(ATINER)

Athens Journal of Architecture

(ATINER)

Volume 5, Issue 2, April 2019
Articles

ATHENS INSTITUTE FOR EDUCATION AND RESEARCH
A World Association of Academics and Researchers
8 Valaoritou Str., Kolonaki, 10671 Athens, Greece.
Tel.: 210-36.34.210 Fax: 210-36.34.209
Email: info@atiner.gr URL: www.atiner.gr
(ATINER) Established in 1995 (ATINER)

Mission

ATINER is a ***World Non-Profit Association*** of Academics and Researchers based in Athens. ATINER is an independent **Association** with a **Mission** to become a forum where Academics and Researchers from all over the world can meet in Athens, exchange ideas on their research and discuss future developments in their disciplines, **as well as engage with professionals from other fields**. Athens was chosen because of its long history of academic gatherings, which go back thousands of years to *Plato's Academy* and *Aristotle's Lyceum*. Both these historic places are within walking distance from ATINER's downtown offices. Since antiquity, Athens was an open city. In the words of Pericles, **Athens*"...is open to the world, we never expel a foreigner from learning or seeing".*** ("Pericles' Funeral Oration", in Thucydides, *The History of the Peloponnesian War).* It is ATINER's **mission** to revive the glory of Ancient Athens by inviting the World Academic Community to the city, to learn from each other in an environment of freedom and respect for other people's opinions and beliefs. After all, the free expression of one's opinion formed the basis for the development of democracy, and Athens was its cradle. As it turned out, the Golden Age of Athens was in fact, the Golden Age of the Western Civilization. *Education* and *(Re)searching* for the 'truth' are the pillars of any free (democratic) society. This is the reason why Education and *Research* are the two core words in ATINER's name.

The Athens Journal of Architecture
ISSN NUMBER: 2407-9472- DOI: 10.30958/aja
Volume 5, Issue 2, April 2019
Download the entire issue (PDF)

Athens Journal of Architecture
Editorial and Reviewers' Board

President's Message

All ATINER's publications including the e-journals are open access without any costs (submission, processing, publishing, open access paid by authors, open access paid by readers etc.) and are independent of the presentations made at any of the many small events (conferences, symposiums, forums, colloquiums, courses, roundtable discussions) organized by ATINER throughout the year. The intellectual property rights of the submitted papers remain with the author.

Before you submit, please make sure your paper meets some basic academic standards, which include proper English. Some articles will be selected from the numerous papers that have been presented at the various annual international academic conferences organized by the different divisions and units of the Athens Institute for Education and Research.

The plethora of papers presented every year will enable the editorial board of each journal to select the best ones, and in so doing, to produce a quality academic journal. In addition to papers presented, ATINER encourages the independent submission of papers to be evaluated for publication.

The current issue of the Athens Journal of Architecture (AJA) is the second issue of the fifth volume (2019). The reader will notice some changes compared with the previous issues, which I hope is an improvement.

Gregory T. Papanikos, President
Athens Institute for Education and Research

9th Annual International Conference on Architecture
8-11 July 2019, Athens, Greece

The Architecture Unit of ATINER, will hold its **9th Annual International Conference on Architecture, 8-11 July 2019, Athens, Greece** sponsored by the Athens Journal of Architecture. The aim of the conference is to bring together academics and researchers from all areas of Architecture. You may participate as stream organizer, presenter of one paper, chair a session or observer. Please submit a proposal using the form available (https://www.atiner.gr/2019/FORM-ARC.doc).

Academic Member Responsible for the Conference

- **Dr. Nicholas N. Patricios,** Vice President of Strategic Planning & Analysis, ATINER and Professor & Dean Emeritus, School of Architecture, University of Miami, USA.

Important Dates

- Abstract Submission: **27 May 2019**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **17 June 2019**

Social and Educational Program

The Social Program Emphasizes the Educational Aspect of the Academic Meetings of Atiner.

- Greek Night Entertainment (This is the official dinner of the conference)
- Athens Sightseeing: Old and New-An Educational Urban Walk
- Social Dinner
- Mycenae Visit
- Exploration of the Aegean Islands
- Delphi Visit
- Ancient Corinth and Cape Sounion

More information can be found here: https://www.atiner.gr/social-program

Conference Fees

Conference fees vary from 400€ to 2000€
Details can be found at: https://www.atiner.gr/2019fees

9th Annual International Conference on Urban Studies & Planning, 3-6 June 2019, Athens, Greece

The Architecture Unit in collaboration with the Social Sciences Division of the ATINER will organize its **9th Annual International Conference on Urban Studies & Planning, 3-6 June 2019, Athens, Greece** sponsored by the Athens Journal of Architecture. The aim of the conference is to bring together academics and researchers from all areas of social sciences such as urban sociology, urban geography, urban design, urban planning, architecture, etc. You may participate as stream leader, presenter of one paper, chair of a session or observer. Please submit a proposal using the form available (https://www.atiner.gr/2019/FORM-PLA.doc).

Important Dates

- Abstract Submission: **22 April 2019**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **6 May 2019**

Academic Members Responsible for the Conference

- **Dr. Nicholas N. Patricios,** Vice President of Strategic Planning & Analysis, ATINER and Professor & Dean Emeritus, School of Architecture, University of Miami, USA.
- **Dr. Virginia Sisiopiku**, Head, Transportation Engineering Unit, ATINER, & Associate Professor, The University of Alabama at Birmingham, USA.
- **Dr. Jesus J. Lara**, Academic Member, ATINER & Associate Professor, The Ohio State University, USA.

Social and Educational Program

The Social Program Emphasizes the Educational Aspect of the Academic Meetings of Atiner.

- Greek Night Entertainment (This is the official dinner of the conference)
- Athens Sightseeing: Old and New-An Educational Urban Walk
- Social Dinner
- Mycenae Visit
- Exploration of the Aegean Islands
- Delphi Visit
- Ancient Corinth and Cape Sounion

More information can be found here: https://www.atiner.gr/social-program

Conference Fees

Conference fees vary from 400€ to 2000€
Details can be found at: https://www.atiner.gr/2019fees

Complexity vs Simplicity: The Contrasts of Architectural Language in the Past and in the Present

By Patrizia Burlando[*] & Sara Grillo[†]

The architecture, the landscape, the urban planning, the information technology and the other disciplines merge and move towards extreme evolution. In search of extreme and unusual shapes and heights to overcome a fictitious challenge between power and ability, it is opposed to the need to simplify the representation and make it elementary. The design of the city is an action that humankind has always done and that the various cultures and populations have developed by creating different rules: orthogonal grids, main axes, concentric patterns and the most varied forms. The development of new settlements is determined by the design of new infrastructures, new axes and the creation of new blocks and buildings. A peculiar phenomenon of recent years, which inspires and goes beyond experiences of the past (ideal cities), is represented by the creation of new cities in the United Arab Emirates where the limits do not exist, the territory is designed with artificial forms, the coastline is remodeled with figures and elementary representations, ever higher and bizarre skyscrapers rise with extreme rapidity requiring considerable economic resources and technological capabilities. This search for complex forms of buildings is observed all over the world; it is now a challenge among the greatest architectural firms to use parametric design to create new buildings. This technology allows us to overcome the limits of the past and the design of intrepid shapes that release from simple geometric shapes, creating a new contemporary language. It is clear that without a proper cultural and intellectual background it is only a game with shapes. This new way of designing the city and its parts must be in some way understandable by everyone, therefore the need to find clear and elementary methods of representation. The general agreement and the acceptance of new forms are essential for identification in the new language. Actually, even if the design process is represented in a schematic way, very complex design software is used.

Introduction

> *"If it is necessary to know and to write, for the same reason every engineer must get to express himself, that is to draw, more exactly that it is possible."*[1]

[*]Professor, University of Genova, Italy.
[†]Architect, University of Genova, Italy.

1. D. Tessari, *La Teoria delle Ombre e del Chiaro-Scuro* (Torino: Camilla e Bertolero, 1880), p. 32.

The study intends to analyze the evolution of forms through their representation from the design of the landscape to that of the single object of architecture.

We want to obtain extreme and unconventional shapes and outside the box to win a fictitious challenge between power and capacity, to which the need to simplify the representation and make it elementary is opposed.

The idea of architecture we have today is profoundly different from that of the past, both in terms of formal and functional aspects.

Forms of architecture in the purest and most intrinsic meaning have always existed, it is not the intention of this study to thoroughly investigate the meaning of architecture, but it is inevitable to think of architecture as a search for shelter and protection.

Since prehistoric times man tries to use the shapes of the territory in his favor, with caves that plots for the search of light and protection, from here on there are countless examples of land use to create a safe place: the huts shaped with the wet ground, the tents of the nomads created with earth and plant elements, the stilt houses that defy the marshy areas making them habitable, the Trulli (Figure 1), the underground cities and not least the spectacular example of Matera.

Figure 1. *Trulli Matera Italy*
Source: http://minervanewscrispiano.blogspot.com/2017/09/.

With the evolution of man, his techniques and design skills have evolved in search of increasingly safe and efficient buildings that have brought the disciplines to a global complexity even in representation. Quite the opposite, in the contemporary world there is a search for simplicity in communication and expression of phenomena.

Why before there was not the need for consensus increasingly required today, in all fields, including architecture, urban planning and landscape?

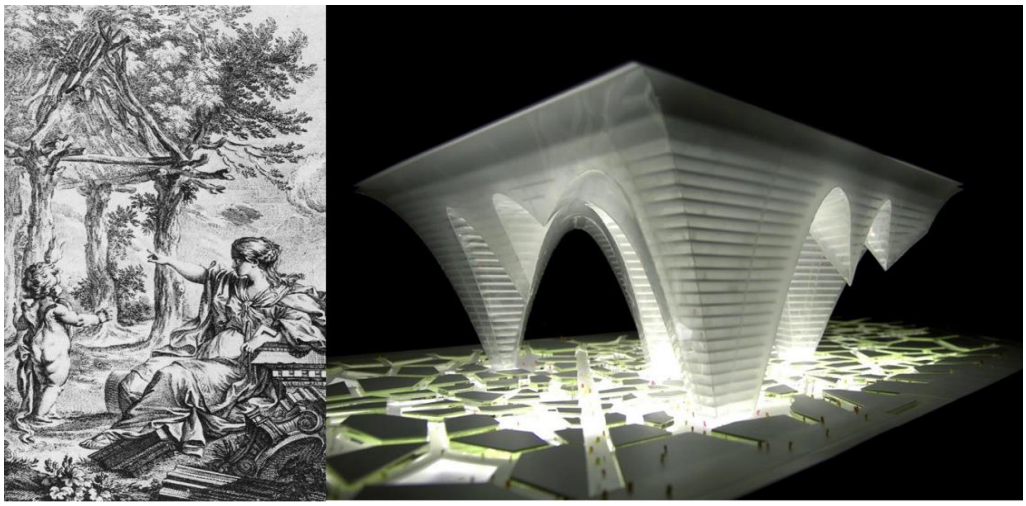


Figure 2. *Marc-Antoine Laugier, Essai sur l'Architecture [Essay on Architecture,] Cover Image; Bjarke Ingels Group: The Pillars of Bawadi, Dubai (UAE), 2007*
Source: https://big.dk/https://big.dk/projects#projects-baw.

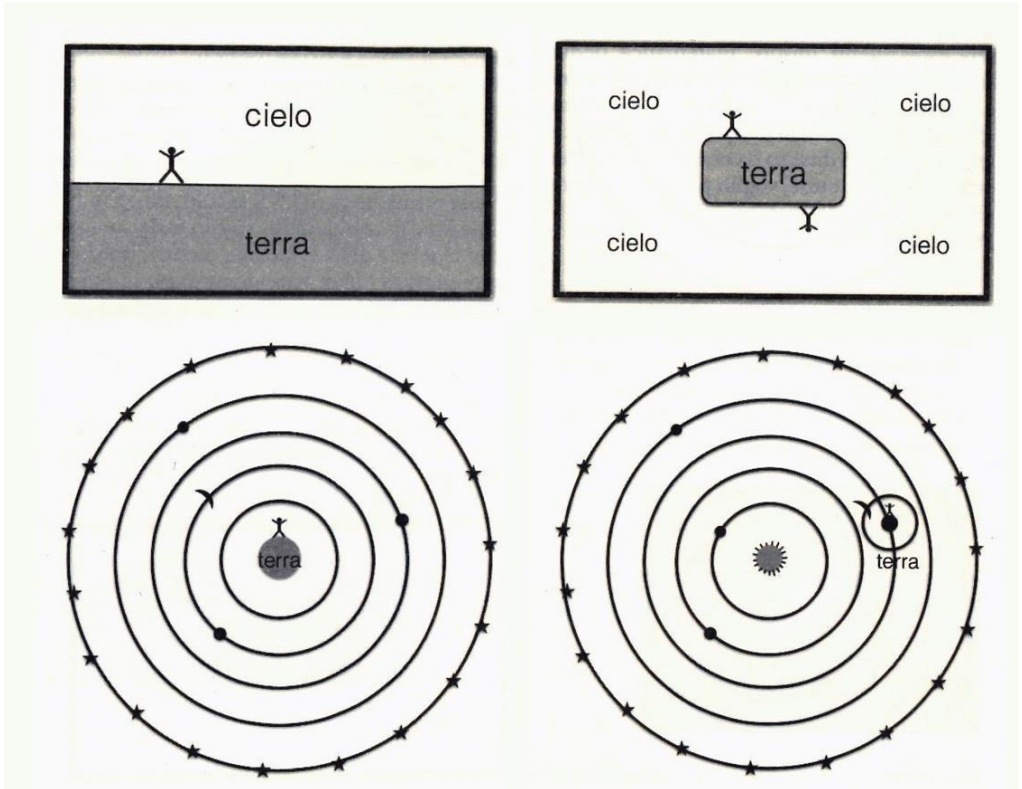


Figure 3. *Evolution of the Solar System: 1. Under the Earth, Above the Sky 2. Anaximander Revolution: The Sky is around the Earth 3. The Shape of the Earth is probably a Sphere (Parmenides, Pythagoras, Aristotle) 4. The Great Scientific Revolution of Copernicus: The Earth is not at the Center of the Planetary System*
Source: Rovelli (2014), 32-34.

Methodology

Simple drawings were used by Carlo Rovelli in "Seven short physics lessons" (2014) to describe the architecture of the cosmos. "*The reason is that science, before being experiments, measures, mathematics, rigorous deductions, is above all visions. Science is primarily a visionary activity. Scientific thought feeds on the ability to 'see' things differently than we saw them before*."[2]

Beyond the important visionary aspect always inherent in the architecture discipline, a careful analysis of the modes of representation from the past to the present has been conducted, highlighting the similarities and differences that as a logical consequence, has generated a greater awareness of what is happening today. The architecture, landscape, urban planning, computer science and other disciplines merge and push extreme evolution. In the field of city planning, clarity and simplicity are sought in the representation that is opposed to the formulation of increasingly complex shapes that challenge the limits of the territory and the rules of static.

A critical examination of the development of disciplines, such as landscape, urban planning, and architecture, through their design and representation, is at the center of this work, based on the analysis of contrasts and contradictions, but also of correspondences and connections to highlight the complexity of each historical period, focusing on the contemporary. To illustrate the initial thesis, examples of application of tools and technologies from the past to the present have been used.

> "*I have rebuilt a lot: and reconstructing means collaborating with time in its 'past' aspect, grasping its spirit or modifying it, almost reaching it, towards a longer future; it means discovering the secret of the springs under the stones (...), touching past and future centuries in my games of stone: the walls that I shore up: hands that do not exist yet will caress the stem of these columns.*"[3]

The design of the city is an action that man has always done and that the various cultures and populations have developed by creating different rules: orthogonal grids, main axes, concentric patterns and the most varied forms. In general, the development of new settlements is determined by the design of new infrastructures and new axes, from the creation of new lots and therefore new buildings.

Today the landscape and the cities appear to us as a stratification of elements, which only in some cases were born at a table, much more often as an overlap of parts and completion of empty portions.

The representation has evolved over time to the same level as the architectural language; in architectural composition it is a fundamental tool to succeed in the creative process, to communicate it and finally to realize it.

2. C. Rovelli, *Sette Brevi Lezioni di Fisica* (Milano: Adelphi, 2014), 31.
3. M. Yourcenar, *Memorie di Adriano* (Paris: Librairie Plon, 1951), 121.

The Theme in its Historical Evolution

The Romans, whose more or less complex signs still characterize the western landscape today, embody a remarkable evolutionary step in the conception of the project through both its representation and its realization, reaching a degree of complexity in the design surpassed only by the engineering calculations of the iron and glass of the industrial revolution, besides the new parametric design that sets different rules to the contemporary world.

The Roman roads are not adapted to the landscape, but there overlapped, draw as much as possible straight, they crossed the country with massive structural works, passed marshes with monumental bridges and viaducts, engraved with the hills halfway cuts by changing the topography of the site.

> "*Building, means collaborating with the earth, imprinting the sign of man on a landscape that will remain forever modified; contribute also to the slow transformation that is the life of the city itself. How much care, to devise the exact location of a bridge and a fountain to give the mountain road the cheaper curve that at the same time is purer!*"[4]

Figure 4. *Roman Cardo-Decumanus Scheme*
Source: Graphic re-processing by the authors Burlando and Grillo.

The camps and military posts, located along the route at a regular distance between 10 and 20 miles, imposed in the lowlands the directionality of the centuriated mesh, originally used for the organization of agricultural fields. The territory was modified according to an orthogonal grid of roads (see Figure 4)

4. Ibid, 120-121.

canals and agricultural plots, often coinciding with the four cardinal points to the point that Goethe called the Roman landscape "*Second Nature that works for civil purposes*". The *Ceturiatione,* which mainly characterized flat areas and which in many cases can still be observed today, is an element resilient to transformations. In this regard, the Sereni in "The History of Italian Agricultural Landscape" argues that there is a "*law of inertia of the agricultural landscape*" that makes the signs once fixed tend to perpetuate, even when the technical, productive and social relationships that have influenced its origin have disappeared.

The example of Villa Adriana (see Figure 5) is in contrast with the Roman way of infrastructuring the territory: in the grandiose landscape complex there is a natural adaptation of the buildings to the altimetry of the place. Among the individual architectures, re-enactment of buildings visited by Emperor Hadrian in his travels through the vast Roman Empire and conceived according to the rules of order and symmetry, there is only a visual link, without large land movements necessary to adapt each new object to the pre-existing orography.

Figure 5. *Planimetric Scheme of Villa Adriana Highlighting the Symmetry Axes of the Individual Buildings*
Source: Graphic re-processing by the authors Burlando and Grillo.

Although Greek architecture was undoubtedly revolutionary and magnificent based on simple and more intuitive principles; with the trilith, the Romans began to develop a real conception of design and ability to shape the space, so they also stood out on the architectural scale. The Romans, as mentioned, built architecture of all kinds, took care of useful works of urbanization, architecture for the worship of gods, honorary buildings and entertainment, theaters, villas and palaces that still amaze us for their magnificence, but the aspects that most interest this study are the techniques and the skills with which they were made including the complex representation of architectural design, which goes hand in hand with a technological development; new forms were developed: the arch and the vault that allow to cover immense spaces and create resistant walls of great thickness, the complex and various techniques of different wall hangings depending on the use

and made stable by the formulation of the mortar. At this point it is crucial to mention the Treaty of Vitruvius De Architectura, for the first time in the history of architecture is formalized by creating an essay on the various techniques and forms but especially on the architecture inherent meaning sanctioning the hinges of the latter. Vitruvius at the beginning of the first volume wrote that architecture was born simultaneously from *Fabrica* and *Ratiocinio*, the techniques developed were fundamental for creating extraordinary buildings and shaping spaces but it is absolutely necessary that at the base there is a theoretical-intellectual thought. Without this there is only one artifact that does not include the complexity of architecture, which is the univocal fusion between *Utilitas, Firmitas* and *Venustas*. Moreover, in the De Architectura, Vitruvius clearly wrote of composition defining *Ordinatio Dispositio* and *Distributio* the canons to follow for the right choice of the site, the determination of plan and elevations with basic modules and the right structural sizing. These must merge with the *Symmetria, Eurythmia* and *Decor*.

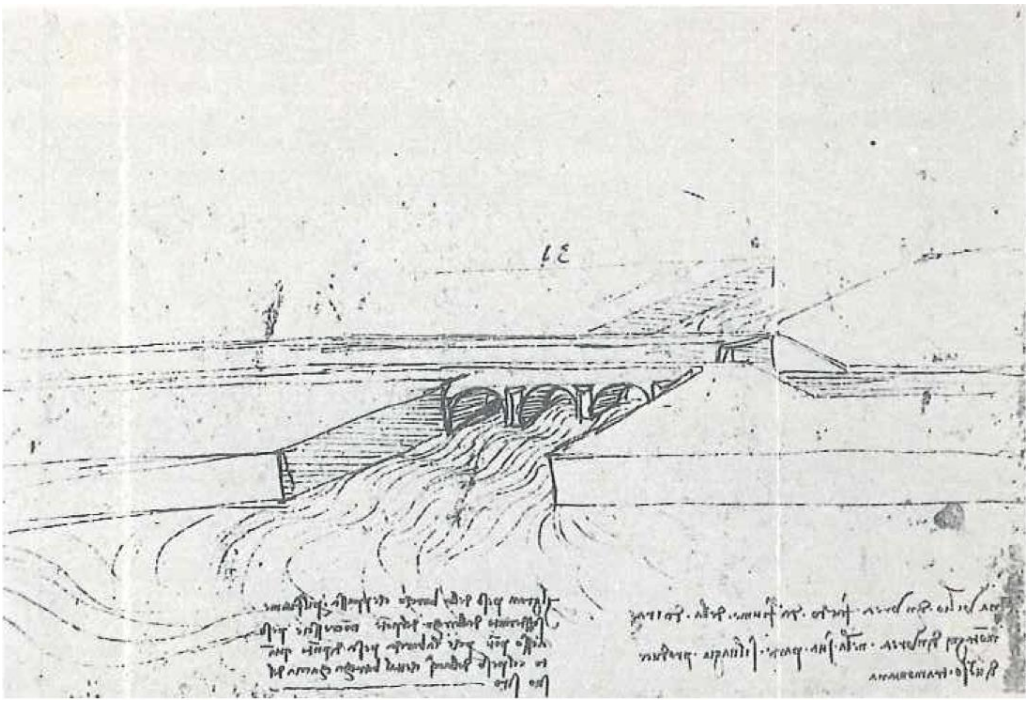


Figure 6. *Leonardo da Vinci: Sketch of the Naviglio Hydraulic Solution, in Codex Atlanticus*
Source: www.flickr.com.

After the pause of the Middle Ages with the spread of the use of perspective, the geometrical design imposed itself again modifying the territory, not exclusively urban, in the realization of squares, gardens and cities and not only ideals.[5] In this case the impact was less than the imposition of the rigid mesh of the

5. Vitruvius introduces *Scaenografia*, which is suggestive design of the building as a whole, called in late Latin *Perspectiva*. Vitruvius in the preface of the seventh book states that the perspective view has already been defined by the philosophers Democritus and Anaxagoras

Centuriatio on the territory and the ingenious introduction of the arc in the art of construction.

A separate chapter could be dedicated to the multifaceted genius of Leonardo da Vinci, Ludovico il Moro's chamber engineer, who worked in Venice, Lombardy, Tuscany and at the court of Charles d'Amboise. An evolved figurative picture of how to design his time can be had through his work: graphic annotations, sketches, models, drawings and notes; important information on tillage techniques, locks, embankments and channels. For example, even today in Ivrea the hydraulic arrangement of the Naviglio can be observed; the corresponding design sketches are preserved in the *Codex Atlanticus* (see Figure 6).

With the application of the theories on the city-park the imposing and immense transformations, which Le Notre imposed on the French landscape, can still be observed today (see Figure 7). The greatest landscape architect of France, not only of the seventeenth century, applied in his interventions the Cartesian rationality with a complete dominion of nature by man, reinterpreted the tradition of the Italian garden and the French models to him earlier, fused the various experiences in a unified vision with magnificent works of landscape architecture. He created a synthetic and rational work, based on an apparently simple design, where the amplitude and the essentiality of open spaces predominantly dominated the building. The parks of Le Notre, with their vast expression of absolute monarchy of Louis XIV, were designed to be populated by many people, to serve as a framework to lavish court festivities and visible from above. *'Forcer la Nature*' was the imperative of the Roi Soleil which led to the radical transformations of landscapes, to the diversions of watercourses, to the leveling of wooded hills and massive reforestation. If the seventeenth-century French parks represent the most splendid expression of absolute monarchy in history, their construction was undoubtedly made possible thanks to the use of innovative methods and instruments introduced by the military architects described in the Mollet, Boyceau or Dezallier treaties, but also thanks to the mastery of design, the use of metric scale and perspective.

On the one hand it was important to perfect the operations of surveying the shape of the land and the water thanks to the measurements and leveling, "*setting up plants and risers*" that allow to recognize "*if the arrangement is gracious, if the parts are convenient the one with respect to the other* "*and finally to evaluate" the work before it is realized.*"[6] Then prepare the ground, regularizing the conformation thanks to the measurement and the art of building terraces, terraces and slopes, art directly marked by the engineering of the fortifications from origin to a sensibly new space. This was mainly made possible thanks to the evolution of measurement and construction tools applied to the construction of the garden: the compass, the line, the team, the plumb line, spirit level, the bevel and the astrolabe; for example, the use of a 16th century English invention spread: the tablet of the

in the fifth century BC. as a natural principle of human vision. M. Spesso, *Teoria dell'Architettura – Dal V secolo a.C. al Barocco* (Padova: Libreriauniversitaria.it, 2011).

6. J. Boyceau de la Baraudière, *Traité du Jardinage Selon les Raisons de la Nature et de l'Art* (Paris: Hachette Livre BNF, 1638), 68.

topographer equipped with alidade, which allowed to trace the angles horizontally directly when the target was taken.

On the other hand also a complete mastery of the design and use of the aerial perspective with effects of fading and reflection for the presence of water premise complete control of the open space and the creation of grandiose works. "*It reigns there, above all through symmetry*"[7] and the compositional order of the terraces from which the view extends to dominate the whole.

The vision defect, recognized by the laws of optics, becomes the "natural" requirement to be used for simulations. Among the gimmicks adopted the approachers are: the avenues too long discourage the visitor, the designer will then pretend by artifice to approach the final stretch by narrowing or closing the end and thus subtracting a part from the view[8]. To determine the extension, however, if the garden is large, it will be possible to make the view open to the surrounding countryside. If, on the contrary, the garden is small, the designer will try to "*make sure that all the avenues are not open to the eye from one end to the other.*"[9]

Figure 7. *Gran Canal View, Versailles @ 2009- M. Lagneau*
Source: www.flickr.com.

In the mid-eighteenth century Italian example of a great transformation was imposed on the Campania region with a complex design. The Lenotriano model was reproduced in the Reggia of Caserta reinterpreted by Vanvitelli. The landscape composition develops along a single perspective axis, which runs along its entire length, between flower beds, pools, waterfalls, sculptural groups, prolonged in the background, in the wooded hillside of oaks. The elements of the park come together in a happy synthesis of different cultural influences, of Italian and French experiences re-elaborated together: the perspectival expansion of the space, inspired by French, obtained by using the

7. D. D'Argenville, *La Theorie et la Pratique du Jardinage (*Paris: Hachette Livre BNF, 1709), 13.

8. F. Boudon, "Nascita del Giardino alla Francese: Cartografia e Storia dei Castelli," in *The Architecture of the Western Gardens – from the Renaissance to the Twentieth Century* (ed.) M. Mosser and G. Teyssot (Milano, 1990), 121-142.

9. Ibid, 36.

dissolving and reflecting effects produced by the large water surfaces developed on the axis tends to infinity; the Baroque style game of the rocks, which are transformed into sculpture in dynamic groups of statuary fountains and water, which assumes, along more than a kilometer path, different shapes, sliding flat or erupting from the artificial reefs. The Renaissance axiality of the only clear directrix, which connects palace, garden and landscape, is enriched in the composition of a new perspective artifice: bending with a rhythmic progression, between the palace and the hill, it allows to perceive the central motif of the water, of the waterfall, of the canal, in all its length, in a single view, from the shadow of the wooded hill, to the sunny and flat area of the garden, from the natural to the artificial, from the natural landscape to the geometrical space tamed by art. In the work of Vanvitelli to obtain the perspective expansion of space with reflecting effects of water, a compositional principle was adopted, described by Dezallier and already used by Le Notre: the *Quercus ilex* wood behind the water chain makes the reduced space (maximum width 120 meters) appear much wider. To make the water features along Mount Briano behind the Reggia, Vanvitelli imposed another indelible mark on the Campania territory: an aqueduct of 30 kilometers, in tunnels and on complex viaducts up to 60 meters high with three orders of arches, which implies difficult plumbing studies with complex drawings of insertion into the landscape.

If by the invention of printing the knowledge is spread more easily, but only with the Enlightenment began the first true globalization of knowledge process, which is closely related to synthesis to facilitate mass communication. In this vein the following example of simplification in the representation of a complex reality can insert. This consists in the introduction of the use of the level curves to draw the morphology of the territory, especially in the case of steep terrain. Despite the advanced use of perspective and the progress made by cartographers after the sixteenth century, the representation of a site had not reached the same evolution. With the cartography, it was difficult to make the idea of a relief if not through the design of the shadows, difficult to represent in correspondence with constructed elements. In 1668 the Marquess of Louvois proposed to Louis XIV to realize, for all the strongholds that were multiplying under the impulse of Vauban, extremely precise models, indicating everything that was in the various citadels: military buildings, civil houses and the surrounding agricultural landscape. The tradition of making three-dimensional models also continued with the kings who succeeded each other until the nineteenth century. Among them the most significant is that of La Spezia. The latter, in fact, was created on the basis of a map on which the level curves were drawn. Probably in the case of the landscape overlooking the Gulf of La Spezia (see Figure 8) the sequence of many parallel lines, corresponding to the terraces, suggested the use of the 'level curves' as a way of graphically representing a relief. This technique brought simplification and clarity in the representation of the territory, so useful that even today it is used to reproduce the slope in all the cartographies, with a differentiation in the number of level

curves depending on the scale of representation.[10]

Figure 8. *Model of the Palmaria Island Created by the Topographic Brigade of P.A. Clerc, Using a Plan-Relief Curves Drawing, La Spezia/Sur le Golfe de Genes (Italie), 1811*
Source: P. Burlando (2010), 33.

The simplification process to allow data communication to all developed further: in this regard, the concept of global participation can be introduced, today at the center of our political-cultural debate. This *excursus* focuses on the idea of sharing expressed by the invention of the subway map as a synthesis of a more complex cartography to be universally readable by each individual. The starting point dates back to 1931 with the innovative idea of Harry Charles Beck to redesign the map of the London Underground (see Figure 9), using only straight lines connected by segments. This scheme, which does not correspond to the topographical reality, simplifies the interweaving of the numerous underground routes. Nevertheless, this representation is readable and understandable at a glance. Inspired by this theme, the writer Baricco explores the theme of "truth", between reality and representation, between phenomenon and perception thanks to surprising relationships with Dante, Beethoven, Kant and Leopardi.[11] Before Beck in 1863, a map was created for the inauguration of the first section of the London

10. R. Ambroise, P. Frapa, S. Giorgis, *Paysages de Terrasses* (Edisud: Aix-en Provence, 1989), 76-77.

11. A. Baricco, *La Mappa della Metropolitana di Londra. Sulla Verità* (Mantova Lectures, 2017). https://www.raiplay.it/programmi/mantovalectures/.

subway, where the open spaces are depicted in scale together with the underground railway lines, with the peripheral areas almost illegible, because they are very decent in the representation. The map indicated the location of the underground stations, but these were irrelevant to travelers who wanted to know how to get to the nearest station to a place located on the surface. In 1933 Harry Beck, who was an employee of the London Underground Signals Office, produced a clearer and more legible map, making a summary redrawing the train trajectories only with straight lines, perpendicular or 45 degrees and each station equidistant from the other, without no reference to the real except for the blue stretch of the river Thames. To make the map clearer and to underline the links, Beck made a difference between the ordinary stations marked only with notches and the interchange stations marked with diamonds. This represents a simple and replicable model, which even today has not been exceeded for its degree of innovation, so much so that it is used universally to draw all the maps of all the subways in the world.

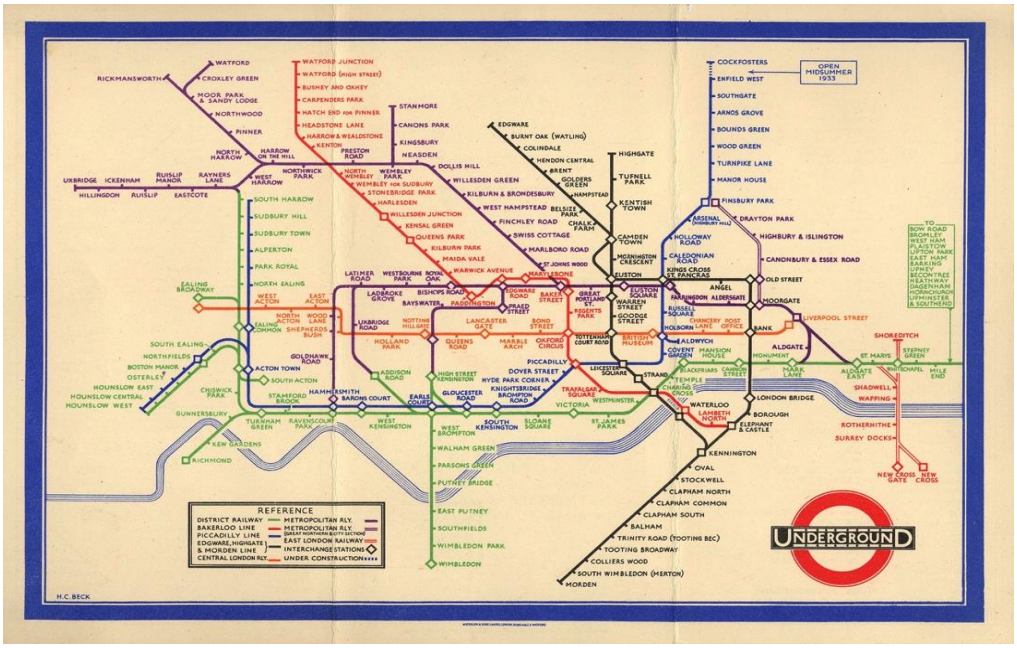


Figure 9. *Harry Charles Beck: The Map of the London Underground 1931*
Source: http://www.abc.net.au/news/2013-01-10/london-underground-map-1933/4459286.

The Theme in Contemporary Age

'To compose is to bring together several things to make just one'[12]

A peculiar phenomenon that has been witnessed in recent years, which inspires and surpasses past experiences (ideal cities, ...), is represented by the creation of new cities in the United Arab Emirates where the limits do not exist:

12. E. N. Rogers, *Esperienze di Architettura* (Torino: Einaudi, 1958).

the territory is designed with artificial forms , the coastline is remodeled with figures and elementary representations, ever higher and bizarre skyscrapers are raised with extreme rapidity, requiring considerable economic resources and technological capabilities.

This search for complex shapes in buildings takes place all over the world, it is now a challenge between the greatest architectural firms to use parametric design to design new buildings. This technology allows to overcome the limits of the past and to create daring shapes that free themselves from simple geometric shapes, creating a new contemporary language. It is clear that without a proper cultural and intellectual background it is only a game with forms.

The extreme search for new territories and new resources has its negative sides: the change of territory by man has very high costs and risks, we need to enhance its potential without forgetting the limits.

A concrete example of the above is the Dubai waterfront: in the satellite image (see Figure 10), we see the contrast between the situation of the city in 2000 and 2016, it is clear how the hinterland has remained almost unchanged, while the sea has been filled creating geometric shapes and the famous project of artificial islands known as 'The world'.

Figure 10. *Satellite Images of Dubai Compared (from the Right 2000-2016)*
Source: https://www.google.com/maps.

On the other hand, the interventions made necessary to adapt the cities, the coastal and fluvial areas to the problems generated by climate change, rising water levels and increasingly widespread urban flooding, are quite different. In this case the immense and expensive transformations are justified for reasons of public security.

> *"In New York a new integrated and reciprocal organization of natural systems with the city's current infrastructure was developed to the contend with incremental sea level rise. In attempt to align natural and hand-made elements, the new model of urban infrastructure can transform the city both in use and experience."*[13]

13. S. Cassell, S. Drake, A. Yarinsky, "Manhattan - New Urban Ground," *Topos: European Landscape Magazine* 73, no. 82 (2011): 82-87.

According to the current trend, it was estimated that in 2100, if no action is taken, 61% of Power Manhattan will be underwater. In the proposed strategies, ecology and infrastructures form an interconnected system: porous green streets and a graduated edge (see Figure 11). The above-and below-ground performance of the city can be supported by a newly integrated and mutually beneficial infrastructure. The idea is to make an internal system of porous roads work with an external marsh system. Up to the reach of a Category 2 Storm surge, the streets are rebuilt as a connected series of porous conduits that drain storm water without impending vehicular circulation. This highly efficient system includes existing services (water, sewer, gas and electric) relocated in accessible waterproof vaults beneath the sidewalk. The individual green streets are calibrated to accommodate three different carrying capacities for absorption, retention and distribution of water. On the edge of the island, three interrelated high-performance systems are constructed to block higher sea levels and mitigate storm surge force and flooding: a productive park network, freshwater wetlands, and tidal salt marshes. This continuous layered ecosystem attenuates waves, manages the urban watershed, filters interior surface runoff, enhances biodiversity, and introduces a new system of public green space. The morphology of this graduated edge adapts to the unique urban conditions on the East and the West sides of Lower Manhattan. The sheltered urban estuaries are comprised of salt and freshwater marshes fed by the porous green streets and the harbor. Throughout the estuaries are a series of pile-supported walkways, called transverses, which connect city streets and allow the people to occupy the landscape without disrupting the natural habitat. The watershed park improves the quality of public space by mediating between wetland and city. This park will be multifunctional, with spaces linked through a reconstructed West Street. This holistic proposal unites natural ecology and urban infrastructure to create a flexible and adaptive future for Lower Manhattan: New York re-invents itself yet again by developing in tandem with natural systems.

Figure 11. *The Big U*
Source: http://www.rebuildbydesign.org/our-work/all-proposals/winning-projects/big-u.

Turning to the urban scale, the new architectural language of the contemporary age is based on the search for new and extreme forms; Frank Gehry was one of the first architects to experiment with a new way of doing architecture. Its buildings, such as the Walt Disney Concert Hall in Los Angeles (see Figure 12), are a set of fluid forms intersected to create projects that are apparently light.

The language of F. Gehry will be developed by Zaha Hadid and other international signatures.

This research is possible thanks to the use of very complex software and the use of the parametric design.

Figure 12. *Walt Disney Concert Hall, Frank Gehry, Los Angeles (CA)*
Source: https://bit.ly/2RLmzeR.

> *"Parametric design became an intensely fashionable process in XXI century, as if had existed before. Essentially what it means is that the relationship between elements or structural components of building can be manipulated, usually trough computer programs, to inform and create new and complex geometries. This allows buildings to spring up in remarkable twists and turns, as if unrestrained by the conventions of structure, materials and design."*[14]

Zaha Hadid showed how parametric design and art can merge into installations with kinetic effects (see Figure 13). The parametric design exists before computers. Gaudì designed the complex vault through a model, in which to look inside with mirrors, to correct any errors. This shows complete mastery of the working tools. The computers have replaced such models, yet it worked. If the works of Gaudì are almost always incomplete due to the difficulty of totally parameterizing the work of art, with the computer the risk is to go towards too bold daring without concrete foundations.

14. Ibid, 140.

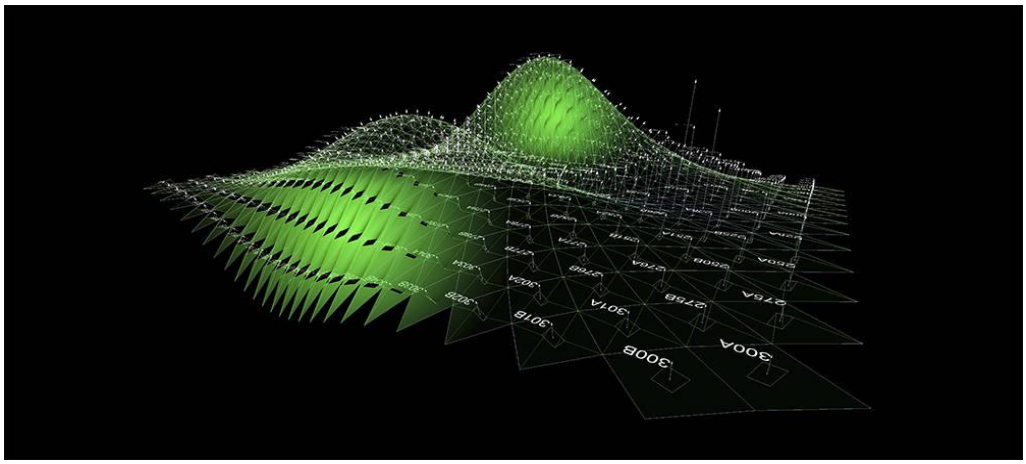


Figure 13. *Prototype of a Lamp Made with Tspline for Rhinoceros and Rhomboidal Pattern Realized in Rhinoscript Code*
Source: https://www.area-arch.it/data-drivengeometry-mutation/.

In the past there was no need, which characterizes the contemporary age, of understanding and global consensus; for this reason the representation of a project pushes towards forms of communication as simple as possible in order to be understood by everyone.

An internationally renowned architect like Zaha Hadid claims that: *"For an architect everything connects. The design of handbag or furniture or cutlery has their challenges, and they're fun to da. I'd love to get some design into mass, low-cost production. I want to be able to touch everyone not just the educated and cultural elite, with a little of what we can do. One of the things I feel confident in saying we can do is bring some excitement and challenges to people's lives. We want them to be able to embrace the unexpected."*[15]

The new way of designing the city and its elements must be in some way understandable by everyone, hence the need to find clear and elementary methods of representation.

The consent and acceptance of new architectural forms is fundamental for the identification of everyone within the new language. A project or a competition must be shared by the multitude before their realization, the media exaggerated the concept that every public action must be accepted by the population; unfortunately, or fortunately, this phenomenon does not only affect the political sphere, but in some way it should be regulated.

In the architectural world, the use of schematic concepts has become widespread, representing in a linear way the development of a project starting from simple shapes and using actions such as emptying, rotating and adding. Actually, even if the design process is represented in a schematic way, very complex but formally and functionally 'perfect' buildings are obtained, so the generated forms require considerable computational capabilities that are often impossible without the sophisticated design software.

15. J. Glancey, *What's So Great About the Eiffel Tower? 70 Questions that will Change the Way You Think about Architecture* (London, Laurence King Publishing, 2017), 127.

Although as regards progress and the creation of a new language in architecture, representation and design are the protagonists. The concept of a building in contemporary architecture is in many cases the search for an increasingly extreme and different form; if you look at the sketches of some great architects such as Gehry, the ideation seems an immediate spontaneous and simple process, or Big (see Figure 14) who, following the functions of exposure and territory morphology, communicates the steps as a logical and inevitable process; the concept that today everyone uses communicates the steps of the composition in a simple and intuitive way, it is an action that was not done before there was no need to justify and accept their architectures, often these representations use ideograms and seek in all ways to simplify the architectural forms obtained; actually, in order to obtain the buildings in question, it is necessary to use very complex planning and calculation software.

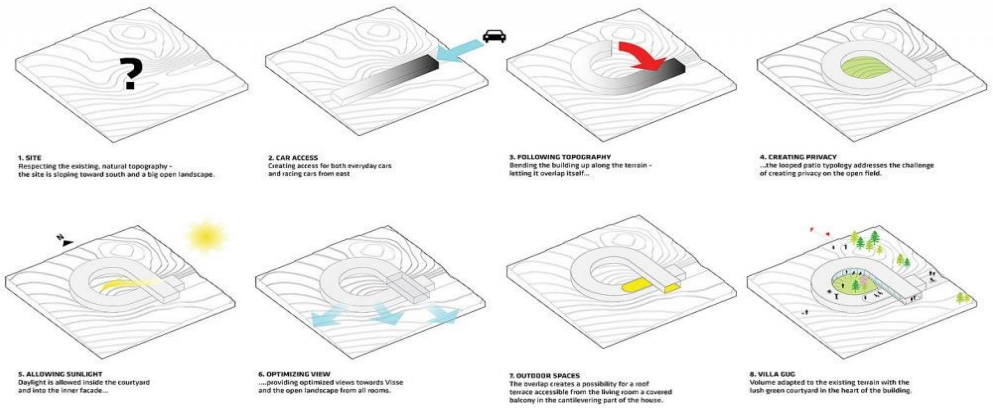


Figure 14. *Diagram BIG Bjarke Ingels Group: GUG, Villa Gug, Alborg, Denmark, 2014*
Source: http://ctrl-z.it/diagrammi-architettura-big-tutorial/.

Conclusions

> *"It is improvising and adapting to unforeseen obstacles, which we make the greatest progress. (...) Instead of complaining about obstacles or failures, we say yes to reality, to the city and to life. Every time we hit against and change we receive a lot. Yes is More."*[16]

The birth of new and rich settlements in certain areas of the world and the use of increasingly advanced design technologies represent an advanced and innovative system of construction, which should be useful even in more difficult situations, where economic resources are scarce and where slums or favelas overwhelm without rules and without a predefined order. Investing substantial

16. Big Bjarke, *Yes is More* (Copenhagen: Ingels Group, 2011), 23.

resources to create shapes and games with figures can have its positive aspects, certainly even in the past if the architects had not dared so much, it would not have been possible to have a work like the Palace of Versailles, still admired and visited by millions of people.

At the center of this study is the evolution of representation in the architectural work; the method for expressing and revealing what happens inside the human mind, to reproduce reality or interpret it, the way to communicate, understood as a process of transformation implemented in the environment both in the design of the city and in the smaller scale of the single building.

These buildings and cities made with extreme designs, the search for new forms, land modification and experiments are part of contemporary language but everything must be done in a sustainable way without consuming all the resources and a cultural background is needed.

In conclusion, analyzing the development of new expansions in various parts of the world, the speed and the design typologies happening with these transformations, the contrast that is developing in the design is highlighted: the search for increasingly new and complex forms and competences in opposition to an extreme will to communicate them in a simple way.

Bibliography

Ambroise, R., P. Frapa, S. Giorgis. *Paysages de Terrasses*. [Landscapes of Terraces.] Edisud: Aix-en Provence, 1989.

Baricco, A. *La Mappa della Metropolitana di Londra. Sulla Verità.* [The London Underground Map. On Truth.] Mantova Lectures, 2017. https://www.raiplay.it/ prog rammi/mantovalectures/.

Boudon, F. "Nascita del Giardino alla Francese: Cartografia e Storia dei Castelli." [Birth of the French Garden: Cartography and History of the Castles.] In *The Architecture of the Western Gardens – from the Renaissance to the Twentieth Century*. Edited by M. Mosser and G. Teyssot. Milano, 1990.

Boyceau de la Baraudière, J. *Traité du Jardinage Selon les Raisons de la Nature et de l'Art.* [Treaty of Gardening according to the Reasons of Nature and Art.] Paris: Hachette Livre BNF, 1638.

Big Bjarke. *Yes is More*. Copenhagen: Ingels Group, 2011.

Burlando P. *Rete di Paesaggi Costieri - Una Blueway per Porto Venere*. [Network of Coastal Landscapes - A Blueway for Porto Venere.] Firenze: Alinea Editrice, 2010.

Cassell, S., S. Drake, A. Yarinsky "Manhattan - New Urban Ground." *Topos: European Landscape Magazine* 73, no. 82 (2011).

D'Argenville, D. *La Theorie et la Pratique du Jardinage.* [Theory and Practice of Gardening.] Paris: Hachette Livre BNF, 1709.

Glancey J. *What's So Great About the Eiffel Tower? 70 Questions that will Change the Way You Think about Architecture*. London, Laurence King Publishing, 2017.

Rogers, E. N. *Esperienze di Architettura.* [Experience of Architecture.] Torino: Einaudi, 1958.

Rovelli, C. *Sette Brevi Lezioni di Fisica.* [Seven Short Physics Lesson.] Milano: Adelphi, 2014.

Spesso, M. *Teoria dell'Architettura – Dal V secolo a.C. al Barocco.* [Theory of

Architecture - From the 5th Century BC at the Baroque.] Padova: Libreriauniversitaria.it, 2011.
Tessari, D. *La Teoria delle Ombre e del Chiaro-Scuro.* [The Theory of Shadows and Light-Dark.] Torino: Camilla e Bertolero, 1880.
Yourcenar, M. *Memorie di Adriano.* [Memoirs of Hadrian.] Paris: Librairie Plon, 1951.

The Soviet Skyscraper: Take-Off and Landing

By François Blanciak[*]

Reviewing a number of radical designs for skyscrapers by Russian Constructivist architects operating in the 1920s, the paper researches how the notion of weightlessness can be identified as a common denominator to many of these projects, how this characteristic aspect manifested itself in architectural form, and what was the cultural framework at play in the definition of this paradigm. Specifically, the paper studies the design strategies of Lazar Khidekel, Georgy Krutikov, Viktor Kalmykov, and most importantly Ivan Leonidov, to highlight their collective desire to leave the ground, either through morphological suggestion or literally, relating them to the historical context of space exploration as a political pursuit. It also delves into the theoretical influences of this particular architectural ethos, looking into the work of Cosmist philosopher Nikolai Fedorov for what may have inspired these architects to design seemingly weightless structures. Finally, the paper searches for parallels such designs have made, wittingly or not, with actual space exploration devices, and investigates to what extent these experimental projects have eventually found ground in the "West."

Introduction

Architecture is fundamentally supposed to be anchored in the ground. Its objects are expected to remain static. Yet, a number of projects by Russian Constructivist architects operating in the 1920s set out to undo this fundamental connection, devising schemes which often attempted to escape gravity. What is researched in this paper is how this characteristic aspect manifested itself in architectural form, and what was the cultural framework at play in the definition of this paradigm. The design strategies of Lazar Khidekel, Georgy Krutikov, Viktor Kalmykov, and Ivan Leonidov will be reviewed in order to highlight by which means their collective desire to leave the ground was architecturally expressed, either through morphological suggestion or literally, relating them to the historical context of space exploration as a political pursuit. As the idea of reaching for the sky can be seen as a more general preoccupation of early twentieth-century Russian culture, this study will research contemporary literature which focused on this theme, and look more specifically into the work of Cosmist philosopher Nikolai Fedorov for what may have inspired these architects to design seemingly weightless structures. Following a comparative mode, the paper also searches for parallels such designs have made, wittingly or not, with space exploration devices, and investigates to what extent these projects have eventually found ground in the "West," looking for clues of the influence of Constructivist projects in the built output of remote countries as a means to precisely relate to their once-contested capacity to fly.

[*]Senior Lecturer, School of Architecture, Design and Planning, University of Sydney, Australia.

Weightlessness in Constructivist Architectural Form

Lifting the Skyscraper

If the *piloti*, the cantilever, and the *plan libre* all indicate that removing the building from the ground was—and remains—a common preoccupation of modern architecture, the most radical expression of this ambition can surely be witnessed in architectural projects that flourished in the Russian *Vkhutemas* schools of architecture shortly after the Soviet Revolution of 1917. This sense of removal from physical context can be traced to an intimate relationship with the art world of Suprematism, wherein Kazimir Malevich had sought to reduce figures to their most primitive expression, either on canvasses, as in his famed *Black Square* (1915), or in three dimensions, as in his combinations of white blocks which he called "architectons." The relation of early Soviet experimental architecture to Malevich's expansive work can probably best be grasped in the depiction of Lazar Khidekel's large-scale projects, which articulate a transition between abstract paintings and architectural/urban representations. A student from Marc Chagall, El Lissitzky, and Malevich himself, Khidekel produced a number of schemes in the 1920s for large horizontal buildings and cities which appeared to be floating above ground, latticed urban forms strictly made of perpendicular, elongated blocks and (rarely) circular shapes, in true Suprematist fashion.

With these projects, Khidekel brought forward the idea of vertical zoning, the stratification of architectural program into layers parallel to the ground. The importance he gave to a harmonious relationship between human settlement and the environment led him to minimize the incidence of vertical points of connection with the Earth, which resulted in very large spans, and generous cantilevers. Such designs anticipated the emergence of the hovering city schemes of Constant, Yona Friedman, or Peter and Alison Smithson in 1950s Europe, with the exception that Khidekel's schemes tended to hover above natural—rather than urban—settings, as an attempt to leave landscapes (or water bodies) intact. The idea of the horizontal skyscraper (fully developed by Lissitsky as a prototype for Moscow high-rises in 1923-1925) takes shape in Khidekel's projects, symbolically denying the need to fight against centrality and gravity which the vertical skyscraper embodies, and instead propounding an image of a city detached from the Earth, transformed into a spaceship-like structure. But perhaps these ideas of continuity and horizontality find themselves taken to their most extreme formulation in the lesser-known project of Viktor Kalmykov for a ring city called *Saturny* (1929) which, emulating the rings of Saturn, proposed to build a structure that simply circles the Earth around its equator without ever touching its surface,[1] using the planet's gravitational field to maintain the complex into space (Figure 1). Extruded as a few-story high inhabitable building in Kalmykov's visual description, the orbital skyscraper would only be accessed by aircrafts of a new kind.

1. S. O. Khan-Magomedov, *Pioneers of Soviet Architecture: The Search for New Solutions in the 1920s and 1930s* (trans.) A. Lieven (London: Thames and Hudson, 1987), 283.

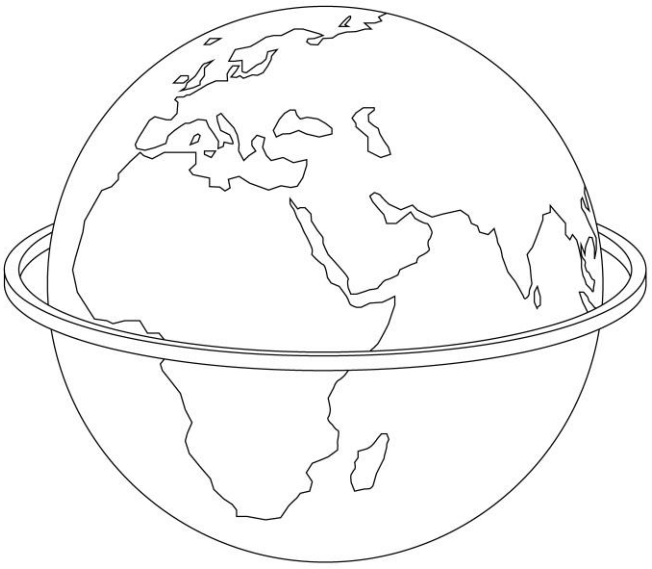


Figure 1. *Axonometric Representation of Viktor Kalmykov's Saturny Project*
Source: Drawing by Author.

Kalmykov's vision could possibly not have been developed without the influence of Georgy Krutikov, whose diploma project of 1928, commonly referred to as the *Flying City*, and published for the first time by the Russian historian Selim Omarovich Khan-Magomedov forty-five years after its completion as a thesis, synthesized a number of nascent technologies into an experimental and controversial design. Krutikov based his project on a desire to render architecture mobile, gathering that the speed of human transportation, which had been gradually accelerating, needed to be addressed in building design. He likewise defended a protective view of the environment, and mentions "planetary organization" as part of his objectives in his diploma notes. "Obsolete and inconvenient town planning," he wrote in 1929, "must be replaced by flexible planning,"[2] which, in turn, should involve the added dimension of height. His *Flying City* project, or *City of the Future*, as he named it, aimed to clear the ground of the Earth for the sole purposes of industrial work and leisure, while housing and official buildings would be located in levitating stations, far above. Krutikov's speculations largely depended on his belief in the capacity of nuclear energy to allow for buildings to be sustained in the air in the future.

2. Cited in S. O. Khan-Magomedov, *Georgii Krutikov: The Flying City and Beyond* (trans.) C. Lodder (Barcelona: Tenov, 2015), 37.

In his vision, the transition between the several flying cities scattered around the globe, and the surface of the planet itself, would be done by means of flying capsules able to plug into specifically-designed mooring areas around the dwellings (recalling the type of spatial organization materialized in Kisho Kurokawa's design for the Nakagin Capsule Tower in Tokyo decades later). The capsule typology was carefully designed by Krutikov as an aerodynamic vessel devoid of any protruding propellers, enabled to navigate in the air, as well as over and under water, according to his diagrams. Its unique passenger was meant to sit perpendicular to the direction of travel (although he envisioned the capsule's shell as flexible in order to allow for changes in body position), facing a large ovoid window covering most of the largest extremity of the oblong cabin and part of its roof. It was conceived as a shuttle between sky and ground, but also as part of the very accommodation it was to be attached to.

Krutikov's proposal can better be understood when reset in the literary context of its time, which expressed a yearning to reach for the sky, such as exemplified in Vladimir Mayakovsky's long futuristic poem titled *The Flying Proletarian* (1925), wherein every individual owns and pilots a personal aircraft, eating takes place in "aerocafeterias," and Moscow is transformed into a myriad of airports.[3] The research that culminated in Krutikov's radical diploma project led him to carefully study aircraft design, and dirigible gondolas in particular, as well as the work of rocket scientist Konstantin Tsiolkovsky, who was closely linked to Cosmism. Khan-Magomedov stressed a possible connection between the two men, adding that "Krutikov knew of Tsiolkovsky's design [an all-metal airship without a carcase, which would have been able to change shape while in flight] and based his own work on this project. He turned for advice to Tsiolkovsky and wrote him several letters."[4]

Leonidov's Detachment

If Ivan Leonidov did not design flying cities per se, his unbuilt architectural and urban planning designs are certainly worth mentioning vis-à-vis the notion of weightlessness in architecture. Between 1927 and 1930, he elaborated a peculiar design vocabulary through a series of projects—namely, the Sov-kino Film Production Complex (1927), the Tsentrosoiuz Building (1928), A Club of New Social Type (1928), the Monument for Christopher Columbus (1929), the House of Industry (1929), the Palace of Culture for the Proletarsky district of Moscow (1930), and the planning for the new town of Magnitogorsk (1930)—which all appeared to be, in essence, variants of his diploma project for the Lenin Institute of Librarianship of 1927 (Figure 2). What characterized these designs is a systematic breakdown of the main program of the building into an array of different elements, which alluded to Classicism through a consistent use of "pure" geometric forms (such as pyramids or spheres), coupled with a

3. See: V. Terras, *Vladimir Mayakovsky* (Boston: Twayne Publishers, 1983).
4. Khan-Magomedov, *Georgii Krutikov: The Flying City and Beyond*, 2015, 89.

scattering of these elements onto the given site.[5] They also expressed a desire to push the limits of construction technology, thus resulting in contrasting visions of distant past and future. The consequent effect of controlled disorder, in plan, was enhanced by a strict adherence to the principle of orthogonality between all the dispersed volumes of the project. If such principles were already present in a number of Constructivist projects by the time of his intervention, Leonidov not only raised these morphological ideas into rules for his own work, but also added to them the notion of detachment between the different building elements of a single project. For example, in his design for the Lenin Institute, the slender rectangular blocks of the book shelves, reading rooms, and the Institute for Library Sciences barely meet at their extremity, while the spherical auditorium, held in place by cables, touches the ground at a single point, and the four research institutes simply do not connect, resulting in an impression that the building masses virtually flee each other.

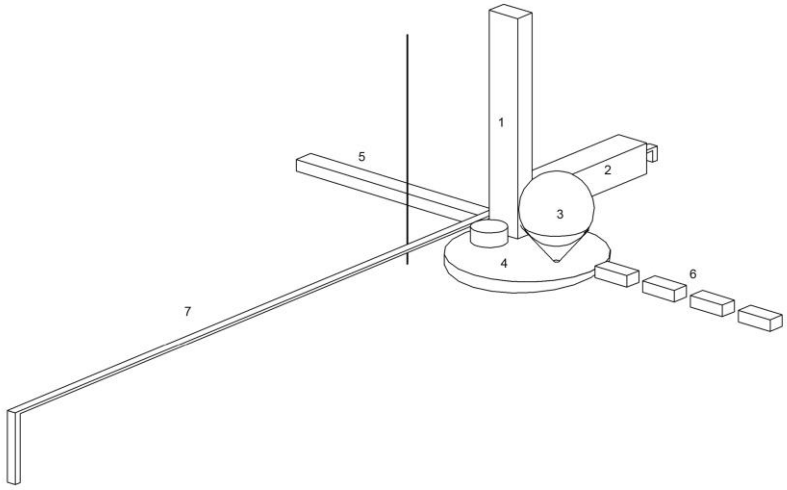
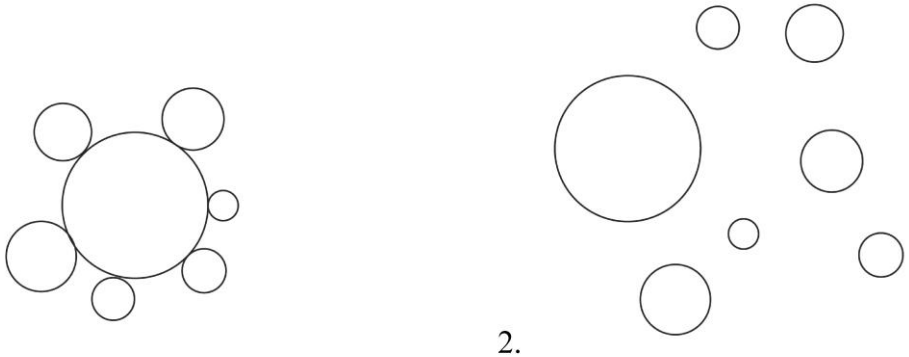


Figure 2. *Ivan Leonidov. Lenin Institute of Librarianship, Moscow, 1927* Legend: 1. *Library of Fifteen Million Volumes* 2. *Reading Rooms* 3. *Auditorium* 4. *Science Theater* 5. *Institute for Library Sciences* 6. *Research Institutes* 7. *"Aerotram"*
Source: Drawing by Author.

This aspect of physical detachment stands in sharp contrast with the architectons of Malevich, or the hovering structures of Khidekel, which, despite also comprising forms flowing in different directions orthogonally, still obeyed to a principle of aggregation into a common body. It also recalls the surge of autonomy that Emil Kaufmann theorized (around the same time) around the work of Claude-Nicolas Ledoux. As Kaufmann posited, the French Revolutionary architect innovated in parting from the Baroque enchaînement (which demanded that all building parts submit to a greater, figurative whole), and opted instead for a

5. F. Blanciak, "Revolutionary Objects: Pure Forms and Disorder in Ivan Leonidov's Work," *Journal of Civil Engineering and Architecture* 8, no. 2 (2014): 139.

dissociation of the main building volume into separate entities,[6] likewise negating the traditional aggregative role of architecture. If Ledoux indulged in drawing planets revolving around the sun (as in his "elevation" of the cemetery of the town of Chaux, France, of 1804), Leonidov's essential inclusion of void as an integral part of architecture can be interpreted as a desired relation to cosmic space. Indeed, most emblematic of his drawings for these projects was also his repetitive use of black as a background—as if his designs were to find home in the dark matter of Malevich's representations of the cosmos—for the thin white lines that defined masses and materials in both plan and elevation, an unusual technique at that time. In Leonidov's design, the notion of movement is utilized to create the presence of space. Weightlessness, it might be worth noting in this respect, is not devoid of rules. It induces the centers of gravity of bodies in space to follow straight lines. It also denies attraction to a common centre (Figure 3). These two characteristics can be found in his projects of the 1920s.



1. 2.

Figure 3. *Grouping Patterns of Elements Exposed to Different Gravitational Values* 1. *Gravitation (Contact to a Main Element)* 2. *Weightlessness (No Main Element, No Contact).*
Source: Drawing by Author.

The concept of weightlessness in Leonidov's composition (or, rather, de-composition) techniques can be observed not only in plan, but also in elevation. His late work indeed includes a project called *The City of the Sun*—named after Tomaso Campanella's eponymous novel of 1602—which denotes this characteristic trait. He worked on this project from his return from war until his death in 1959, and appears to have used this project as a source of inspiration for several projects, or variants, including a headquarter complex for the United Nations and the Moscow World's Fair. *The City of the Sun* is more a gathering of individual buildings than an exercise in strict city planning. Its imaginary site was an island in the Indian Ocean. What distinguishes this project is the striking diversity of building forms and sizes, each one aiming to embrace the traditional and cultural specificities of the respective nations they represent, a message of

6. See: E. Kaufmann, *De Ledoux à Le Corbusier: Origine et Développement de l'Architecture Autonome* (trans.) Guy Ballangé (Paris: La Villette, 2002).

tolerance on par with Campanella's book, which imagined a city based on principles of egalitarianism reminiscent of communist ideals. Reflecting on this project, Jacques Herzog wrote that Leonidov "explored gravity as a weighty historical vehicle that he attempted to overcome."[7] Relieving society from the weight of the past appears to be the symbolic dimension Leonidov tried to assign to the floating dimension of this project, invoking a new type of social organization that fosters world peace by tolerating the formal and cultural specificities of each individual nation. Left as an incomplete project, *The City of the Sun* was represented only through perspective views. In contrast with his earlier projects, plans and sections are absent. However, after working on a number of neo-classical designs in the 1930s and 1940s, for which he used the most conventional means of architectural representation, Leonidov renewed in this project not only with the pure forms that have characterized his earlier work of the 1920s, but also with sheer black as backdrop for the buildings he depicted, referring again to cosmic darkness.

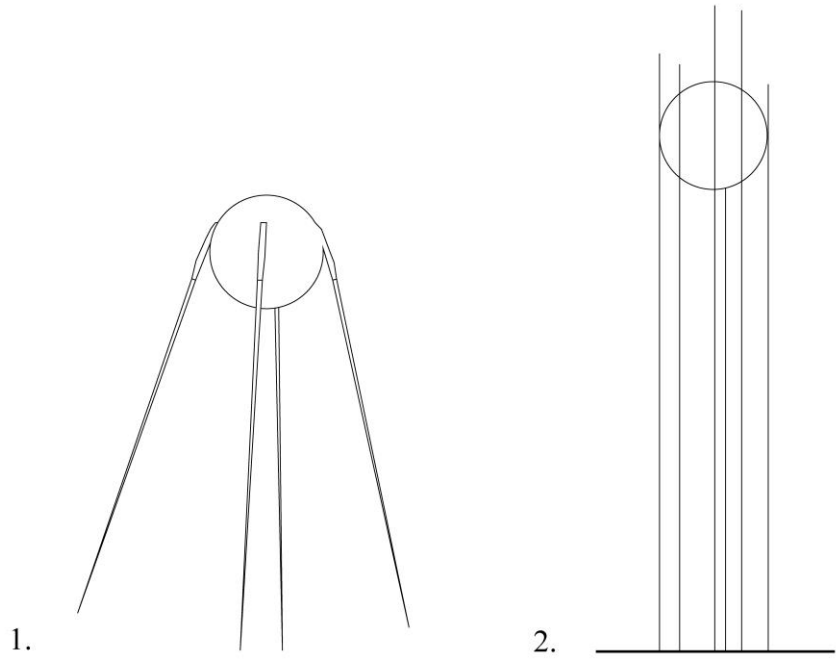


Figure 4. 1. *Sputnik 1 (in Vertical Position), Launched on October 4, 1957* 2. *Ivan Leonidov. Tower Design for The City of the Sun, 1943-1958*
Source: Drawing by Author.

The microcosm envisioned by Leonidov was intended to recall a solar system. *The City of the Sun* and its derivative projects all contain an array of buildings, but one stands out as a common object: a tall tower consisting of a

7. J. Herzog and P. De Meuron, *Treacherous Transparencies* (New York: Actar, 2016), 23.
.

large golden globe hovering in the sky, merely attached to the ground by what looks like thin parallel columns of unequal heights, which make this building design in elevation strikingly resemble Sputnik 1 (the first made-made satellite to be put into orbit), also a sphere on long stilts, mainly used to keep the object flying in the right direction (Figure 4). It is difficult to think that he would not have been aware of this connection, as Sputnik 1 became a mass media phenomenon shortly after its successful launch in 1957, while he was working on this project. He also himself designed a monument to the first Sputnik in 1957-58 (which did not look like the satellite, but rather resembled a mountain). What is meant here is not that Leonidov's project preceded the satellite, nor the opposite, but that the common desire to use technology for the design of flying (or hovering) objects led both rocket scientists and Constructivist architects to similar results (in fact, the capsule which famously carried the first earthling—a stray dog called Laika—in outer space with Sputnik 2 also bears resemblance to Krutikov's highly idealized space travel cabin in both form and functionality).

This endeavour to at once embrace and challenge technological development led Leonidov early on to exhort his fellows: "Architects!" he wrote in the Russian journal *Sovremennaia Arkhitektura* in 1926, "Do not imitate the forms of technology, but learn the method of the engineer designer."[8] A number of other projects by Leonidov turned out to be at the forefront of construction techniques. For example, his design for the Headquarters Building for the Commissariat of Heavy Industry in Moscow (1934) makes use of the form of the hyperboloid for a tall structure, which nearly coincided with the first implementations of this type of structures in the design of power plant cooling towers (which later became a recurring form within modern architecture, through the work of architects such as Le Corbusier or Oscar Niemeyer). The choice of this form in fact relies not on aesthetic concerns but on rationalist engineering principles. As calculated by the Russian engineer Vladimir Shukhov, whose first hyperboloid tower was completed in 1896, for a given diameter and height of a structure, as well as a given strength, this shape requires less material than any other form. Leonidov, together with other Constructivists, sought to rely upon state-of-the-art engineering to generate their designs, and often searched for the most material-effective constructive solutions to implement them.

The Cosmist Factor

In a drawing representing a scheme of spatial organization of cultural services for his Club of a New Social Type project (1928), Leonidov opted for a fully black background upon which few circular colourful dots were surrounded by a series of thin white outlines, alluding obviously to planets and their orbits, and relating therefore more to a cosmic order than to the

8. A. Gozak and A. Leonidov, *Ivan Leonidov: The Complete Works* (London: Academy Editions, 1988), 38.

architectural project at stake. Relating to the larger context of the universe—if not *planning* the universe itself—is what the esoteric philosophy of Cosmism, which emerged in the years that led to the Soviet Revolution of 1917, strived to do, with immortality as its ultimate goal. Cosmism, as a system of thoughts, was pioneered by the Russian philosopher Nikolai Fedorov (1829-1903), a librarian who published little during his lifetime, but whose magnum opus *The Philosophy of the Common Task* reached a larger audience of intellectuals after its posthumous publication in 1906.[9] The ideas of Fedorov, who believed in science as a means to overcome the woes of the world, became very influential not only to revolutionary political thinkers, but also to the artistic avant-garde, including architects operating in the wake of the Revolution. His precepts were also developed into scientific studies by followers such as Tsiolkovsky, whose research contributed to the development of the Soviet space program.

If, as Boris Groys pointed, the initial technological drive of early Constructivism followed a desire to break with the traditions of the past, and therefore to embrace the chaos of the revolution, rather than to strive for the form of harmony Cosmist ideology aspired to,[10] the two strains of thought had a number of significant characteristics in common. Primarily, both were interested in social organization (and this is where it resonated with communist ideology), as the common task of shifting "from meteorology to meteorurgy" envisioned by Fedorov[11] would necessitate a great deal of political unity. The fascination for potential technological developments is another point in common. Within these two movements, art was supposed to be subservient to the project of society as a whole, in accordance with the doctrine of *Proletkult*, a major cultural association which sought to promote the practice of non-professional artistry. As noted by Anatole Kopp, architecture in post-Revolutionary Russia was only considered essential as a means to transform lifestyles and create a harmonious society through the planning of "social condensers."[12]

The ultimate goal of immortality, in Fedorov's thought, necessitated space travel. By developing social unity, technological progress toward this goal could be sufficiently developed, and the colonization of the rest of the universe would provide the key to overcoming death, the Cosmists thought. Here, we can start to fathom a similarity in the type of technological projects both Cosmists and Constructivist tried to envision. Fedorov indeed makes a crucial parallel with architecture in one of his texts, precisely titled "Astronomy and Architecture." Seeing astronomy as the union of all sciences, and architecture

9. See: M. Hagemeister, "Russian Cosmism in the 1920s and Today," in *The Occult in Russian and Soviet Culture* (ed.) B. G. Rosenthal (Ithaca: Cornell University Press, 1997), 185-202.

10. B. Groys, "Introduction: Russian Cosmism and the Technology of Immortality," in *Russian Cosmism* (ed.) B. Groys (Cambridge, MA: EFlux-MIT Press, 2018), 3.

11. G. M. Young, *The Russian Cosmists: The Esoteric Futurism of Nikolai Fedorov and his Followers* (New York: Oxford University Press, 2012), 79.

12. A. Kopp. *Ville et Révolution: Architecture et Urbanisme Soviétiques des Années Vingt* (Paris: Points, 1972), 139.

as that of all the arts, Fedorov in this text questions "why architecture cannot be called the application of a knowledge that is produced by astronomy."[13]

Fedorov was more specific when describing by which technological means should the space travel he called for be achieved. The aerostat—a dirigible-like, lighter-than-air flying device—would be used at a global scale: "a massive configuration of lightning rod-aerostats," he wrote, would be utilized to redirect solar energy toward the Earth, so as to "alter the density of its new home, weaken the bonds of its gravity, giving rise in turn to the possibility of manipulating its celestial course through the heavens, rendering the planet Earth, in effect, a great electric boat."[14] For him, art was essential in this transformation, as it shared the goal of resurrection of destroyed beings, albeit at a symbolic level. Assimilating science to knowledge, and art to action, Fedorov asserted that "it is by that other discipline, the application of science, that the course not only of the Earth, but of whatever planets may prove moveable by the same methods, is to be directed," so as to turn them into "new dwellings."[15]

Despite the difference in scope between the Constructivist flying city schemes and Fedorov's project of "Earth Ship"—the former proposing to leave Earth, the latter suggesting to use it as a navigation device within the universe— the Cosmist idea of liberation from gravity resonates sharply with the weightlessness expressed in numerous Constructivist projects. This can be traced down to the very type of technology-oriented terminology used by these architects and planners. In particular, the use of the Greek prefix "aero-", denoting a relation to air and flight which was profusely used by Fedorov, appears in Khidekel's projects for an Aero-Club (1922), and for an Aero-City (*Aerograd*, ca. 1925), while Leonidov also used the term "Aerotram" to describe the means of transportation that leads to his Lenin Institute project. The student association called UNOVIS (Affirmers of the New Art), whose members benefitted from teachings on the cosmos by Malevich himself, even published a collection of articles under the very title *Aero*.[16] Malevich's *Black Square* breakthrough painting, bordering figuration in an abstract manner by symbolizing the dark cosmos, was reportedly painted for the first time as part of a scenography for a futurist opera titled *Victory Over the Sun* in 1913,[17] which evoked a desired mastery of solar energy, on par with Cosmist ideas. Malevich also spent a great deal of his career imagining cosmic cities, and transmitting his precepts to his close student Khidekel, who literally titled one of his own drawings *Cosmism: Suprematist Compositions in Space* (1921). A recent interview with Khidekel's daughter-in-law Regina Khidekel further stresses this relationship: "Students of Malevich, including Lazar Khidekel," she said, "began to turn these forms into space stations. Structures and volumes

13. N. Fedorov, "Astronomy and Architecture," in *Russian Cosmism* (ed.) B. Groys (trans.) Ian Dreiblatt (Cambridge, MA: EFlux-MIT Press, 2018), 55.

14. Ibid, 56.

15. Ibid.

16. Khan-Magomedov, *Pioneers of Soviet Architecture*, 1987, 280.

17. Groys, *Introduction: Russian Cosmism and the Technology of Immortality*, 2018, 3.

were perceived by them as the cosmic dwellings of future earthlings," sharing with Cosmist thought the idea of "resurrection of our ancestors, for whom these space colonies were designed."[18]

Other traits of Constructivist projects, both representational and programmatic, point to the Cosmist imagination. For example, in Krutikov's competition design for the Columbus Monument in Santo Domingo (1929), a large sphere at the centre of the project, symbolizing the world, is surmounted by a very tall antenna, which in his rendering appears to capture energy from the sky in the form of a luminous beam, and to redistribute it towards the Earth from the same point, reminding clearly Fedorov's lightning rod-aerostat concept, aimed to perform the same function. At the very top of the Monument's antenna rests another smaller sphere, symbolizing the New World discovered by Columbus according to Krutikov, and alluding to the possible future conquest of other worlds, or planets, in Cosmist manner.

Leonidov's entry for the same competition likewise featured a very tall mast, and contained, in his typical penchant for programmatic invention, a meteorological station as well as scientific laboratories that included an "Institute for Interplanetary Communications," whose task, he explained, "is to solve the problem of interplanetary communications by means of the latest achievements of science and technology."[19] Another allusion to Cosmist symbolism can be seen in Leonidov's competition entry for the new town of Magnitogorsk (1930), whose seminal aerial view—a montage that gives prominent place in its foreground to the photograph of a large dirigible (reminiscent of an aerostat) which flies in the same direction as his linear city scheme—appears to assign nearly equal value to architecture and infrastructure.

Lastly, and importantly, Cosmism and Constructivism shared a similar fate with the rise of Stalinism in the 1930s. Experimentation was progressively banned from architecture schools to make room for the form of neoclassicism that came along with socialist realism, while Constructivism was coined a form of "decadent bourgeois art." Accused of sabotage, Leonidov was sent to war in 1941 (and came back wounded in 1943). Most of the protagonists of Cosmism who had elaborated on Fedorov's ideas were likewise persecuted, and in a number of cases sent to labor camps or executed. Both movements were drastically put to an end, only to reappear decades later in Western media.

Soviet Influence in the American Skyscraper

If tall structures can be seen as an attempt to reach for the sky, they also involve, fatally, some form of connection to the ground, and the eclipse that Constructivist architecture has suffered between the 1930s and the 1960s has eventually constituted a wealth of inspiration to Western designers when this work was made available to them in the 1970s, particularly in America, the birthplace of

18. R. Khidekel, *Khidekel i Goroda Budushhego*, (Interv.) Dobryakova [18 August 2013.] Retrieved from https://art1.ru/2013/08/18/xidekel-i-goroda-budushhego-21083.

19. Gozak and Leonidov, *Ivan Leonidov: The Complete Works*, 1988, 68.

the modern skyscraper. The Soviet skyscraper has surely been influenced by the American Beaux-Arts, ornamented towers erected in New York and Chicago around the beginning of the twentieth century, as suggested by Andrei Gozak in the reminiscence he pinpointed between a street-level photograph of a New York skyscraper in Eric Mendelsohn's *Amerika, Bilderbuch Eines Architekten* (1926) and Leonidov's perspective drawing of his Commissariat for Heavy Industry project seen from below.[20] But this influence was essentially limited to the vertical typology of the skyscraper, and even that, as we have seen, was clearly challenged by the Constructivists' desire to couple the high-rise with the horizontal. Because of the typological reduction they operated in their works, one could argue that the influence of Russian avant-garde architects over the modern American skyscraper remains understated.

The experiment of the Lenin Institute of Librarianship, in this respect, can be further inspected. Its book shelves section, contained in the culminating, slender, rectangular tower of Leonidov's composition, could in fact be regarded, arguably, as the first modern skyscraper of this kind. Roughly thirty years before the completion of the design for the Seagram Building in Manhatttan by Ludwig Mies van der Rohe (who likely was well-verse in Leonidov's work, given his exposure to the cutting-edge architectural research and educational milieu of the Bauhaus) and Philip Johnson, he designed a tower that consisted of a mere box, completely devoid of ornaments, going as far as erasing the incidence of floor plates from the facades of the building. Louis Sullivan, theorizing the Beaux-Arts skyscraper at the end of the nineteenth century, famously advocated a view of the skyscraper as a tripartite organization which aimed to be reminiscent of a classical column, with a base, a shaft, and a capital.[21] This traditional reference is radically rejected in Leonidov's scheme. What his design suggested was the sheer concept of reversibility, which also applies to the aesthetics of the Seagram Building and its derivatives in America and elsewhere.

The typology of the horizontal skyscraper, developed in the projects of Lissitsky, Khidekel, and Leonidov (with the Palace of Culture of the Proletarsky district of Moscow, and the planning of the new town of Magnitogorsk), also turned out to be reinterpreted more than once in architectural history (most notably by Italian, Dutch, and Japanese architects). Leonidov's project for Magnitogorsk in particular is interesting with respect to that topic. Embodying clearly the ideas of spatial conquest and equitable distribution of land, the project consisted of a 25-kilometer continuous strip of housing and service buildings, laid out as a series of intermittent low-rise and high-rise squared quarters, and lined by a high-speed highway.

20. Ibid, 12.

21. L. H. Sullivan, "March. The Tall Office Building Artistically Considered," *Lippincott's Magazine* 57(Mar) (1896): 406.

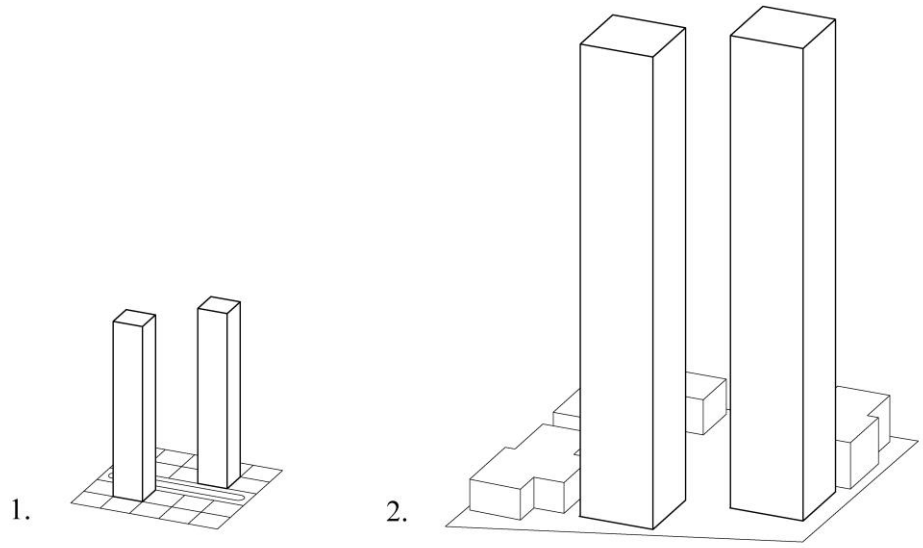


Figure 5. 1. *Ivan Leonidov. Portion of a Planning Scheme for the New Town of Magnitogorsk, Ural Mountains, 1930* 2. *Minoru Yamasaki Associates and Emery Roth & Sons. World Trade Center, New York, 1968-1973*
Source: Drawing by Author.

What is of interest here is that one of the squared portions of his design, when looked at closely, contained a set of high-rises that resembled and preceded by over thirty years the design of Manhattan's World Trade Center by Minoru Yamasaki Associates and Emery Roth & Sons (Figure 5). The American project replicated not only the idea of negation of the building as a single entity—since he designed two towers instead of one—but also the disposition of the two identical edifices in a checkerboard pattern within a gridded plan (paradoxically avoiding the notion of center itself). Aiming at establishing a symbolic relation with the planet as a whole, at the tip of the New World's most emblematic outpost, the towers of the World Trade Center were likewise based on the use of the square in terms of footprint. The parallel can be stretched to the very orientation of the two sets of twin towers, diagonally aligned with the North-South axis in both cases, and to the façade treatment, which in the two schemes attempted to conceal the presence of inner floors. Yamasaki, whom, like Leonidov, showed openness toward, and interest in, ornamented non-Western architecture (especially upon his return from a trip to India and the Far East in 1954, which influenced his designs), was likely aware of the Constructivist's linear city scheme, yet persistently sought to establish his full authorship of the World Trade Center project despite the collective nature of that enterprise.[22]

22. D. Salomon, "Divided Responsibilities: Minoru Yamasaki, Architectural Authorship, and the World Trade Center," *Grey Room* 7(Mar) (2002): 90-92.

Conclusions

The history of American modern architecture often showcases the skyscraper as a mere product of capitalist forces: an almost logical result of either the pressures of the real estate market, or of local technological developments, such as elevators, generators, steel frame construction, water pumps, and air-conditioning systems. But one can argue that the modern skyscraper, as we know it, in its bland, common, repetitive, and gridded character has, in essence, more to do with the aesthetics of communism than with those of capitalism. The skyscraper, as a building type, relates to the notions of industry, regimentation, and uniformity, which have more to do with the socialist ideals of equitability (and, in a way, one could argue that the large Western corporations housed in skyscrapers have sought to emulate a communist type of organization) than with the individualistic credo of capitalism. And this neglect of personal specificities, this loss of the individual into communal space, is nowhere more deeply registered in architectural form than in the modern skyscraper.

As we have seen, the projects elaborated by Constructivist architects operating mostly during the second half of the 1920s, in themselves visions of the future attempting to reach far in both space and time, have found resonance in the design of buildings either planned or built decades later in Western countries. This phenomenon appears to closely relate to the literal meaning of the term "project," which involves, from an etymologic point of view, something that is essentially "thrown forth," requiring some form of flight prior to reaching the firm ground that architecture is known for sticking to. This is what the term "take-off" in the subtitle of this paper refers to. As an idea, this "project" finds itself developed into a theory in Fedorov's doctrine of "projectivism."[23] Paramount in his Cosmist philosophy, "projectivism" advocated the regulation of nature, its domestication by artificial means, taking to its extreme modernity's dichotomy between culture and nature, which the form of the skyscraper most directly represents.

In his 1924 Suprematist manifesto Unovis, Malevich wrote: "The new dwellings of man lie in space. The Earth is becoming for him an intermediate stage; accordingly airfields must be built suited to the aeroplane, that is to say without columnar architecture."[24] Around that time Malevich also produced his famous photomontage of a drawn architecton (consisting of sheer white blocks interpenetrating each other) pasted against the photographed backdrop of Manhattan's skyline—as if parachuted into foreign territory. This radical vision, which contrasted not only with the form of the Beaux-Arts high-rises in the background, but also with the market-driven pyramidal type of skyscraper propounded by New York architects such as Raymond Hood or Hugh Ferris in the 1920s, serves as an indication that he possibly foresaw the virtual landing of the Soviet skyscraper on Western ground.

---

23. Young, *The Russian Cosmists: The Esoteric Futurism of Nikolai Fedorov and his Followers*, 2012, 89.

24. K. Malevich, "Suprematist Manifesto Unovis," in *Programs and Manifestos on 20th-Century Architecture* (ed.) U. Conrads (trans.) Michael Bullock (Cambridge, MA: MIT Press, 1*971), 87.

It is argued here that the concept of weightlessness was instrumental in this projecting process, and that the philosophical precepts of Cosmism helped define the strategies adopted by Constructivists for the design of spatial settlements and representational aesthetics. Further, the meticulous detachment of programmatic elements into separate forms proposed in Leonidov's early projects can be regarded as both a facilitator of this phenomenon, and as a harbinger of the type of eclectic mixes of architectural programs which eventually characterized the modern Manhattan skyscraper.

Reflecting on the achievements of Russian avant-garde architects after a decade of intense productivity, El Lissitsky wrote in *The Reconstruction of Architecture in the Soviet Union* (1930): "The idea of the conquest of the substructure, the earthbound, can be extended even further and calls for the conquest of gravity as such."[25] Embedded in this ethereal concept of weightlessness lies an invocation of movement and transportability of architecture from one place to another, which can explain, in part, the adoption of Russian Revolutionary architecture by overseas designers. Had it yearned for groundedness, this transnational phenomenon would have been unlikely to take place.

Bibliography

Blanciak, F. "Revolutionary Objects: Pure Forms and Disorder in Ivan Leonidov's Work. *Journal of Civil Engineering and Architecture* 8, no. 2 (2014): 135-142.

Fedorov, N. "Astronomy and Architecture." In *Russian Cosmism*. Edited by B. Groys. Translated by Ian Dreiblatt. Cambridge, MA: EFlux-MIT Press, 2018, 55-58.

Gozak, A. and A. Leonidov. *Ivan Leonidov: The Complete Works*. London: Academy Editions, 1988.

Groys, B. "Introduction: Russian Cosmism and the Technology of Immortality." In *Russian Cosmism*. Edited by B. Groys. Cambridge, MA: EFlux-MIT Press, 2018.

Hagemeister, M. "Russian Cosmism in the 1920s and Today." In *The Occult in Russian and Soviet Culture*. Edited by B. G. Rosenthal. Ithaca: Cornell University Press, 1997, 185-202.

Herzog, J. and P. De Meuron. *Treacherous Transparencies*. New York: Actar, 2016.

Kaufmann, E. *De Ledoux à Le Corbusier: Origine et Développement de l'Architecture Autonome*. [From Ledoux to Le Corbusier: Origin and Development of Autonomous Architecture.] Translated by Guy Ballangé. Paris: La Villette, 2002.

Khan-Magomedov, S. O. *Pioneers of Soviet Architecture: The Search for New Solutions in the 1920s and 1930s*. Translated by A. Lieven. London: Thames and Hudson, 1987.

Khan-Magomedov, S. O. *Georgii Krutikov: The Flying City and Beyond*. Translated by C. Lodder. Barcelona: Tenov, 2015.

Khidekel, R. *Khidekel i Goroda Budushhego*. [Khidekel and Cities of the Future.] Interviewed by Dobryakova. [18 August 2013.] Retrieved from https://art1.ru/2013/08/18/xidekel-i-goroda-budushhego-21083.

25. E. Lissitsky, *Russia: An Architecture for World Revolution* (trans.) Eric Dluhosch (Cambridge, MA: MIT Press, 1970), 64.

Kopp, A. *Ville et Révolution: Architecture et Urbanisme Soviétiques des Années Vingt.* [Town and Revolution: Soviet Architecture and City Planning in the 1920s.] Paris: Points, 1972.

Lissitsky, E. *Russia: An Architecture for World Revolution*. Translated by Eric Dluhosch. Cambridge, MA: MIT Press, 1970.

Malevich, K. "Suprematist Manifesto Unovis." In *Programs and Manifestos on 20th-Century Architecture.* Edited by U. Conrads. Translated by Michael Bullock. Cambridge, MA: MIT Press, 1971, 87-88.

Salomon, D. "Divided Responsibilities: Minoru Yamasaki, Architectural Authorship, and the World Trade Center." *Grey Room* 7(Mar) (2002): 86-95.

Sullivan, L. H. "March. The Tall Office Building Artistically Considered." *Lippincott's Magazine* 57(Mar) (1896): 403-409.

Terras, V. *Vladimir Mayakovsky*. Boston: Twayne Publishers, 1983.

Young, G. M. *The Russian Cosmists: The Esoteric Futurism of Nikolai Fedorov and his Followers*. New York: Oxford University Press, 2012.

Francesco Venezia: Time, Memory, Senses as Elements of Architecture

By Raffaella Maddaluno[*]

The design approach of Francesco Venezia (1944), master of Italian architecture appears unpopular, out of step with an architectural world that increasingly faces every gesture of building and design practice as a desire to demonstrate the "exceptional". The distance that Venezia keeps from perfection that does not signify methodological approximation or programmatic superficiality but a respect for everyday human life, distances his works from the danger looming over contemporary architecture: considering every opportunity in architecture as a self-portrait, as an object constantly longing for the fixedness of fame, an aspiration for the eternal. The humanity of architecture, everyday life and not the desire for eternity leads to the silence of forms and the wisdom of building, placing the work of the architect on a respectful path already mapped out where, before engaging or becoming carried away by temporal syntax, it is right to relinquish a hedonistic desire for power. This deep respect for the learning of a language that renounces exemplarity and novelty is also found in the teaching of Francesco Venezia and in the themes proposed as objects of design reflection for students. This paper aims to describe some of architectural experiences in which Francesco Venezia leads to concepts like time, memory, humanity, integrity and etic of architecture.[1]

Introduction

The research and constructive experience of Francesco Venezia demonstrates that history must be considered as a heritage of living examples. The direct knowledge of these examples cancels out the lapse of time, which sometimes impedes the work. This does not imply a lack of respect for its specificity and uniqueness, instead having the ability to go beyond the ineffective sacralisation of the existing.

In his design and teaching experience the ability to relate to themes like "time" is evident. His buildings seem to offer the possibility of time, they seem to predict the effects of time and they also seem to slow down the use of our time.

*Assistant Professor, Lisbon School of Architecture, CIAUD, University of Lisbon, Portugal.

1. Francesco Venezia is an architect from Naples. He was born in Lauro in 1944. He combined, during his career, the activity of university professor (professor of architectural composition at the University Institute of Architecture of Venice) with a long-lasting and accurate professional activity. His career was enriched by numerous experiences of foreign academic sharing: lecturer at the Berlin Sommerakademie (1987), visiting professor at the Graduate School of Design of Harvard University (1988), Professeur invité at the École Polytecnique Féderale di Lausanne (1989), lecturer at the University of Italian Switzerland in Mendrisio (2010). His works won numerous awards, including the "Architecture in Stone International Awards" in Verona at the Faculty of Law and Economics and the university library in Amiens in 1997. He is also an academic at the Accademy of San Luca.

Another specificity of his work is the sensory link he has with architecture, due to this we can perceive ancient presences, vanished myths and the unheard voices of chosen places.

His lesson consists of teaching the form of architecture as a cultural phenomenon, strongly linked to life and to man. His culture, real, varied, built and put to the test with time, makes his opportune interventions inter-temporal and classic. It is mainly these themes that the following text deals with.

Project and Fragment

If we stopped to scroll through the sketches of Venezia's project, we would have before us a geography of fragments. Each fragment has its own completeness, it is part of an object to which something has been removed, or something added, or inside it has been excavated. It is a tracing of foundations, pedestals and excavations. It is a constant reflection that oscillates between sediment and ruin, but which, as a final result, returns an intact architecture. These parts of which it is composed, are separated from a temporal point of view, but perfectly adherent to the nature of the real and daily world, made of fragments.

His sketches, as well as his writings are clearly composed. They are attentive and respectful of limits and brevity. They are parsimony exercises but correct expressions of creative clarity. They are not manifestations of artistic desire, however instead are rigorous tools to find the right rule, the correct spatial modulation, the balance between the whole and its parts (See Figure 1).

Continuing on with the relationship between project and fragment it would be impossible to not mention the Gibellina Museum or Palazzo di Lorenzo (1984) one of the interventions Venezia completed after the earthquake. It is a building that fits into a reconstruction plan of the old Gibellina, which after a disastrous earthquake (1968), was cancelled. The new Gibellina is a carousel of architectural exuberance and of artistic license.

It is actually a building that does not have a real function. Its function coincides with its presence, like ruins or wrecks. The Venezia Museum appears silently in the midst of this whirlwind of design self-references. The ruins appear in the Roman countryside, or the ancient vestiges in the bare landscapes of the Greek lands.

As Dal Co says, referring to the study for San Leucio, and for the project for the temple of Fortuna Primigenia in Palestrina (1984): "the question for which he seeks answers comes from the realization of the precariousness that architecture is capable of opposing the irruptions of time and needs in their most diverse manifestations. It is not for nothing that Venezia is attracted to the insistence of the ruins, and the ruins repeatedly try to make use of design material in the proper sense, after having taken them as a touchstone" (see Figure 2).

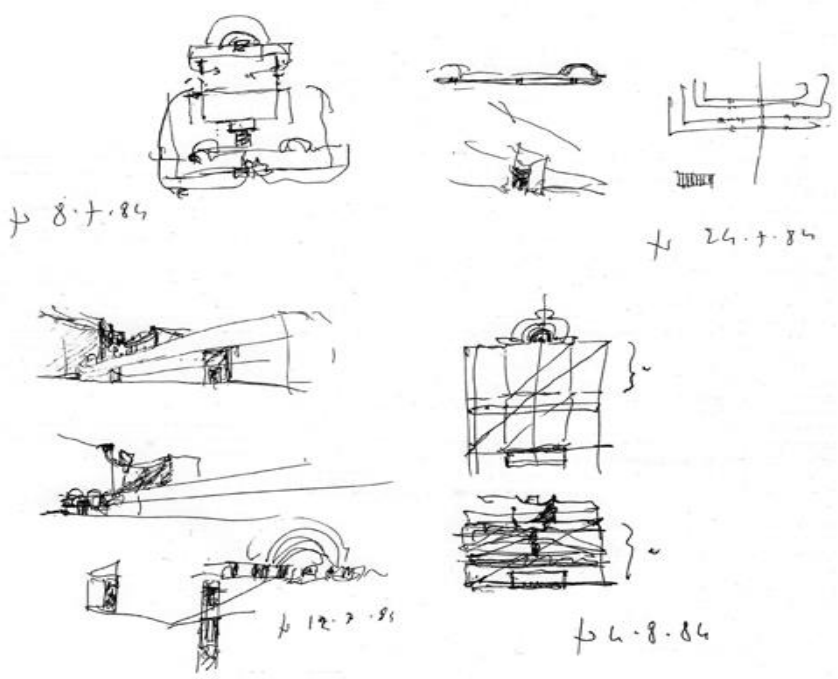


Figure 1. *F. Venezia. Study Sketches of the Temple of Fortuna Primigenia in Palestrina*
Source: http://www.engramma.it/eOS/index.php?id_articolo=823.

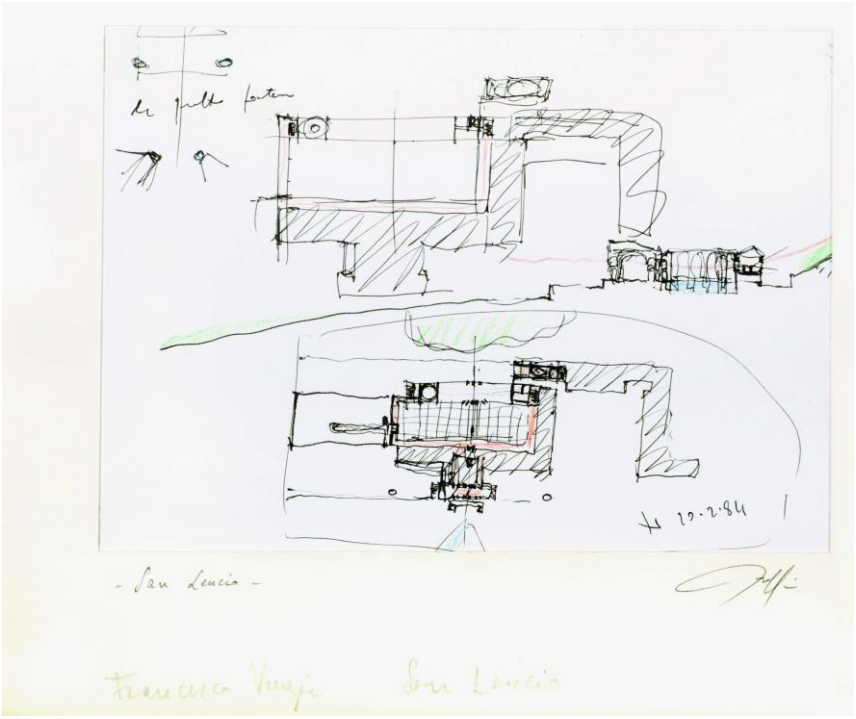


Figure 2. *F. VENEZIA, "Il Regno Dellacqua", a Project Developed in the Context of the International "San Leucio: Five Proposals for a Territory", 1984 Contemporary Archive | Architectural Drawings | Online Collections*
Source: https://www.pinterest.it/pin/393220611197548889/.

From these reflections it can be deduced that the works of Francesco Venezia transform the many manifestations of architectural practice into one unit, but they also come to terms with the experience of the typical and necessary fragmentation of the human condition. This dual collocation seems to better relate to the dual character with which we perceive the world in cases such as multiplicity and unity, continuity and discontinuity, convergence and fragmentation.

The unfinished architecture, very often the subject of his own work, is an expression of this duality, of the human weakness and of the mortality of his work. The incompleteness, desired or provoked by decadence, as in the case of ruin, returns architecture to a dimension in which the ephemeral things have no place and then time turns to matter.

As we can read from the pages of his text dedicated to the ruins and the unfinished both the ruins and the unfinished buildings possess a strong aesthetic value, because in their FRAGMENTATION, in their incompleteness it is contained a force that moves us and this force places us constantly in relation to a feeling of imperfection, but also to a different beauty. It is the beauty that appears suddenly, like when a roof falls and disclose a space leaving the roof open to an unexpected sky: "It is like a broken shell: destroyed inside making us discover a fascinating world."[2]

The ruin always covered a fundamental role in the perception of mankind's space; it has always offered the possibility to make an experience of reality that possesses a poetic nature because it allows those who see it to lose themselves indefinitely over time. A journey that is human but that can incite to explore the boundaries of the infinite, because it has no limits. And the possibility of approaching infinity has always moved mankind, deceiving him that he can dominate time, but that actually only drives him to become aware that he is an infinite human, that perhaps, as Venezia says, it would be more correct to be called "indefinite".

There is a second opportunity, for a building, to enter into a relationship with the "break", and it happens when buildings are not finished, so that they are delivered to oblivion even before being finished. They are buildings complementary to the ruins, because they are what is ultimately a project but not the realization of the project itself. In both cases we are dealing with something fragmentary and mutilated.

"If we look around, reality is full of unfinished buildings, buildings that had a constructive story in which, because of the excessive ambition of the project - a building too big - or for unforeseen events - a war, an invasion, a political change – or because the money simply out, the building materials had finished or there was a break in the construction process. These are complementary buildings of the ruins; they are the surviving part of a completed project."[3]

This introduction serves to frame the theme of the design exercise that Francesco Venezia assigned, in one of his teaching years, to his students during the course of the first year of Design Laboratory in Venice. We also need to demonstrate that there is no boundary of interest between his theoretical

2. F. Venezia, *Rovine e non Finito* (Venezia, 2007), 13.
3. Ibid, 14.

reflections, his built works and his research aimed at teaching. His themes constantly focus on concepts such as time, interpretation of memory, relationship with the presence, whether it is a place or a building.

The students were assigned a completed project of four great masters of the Modern-style, and they were asked to "simulate through models and drawings the realization of one of his fragments, taking care of finding a certain compensation for its interminativeness."[4] The chosen buildings were: The Unité d'habitation of Strasbourg by Le Corbusier; the Bergaliden Crematorium of Sigurd Lewerentz; the Church for the new hospital in Venice by Le Corbusier and Guillermo Jullian de la Fuente; the Christian Catholic Church of Zion City by Frank Lloyd Wright. The results were surprising.

For example, in the case of the Crematorium of Lewerentz, a project commissioned by the Helsinborg Society in 1914, the building envisaged an elongated and narrow block that at the back should have stretched over a small lake, like a bridge. From this lake a ramp would have had to connect to the first room of the crematorium, a high, domed space, where the funeral ceremonies would have had to be performed. The unfinished theme, in this case, under the supervision of Francesco Venezia and his collaborators (in this case the architect Stanislao Fierro) was interpreted by his students in two ways. In the first hypothesis, not modifying the intended use of the building, the students hypothesized that the vaulted room had never been built; in the second it could have been built up to the last courses of the wall that would have to had kept the roof. Therefore, in the second solution, the roof would not have really been built. Seemingly the theme of the course, is difficult to execute for inexperienced first year students due to a lack of special awareness but Venezia in his presentation of the exercise says: *"I avoid elementary exercises, preferring complex exercises supported by an idea that you will develop with the resources of your experience, which is necessarily limited. (...) it is natural that you have little technical and instrumental skills, little experience. But there is no experience, there are no technical skills and tools able to flourish and bear fruit in the absence of an ideal motive. "*

The praise of ruin and of the unfinished in architecture may seem a position vaguely linked to the past, but this is due to a superficial interpretation. The themes he deals with are deliberately old-fashioned, but very actual if not urgent. His architecture is a constant warning against the anxiety of perfection of contemporary architecture.

This warning should not be confused with a lack of semantic precision or absence of grammatical and programmatic discipline; on the other hand, Venezia brings his work towards a temporal dimension that goes beyond the limits of the antique period and reaches the primordial one. It is not a coincidence that the story that seems to describe in a better way the dangers of perfection in architecture, as a direct consequence of a lack of humility and of the non-assumption of the concept that perfection is possible only when we entrust everything to the divine, is represented by Mircea's essay Eliade that tells the timeless legend of Manole. A

4. Ibid, 15.

figure representing a master who entrusts the rite of building to the ritual of sacrifice, trying to solve the continuous cases of deaths of his workers on his building site. He understands that it is the sacrifice of the body of his young bride, who can defeat the danger of the failed construction, due to the recurrence of the accidental event.

Francesco Venezia relates to the interruption of the life-time of architecture with an act of suspension. It suspends time by giving up, which does not mean getting away from it: it rather means refusing to entrust the architectural occasion that it has as concerns the temptation to create a "first work". An approach that seems unpopular, far from the tendency of architecture that is more and more related to every practical action about building and that considers the construction as a will to show the exceptional.

"Universal for Renunciation"

He chooses Paestum as the setting of the montage because, as he says, those temples have an archaic Doric structure, not yet perfected, "and perfection is already a sign of decadence". In Paestum, in particular in the basilica, the Doric shows his will to be. It is in the state of maximum power. It nourishes us."[5]

According to Venezia, the Mies building achieves the right latitude, after having escaped from Berlin, and appears with its dark steel, its peristyle and its glass cell. A cell "from which the Gods walked away and into which men have entered."[6] What motivated the choice of these three buildings and this unusual approach? What do they have in common?

They refused the superfluous, and by renouncing the superfluous they became universal. The two temples have renounced that because they have lost the superfluous in the time that degrades, shapes, uniforms; the temple of Mies has renounced it because it is made of steel "and renouncing the superfluous, the ephemeral signs of actuality, of fashionable things, thanks to the use of innovative materials -steel, crystal–is paradoxically universal. Universal for renunciation."[7]

By losing the superfluous they belong to the world of MEMORY, which preserves the essential, and ensures that spaces are inhabited by ghosts.

In the choice of Greek temples and references to the classical architecture made by Venezia, it seems to be the willingness to relate the dimension of BECOMING, which is the human measure, with the dimension of the ABSOLUTE, which is the divine measure. The absolute has no movement, is in a balance without gaps; the gap with respect to a horizon produces movement and the passage of time, referring to a time in evolution.[8]

5. Venezia, *Che Cosa è l'Architettura. Lezioni, Conferenze, un Intervento* (Milano: Electa, 2013), 101.

6. Ibid.

7. Ibid.

8. A. Colonna, *Genealogia del Presente e Storiografia dell'Architettura. Appunti dalla Didattica e per la Ricerca* (Potenza: Calebasse ricerche, 2015), 78.

Figure 3. *Photomantage "La piana dei Templi" where the Nationalgalerie of Mies Van der Rohe, the Ruin of Nettuno's Temple, and the Basilica of Pestum can be seen*

Source: Venezia, *Che Cosa è l'Architettura. Lezioni, Conferenze, un Intervento* (Milano: Electa, 2013), 99.

This photomontage reminds us of a respect and an obligation to refer to matter and time by Venezia and to their mutual relationship. It seems that architecture for him is a gesture of trust deposited in matter, in the hope that this will last and remain faithful to the functions assigned to it: "The lifetime is the label that quantifies the time assigned to an object (...) The lifetime therefore measures the perseverance of entities in their identity."[9]

This perseverance in opposing resistance to the uncertainty that time brings is present in its architecture. Its buildings seem to be the sum of a series of transformations underwent by the material they are made in order to adapt to the place. It is a way of doing classical architecture, recognizing that there are two ways of naming and conceiving time: Aion and Kronos.

9. F. Espuelas, *Madre Materia* (Milano: Marinotti, 2012), 103.

Kronos is the time that enters the matter in a corporeal form, Aion is the time that has been freed from matter, and so it becomes immortal. Kronos acts in the present, he thinks that there is neither the past nor the future, so they are conceived as a form of the present. When time is not only the time of the present but also memory, then we are in the field of Aion. "Time-duration and time-becoming possess the two different faces of making architecture. Aion's time is that of the project and the prefiguration of the building, but also of that sort of retroactive project that is historiography and criticism. A time that anticipates and reconstructs, which ventures into the future (Project) as in the past (History) and which is endowed with the plasticity of the projective imagination."[10]

Aion deals with the relationship between the beginning and the end, Kronos takes care of the time that is perceived through the body. With the architecture of Venezia, the body (time-matter) and the mind (time-project) are in harmony but what really appears in his experiences is the third form of time, what the Greeks called "the time of opportunities ", Kairos. "The Greeks have a name to indicate the coincidence between human action and time. It is called Kairos the moment when time is favorable and human actions are good: occasion and time are favorable."[11]

This idea of time is related to human action, to the ethics of his behavior. The buildings of Venezia appear "opportune", they are conceived and constructed in a breach opened in the temporal sequence of the narration of a place. This breach, which is not always painless, is the signal that it is necessary to enter into the dialogue based on resistance and acceptance with the ground.

To better understand this concept, we can refer to an interview left by Venezia, where he talks about the design process of Gibellina. At a certain point he clearly explains that projects that have a positive outcome are those whose assignment comes when an idea has already matured in the author's mind. This maturation does not depend on the nature of the assignment, nor on the site. It is the idea that acts as a link with the specific situation. But the idea, in order to be valid, must take over an "opportune time", that is the final moment of a maturation process. "It could be said that more than a good relationship with the context, one must have a good relationship with their own mind and one should arrive at assignment prepared with an idea. When the task is given, the strength of the idea becomes an "interlocutor" of the specific situation. The stronger the idea, the stronger the relationship between one's idea and the needs of the site in which to insert the project. "

To appreciate the buildings of Venezia, you need to take your time. Laziness is not permitted to those who look at them. In a world where "everything is immediate" is the rule, in contrast, they require slowness of understanding. As Dal CO says: "they offer the gift of their own time, of an interval - they offer as a gift to the public distracted by modernity, the possibility of losing, due to the architecture and a bit of time"

10. Ibid, 106.

11. P. Aubenque, *Le Prudence chez Aristote* (Paris: Presses Universitaires de France, 1963), no. 8, 107.

Architecture and the Sensorial Design

"*Man employed centuries to make perfect the grammar of architecture, and, as I often repeated to my students, who are able to dominate and to know the syntax and grammar of a stone building, can also dominate the syntax and the grammar of a steel and crystal building*"[12]

A conscious design presupposes the control of the sensorial effect that the building will cause on the body of those who will inhabit it, who will look at it and who will cover its space. The body, through the senses, measures our relationship with space. Space organizes our life experience on earth, relating to time in its duration.

Several experiences concerning the project demonstrated this constant dialogue with a design that consciously involves our senses: from the reconstruction of Palazzo di Lorenzo (1984) to the redevelopment of the spaces of the "Secret Gardens" in Gibellina. The earthquake as a sort of reward, it offered to numerous architects, including Venezia, Quaroni and Burri, an opportunity to improve their abilities.

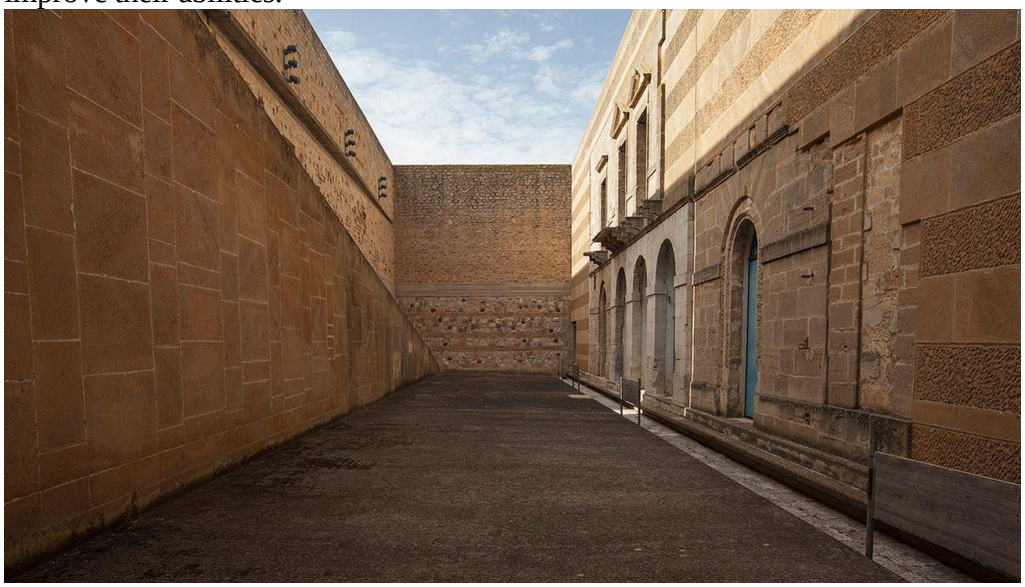


Figure 4. *Di Lorenzo Palace, Gibellina, Italy*
Source: http://www.artribune.com/progettazione/architettura/2018/01/francesco-venezia/.

Gibellina's works show how much the relationship that architecture has with reality is quite never passive, and rarely puts itself in relation to the place. Venezia himself says: "It is often the result of deep conflicts, wounds, lacerations. I become suspicious when reality appears as a careful listening and interpretation of a site. Architecture goes in hard and the site does not desire to be occupied by architecture - the sites are as good as they are."[13] And how does a site feel when it lives the wound of an earthquake that suddenly interrupted the relationship of an

12. Ibid, no. 4, 13.
13. Ibid, no. 8, 28.

entire community with a territory? How could we intervene after a physical, architectural, social moment of mourning? Would the site choose everything to stay suspended in time, like ruins do for example?

From that moment on, it begins the construction of a concrete relationship between architecture and the place. This imposition is violently refused by the site at first. But architecture, when it is architecture and not a hedonistic soliloquy of an egocentric personality, when everything is finished, gives the possibility to offer an image of that place, unimaginable without the presence of that intervention, "assuming intervention could express this capacity to interpret this action of contrast. Reconciliation, that is revealed to things done, is never preliminary, it is a result. It is a result that tells us that our action has been successful."[14]

In the case of Gibellina projects, the architecture of Venezia returns to have a sediment, a link with the ground that most of the contemporary architecture does not seem to have. In many of today's architectures the gesture of founding is put aside starting from the first steps of conception: it is not based on a conceptual sediment, it seems not to struggle anymore, it gives up by renouncing to live dramatically the drama to unload its importance.

His architecture represents a critique to a contemporary production that is increasingly concerned with proposing novelty, through a collection of objects that are much more similar to design objects, rather than objects of architecture: "Objects similar to corks floating on water and not taking any action against things. They do not oppose anything, they simply exist, they run before our eyes like in a big fashion show and in the course of a few years they will leave the catwalk. (...) There are architects who dream of buildings similar to clouds, so they can float up in the air without dumping their thousands of tons on the ground with all the consequences that this action entails. We are witnessing the flowering of objects that, not by chance, lend themselves to being an advertising scene. (...) thus fulfilling the fatal conjunction of two fleeting realities.[15]

In Lorenzo's palace project, space seems to dominate the form. It does not give occasions to the image to be charming, but it is organized to restore a significant and temporal "collocation" to the objects that overcame to the traumatic event (see Figure 2). The "dispositio" is not always the same as the original space but continues to allow the integration between the designed material and the environment. And not only matter and materials belong to that environment, but also echoes of distant cultural influences. We perceive them in the secret areas of the Gardens of Gibellina, without recognizing the existing Arab, Norman and Sicilian structures. In a project of a house (not yet realized) in Palazzolo Acreide, it is introduced a theme on which Venezia will reflect on several occasions: the coexistence of two worlds, of the double. Moreover, his relationship with Naples, by origin and training, obliges him immediately to dialogue with an inferior reality (the thousand cavities in the subsoil of Naples) and a superior reality (the city in the sunlight). In the design of this small house, the section shows a small cave, and shows a character of domesticity suggested by the reduced size of everything. But

14. Ibid.
15. Ivi, 28-29.

the coexistence of these two realities, as he describes speaking of the project, is well highlighted through a vertical axis that connects and both physically and symbolically unites the inferior world, the underground (the cave) and a superior world, the loggia. An axis also transformed into a possibility to ventilate the house, is a ventilation shaft, and an interior garden.[16]

The Memory Project

Among the merits of the Italian culture of the twentieth century there is that of having given birth to some of the most interesting and bright opportunities for the design of exhibitions and installations. In Pompeii two exhibitions were set up but we will deal with the one set up in the amphitheatre. The exhibition at Palazzo Grassi about the Etruscans (2000), and the exhibition about Jean Arp in Rome (2017) in the church of Santa Maria degli Angeli make Francesco Venezia a worthy heir of this process.

The two exhibitions, Pompeii and Europe, 1748-1943 in the National Archaeological Museum of Naples, and the other in the amphitheater of the excavations of Pompeii, were inaugurated in May 2015.[17]

The genesis of the project for the amphitheatre of the excavations of Pompeii can be recognized through an image that is part of a series of preparatory sketches for the exhibition. The same typology of sketch can be recognized in the phase of conception of the exhibition for the National Archaeological Museum: this is the co-factor that suggests the actual conceptual relationship between the two set-up occasions. In one of these sketches it is easy to recognize a design of a beam diagonally slanting a dome to which a transverse cut has been made. The path of the ray comes to some figures, lying on the floor, whose features are not recognized. The effect of light reminds us, as Dal Co says in his book,[18] the atmosphere of an interior of the ancient era: the temple of Mercury in Baia, in the Campi Flegrei, a volcanic area close to Naples. It is a temple of the I. Sec. D.C, always been a destination for travelers interested in ancient ruins.

This image, which turns into an ideogram, represents the conceptual foundation of the entire exhibition of Pompeii. The site that has been chosen for the construction is the Roman amphitheater that was built to give gladiators a place where they could improve their fighting skills. There are testimonies of these activities in several graffiti found in the walls of the archaeological excavations. The elliptical arena is about six meters far from the second order of the cavea. Venezia arranges a pyramid by using the ruins of this place. He uses wood both

16. F. Venezia, *La Natura Poetica dell'Architettura* (Pordenone: Giavedoni, 2010), 67.

17. As concerns these two expositions, it is useful to consult the catalogues: M. Osanna, M. T. Caracciolo, L. Gallo, (ed.) *Pompei e L'Europa, 1748 – 1943* (Milano: Electa, 2015); Aa.vv. *Pompei. La Fotografia* (Milano: Electa, 2015). The two expositions were examined and described in: F. Dal Co, *Francesco Venezia e Pompei. L'Architettura come l'Arte del Porgere* (Palermo: Lettera Ventidue, 2015), and the text above refers to this part.

18. Dal Co, *Francesco Venezia e Pompei. L'Architettura come l'Arte del Porgere*, 2015, 33.

for the structural part and the cladding, but trying to give the idea of a stone texture. Dal Co, in his text, establishes a relationship between the form of the temporary building chosen by Venezia and the architectural form considered by Ètienne Boullée in his “Architecture. Essai sur l'art” the most appropriate for the "temples of death. It is defined as: "a buried architecture, with squat and slashed proportions."[19]

This is how the pyramid appeared inside the amphitheater, like an object that had found a sediment below ground level. And the choice of a pyramid shape inevitably puts him in dialogue with some famous projects by Boullée. This dialogue does not place Venezia in a position of submission, on the contrary, it contrasts it in a clever way to the suggestions that Boullée makes about the funerary architecture. Since Venezia decides to build a real cenotaph inside the amphitheatre it possesses all the features of a funerary architecture. It is Dal Co that in the text suggests the relationship with the "famous funerary monument in honor of viscount Turenne, the Marshal of France which served Louis XIV, and fell in the battle of Salzbach in 1675, conceived by Boullée more than a hundred years later, much probably in 1782."[20] For this project Boullée chooses the pyramidal shape, cut at the tip, placing it in the center of a rectangular enclosure, and isolated on each side. The absence of any decoration, the pyramidal trunk shape and the central insulating in an encloded area are other choices made by Venezia. The difference lies in the eccentric collocation of his pyramid that occupies one of the two centers of the ellipse of the amphitheater.

The animated dialogue that Venezia ideally establishes with Boullée also passes through the choice to dedicate the architectural "object", not to a valiant leader but rather to bodies without a name, the "molds of Pompei". These are the result of a process of revitalization of hollow shapes that are the result of the decomposition of dead bodies following the eruption of Vesuvius. The lava flow of that special mixture of materials has returned not the perfection that a human body has, but the sketches of bodies expressing the last moments of the common lives, through the gestures that have been immortalized by death. As a result, the protagonists of this exhibition are lifeless plastic forms.

This choice immediately distances the pyramid of Venezia from the idea of a cenotaph which by definition comes from the union of the words Kenós, empty, and Taphós, tomb but above all defines a tomb that does not contain the body of the deceased person to whom it is dedicated. It is therefore not a VACUUM OF SPACE, but a "inhabited monument" and this turns it into ARCHITECTURE.

The features of their last dramatic movements transform these lifeless casts into a timeless testimony, as if we could still hear their last cry or their last breath. This extension of figures in their last contorted movement is arranged in such a way that those who visit the exhibition can have a view from above, thanks to the presence of a raised and circular path.

At the entrance, at the top of the pyramid we find a gnomic hole, like the one in the sketch that was part of the first step in the design process of the two exhibitions. This hole allowed the light to enter the space and to touch and

19. Ibid, 34.
20. Ivi, 35.

illuminate the casts. But the effect of light changes with the changing of the hours and the position of the sun: as well as actors from time to time illuminated by the limelight, the bodies reclaimed for a few hours their role of protagonists. This is because the dome is not cut at one of the circumferences of the hemisphere that are parallel to the ground, but along a circumference drawn by an inclined plane, in order to form a circle of light instead of an ellipse (see Figure 5).

Figure 5. *Roman Amphitheater in Pompeii with the Venezia´s Pyramid*
Source: http://www.artribune.com/progettazione/architettura/2018/01/francesco-venezia/.

The visit of this temporary architecture shows us that between Venezia and Boullée there is a sharing of references and models and a similarity of suggestions. The model of the temple of Mercury in Baia, must surely be part of the memory of education of the Neapolitan architect Venezia. Some coincidences, as Dal Co points out, cannot be a coincidence: for example, the diameter of the circular thermal room is the same as the pyramid, and this gives rise to the overlap between a circle and a square. This overlap is the same one that Boullée adopts in the Tourenne cenotaph project[21]. Even the diagonality of the ray of light in the pyramid is definitely inspired by the light that enters the thermal room from one of the side windows.

It should be recalled that Boullée was an expert of the temple of Mercury, thanks to the reliefs that Abraham - Louis Ducros had conducted during his first trip to Naples in 1778, four years before the Cenotaph's project.

21. Ivi, 39.

Moreover, the changeable shadow play that the casts cause, thanks to a slight super elevation that Venezia choose for them, ensures that in the design references it is perceptible Piranesi and his architectures of shadows.

On the sides, along the curved walls, there are the photographs taken since the mid-nineteenth century during the excavation works.

"Modeled without art or imitation" as Luigi Settembrini observed in the nineteenth century, the casts restored body and figure "to the pain of death". Figures of the immutable, were greeted by Venezia within an ephemeral construction, therefore inevitably paradoxical. For a very short time, however, the installation ensured a roof - a body as Boullée would say."[22]

The cenotaphs have the function of "perpetuating the memory of those to whom they were consecrated" and this is the reason why they must be designed in order to resist the offenses of time, as stated in the Essai of Boullée. "But the cenotaphs, as we have seen, are empty monuments: only fame lives inside them. For the bodies, on the other hand,they are reserved modest coverings, similar to those that Venezia designed for casts"[23] (see Figure 6).

Figure 6. *Interior of Pyramid with Casts*
Source: http://www.artribune.com/progettazione/architettura/2018/01/francesco-venezia/.

Fifty years after the death of the artist Jean Arp (1887 - 1966), the Special Superintendency for the Colosseum and the central area of Rome and the National Roman Museum decided to honor him by asking for an exhibition project to the

22. Ivi, 41-42.
23. Ibid.

Neapolitan architect Francesco Venezia and evocative space that was chosen were the great Halls of the Thermal Baths of Diocletian. Another opportunity for the architect to compete with the great architectural history, and to challenge the obvious and winking project. The works, which follow a rigorous division into the spaces chosen for the exhibition, underline a relationship with classicism and with the poetry of the fragment, themes, as we could understand in the text, dear to the design and theoretical mentality of Venezia.

"The exhibition appears as isolated and almost suspended in the immense space of the two Halls of the Baths" explains Venezia "metaphor of the difficult individuation, in the work of Jean Arp, of a reflection of the ancient or of a character of the eminently historical soul". "The pendulous stems that support the bodies, illuminating, the walls of the exhibitors, the bases of the sculptures intertwine in perspective and with calculated variety five colors: black, green, red, yellow and blue. They are recurring colors in the artist's graphic work."[24]

The conceptual organization of the exhibition is imposed in Venezia, which has to resolve some important conditions in the conception of the space dedicated to the artist. The choice focuses in particular on the sculptural activity of the 30s that obliges the architect to favor a fruition of the works organized through a multiplicity of directions of the gaze. It is mentioned only his participation in the Dadaist movement, his use of collages and the language influences coming from his friendship with Matisse. The second limitation has a spatial nature and comes from having chosen as a space for the exhibition, a unique hall for the baths.

All the works had to find a deserving placement within a spatial limit that must have influenced the ideation of Venezia. Almost all the works have been arranged outdoors. "And here and there the parentheses of unexpected glimpses that frame the mosaics, the statues, the ancient marbles, the sample of columns and architectural friezes of the Roman museum as mirages of a remote and incumbent horizon of confrontation with a past in which the same Arp he immersed himself, drawing inspiration from it."[25]

Conclusion: Architecture as Reward

The distance that Venezia assumes with regard to perfection, which does not mean methodological or programmatic superficiality, but respect for human daily life, outdistances its work from the danger that threatens contemporary architecture: considering every architectural occasion as a self-portrait, as an object constantly longing for that fixedness given by fame, and by the aspiration of eternity. The infinite and multiple stresses to which the surface architecture is subjected, shift the attention in different directions, putting it away from the depth where the movement is slow. It reacts and manifests itself as a force that sometimes is evident.[26]

24. http://www.artribune.com/tribnews/2016/09/jean-arp-terme-diocleziano-roma-dada/.
25. http://www.succedeoggi.it/2016/10/arp-lequilibrista/.
26. Op. Cit., no. 11, 33.

This is the layer to which Venezia seems to be interested, a divine exactness that manifests itself through its voluntary superficial absence, but which is present there, where nobody sees it.

The humanity of architecture, daily life and the non-aspiration to eternity leads back to the silence of the forms and the wisdom of building. Moreover, it places the architect's work on a respectful path already traced, where before being transported by temporal syntax, it would be better to abdicate from the hedonistic will of power.

The works of Francesco Venezia – fortunately - do not allow themselves to be considered as concluded. His relationship with the unfinished gives his poetics the idea of "becoming". Each of his generous transmission of experience allows us to take one more step towards a process of self- discovery of the sense of doing architecture. It is the practice of the good teacher, who indicates by directing a path which only those who walk through it can find out where it will lead them.

Bibliography

Aa.vv. *Pompei. La Fotografia*. [Pompeii. The Photography.] Milano: Electa, 2015.

Aubenque, P. *Le Prudence chez Aristote*. [Prudence at Aristotle.] Paris: Presses Universitaires de France, 1963.

Colonna, A. *Genealogia del Presente e Storiografia dell'Architettura. Appunti dalla Didattica e per la Ricerca.* [Genealogy of the Present and Historiography of Architecture.] Notes from Teaching and Research. Potenza: Calebasse ricerche, 2015.

Dal Co, F. *Francesco Venezia e Pompei. L'Architettura come l'Arte del Porgere.* [Francesco Venezia and Pompeii. Architecture as the Art of Offering.] Palermo: Lettera Ventidue, 2015.

Espuelas, F. *Madre Materia.* [Mother Materia.] Milano: Marinotti, 2012.

Osanna, M., M. T. Caracciolo, L. Gallo. (ed.) *Pompei e L'Europa, 1748 – 1943.* [Pompeii and the Europe, 1748 – 1943.] Milano: Electa, 2015.

Venezia, F. *Rovine e non Finito*. [Ruins and Unfinished.] Venezia, 2007.

Venezia, F. *La Natura Poetica dell'Architettura*. [The Poetic Nature of Architecture.] Pordenone: Giavedoni, 2010.

Venezia, F. *Che Cosa è l'Architettura. Lezioni, Conferenze, un Intervento.* [What is Architecture. Lectures, Conferences, an Intervention.] Milano: Electa, 2013.

Genius Loci: Place as a Mean to Develop Inter and Transdisciplinary Skills for Architecture Students

By Karine Dupré[*] & *Anke Vrijs*[‡]

The French government has a long tradition of supporting the Arts as well as supporting collaborations between artists and architects. In the case of architecture education, expected skills and competencies are by nature multidisciplinary, as the practitioner never works alone but is always in contact with other professionals of the built environment such as engineers, planners, and sociologists, for instance. However, it does not mean automatically that courses are multidisciplinary or even trans or interdisciplinary. This study is based on a ten year land art workshop organized for second year architecture students and questions how inter or transdisciplinary skills for architecture students are developed through experimenting and learning about the relationship between art and the natural environment. Methodologically, the analysis was based on the systematic review of the produced outcomes, and is trying to identify the variable factors that might have influenced them. Findings show that even if the course provides interdisciplinary skills, transdisciplinary features are not really present, unless a real critical reflection is actioned.

Introduction

The French government has a long tradition of supporting the Arts in the built environment. In 1951, it legislated a law that stated "one percent of the total budget spent for the construction of a new state building (school, university, etc.) will be dedicated to the creation of a contemporary art project to be integrated to the architectural design."[1] After decades of collaborations between artists and architects, further incentives emerged in the 1990s onwards to encourage artistic interventions in natural and urban spaces. This created a new opportunity in terms of scale and network as it involved larger territories and new professionals such as city planners, urban designers and landscape architects.[2] The legacy of this multidisciplinarity is visible today throughout France. It ranges from highly contested projects (e.g. the Columns "Les deux Plateaux" of Daniel Buren in Paris, 1986, Figure 1) to those well accepted such as Pourtales Park or artwork on the tram in Strasbourg (Figure 2). For the latter, artists were asked to establish a tight relationship with nature through their creation. In both cases, the artists were supposed to interact with a specific environment having not only an urban, architectural, natural or social but also an emotional content.

[*]Associate Professor, Griffith University, Australia.
[‡] Associate Professor, Strasbourg National Institute of Applied Sciences, France.

1. Legifrance, legifrance.gouv.fr. [Accessed November 25, 2017].

2. Serge Lemoine, *L'Art dans le Paysage du Tramway d' Orléans* (Paris: Editions des Musées Nationaux, 2002).

Figures 1 and 2. (left) *"Les deux Plateaux" of Daniel Buren in Paris, 1986* (right) *Artwork on the Tram in Strasbourg, 1994*
Source: (left) blogs.parisnanterre.fr. [Accessed 11/06/2018.] (right) http://publicartmuseum.net/wiki/L%27empathie_peut_changer_le_monde_(Barbara_Kruger). [Accessed 11/06/2018.]

This study is based on a ten year land art workshop organized for second year architecture students in the forest of Brumath, a small city located 20 km north of Strasbourg (France). It documents the different processes through which the architecture students developed their work, from revealing the genius loci of the place to the final exhibition of their designs. In this research, we question how inter or transdisciplinary skills for architecture students are developed through experimenting and learning about the relationship between art and the natural environment.

Methodological Context

Literature Review

Although there is a wide consensus on the definition of multidisciplinarity to be understood as 'people from different disciplines working together, each drawing on their discipline knowledge,[3] scholarship in order to understand the difference between inter and transdisciplinary practices has exploded in the last decades for there is a real interest in better understanding what can be gained from these different approaches. Some works concentrate on the reasons why those concepts emerged and on their meanings,[4] while others concentrate on defining them.[5]

3. Alexander Jensenius, *Disciplinarities: Intra, Cross, Multi, Inter, Trans*, http://www.arj.no/2012/03/12/disciplinarities-2/. [Accessed May 20, 2018].

4. Patrick Paul and Gaston Pineau, *Transdisciplinarité et Formation* (Paris: L'Harmattan, 2005); William Newell, "Decision Making in Interdisciplinary Studies," in *Handbook of Decision Making* (ed.) G. Morçöl (New York: CRC, 2007).

5. See for example the work of Julie Klein, *Interdisciplinarity: History, Theory, and Practice* (Detroit: Wayne State University Press, 1990); Jeroen Van Merriënboer and Getrudes Johannes, *Training Complex Cognitive Skills: A Four-Component Instructional Design Model for Technical*

Based on the initial works of Stember[6] who developed intellectual, practical and pedagogical argument for interdisciplinarity, this work uses the following definitions proposed by Jensenius (2018):[7]

- Interdisciplinary: integrating knowledge and methods from different disciplines, using a real synthesis of approaches.
- Transdisciplinary: creating a unity of intellectual frameworks beyond the disciplinary perspectives.

Furthermore, Resweber (2000)[8] poses that interdisciplinarity raises the fundamental question of the outcomes by processing the unification of knowledge, both subjective and objective, which is also a statement announced by Klein (1990)[9] and Spelt et al. (2009)[10] by focusing on the context of higher education, emphasised the increased request from the professional world to develop interdisciplinary skills, with, importantly, the possession of real awareness of the different definitions and processes needed to implement true interdisciplinarity, and a fortiori transdisciplinarity.

In the case of architecture education, expected skills and competencies are by nature multidisciplinary, as the practitioner never works alone but is always in contact with other professionals of the built environment such as engineers, planners, and sociologists, for instance. However it does not mean automatically that teaching is multidisciplinary or even trans or interdisciplinary. The extensive scholarships that have emerged in the last two decades advocating better integrated practices within both the profession and the architecture curriculum,[11] reflects without any doubt an increased interest in doing so. This trend can also be linked to the rising interest in the employability of architecture graduates in combination due to the global financial crisis, the changes in architecture education, and the increased cost and growing academic accountability.[12] This is also concomitant

---

Training (Englewood Cliffs: Educational Technology, 1997); Veronica Boix Mansilla, William C. Miller, William. C. and Howard Gardner, "On Disciplinary Lenses and Interdisciplinary Work," in *Interdisciplinary Curriculum: Challenges of Implementation* (ed.) S. Wineburg and P. Grossman (New York: Teachers College Press, 2000).

6. Marilyn Stember, "Advancing the Social Sciences through the Interdisciplinary Entreprise," *The Social Science Journal* 1, no. 28 (1991): 1-14.

7. Jensenius, *Disciplinarities: Intra, Cross, Multi, Inter, Trans*.

8. Jean-Paul Resweber, *Le pari de la transdisciplinarité. Vers l'intégration des savoirs* (Paris: L'Harmattan, 2000).

9. Klein, *Interdisciplinarity: History, Theory, and Practice.*

10. Elisabeth Spelt, Harm J. A. Biemans, Hilde Tobi, Pieternel Luning and Matthijs Mulder, "Teaching and Learning in Interdisciplinary Higher Education: A Systematic Review," *Education Psychology Review* 21, no. 4 (2009): 365-378.

11. Richard Tucker and Hisham Elkadi, "Teaching in Practice: Work Integrated Design Learning and Practice Readiness for Architecture Students," *Proceedings of Association of Architecture Schools of Australasia, AASA* (Melbourne Australia, 2011), 341-354; Ali El Hanandeh, Karine Dupré and Benoit Gilbert, "Enriching Architecture Courses with Engineering Knowledge," *AAEE 2013 Proceedings* (2013); IPENZ, *Improving Collaboration between Architects and Engineers* (Institution of Professional Engineers New Zealand, 2014) [Accessed August 11, 2015].

12. Gaby Atfield and Kate Purcell, "Graduate Labour Market Supply and Demand: Final Year Students' Perceptions of the Skills they have to Offer and the Skills Employers Seek," *Futuretrack*

with structural changes in the built environment industry where sustainable development not only provides new ways of thinking, but has become a real driving economical force. The challenge to promote and adopt sustainable practices and to decrease the rate of natural resources and energy consumption, questions methods and actions, as well as the existing systems, regulations and actors. Toward this end, the built environment industry is also the place where experts in design, construction, and management, are experiencing interdisciplinary engagements.[13] Yet literature is very much focused on the architectural sciences stream and less is known regarding the arts and architecture, which is surprising considering the long intertwined relationships between the two.

In France, architecture education is part of a long governmental institutional tradition (Ecole des Beaux-Arts in Paris), traditionally along with drawing and sculpture, that dates back to the 17th century when it separated from engineering.[14] The education was heavily based on classical arts and architecture from Ancient Greek and Roman cultures, as well as on apprenticeship, where teachers and more experienced students trained new students, who, in turn, would take over the training of new cohorts. An important pedagogical element was the design charrette, during which design teams were formed with students of every year of the program, working together intensively to achieve usually the last design project of the most experienced student. Knowledge sharing, co-learning and team management were essential attributes of the design charrette. A major milestone occurred in 1968, when the architecture department was separated from the Beaux-Arts and became a discipline on its own, with independent premises and a redefined curriculum. However the principle of charrette remained strong and continues to this day, as a distinctive feature in the architecture training. Today most architecture curriculum worldwide usually includes 4-5 main streams such as design courses, history and theory courses, sciences and technology courses and communication and elective courses. Art courses are usually included in the communication suite and teach drawing and visual communication skills, as well as a different way to view at the world. Each school of architecture has different emphasis on the number of art courses they teach.

Working Paper 4 (2010); Susan J. Shannon and John Paul Swift, "Employing Graduate Attribute Mapping to Bridge the Divide from Education to Industry," *Proceedings of 44th Annual Conference of the Architectural Science Association, ANZASCA* (Auckland, NZ: United Institute of Technology, 2010).

13. Guy Tapie, *Les Architectes: Mutations d'une Profession. Logiques Sociales* (Paris: L'Harmattan, 2000); Yves Dauge, *Rapport d'Information Fait au Nom de la Commission des Affaires Culturelles sur les Métiers de l'Architecture. Annexe au Procès-Verbal de la Séance du Sénat du 16 Novembre 2004*, http://www.senat.fr/rap/r04-064/r04-0641.pdf. [Accessed August 11, 2015].

14. Christel Frapier, *Les Ingénieurs-Conseils dans l'Architecture en France, 1945-1975: Réseaux et Internationalisation du Savoir Technique Volume I: Texte* (PhD Thesis, University of Paris I, 2009).

Methodology

Based on the overall context, this research is aimed at analysing one art course that has run for ten years under the form of a land art workshop in order to understand how inter and transdisciplinary skills for architecture students were developed through experimenting and learning about the relationship between art and the natural environment.

Methodologically, the analysis was based on the systematic review of the produced outcomes to identify similarities and dissimilarities (Figure 3). The comparison included three criteria for the analysis. The first criterion concerned the broad themes of the outcomes, to evaluate whether there would be recurrent themes and to understand how these themes are disciplinary-bound or not. The second criterion concerns the level of integrated transdisciplinarity that was displayed throughout the making process and the outcome itself. This level was essentially assessed against the set of skills that was required to achieve a satisfying outcome. These skills were communication, conceptualisation, design thinking and process, and construction. The last criterion encompasses the different structural variables that might have had an impact on the outcomes, such as changes in the teaching method and changes that affected the site.

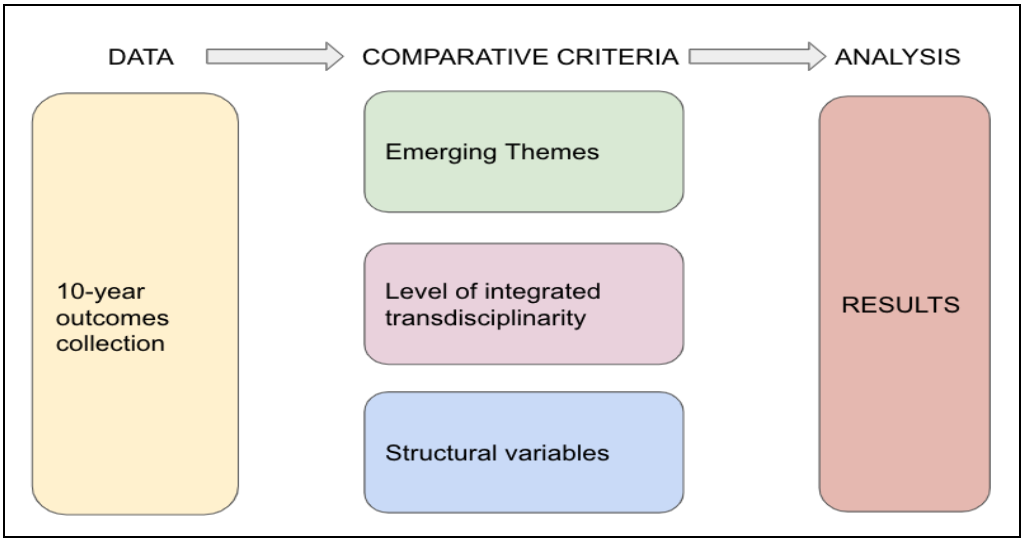


Figure 3. *Methodological Diagram*

The Workshop Context and Processes

Context

The architecture curriculum at the Strasbourg National Institute of Applied Sciences (SNIAS, France) is a professionally accredited program that delivers a master degree after five years of studies. Within this curriculum, 'expression representation' is one of the main streams, gradually introducing students to basic concepts and skills in visual and oral communication and art history to advanced

competencies. Art is taught during the two first years of the 5-year program, starting by the teaching of drawing and coloring techniques and finishing with a real-life land art workshop, for which students have to deliver three-dimension outcomes in-situ.

This workshop is the fruit of the long-term collaboration between SNIAS and a local authority, Brumath, located 20 km north of Strasbourg. The project initially originated as one of the responses to a natural disaster that hit the town in December 1999. A cyclone with extreme high speed wind (272 km per hour) had just destroyed more than 60% of the 460 hectares of forest in only half an hour, which also meant the loss of 15 years of timber exploitation.[15] At that time, the city authorities and the National Forest Office (*Office National des Forêts,* ONF) decided to review their policy concerning the use of this forest and the practices of the timber industry. The easy access for the population of Brumath and that of Strasbourg encouraged a different development policy as they had observed that more and more people came to this forest for recreational use. Concomitly, timber production had also dramatically dropped (22% less than estimated in 2003)[16] and thus, following this evolution from a timber producing forest to a leisure activities centred area, it was decided to officially reconvert part of the forest for recreational use only. SNIAS was approached in 2008 to develop temporary art installations that would both attract visitors and renew the quality of the experience in the forest.

From the beginning, the project had clear targets. Firstly, it aimed at developing the natural conservation features and heritage by means of information and education in order to stimulate curiosity and recurrent visits. Secondly, to focus the views and minds of the visitors on specific topics such as the regeneration of the forest, information about trees and animals or the Celtic and Roman past of the area. Finally, from a pedagogical point of view, it represented a great opportunity for the students to work with their emotions to enhance the character and culture of an area. Inspired by the work of Norberg Schulz (1979)[17] who theorised the notion of place into three components, physical location, physical elements (both natural and built) and the qualitative subjective elements of feeling and nature, the land art workshop also aimed at developing awareness of these aspects for the students. Working in-situ for a couple of days in the forest of Brumath, the second year architecture students are annually tasked to design and make art in dialogue with the natural environment or their interpretation of it. The following section presents the processes through which the students develop their work.

15. Office National des Forêts, "Introduction, Aménagement Forestier Forêt Communale de Brumath," (Bas-Rhin, 2014), 2013-2032, https://www.brumath.fr/mairie-brumath/urbanisme-environment-foret-communale.html. [Accessed June 10, 2018].

16. Ibid.

17. Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (New York: Rizzoli, 1979).

Processes

The workshop lasts two full days. On Day 1, the students discover the forest and gather some precise, objective and professional input about the specific features of the forest. For example, an ONF warden gives them information about the historical and botanical aspects of the environment. Often the students are surprised to learn that the forest of Brumath has hardly anything "natural". From the Celtic and Roman times, roads were crossing the area and many Celtic tombs (tumuli) are present all around. The forest of Brumath is the result of the numerous elaborations and interventions of mankind like most of the European forests. They also learn that the most dangerous animal of the forest is not larger than 1 mm; a tick transmitting very often the Lyme disease as the Rhine valley is a highly infected region.

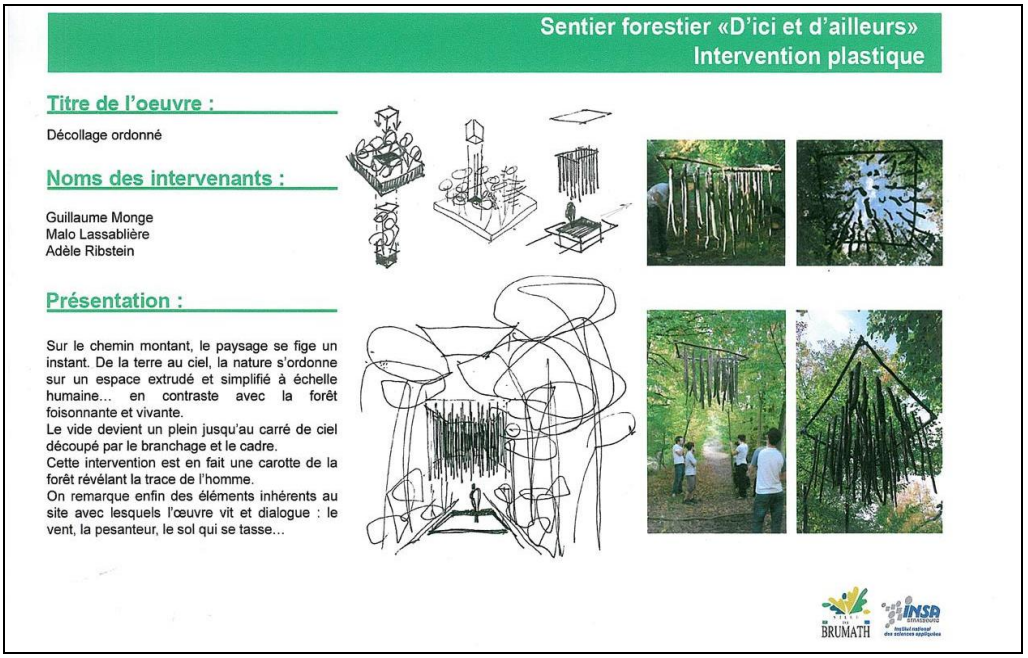


Figure 4. *Example of Data Collection by Drawings and Photographs, 2009*
Source: Guillaume Monge, Malo Lassablière, Adèle Ribstein.

After this informative session, the students are invited to visit the forest on their own in small groups of 2 or 3. They explore the place physically and begin to understand its space and the density of the vegetation. They observe the colours, the orientation and configuration of the numerous paths. Then, the students are asked to capture these features and their own sensations in drawings and photographs (Figure 4) to eventually select the particular place to develop their project. They are supposed to focus on one aspect of the chosen place such as the density of the forest, a path leading somewhere, a peculiar point of view, a rotten tree, a hollow or hill for exemple. Somehow the forest whispers the choice of the site to the students' ears, which is rarely the case in the architecture practice where most of the time the site is 'given' to the the architect. The sensory experience of the site gives the first impulsion and allows the students to trust somehow their

feelings before resolving technical problems. It was noticed that this pedagogical approach is even more efficient for students who have had very little contact with artistic approaches before.

After this subjective phase follows a more rational one. The students start ela**b**orating on their project. It should interact with their chosen site. They are given a list of words to help them to find guidelines for the conception of their work. These words consist of verbs and nouns that pose conditions to the design development because of their meaning (Table 1). On one hand verbs indicate an action, and on the other, the nouns refer to the subjective perception of space.

Table 1. *List of Words to Inspire Design Development*

to reveal	hierarchy
to dialogue	framework
to extend	point of view
to oppose	perspective
to reflect	staging
to elevate	horizon
to densify	earth
to penetrate	heaven
to graft	metamorphosis

Using traditional means of architectural expression such as perspective drawings, sketches, plans, cross sections and schemes, the main idea at this point is for the students to conceptualise their project and develop the design proposal. Once this is achieved, the building phase can start.

Day 2 is basically about the construction of the art installations. The city of Brumath lends some gardening tools (rakes, picks, spades and secateurs); SNIAS provides hammers, saws and nails to facilitate more detailed work, whilst students may bring some hemp strings and other biodegradable materials. However their main resource is what they can find in the forest. They may use leaves and wood from fallen trees. They are also encouraged to use the abundantly found twigs from the Prunus Serotina, a plant that has unfortunately invaded the Brumath forest since the 1999 cyclone and has become a serious problem for the regeneration of the forest as it grows easily and very quickly on every open space. During the entire constructing process the teaching team attends to the students and very often the project changes due to the confrontation with the material. It is really a case of learning by doing and experiencing the difference between knowledge and skills.

Results and Discussion

Within the period of 2008-2018, 157 art installations were produced with the same teaching leadership and course convenor, who is an artist as well. The following lines discuss the main emerging elements from the analysis made about the process and the outcomes of the workshop according to our three criteria.

Theme: The Forest as Inspiration, Genius Loci

Nature as inspiration for artists is not a new finding and many have already written about it.[18] However, what is interesting here concerns the repetition of the exercise on the same site over a ten-year period and how recurring themes appear when overviewing all the produced projects. Namely they are geometry, anamorphosis, micro or macro scale, perspectives, archetypes (shelters, huts, nests), inventing architecture and the poetic approach. Typically geometrical shapes such as triangles or squares are used to contrast with the natural environment and its organic features (Figure 5). 'Anamorphosis' suggests a playful relationship between the artist and the visitor; basically the artist challenges the spectator to find the right spot from which the work has to be viewed (Figure 6).

Figures 5 and 6. (left) *Examples of Geometry* (right) *Anamorphosis*
Source: (left) Anke Vrijs (right) Michèle Heussner.

In the 'micro macro scale' projects, the students try to emphasize and reveal the visual relationship between small and large scale objects (small pieces of wood and the surrounding forest for example) (Figure 7). By offering the focus on the different scales, they direct the sensory experience from detail to comprehensive understanding of the space. 'Perspective' category is the most popular of the topics chosen by the students. The forest with its increasing density and the fire paths are easily an invitation to work with vanishing points (Figure 8). For 'archetypes', it means that students were using references traditionally associated with forests, such as huts or nests (Figure 9).

18. Gilles Tiberghien, *Nature, Art, Paysage* (Arles: Actes Sud, 2001); Franck Guêné, *De l'Idée Architectural aux Lieux de l'Architecture. L'Approche du Lieu Comme Révélateur de la Nature du Regard de l'Architecture sur le Monde* (PhD Thesis, University of Strasbourg, 2009); Hans-Dieter Schaal, *Landscape as Inspiration* (Berlin: Ernst & Sohn, 1994); Jean-Noël Bret and Yolaine Escande, *Le Paysage, Entre Art et Nature* (Rennes: Presses Universitaires, 2017).

Figures 7 and 8. (left) *Micro Macro Scale* (right) *Perspectives*
Source: Anke Vrijs.

'Inventing architecture' often reflected the desire of the students to build up their work with strong architectural models like building arches (Figure 9) or even more complicated structures inspired by tensed fabric (Figure 10). The 'poetic approach' is perhaps the most artistic way of working in the sense that most of the time students freed themselves from references. It resulted in incredible demonstration of meticulous and various projects. Some for example attached hundreds of small red leaves one by one by hairs on twigs or other designed floating triangles (Figure 11).

Figures 9 and 10. (left) *Archetypes* (right) *Inventing Architecture*
Source: Anke Vrijs.

Figure 11. *Examples of the Poetic Approach*
Source: Anke Vrijs.

Importantly, all of these themes are closely intertwined with the site features, as they are the expression of a reaction to the place. The recurrence raised several questions: is it a result of a normative way of teaching or in contrary of the interdisciplinary approach? Also, how does one evaluate the reaction to a site? When looking at the outcomes of the poetic approach sub-category, one might think it is quite free from the site features, but is it really so?

Furthemore, since the aim was also to evaluate how much these themes are disciplinary-bound, three themes clearly are (geometry, archetypes, and inventing architecture), whilst the four others (anamorphosis, micro or macro scale, perspectives, and the poetic approach) have drawn from the landscape art discipline to different levels. As such, it can be concluded that the interdisciplinary approach had quite an influence on the student outcomes and demonstrated that the students integrated their knowledge and methods from other disciplines.

Levels of Transdisciplinarity

Experimenting on small scale objects during a very short period means being able to react and act spontaneously in terms of planning. This spontaneity though is not (only) based on intuition, but can be the result of "transdisciplinarity as a strategy to reach a certain form of unity between subjective and objective knowledge."[19] Student work corroborates this statement, as do the student approaches in developing their work.

For example, assembling different elements on a drawing looks often very easy, but how does it work out in reality when two pieces of wood have to be fixed together? Two projects of seat creation express this dilemma. In the first case (2013), the drawing expresses a certain quality of comfort for the seat (Figure 12). In reality however, the backrest was badly fixed, thus preventing the seat to be truly comfortable. The students knew how a seat looks like, but did not manage to find a compromise between the simple material (wood), the limited number and type of tools they could use (hammer and saw) and the time they had to realize the object. In the second example from 2008, the photo shows a nice design, small

19. Resweber, *Le Pari de la Transdisciplinarité. Vers l'Intégration des Savoirs,* 2000, 48.

twigs are regularly disposed and the seat looks very convenient (Figure 13). Yet the seat itself broke as soon as the first person tried to sit on it for the dimensions of the pieces of wood were completely underestimated. In both cases, the students learned the hard way that some specific skills are to be sought outside their disciplinary knowledge. In their case, they missed knowing the employed material which means being familiar with the weight, composition, flexibility, and resistance, for instance. They also lacked time or even understanding to look for adequate solutions to use this material and to test them before the elaboration of the final outcome.

Figures 12 and 13. (left) *Drawings for a Chair Project, 2013* (right) *Built Chair, 2008*
Source: (left) Benoît de Cillia, Camille Duval, Caroline Moroni, Rafal Kaczmarek (right) Anke Vrijs.

Secondly we propose to look at two installations dating both from 2015. One is a sort of eyepiece installed at the border of the main path in order to focus the sight on a small tree situated a couple of meters away (Figure 14). The title is "Visible mais inaccessible" (Visible without access). Small twigs are assembled by wire in an apparently chaotic way around a circle. The way this object was made seemed to be very resistant. Two years after the installation it was still perfectly hanging between the branches. The center shows up a very high density of twigs which makes the piece very resistant. The elegance is created by the geometry contrasting with the more dispersed order of the outer twigs and the surrounding trees. In terms of organisation, this work indicates a clear limit, a transparent and light limit, though impressive and solid. Here the simple material of wooden twigs shows that the flimsiness of the structure is an illusion. The way the twigs are fixed is highly sophisticated and the result of much experience. Due to the later, doing and undoing, fixing in this or that way, the students eventually managed to carry out a perfect object according to their design.

Figure 14. *Installation, 2015*
Source: Anke Vrijs.

The installation named "Ruban en ballade" (Travelling Ribbon), shows equivalent qualities. A simple ribbon made out of four strings crosses delicately a part of the forest. The distance in between the different strings is inspired by the width of the grey marks on the trees used by the National Forest Office to limit the different parcels of land. The idea was to introduce a simple line in the more or less chaotic forest. In this project the students acted in a clear artistic attitude drawing a long line in the forest. The difficulty was to create the impression of a very straight line. The risk was that this line would be slack and flabby because of the more or less elastic strings they intended to fix on poles grounded into the soil. As it is forbidden to put nails directly in the trees to fix the strings, the students had to imagine how they could "translate" their design into the reality of the place. They took the option for a "low tech" solution (Figure 15). They attached a piece of wood with two wires on the tree, which allowed them to fix the strings then with four nails in the piece of wood without damaging the tree. This simple solution shows the inventiveness of the four students within the many limiting factors

- Not to damage the trees.
- Working with poor and few materials.
- Having one and a half days to set up the concept, to test the fixing methods and carrying out the project.

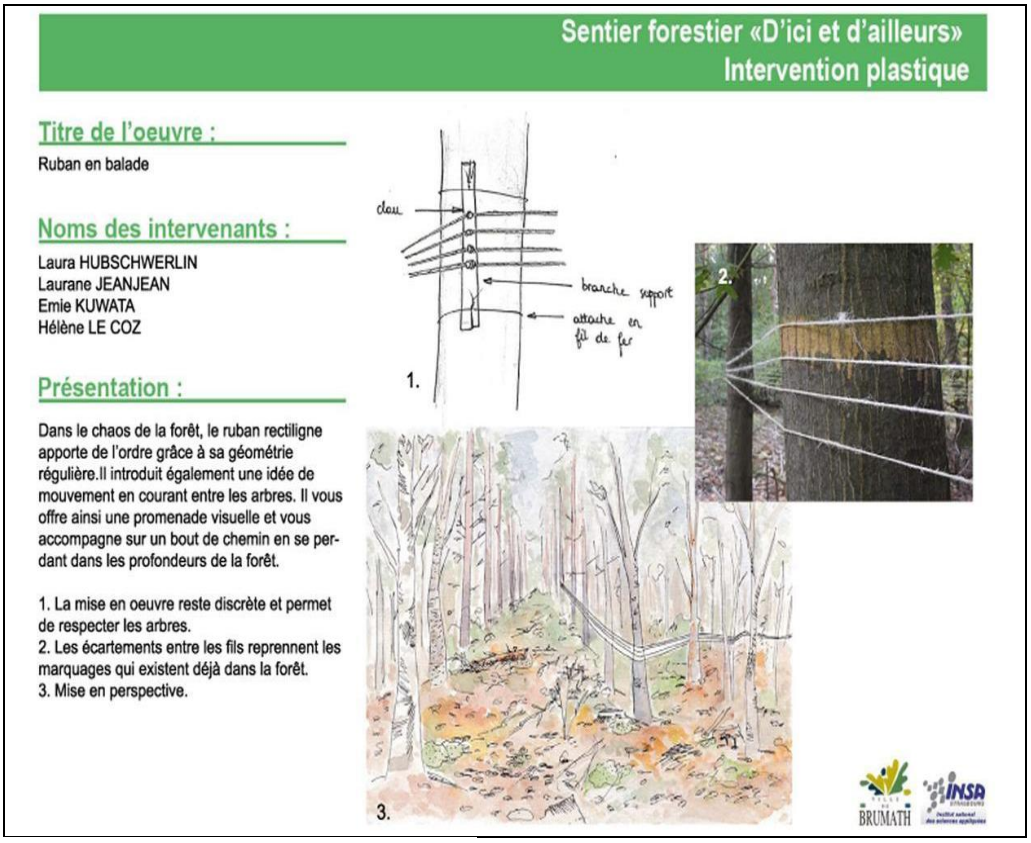


Figure 15. *Example of Project, 2015*
Source: Laura Hubschwerlin, Laurane Jeanjean, Emie Kuwata, Hélène Le Coz.

This set of constraints integrated by the students made them act beyond disciplinary perspectives of art and architecture, without being conscious of it in the beginning. They combined knowledge and skills, activated their problem-solving competencies and drew on their own experience to achieve a satisfying result. This is exactly what architects are supposed to implement all their life! In this case, testing the production of small scale art installations in a very short time, allowed the students to be aware of the complexity of a project and the inherent risks. Almost 100% of the students embraced the transdisciplinarity but not all of them in its entirety. Judging approximately, it could be stated that all used it at the communication stage, and 75% at the conceptualisation, design thinking and process phases. Nearly every student became aware of the importance of transdisciplinary skills, but this was in most cases the result of intense discussions with the teaching staff and critical analysis of their construction stage.

Structural Changes 2008-2018

Other changes also influenced the workshop outcomes. For example, the introduction of a specific theme from 2010 onwards refined the relationship between the site and the art installation. 'Perspective' was the first theme we chose and the results gave a more solid base to the projects (Figure 16).

Figures 16 and 17. (left) *Project, 2010* (right) *Project, 2011*
Source: (left) Anke Vrijs (right) Klaus Stöber

Another aspect concerns the influence of the forest's changes. In 2008, when the land art workshop started, the forest of Brumath still showed signs of the 1999 cyclone. Today, ten years later, the forest has recovered, the tree height and density have increased. The Sequoia trees still visible in 2008 for example disappeared little by little completely in the mass of the surrounding trees (Figure 18). These changes influenced the students work as the students often reacted towards the higher density of the forest by choosing dark spots within the forest to develop their projects.

In 2011 and 2012 the city of Brumath decided to organize a festival integrating the land art projects. These were illuminated during the night (Figure 17). It also transformed the way to produce and think about the art installation since it introduced the notion of a night experience.

Another important change took place in 2013 when the workshop became an integral part of the official European Architecture Days Event. This event is organised around a yearly topic that drives all their conferences and exhibitions. For example in 2013 it was 'Metamorphosis', in 2014 'Enlightened architecture', and in 2015 'Perspectives'. This enabled the students to reduce their focus and not to be too overwhelmed by the forest and, importantly, to show how rich and diverse one focus can be. The public seems to appreciate this variety around one

unique theme, as there are more and more visitors and press coverage. Some kind of annual ritual has been instaured for which the Brumath residents are looking forward to the student works. The students' interventions not only transform the forest, but they renew the relationship between the population and this natural environment.

Figure 18: *The Same Site at 3 Years Interval* (left) *2008 and* (right) *2011*
Source: Anke Vrijs.

In conclusion, it is quite evident that these structural changes have impacted the outcomes, yet it did not fundamentally disturb the inter and transdisciplinary approach. On the contrary, it was exacerbated to a new dimension when community became an audience.

Overall, the analysis based on the systematic comparative review of the produced outcomes through three main criteria, shows that even if the course provided interdisciplinary skills, transdisciplinary features are not really present, unless a real critical reflection was actioned.

Conclusions

This research questioned how inter and transdisciplinary skills can be developed through experimenting and learning about the relationship between art and the natural environment. It was found that direct experience with the site

played a crucial role to achieve this, as already discussed by Schramm (2014).[20] However these physical and poetical experiences need training. The land art workshop offers this training and is not only "a fantastic playground" (to use some student wording), but above all a place to test interdisciplinary approaches on small scale installations. The main interest lays in the transferability of the process to larger scales for architectural projects.

Besides, the recurrence of topics within the produced outcomes over the ten-year period also suggests that the approach through sensory experiences, the emotions they create and our ability to connect to places are lovely poetic ideals but can become overwhelming when stepping into the making. In the same way that Christopher Alexander developed a theory on the pattern of language for the built environment (1977),[21] and Tom Turner transposed it for cities, to be understood as landscapes (1986),[22] students integrated knowledge and methods from different disciplines, using a real synthesis of approaches to develop their projects. This interdisciplinary approach becomes interesting when overall it leads to transdisciplinary results, creating a unity of intellectual frameworks beyond the disciplinary perspectives.

Another learning lesson concerns the fact that 'to design is not to make'. To make implies constructive imperatives which call for specific skills and competencies. All architecture students do not have necessary internships on construction worksites throughout their education and yet it seems indispensable to do so, as this research has shown. Through this land art workshop, students understood the difference between the image of the project they designed and the making of the project. Thus it raises the question whether architecture curriculum should be revised to introduce more practical knowledge.

Finally, this study has demonstrated that the place is inspiring as much as it is constraining, and there is a constant iterative process between both, ranging from emotion to rationality. Students had to find the right balance, using both what they had learnt previously, were learning and what they were experiencing. In becoming aware of the decisions they were making and the processes they were using, it was maybe the best way to enhance their interdisciplinary skills.

Bibliography

Alexander, Christopher, Sarah Ishikawa and Murray Silverstein. *A Pattern Language: Towns, Buildings, Construction*. Oxford: University Press, 1977.

[20]. Samantha Schramm, *Land Art. Ortskonzepte und Mediale Vermittlung. Zwischen Site und Nonsite* (Berlin: Reimer, 2014).

[21]. Christopher Alexander, Sarah Ishikawa and Murray Silverstein, *A Pattern Language: Towns, Buildings, Construction* (Oxford: University Press, 1977).

[22]. Tom Turner, *City as landscape: A Post-Postmodern View of Design and Planning* (London and New York: Taylor & Francis, 1996).

Atfield, Gaby and Kate Purcell. "Graduate Labour Market Supply and Demand: Final Year Students' Perceptions of the Skills they have to Offer and the Skills Employers Seek." *Futuretrack Working Paper* 4 (2010).

Bret, Jean-Noël and Yolaine Escande. *Le Paysage, Entre Art et Nature.* [Landscape, between Art and Nature.] Rennes: Presses Universitaires, 2017.

Boix Mansilla, Veronica, William C. Miller, William. C. and Howard Gardner. "On Disciplinary Lenses and Interdisciplinary Work." In *Interdisciplinary Curriculum: Challenges of Implementation*. Edited by S. Wineburg and P. Grossman. New York: Teachers College Press, 2000.

Dauge, Yves. *Rapport d'Information Fait au Nom de la Commission des Affaires Culturelles sur les Métiers de l'Architecture. Annexe au Procès-verbal de la Séance du Sénat du 16 Novembre 2004*. [Information Report on the Professions of Architecture by the Cultural Commission. Annexe of the Memorandum of the Senate Session of November 16, 2004.] http://www.senat.fr/rap/r04-064/r04-0641.pdf. [Accessed August 11, 2015].

El Hanandeh, Ali, Karine Dupré and Benoit Gilbert. "Enriching Architecture Courses with Engineering Knowledge." *AAEE 2013 Proceedings* (2013).

Frapier, Christel. *Les Ingénieurs-Conseils dans l'Architecture en France, 1945-1975: Réseaux et Internationalisation du Savoir Technique Volume I: Texte*. [Advice-Engineers for Architecture in France, 1945-1975: Network and Internationalisation in Technical Knowledge Volume I: Text.] PhD Thesis. University of Paris I, 2009.

Guêné, Franck. *De l'Idée Architecturale aux Lieux de l'Architecture. L'Approche du Lieu comme Révélateur de la Nature du Regard de l'Architecture sur le Monde.* [From the Architectural Idea to Architectural Place: an Approach to the Place which Reveals the Architect's Standpoint and View of the world.] PhD Thesis. Strasbourg: University of Strasbourg, 2009.

Jensenius, Alexander. *Disciplinarities: Intra, Cross, Multi, Inter, Trans*. http://www.arj.no/2012/03/12/disciplinarities-2/. [Accessed May 20, 2018.]

Klein, Julie. *Interdisciplinarity: History, Theory, and Practice*. Detroit: Wayne State University Press, 1990.

Lemoine, Serge. *L'Art dans le Paysage du Tramway d'Orléans*. [Art in the Landscape of the Tramway in Orléans.] Paris: Editions des Musées Nationaux, 2002.

Newell, William. "Decision Making in Interdisciplinary Studies." In *Handbook of Decision Making*. Edited by G. Morçöl. New York: CRC, 2007.

Norberg-Schulz, Christian. *Genius Loci: Towards a Phenomenology of Architecture*. New York: Rizzoli, 1979.

Office National des Forêts. "Introduction, Aménagement Forestier Forêt Communale de Brumath." [Introduction, Forest Management in Brumath.] Bas-Rhin, 2014, 2013-2032. https://bit.ly/2QFa5po. [Accessed June 10, 2018].

Paul, Patrick and Gaston Pineau. *Transdisciplinarité et Formation*. [Transdisciplinarity and Education.] Paris: L'Harmattan, 2005.

Resweber, Jean-Paul. *Le Pari de la Transdisciplinarité. Vers l'Intégration des Savoirs.* [On Transdisciplinarity. Towards an Integration of Knowledge.] Paris: L'Harmattan, 2000.

Schaal, Hans-Dieter. *Landscape as Inspiration.* Berlin: Ernst & Sohn, 1994.

Schramm, Samantha. *Land Art. Ortskonzepte und Mediale Vermittlung. Zwischen Site und Nonsite.* [Land Art. Concept of Places and Mediation. Between Site and Nonsite.] Berlin: Reimer, 2014.

Shannon, Susan and John Paul Swift. "Employing Graduate Attribute Mapping to Bridge the Divide from Education to Industry." *Proceedings of 44th Annual Conference of*

the Architectural Science Association, ANZASCA. Auckland, NZ: United Institute of Technology, 2010.

Spelt, Elisabeth, Harm J. A. Biemans, Hilde Tobi, Pieternel Luning and Matthijs Mulder. "Teaching and Learning in Interdisciplinary Higher Education: A Systematic Review." *Education Psychology Review* 21, no. 4 (2009): 365-378.

Stember, Marilyn. "Advancing the Social Sciences through the Interdisciplinary Entreprise." *The Social Science Journal* 28, no. 1 (1991): 1-14.

Tapie, Guy. *Les Architectes: Mutations d'une Profession. Logiques Sociales*. [Architects: Changes of a Profession. Social Logics.] Paris: L'Harmattan. 2000.

Tiberghien, Gilles. *Nature, Art, Paysage.* [Nature, Art, Landscape.] Arles: Actes Sud, 2001.

Tucker, Richard and Hisham Elkadi. "Teaching in Practice: Work Integrated Design Learning and Practice Readiness for Architecture Students." *Proceedings of Association of Architecture Schools of Australasia, AASA*. Melbourne, Australia, 2011, 341-354.

Turner, Tom. *City as Landscape: A Post-Postmodern View of Design and Planning*. London and New York: Taylor & Francis, 1996.

Van Merriënboer, Jeroen and Getrudes Johannes. *Training Complex Cognitive Skills: A Four-Component Instructional Design Model for Technical tTaining*. Englewood Cliffs: Educational Technology, 1997.