes threatens architecture with irrelevance. The parameters are so far from conventional architecture for humans, that it is extremely difficult to deal with. Light, program, atmosphere, temperature, comfort, accessibility, all are substituted by mechanical dictates of efficiency, flexibility, accuracy and promptness (Fig.7). In his book "The Rule of Logistics: Walmart and the Architecture of Fulfilment", Jesse

LeCavalier develops an in-depth research into the functioning of Walmart Fulfilment Centres. In his opinion, logistics have taken over from mass production and become the new organizational paradigm for our age (Fig.8). In opposition to any idea of architecture as autonomous form, the exterior of this "big box" adapts to whatever make the store tolerable wherever the local condition. The paradox is that the goal of these structures is to



Fig.7. Distribution Center FASA / GH+A | Guillermo Hevia. Source: G. Hevia.

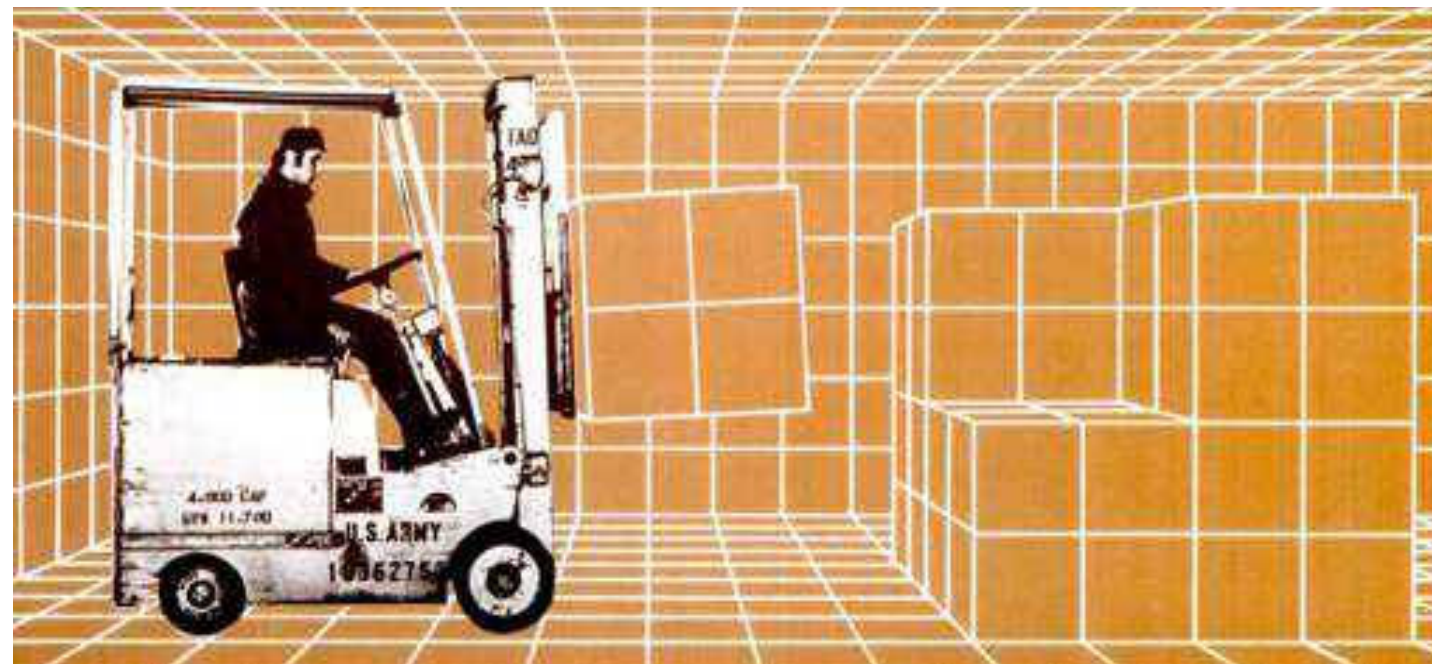


Fig.8. Are Walmart's fulfillment centres avant-garde architecture? Source: University of Minnesota Press.

disappear through camouflage, while obtaining the most efficient flow of merchandise and information across space and time. The discipline of architecture is progressively addressing this challenge and giving significant responses.

One of the main concerns of this new typology is to assist in the protection of the environment, the rational use of

the technical and energy resources, as well as economic and material savings. An example is the implementation of a bioclimate simple architecture in harmony with the natural environment. The architect G. Hevia, looks at this in his design for the distribution and handling of pharmaceutical products, incorporating the latest operational technologies and bioclimate solutions.

6. Learning from logistics.

These responses are frequently related to the preceding strategies used by the logistics industry, where efficiency and readiness are more relevant factors than comfort, as it has been mentioned above.

In the '90s architects started to look at logistics networks as a way to control and enable the flows of material, people and data, which is what might be considered to characterize the contemporary urban condition. In recent times, it seems that architects have set their sights on the concept of design. In her book "Learning from Logistics", Clare Lyster studies the case of three huge corporate logistics practices (*Amazon, FedEx and Ryanair*) and their related infrastructure, architecture and landscapes. These examples are chosen due to their territorial impact and reliance on a combination of digital and physical infrastructure. She explains how powerful these networks are as "urbanizing agents", for through their practice, they are able to generate effective and actual changes in the territory. As an example, she describes Ryanair's practice of offering cheap direct flights between peripheral, under-utilized airfields, effectively producing a new map of Europe populated by unknown places, creating what she

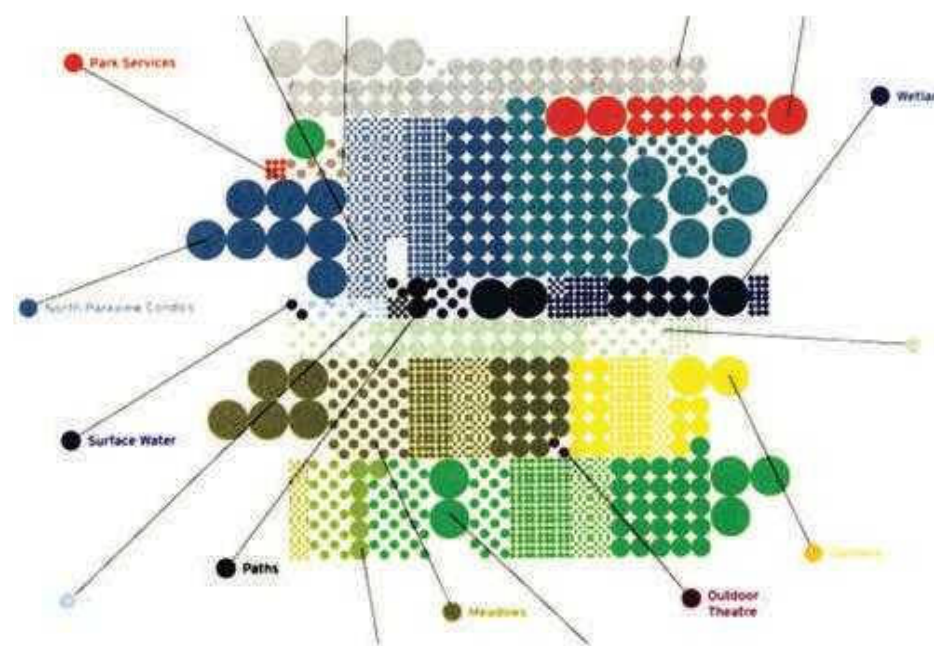


Fig.9. Downsvie Park Diagram, Toronto, Canada, 2000. Source: OMA/AMO.

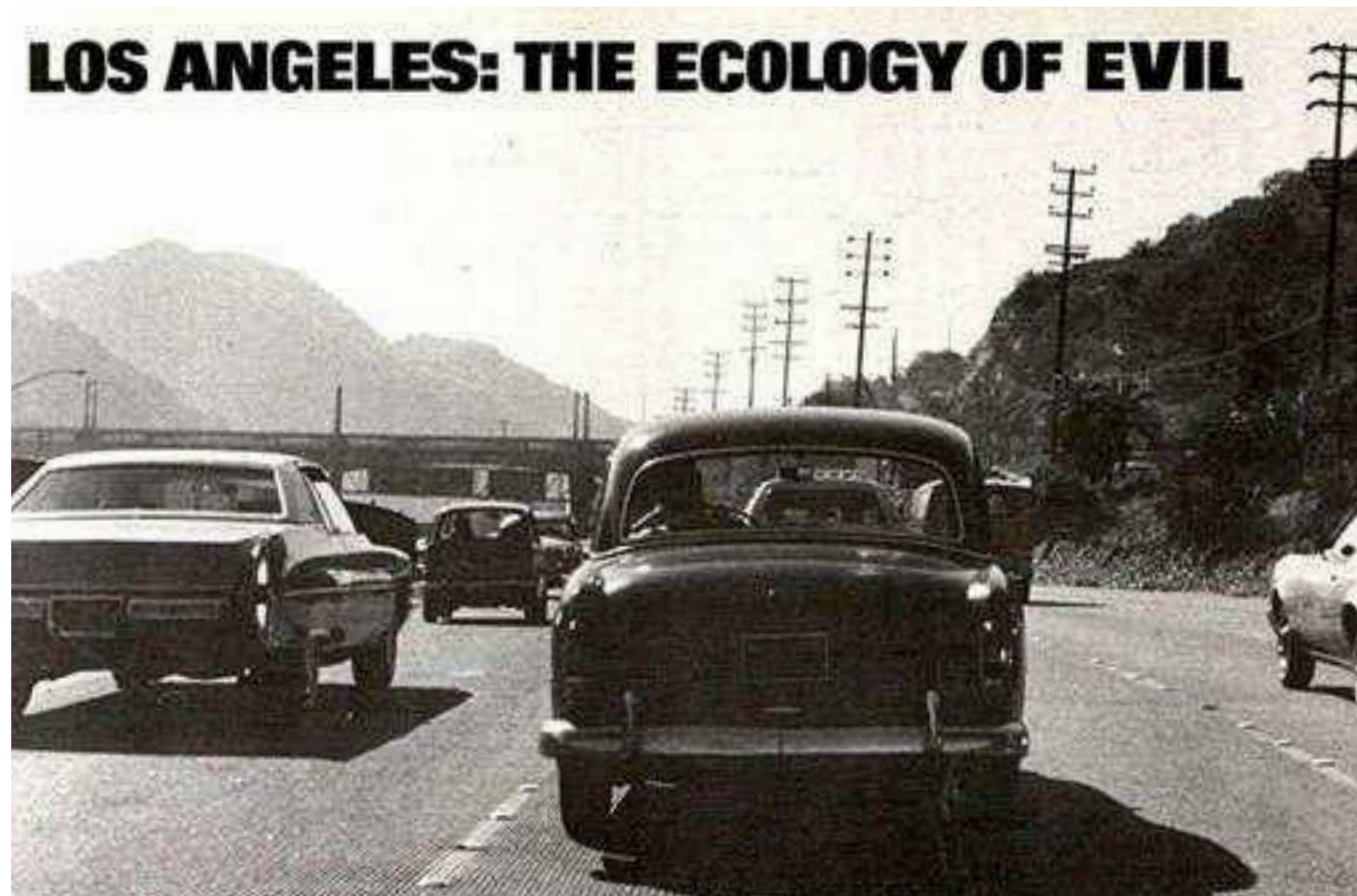


Fig.10. Los Angeles in the 1970s. Reyner Banham's Autopia. Source: Peter Plagens.

calls an "alternative spatio-geographic indexing of the continent." Lyster relates concepts derived from logistics to paradigmatic architecture, landscape, urban design theory and projects (such as OMA's Downsvie Park proposal, Fig.9) and extrapolates the consequences in concepts such as "site", "plan", "zone", "circulation" and "architecture."

Lyster proposes to work with the "network" as the context, departing from historic interdependencies between geography, identity and urbanism. To illustrate the "network context concept", she resorts to utopian visions such as Reyner Banham's "Autopia", Superstudio or Archizoom (Fig.10). She also develops an interesting parallelism between the infrastructural "framework" proposals of the Metabolists, and the efficient ground surface distribution in logistics facilities.

7. Conclusion.

The main contribution of this research is to reveal the consequences of the relocation or dislodgement of production

industries to the countryside in parallel to the increasing demands of "immediacy" and "comfort" by society. It is clear that the new social paradigm and the unstoppable development of technologies applied to logistic networks will end up by transforming the urban condition around the planet.

These are the main consequences identified:

- With the Distribution and Production Centres located outside the city, it is necessary to implement an increase in the capacity of distribution lines, which will undoubtedly affect traffic in cities and their urban development.
- A new paradigm emerges in the relation between the city and the countryside. The city is no longer the place where radical changes happen. It is in the countryside where architects must face the new challenges and propose a genuine response according to these new parameters.
- Equally, a new architectural typology

arises that responds to many factors, from technological to sociological new conditions.

This new typology will force the generation of a new urban condition. As Rem Koolhaas declared: "Architecture's legitimacy has always been based on how it could accommodate, inspire, cherish, challenge, and console its clients. What will it do to its status if the client evaporates? What will be the new legitimations?" (Flaunt, 2016).

As a result, the redistribution of these functions into the countryside will force architects to make important decisions regarding these new hyper-dimensioned ghost cities ("post-cities", R. K.) created outside the cities, and also will encourage them to rethink the "empty" spaces that will emerge in the cities due to the loss of functions previously embedded in the urban tissue. This research shows that the ramifications of these issues are both new and varied and exposes an urgent need for the discipline to address these major topics for the future of our environment.

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From Mechanical to Digital Paradigm. Empirical Methodology.

New digital tools have become essential instruments for architecture: they have revolutionized various fields, from graphic representation to conception, and including the development of new ways of transferring knowledge. The current computer tools allow us a more accurate representation of reality, and digital manufacturing tools make it possible to control the design and production simultaneously. The completion process directly influences the result.

Architecture should not avoid the reciprocity between the formal intentions and the possibilities of manufacture that now exist.

The paradigm of standardization, which existed during most of the 20th century, is giving way to the digital operating today in schools

of architecture and the Fab-Lab or Digital Laboratories. From an experimental perspective, diverse international workshops¹ have been organized, as a strategy to test the validity of the new digital paradigm. In a one-week long seminar, students without any previous knowledge were asked to design and make an architectural artefact. It has been possible through the empirical methodology, which allows testing immediately the results through trial and error with the prototypes made by themselves. The digital paradigm provides accuracy and efficiency in the design of form through to production.

Key words:

Seminar, Digital, Paradigm, Fabrication.

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1. Introduction. From standardization to a digitalization process.

"Before the founding of the École des Beaux-Arts in Paris in 1671, the communication between the teacher and the apprentice took place through direct experience in building on-site and theoretical knowledge consolidated on a narrow contact with reality. After the institutionalization of architecture teaching and, as a consequence of the Industrial Revolution that required a massive amount of trained professionals, the traditional relationship between praxis and theory was reversed."²

The Modern Movement in architecture during the first decades of the 20th Century set out to standardize prototypes following the metaphor of the machine. The Deutsche Werkbund - to which belonged many German architects during this period - tried to rationalize the construction process through industrialization, principally those authors who were in favour of Typisierung (the standardization of a few industrially produced types).³ In the Bauhaus, the school inaugurated by Walter Gropius in 1919, new standardization theories became part of the teaching process taught to new student architects. Gropius was obsessed about the complete prefabrication of the construction process, and he designed, along with Konrad Wachsmann, a series of prefabricated houses as prototypes.

The result was registered in a patent titled "Prefabricated" described as: "It is the chief object of the invention to devise a building structure which can be assembled exclusively, or substantially so, from standard units or sections, each consisting fundamentally of duplicates of the other, so that they can all be manufactured completely in a factory equipped with machinery for producing them efficiently."⁴ (Fig.1)

Since the introduction of computers in studios - from 1992 - digital processes are commonly used in architectural practice. Architecture is inconceivable today without the use of software like *Autocad*, *Maya* or *Rhino*. The debate is no

longer focused on whether these tools are an optimal resource, but rather how they are changing the architectural process. One of the most important consequences is the possibility of working with complex geometries and the possibility to design using complex algorithms. Also, it allows the design to be related to the production processes. As a consequence, it is already unnecessary to standardize the elements to diminish costs and also allows the economical production of prototypes."The crisis of traditional tectonic codes that defined the hierarchy of building parts and its meaning represents another crucial aspect of the contemporary digital architecture scene."⁵

The individual possibilities of the architectural prototype are described by Nicholas Negroponte in 'Being Digital', where he explains and explores the individual application of the digital condition. Negroponte is the creator of the MIT Media Lab (Technological Institute of Massachusetts), a center where the international network named Fab-Lab Network is promoted. This network is pioneering what has been named the "third digital revolution."⁶

The Fab-labs are laboratories for investigation and innovation into the development of new emergent technologies and the development of its applications. Their investigations focus on the development of digital software associated with digital manufacture using the newest tools, such as 3D printers and laser cutters that make possible prototypes made at a scale of 1 to 1.

The new forms of computerized digital manufacture also allow integration between the design stages and all the aspects of the constructive process in a complex combination between abstract geometric forms and their specific realization.

2. Digital Fabrications & Deployable Structures.

The seminar, which we call 'Digital Fabrication & Deployable Structures', is organized in the form of an intensive workshop. Thus a limited group of students will have the possibility to

transform the theory about folding structures into real prototypes at a scale of 1 to 1. They design prototypes related to the idea of colonizing a space to be inhabited.

Different groups share the same workspace for one week, a studio with tables to work in groups, enough free space to test the different prototypes, and the laser cutter for the immediate execution of the designs made during the process. During the first days, we explain to students basic notions of the ideas of Emilio Pérez Piñero, Félix Escrig and Charles Hoberman.

They could find here different options of structures to choose and to deploy for their proposals during the workshop. Also, some necessary instructions are explained on how to use the laser cutter (SABKO Gmb HSH-G1290, 1200mm x 900mm), which is given in an independent way for every student. They will have batches of 3 mm MDF dyed black, in two sizes - 1200 x 900 mm and 1200mm x 300mm - to design the bars and knots. The joints will be fixed with screws, clamps or other devices that the student can conceive. It is also possible to include complementary elements during the design process of

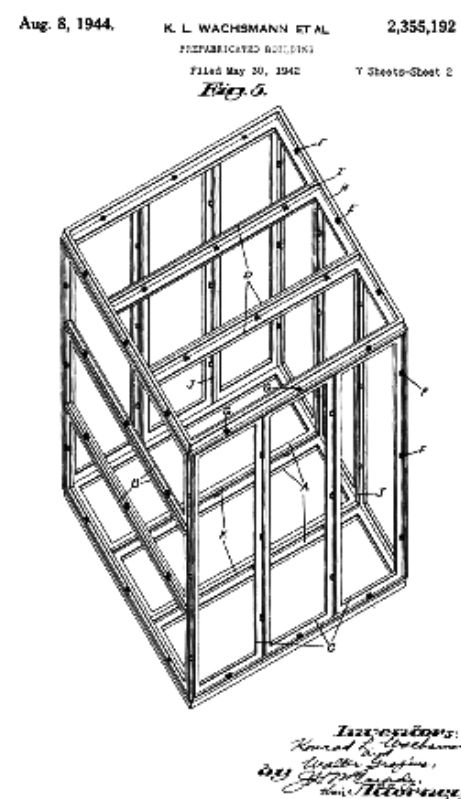


Fig.1. Patent 'Prefabrication Building' from K. Wachsmann and W. Gropius, 1944.

the prototype, such as textiles, tensile materials, etc.

Another day is planned for a brainstorming session, to explain different ideas for the prototypes and possibilities for the designs. After that, the groups start a process of trial and error, building the prototypes in parts, or at the same time that the students are designing. This strategy helps to make decisions, to detect problems, to find solutions efficiently, and turn all of these elements into real scale.

The parameters designed to allow us to value each prototype in relation to others since direct comparison is not possible because all of them are different. The digitization of the process is what allows the uniqueness of the architectural designs and the prototypes. Parameters such as foldable index, duration of the assembly process, duration of the cutting process, or superficial module variation are used to verify the efficiency of each 'Specific Prototype'.

Considering all the parameters, we generated a multidimensional scale endowed with several axes, that allow us to measure the efficiency of the generated prototypes. As a general criterion, one prototype would be more efficient than

another, if its diagram, once represented at the aforementioned scale, had a smaller surface area. The results show the validity and possibilities of the digital process: it allows the manufacture of differentiated models, something quite expensive in the previous mechanical paradigm. It also allows a comparative analysis between the prototypes using parameters to prove their efficiency.

This shared experience serves as a creative catalyst of solutions generated in common: all groups can learn from the other students and their prototypes. This approach helps to see how the prototypes are evolving and improving at every moment, and always with the necessary technological precision during the process of digital fabrication.

The seminar can be thought of as an updated version of the medieval guild studios, where the digital media has substituted for the tools of craftsmen, and the models evolve with the precision of the system of production.

Finally, each group of students complete 'specific prototypes', which are evaluated by different indicators that have been set to help us to quantify the idea of the efficiency of every prototype (Fig.2).

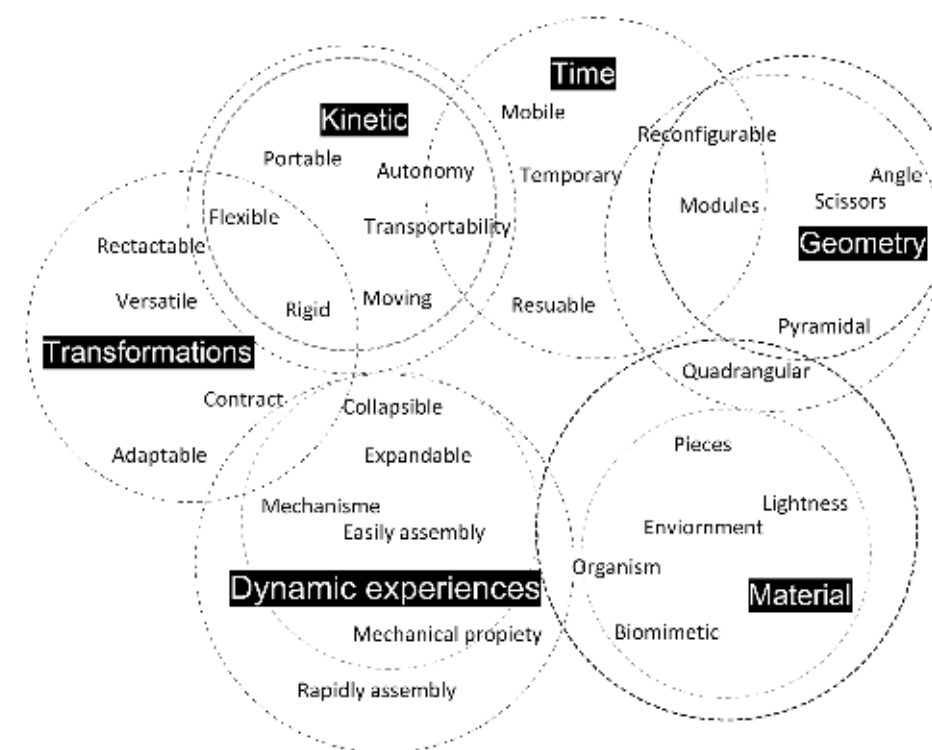


Fig.2. Dynamic experiences / Digital paradigm.

3 Conclusion: Dynamics experiences.

What does expand or contract mean? Which geometry have I to use? The way to achieve results is to have your own kinetic experience with elements of a deployable prototype directly. Hence, students need to test several kinds of models.

Thus, this seminar attempted to explore beyond folding structures. Students used concepts around the idea of deployability, but without the goal to cover a large surface with a deployable structure.

This significant difference brings them a rich experience through other aspects such as: exploring the limits of the dynamic experience of deployability. Félix Escrig recognized that a fundamental moment in human development occurred when men abandoned caves and they needed to build shelters by the most rapid means of assembling a structure made with materials found anywhere or by pieces easily transported. Around this action humans began to think about architecture.

It makes for a more interesting world than the dominant modern duality of subjective and objective, when using possibilities related to transportability or expandability, for example, rather than designing with numerical calculation to achieve the largest covered area.

In the 1970s, Reyner Banham proposed that architecture should not have only a pragmatic and unidirectional approach in order to solve problems, but rather it must allow for fantasies and to create a world of opportunities. In this way, deployability can be understood, as a different way of perceiving design or architectural issues.

The mechanical paradigm not only reflects the traditional work of a carpenter, for example, where the design of a specific object is pursued through an empirical methodology but might also be thought of as associated with the typisierung of the Modern Movement.

Maybe we are at the beginning of a new period where the educational

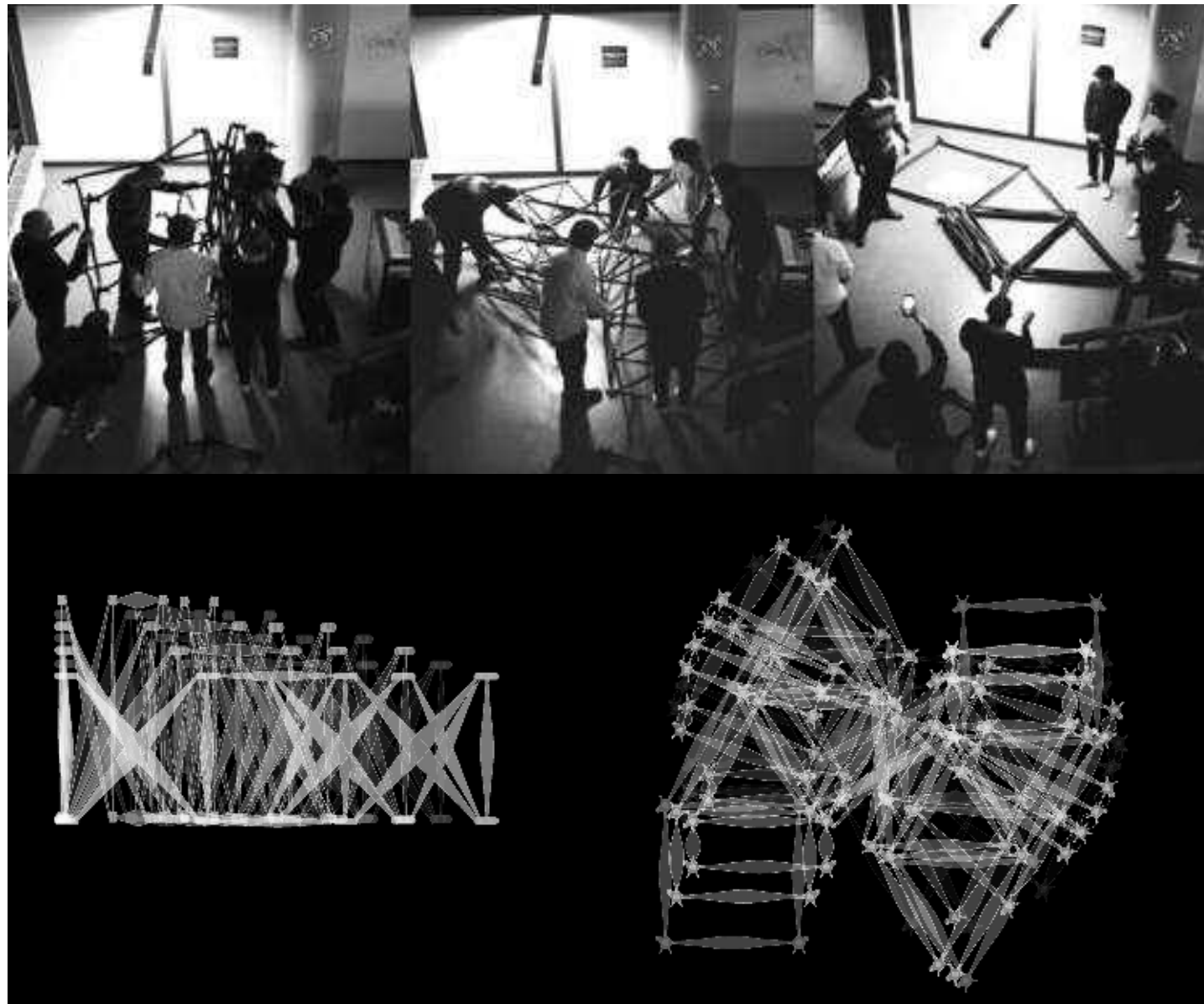


Fig.3. Workshop TU Berlin, 2018.

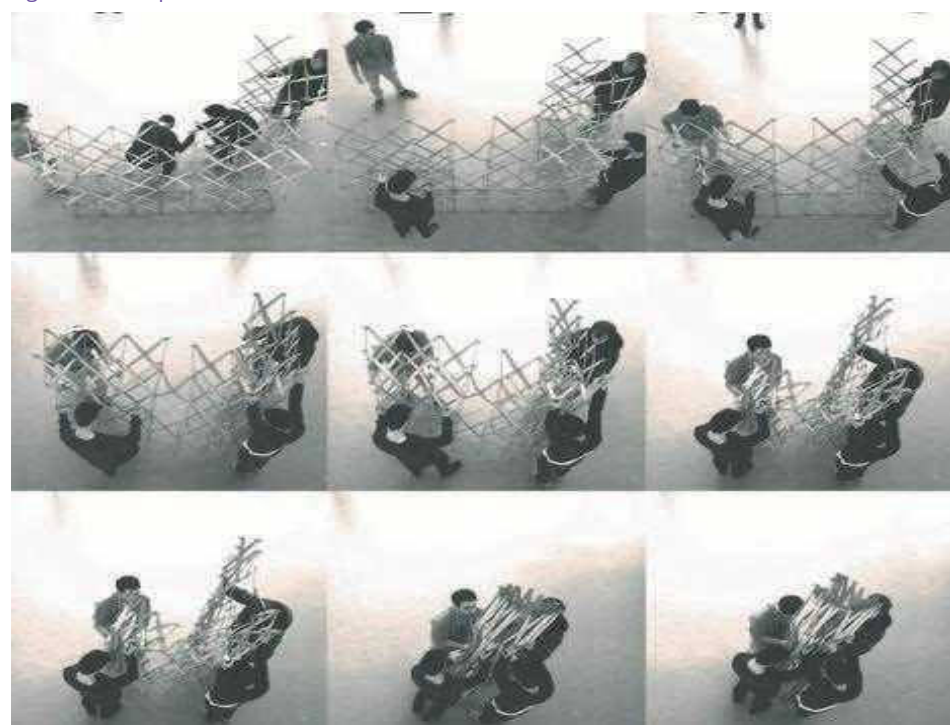


Fig.4. Specific Prototype. TU Berlin, 2018.

model of the workshop or seminar is implemented again. Workshops with the idea of making things that unite the optimization of the process - Typisierung and simultaneously to preserve the uniqueness of the designed object -as the followers of the Kunstwollen wanted in the Deutsche Werkbund 100 years ago.

The digital paradigm provides the possibility to solve the problems through the "carpenters way" with prototypes made by digital technology, i.e., exploring the world through the designer's own experience.

Perhaps, in this period, we are able to reinterpret the possibilities of artisan craftwork from the perspective of the digital paradigm (Fig.3 and 4).

Notes

1. Workshops organised by Ignacio Borrego, Pedro García, Martino Peña, Montserrat Solano and Antonio Cerezuela.
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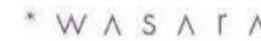
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