THE DEFINITION OF A PROGRAMME THAT ELABORATES AN ARCHITECTURAL PROJECT

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THEORY BY DESIGN SYSTEMS

Maurizio Bradaschia: DEFINICIJA PROGRAMA, KI OPISUJE ARHITEKTURNI PROJEKT

THE DEFINITION OF A PROGRAMME THAT ELABORATES AN ARCHITECTURAL PROJECT

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The definition of a programme, elaborating an architectonical project, is the first step that a designer takes to solve a complicated problem, giving multiple and many answers, to reach one of the possible synthesis: the project.

There are many ways and possible methods.

It's not easy to summarize a method. Usually, before the installation of a program, you have to know the project theme and the context in which it will be realized. The acquisition and implementation of this knowledge can be obtained through direct researches (surveys, evaluations, etc.) or indirect researches (documentary researches, archive surveys, library, etc.) and morphological and typological analysis of the context being transformed.

Context, as reminded by Ludovico Quaroni in Analysis and project of his "A building project. Eight lessons of architecture." referred to physical and human reality (but political as well) of the environment.

Part of the programme are also, of course, all those preliminary data, inferable from the superior regulation and from urban planning restrictions existing on the transforming area, but this is not the aspect that has to be developed.

What seems more important is the type of the existing urban fabric, which characterizes the context in which the project is inserted, as the town plan, as dimensional relationships between solids and voids (of the building, of the façade, etc.), between the length of the streets and the height of the perimeter continuous facades, … substantial questions, especially in the case of the historical context which characterizes most of the Italian regions, and that of many other countries, not only in Europe.

Also, the belonging to a specific historical or stylistic period, the features of the urban shape (trivialising: considering the case of cities like Venice, Rome or Trieste, characterized by an explicit neoclassic koinè, or the colonnades in Bologna, the great boulevards of Paris, the slums of Lagos, Beijing,… despite an exportable method, the approach is, necessarily, different). And also: the morphological survey, the architectonical emergency, the presence of specific typological characteristics , which are the face, the nature and the substance of a context.

Typological characteristics which don't exclusively refer to dimensional shapes, spaces and relationships, but also to building techniques, to technologies more or less locally used, etc.

However, these analyses shouldn't be misunderstood, or they shouldn't lead to dangerous paths like the one of the "mimesis", of the "philological rescue" of the pre-existing features, of the "historical counterfeit".

These analyses also have to let the architect create a correct and coherent reference framework, from which his own project starts or, maybe, deny the context and its characteristics.

The intrinsic historical memory of a place can actually suggest the structure of a project hypothesis, through an accurate analysis of the morphological and typological characteristics of the settlement context.

For example, in continuity with the pre-existing features and to give value to the environmental morphological factors, the study of the physical-environmental and geometric-settlement conditions can determine the choice of a specific typical-morphological shape of the building or of the building materials used, and this choice would be determined by perceptual and visual factors of the environment (margins, barriers, views, emergencies) or of the surrounding landscape (urban, suburban, …) or by the prevalent trend.

We have to say, though, that indications and suggestions given by the history of the place or by the place itself are not fundamental restrictions for the project, but they are important, recognized elements, an useful and necessary component of consideration, which can make up architect's mind, and can make him get the permanent features and (re)interpret them.

Therefore, the architect has the responsibility of suggesting or realizing the project, after reading and interpreting collected data, following his own inclination, culture and experience.

It's not just an "aesthetical" question (on which was based the representative will of political classes, who contribute to the configuration of the historical city), but it's more a question relied to the concept of cultural sophistication.

Project is, however, subjected to the idea.

It's almost every time the creature of an idea which, growing up during an indefinite and indeterminable period of time, develops itself in the architect's mind, until it finally becomes one or more sketches, synthetic and instinctive, in one go, which first define the idea.

The sketch (no matter if good or bad) is a revealing tool, a knowledge tool. Usually, drawing is, for an architect, for an engineer or for a designer the starting point of a survey.

The sketch helps understand, perceive and organize the different scaling ups of the project.

An example: drawing, representing with sketches a city, you can redefine its systems, the urban rules, and represent its historical evolution. Drawing helps, it's an excellent tool to define a shapeless place, or a not very defined one.

Architecture can be referred to as a crossbreeding of drawing, thoughts and writing.

Many designers write a lot. In their works the first step is often that of understanding how to define, in a "literary" way, the project, through words and emotions, as Aldo Rossi used to do. The Architect was interested in writing and in building.

Once this phase of drawings and sketches is done, hanging between the literality and the drawing, the building starts to be thought as construction.

I think that the execution of many preliminary sketches, many conceptual models, and representing the idea through spatial forms and diagrams is fundamental. Starting from a programme, previously planned, defining the "outline boundaries", the meta-project pre-conditions, to better understand client's needs.

And the realization of a functional scheme is fundamental as well, to define functions' organogram; it also allows spaces and connections between them to be balanced.

Then, it's time for a volumetric drawing, for the definition of the three-dimensional space, through the CAD drawing, followed by other sketches, to correct errors and make the necessary adjustments.

The final step is the definition of the project on computer.

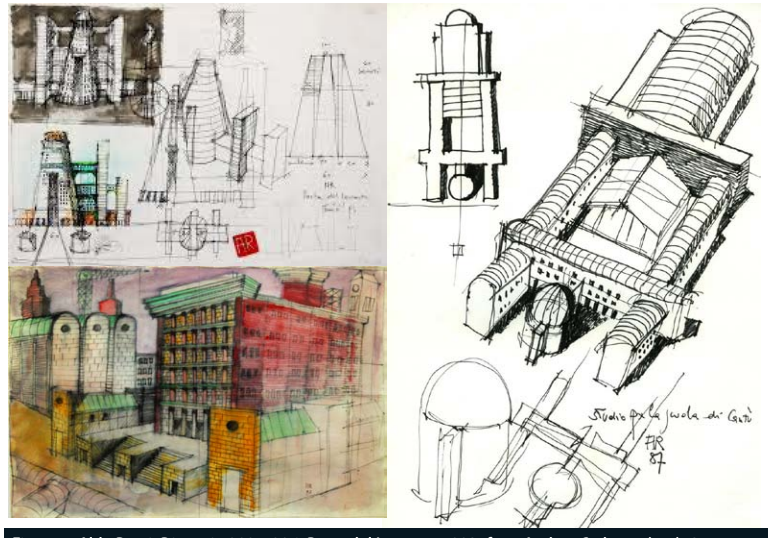

Figure 1: Aldo Rossi: Disegni 1980-1996, Porta del Levante, 1993, foto: Andrea Corbetta (top); 2. Aldo Rossi: Fukuoka, 1987, foto: Andrea Corbetta (bottom); Aldo Rossi: La nuova palestra di Cantù, 1994, foto: Andrea Corbetta

But the original idea of the project, after all, is fixed in the meta-design sketch. The sketch, the freehand drawing is more expressive, more human, and true.

I think that's very important to reflect on the project, think about it, before doing anything else.

The use of different methods can be helpful: freehand drawings, the renderings, the creation of models can help to better understand proportions, volumes and the project theme.

Sketches and drawings allow to think about something that oversteps the building – not exclusively as Aaron Betsky meant – something that anticipates its conception.

The concentration on the relationships between mind and hand is fundamental. Freehand drawing is exactly what you want, on a piece of paper.

The project process and the creation of the building can be linked to every phase between the idea (of the project) and the accomplished work.

They include the meta-design sketches, the collection of data and hypothesis that lead, with survey and analysis graphics, to the prefiguration of the first drafts of what will become the design. Design which, developed on various scales, will lead, with the executive project, to the readiness and realization of the work, under the supervision of one or more people who, as directors of the work, will follow every step of its development, from the artistic, architectonical, technical and constructive, technologic and economic point of view, to accomplish the work under the artistic-architectonic aspects.

Provided that Architecture (and every other discipline which calls for a synthesis elaboration) is, as Hannes Meyer used to say, "a problem of knowledge", there are many and different methodological approaches that lead an architect to the realization of a project.

One of these, still possible and credible, is with every possible update, the one drawn by the same in 1928 and which, starting from twelve points/themes:

1. Sexual life, 2. Sleeping habits 3. Pets, 4. Gardening, 5. Personal care, 6. Weather protection, 7. House care 8. Car maintenance, 9. Cooking, 10. Heating,11. Exposure to sun, 12. Services, pointed the reasons for the building of a house.

Meyer thought that, analysing someone's everyday routine, it's possible to obtain a functional diagram on which the project should be planned.

The two main principles of building were the functional diagram and the economic programme.

The economic programme still remains, now more then ever, one of the reasons that rule the feasibility of any project.

The functional diagram is a valid starting point for the design of a work. It's, essentially, the creation of a group of quadrangular or rectangular shaped surfaces, which represent the dimensions in scale of the functions/purposes of the spaces of the building.

These surfaces will be linked between each other, highlighting ways and possible connections to organize the series of volumetric/planimetric spaces which will dimensionally make the building up.

It's a very simple and schematic procedure which, following similar logics, can lead, already from the beginning, to very different and varied solutions.

Different because it's different the importance that every single architect gives to spaces and functions inside of a given architectonic type, regarding many different possible questions (geographic location, nature of the place, culture, building system, uses, etc.).

This method, very common in Engineering faculty, is not very developed in architecture schools, maybe because of the (unfounded) fear of an excessive and reductionist schematization of the project.

Another approach is geometry.

I personally would point out two fundamental pillars of geometry, as project tools: the first one, out-dated, referred to the research of reasons and proportions linked to harmonic relationships (golden ratio, etc. ..); the second one, very popular from the beginning of 80s, referred to the context "structure geometries".

Talking about the first one, which can remind a conception of project typical of the Vitruvian triad, was very popular until the end of 80s.

Utilitas, *firmitas* and *venustas* are the categories that we have to refer to.

The plan [1], which generates the project, is the place where the game was played.

Utility, solidity and beauty were considered, almost by everyone, necessary and essential principles for the project.

Questions and themes that could have been seen in different ways, and then (re)interpreted and adapted to the contemporary, to realize "useful", "solid" buildings, and though not "beautiful", congruent with the theme, appropriate, correct.

The architecture, in many authors' point of view, could be expressed through the synthesis of these concepts.

And they could still be interesting, nowadays, if put in the right light: utility, compliance and congruence with the theme are the basis of every project operation, especially nowadays, where planet "urgencies" require less wastage and useless wasting of areas. Designing and building have to be useful for the community.

Buildings don't have to be firm and solid just to comply with rules and requirements of the building science, but they also have to last in time, maintaining the original quality characteristics. They have, therefore, to be conceived, designed and realized in a way to reduce maintenance and repairing costs.

Too much should be said about beauty (and, as Lina Bo Bardi said, a possible Right to the ugliness).

The key issue is, though, pertinence, accuracy, adequacy, maybe elegance, maybe an aesthetic solution as well. As said by many, adequacy to the time, to the contemporary zeitgeist, to the context (both natural and artificial), to the raumgeist.

It would be very useful to read what Luciano Semerani wrote about this subject, about the "regulatory line " [2] in Lessons of Architectonic Composition, Arsenale, Venezia, 1897:

"The general issue is the regulatory line. Talking about what is conventio-

1 Cfr. The Plan: Le Corbusier, Toward an Architecture, 1920-21:
THE PLAN
The plan is the generator. Without plan, you have lack of order and wilfulness. The plan holds in itself the essence of sensation. The great problems of tomorrow, dictated by collective necessities, put the question of "plan" in a new form. Modern life demands, and is waiting for, a new kind of plan, both for the house and the city.
2 The general issue is the regulatory planning. Talking about what we called the "invisible structure of the architecture", after the plan and the type we have added this: the regulatory planning.
Strictu sensu the regulatory planning is an empirical tool of the project; it shouldn't be so much important. It's a graphic device to empirically control the connection between architectonic elements. It has to be distinguished from the harmonic proportion, which is not the result of an empirical discovery, but it's just the application of a canonical rule. The truth is, however, that debates about numbers, the question of the regulatory planning, the question of the harmonic proportion, they all together come from the conviction of "finding" or "applying", or of "acting" following the rules, not just scientific or classic, but universal.

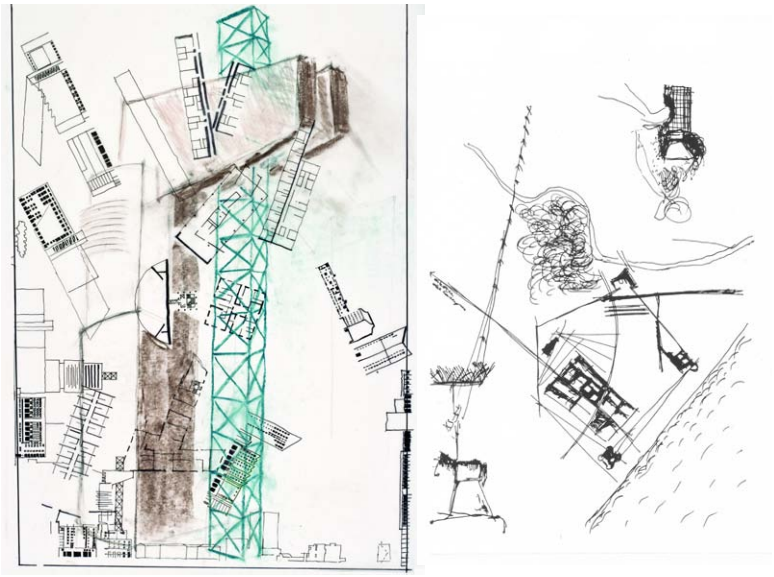

Figure 2: Luciano Semerani: Pesaro Programma, 1977

nally called "invisible structure of architecture", after the plan and the type there's the regulatory planning.

For Semerani, this term can be better applied to the first method, to an architecture based on (but not only) harmonic relationships between the parts, to an "Albertian [3]" vision of architecture, based on "concinnitas", to a relationship in which all the elements depend from each other.

The method developed by Le Corbusier in "Regulatory lines", in Towards an Architecture (1929-21):

REGULATORY LINES

The fatal born of architecture.

The commitment to order. The regulatory line is a guarantee against the free will. It's the joy of the spirit.

3 Leon Battista Alberti: "De re edificatoria", IX, book chap. VI (prima ed. 1485).
"... the method we're analysing is based on three main laws: the number, what we mean by saying delimitation, and the collocation. And then, there's another element, which is the result of the connection and the union of all these elements: the shape of beauty shines in it, and we will call it CONCINNITAS, ..."
In Paolo Carpeggiani's point of view, "Leon Battista Alberti transfers to architecture every concern on which his philosophical speculations were based, the method in which every axiom is rejected, everything is verified, it's the will of overcome all the stereotypes.We can see that in his monumental work De re aedificatoria (1443-1452), which has become a real theoretical paradigm in modern age. He elevates architecture, which won't be ars mechanica anymore, to the rank of ars liberalis, he requires the intellectual architect to be able, with a sure and perfect method, to rationally design and practically realize". Project's goal is the beauty of the manufactory and its basis is the concinnitas, "the harmony between every part, in the unity they all take part to, based on a definite rule, so that any change or removal or adding can but change the project in a bad way".

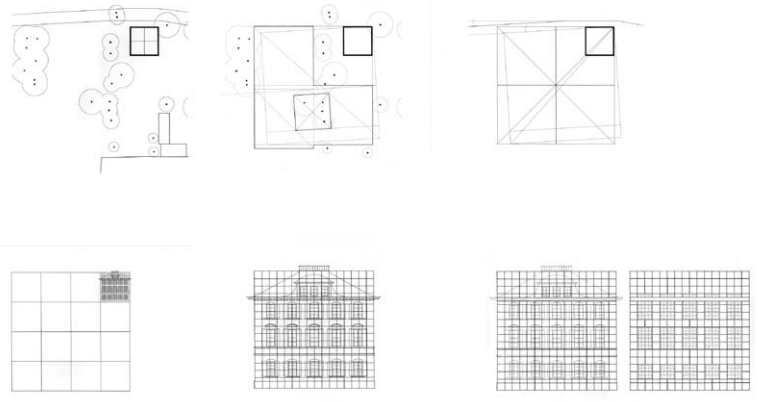

Figure 2: Richard Meier – Decorative Arts Museum, Frankfurt, Germany (1979-85).

The regulatory line is a mean, not a recipe. The choice and modality of expression of the line are integral part of the architectonic creation.

This corbusian "method" was born in '80. The new importance given to "diagrams", opposite to the old concept of "type", makes the architectonic "composition" the most important tool for the architect. The architectonic composition is given the task to solve the question between shape and programme, between shape and function to somehow solve the architecture. JNL Durand said that the first aim of architecture is not the imitation of nature, or the search for the pleasure and aesthetic satisfaction, but the composition, or disposition.

This theory, suggested by Durand, is based on a rigorous compositional method, based on a geometry of axes, to which regularity and symmetry has to be proved, drawn on a grid.

Durand suggests two tools: the undifferentiated grid and the axis.

The modular grid substitutes the old project models of Renaissance and stands out as rigorous designing method based on geometry. This is a scientific method, that reject Laugier's idea about the origins of architecture, and which stands with an attitude of strong scepticism towards history.

The second method attributable to geometry is very simple: starting from various nature arrangements, we set up different gratings which lead, in the plan on in 3D, to the structure of the project.

Nowadays, many historical projects by Richard Meier are the best example to explain this method, starting with Decorative Arts Museum in Frankfurt (1979-85) where a geometric lecture of the pre-existent building leads the author to re-design and structure the new factory, following neo corbusian logics [4].

4 The project contains all the five points of the Corbusier's Architecture, starting with the promenade architectural, which influences the whole project trough meanings and suggestions.

Figure 2: Richard Meier – Getty Center, in Los Angeles (1984-1997).

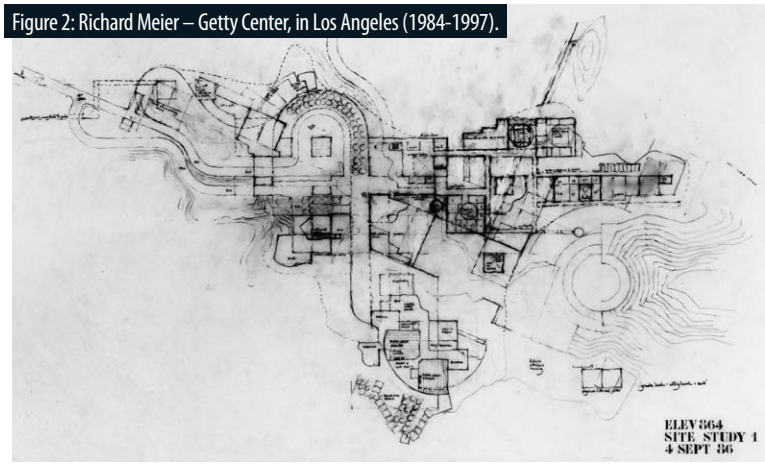

Figure 2: Peter Eisenman - Park or for the Check Point Charlie

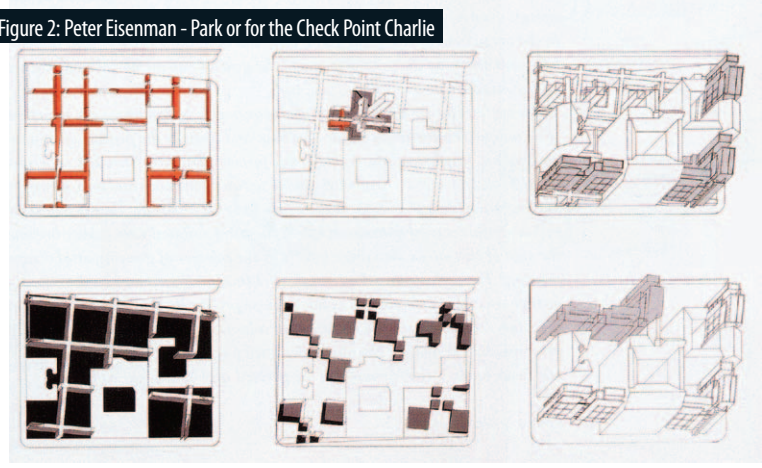

Figure 2: Zvi Hecker - Heinz Galinski School, Berlin; Germany 1995.

Project complies with the typology of the pre-existent Doppelvilla, and the planimetric organization is the result of the intersection of two geometries: the orthogonal grid of villa Metzler and a second grid, which follows the trend of the river Meno.

Villa Metzler is absorbed by the new complex and corresponds to one of the sixteen squares of the new grid, which orders the whole complex.

The other axis, perpendicular to the river, generates a new grid of the same size, but rotated three and a half degrees, overlapped to the one aligned with the villa. -The formal order of the whole structure derives from this grid

Figure 3: Daniel Libeskinc Figure 3: Daniel Libeskind - Hebraic Museum, Berlin

Figure 2: Idis Turato and Sasa Randic - Nursery in Veglia on the island of Krk, Croatia.

Figure 2: Ben van Berkel - Möbius house. 1993, Amsterdam, Nederlands.

overlapping.

The proportions and the dimensions of the holes in the façade are dimensionally evoked to define the modularity of the cladding panels of the new structure.

Here is a very significant example that allows to understand the importance of the "grid" during the predisposition of a project: the great complex of Getty Center, in Los Angeles (1984-1997), where Meier characterizes two axis, planimetricaly rotated twenty-two degrees and a half, corresponding to the two motorways (San Diego Freeway) which are around that area in LA.

The key concepts of the Getty Center project are : Context, Geometry, Structure, Circulation, Outdoor spaces, Landscape.

This geometric system doesn't characterize just the "classicist" approach of neo-modernists and the well-established project approach by Richard Meier, but also that of other authors, methods and systems.

For example, many projects by Peter Eisenman in 90s, or the one for Rebstock Park[5] or for the Check Point Charlie and the Max Reinhardt Haus in Berlin, in 1996, where geometries are multiplied in the space and they're not just material, but immaterial as well: Eisenman himself talks about planes routes that overfly Berlin's sky as new possible paths that could inspire new geometries and architectures.

The regulatory line is enriched, in Eisenman's project, mostly since 90s, by geometries attributable to the concepts of folding and morphing.

The volumes of Eisenman's new projects' buildings are the result of extrusions on fragmented lines that overlie and intersect each other, they fan with various rotations or on different vertical sections, they follow the mechanism of genetic fractals, they develop the issue of the wasted spaces, they result as minerals come to light following sudden telluric movements, they elaborate the topic of the presence-absence of a virtual geometry.

His previous work was based on the Euclid geometry, while later on sinuous, fragmented, bended shapes of fractals (mechanically generated by calculators or discovered in minerals and vegetables), on the geometry of Boolean differences, or on the topological one of the areas' grids.

The theoretical role played by Chomsky in 60s is replaced with the one of Jacques Derrida and the reflexion on the "text" moves from the syntactic absoluteness of the first phase to an interstitial research ("in between"), in which the purpose is the "variety" of meanings, the surprise, the "destabilization".

To be fair, talking about architecture, starting from other considerations (always related, however, to space and geometry experimentations), we can identify in both Formspiel by Wassili Luckardt [6], 1919, and in Weimar by

5 For Rebstockpark, the main conceptual element of the plan is the fold, result of the mathematic model of the concept of fold in chaos theory by René Thoms, and of the fold concept of Gilles Deleuzes. The orthogonal organization system is replaced, in the project, with a system that exceeds the right angle. The surrounding ground has been shaped by two grids, each of which is a torsion of one of the Cartesian plans used to define the limits of the lot. The relationship between the single buildings and between buildings and empty spaces is determined by the fold.

6 From Treccani Encyclopedia: "Luckhardt Wassili – German architect (Berlin 1889 – 1972); he worked with his brother Hans (Berlin 1890 – Bad Wiessee, Bavaria, 1954). Grown surrounded by the Berlin expressionist vanguard, he joined, with his brother, the Arbeistrat für Kunst (1918), to the Novembergruppe, to the Gläserne Kette of B. Taut, and realized idealistic projects which exalt the qualities, the symbolic ones as well, of new materials, especially the glass. From 1924, in cooperation with A. Anker, they focused their research on models for residential construction industry, on the analysis of the problem of the minimal accommodation and on the study of urban-scale interventions (experimental Siedlung in Schorlemer Allee, Berlin, 1925-27; single-family detached homes in Berlin-Rupenhorn, 1928; project for the reconstruction of the Alexanderplatz in Berlin, 1929). After the end of the Second World

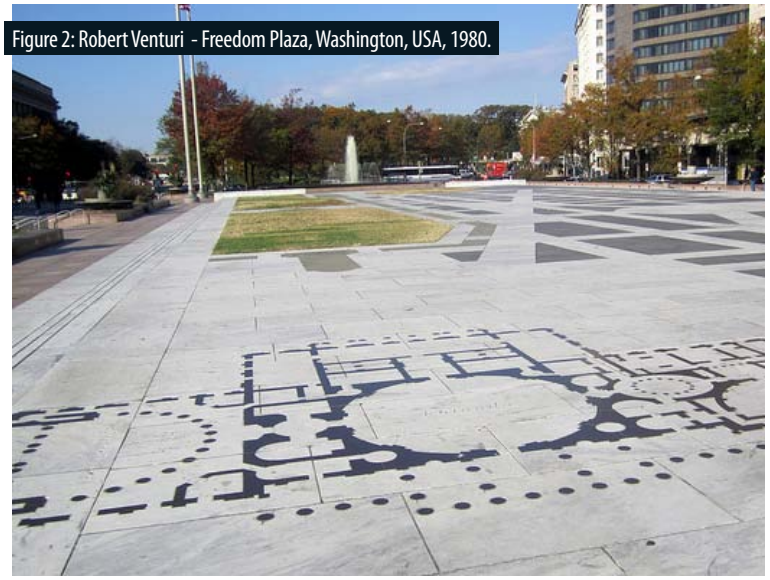

Figure 2: Robert Venturi - Freedom Plaza, Washington, USA, 1980.

Figure 2: Peter Eisenman - theatre for Bruges (top) and the big project for Santiago de Compostela (bottom)

Walter Gropius (1920-22), two archetypes of eisenmanian experimentations.

Geometry, the "regulatory line" is also the basis of all Daniel Libeskind's works.

An very important example is the Hebraic Museum in Berlin, where geometry also plays the role of signifier and signified [7]: Libeskiind called his project between the lines and the voids, which go through the whole museum, are the point where the two lines meet.

Looked from above, the building has a zigzag shape, hence the nickname blitz, that means lightning in German. Its shape reminds of a broken down, destructed Star of David. The building is completely covered by zinc plates and the facades are characterized by very long and thin windows, more similar to lacerations or wounds than to actual windows, randomly arranged.

Zvi Hecker, another Jewish German author, uses similar signifiers and signifieds, starting from geometric rules.

His Heinz Galinski School, the first Hebraic school opened in Berlin after the end of the Second World War, built in 1995, was organized on the open pages of a book; book that doesn't represent just itself, the link with the apprentice, but with the "Scriptures" of Hebraic people.

Another school, the nursery on the island of Krk(Veglia), in Croatia, by Idis Turato and Sasa Randic, is based on geometric reasons. Here the geometric shapes of the dry stonewalls, that characterize the paddocks for sheep farming and, generally, the mean to demarcate the properties, are translated into a planimetric shape.

The pre-existence is evoked and translated trough geometry and also through the conservation of geometric and material relationships.

The nursery, positioned at the edge of the building, appears as a close, introvert island, surrounded by dry stone walls. Inside the complex, conceived as a "nursery-city", paths and empty spaces repeat the shapes and the relationships of the insular village of Venetian origin.

The approach and the theme are different in Ben van Berkel's Möbius.

War, they restart their activity, exemplar expression of the international style of the post-war: city of Berlin pavilion for the exhibition Constructa in Hannover (1951); houses organized in line for the Interbau in Berlin (Hansaviertel, 1957); the Town Hall in Brema (1961-66); the Institutes of Plant Physiology and Veterinary (1963-68) of the Freie Universität of Berlin. We can mention: Zur neuen Wohnform (1930, in collab. with A. Anker) e Lichtarchitektur (1956, in collab. with W. W. Köhler)".

7 The museum doesn't have an independent entrance from the street, you have to enter through the next historical building of Berlin Museum.
The two buildings are linked through a stairway and an underground path, which symbolizes the union and link between Hebraic and German histories. The stairway leads to a basement, made of three corridors, metaphor of different destinies of Hebraic people: the Holocaust axis leads to an empty tower, called Holocaust Tower: the Exile axis leads to an outdoor garden, called Exile Garden, characterized by 49 quadrangular pillars; the continuity axis, linked to the other two corridors, which represents the Jewish stay in Germany despite the Holocaust and Exile. This axis leads to a stairway, which, in turn, leads to the main building. The entrance to the museum is intentionally long and difficult, meant to transmit the visitor the feelings of challenge and extreme difficulty that characterizes Hebraic history.

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House, where Möbius strip characterizes the building and its function/use. The diagram itself (the "regulatory line" on which the project is adjusted), transposed into in constructed architecture, represents the life cycle in the daily 24 hours.

In 1993, a Dutch young couple commissioned Ben van Berkel the project of a "house that should have represented an innovation, being the point of reference in architecture panorama". The project, developed in six years, was based on the studies of the famous German mathematician who gave the name to the house. The building, positioned in a residential area in Amsterdam, is surrounded by a green landscape. Ben van Berkel understood that he had a challenge: responding to the personal needs of the young couple, who had its own working life, integrating it with the relational needs: the house had to solve questions about sleeping, socializing, living with the family, about the needs of the single individual. Because of that, time and duration notions were fundamental. The idea was, then, to realize a life diagram during the whole day. The whole scheme was connected to the Möbius strip, which represents the infinite, turning its own faces in a continuous and unlimited curved surface.

Van Berkel could, through Möbius strip, synthetize the agreed programme in the house, integrating it and making it coincide with the structure and the paths inside of the building itself. The movement, through the built continuous slab, goes along with the totality of daily life, the set of activities. The strip, organized on three levels, contains two offices, three bedroom, one common room, a kitchen, a living room, broom closets and a greenhouse on the top. Glass walls integrate the house in the surrounding space. The building is dynamic, it seems in constant movement, thanks to the materials used and its geometry.

The regulatory line, in this case, coincides with a model, a diagrammatic idea, which connects the project itself to the Haus Wittgenstein [8] (1925-28), and to the more recent project operations based on "diagrammatic" rules.

And, also, the basis of the Freedom Plaza's project, in Washington, by Robert Venturi, is based on geometric reasons (less conceptually complex). Here, the floor of the whole Plaza is the on scale- copy of an area of the city. Inaugurated in 1980, the plaza is composed by simple but effective elements: it copies the plan of the city realized in 1887 by Pierre l'Enfant, using a bicolour granite (black and white), with green areas and bronze drawings. It's, somehow, a turned project, compared to the grids used for urban orientations: it's the city the one which is reduced to plaza and the plaza which, representing the city, declares its own belonging to it.

The "geometric" planning, arranged on regulatory tracks, belongs to most of the architectonic planning of history, and has a great influence, more or less emphasized, in almost every author of modern and contemporary ages.

However, it's interesting the answer given by many architects, looking, in non Euclid geometries, for the key or, better, a new project planning: it's the search for the space with an unspecified number of dimensions, as the search for invisible geometries positioned or identified in border, margin or friction areas between adjacent plans. And it's interesting as well the answer that many authors try to give about the individuation of new possible limits and superimpositions between phenomenal world and diagrammatic geometry.

Again, Peter Eisenman's[9] projects are quite interesting, especially two of them: the new theatre for Bruges and the big project for Santiago de Compostela. Eisenman sets the New Theatre in Bruges using tidal streams, here characterized by big ranges, making the building directly arise from the folds in the ground, so that it becomes integral part of the landscape, an element that joins and connects the park and the square. The building, composed by two wings connected with each other in the basement, is completely integrated in the surrounding park. Eisenman, through the use of a new type of regulatory track, introduces a new type of building, rejecting and in opposition with the traditional relationship between ground and building. In Bruges, the Architect cancels this relationship, and the one between building-context: work and context are reunited in a total continuity.

He tries, in the project for the Cultural Centre in Santiago de Compostela, Spain, to realize an even stronger connection between context and architecture: the designer draws three buildings completely integrated to the ground, engraved in the land. The context and the landscape, after overcoming Euclidian geometry, become materials for the construction of the new architecture, a kind of fractal "budding".

Other architects, around the end of '90, use the same fractal budding and give life to the so-called "blob architecture".

Among them, we have to remember Greg Lynn, in whose work the distance between the imaginary and the real is cancelled, creating a liquid and immaterial architecture. He introduced, from the end of 90s, after abandoning the traditional geometry, a new way of conceiving, drawing and representing architecture. Thanks to the architect, architecture became dynamic, lively, starting from the planning conception.

Dynamicity, centrality of the point of view, animation are the basis of a research which, on a design level, abandoned the meta project sketch, to find in mouse and keyboard the new tools with which trying a new, innovative approach to the project.

It's the landscape of the topological geometry [10], the passing of the Carte-

8 The house that Ludwig Wittgenstein commissioned to the architect Paul Engelmann for his sister Margaret, in Vienna, in 1925. The house, finished in 1928, is based on precise numeric relations that control the construction of three cubic blocks placed side by side. Wittgenstein himself took care of it for two years, searching for absolute perfections in harmonic relations between the parts and the whole.

9 "A diagram, in architecture, can be seen as a double system that operate as a scripture, both in the indoor and outdoor spaces of architecture, and in respect to the requirements of a specific project. It acts as surface, which receives inscriptions from the memory of what doesn't exist yet, that means the memory of a potential architectonic object. The diagram functions as agent that focuses the relationship between a subject author, an architectonic object and a receiver; it's the layer between them"Peter Eisenman in: Contropiede, Skira, Milan 2005, page 200.

10 "The topology, or study of spaces (from the Greek τόπος, tópos, »space«, e λόγος, lógos,

sian geometry, which expresses itself in the plurality of new destabilizing spaces.

»study«) is one of the most important branches of the modern mathematics. It's the study of the properties of the forms and the shapes that don't change when a deformation without "tearing", "overlapping" or "gluing" take place. Fundamental concepts as convergence, limit, continuity, connectedness or compactness find their best formalisation in topology.
It's essentially based on concepts of topological space, continuous function and homeomorphism. The same term means as well the collection of open spaces that define a topological space.
For example, a cube and a sphere are, topologically talking, equivalent objects (that means homeomorphs), because they can be deformed one in another without using any gluing, tearing or overlapping; a sphere and a bull, on the contrary, aren't equivalent, because bull has a "hole" that can't be removed from a deformation.
The topologic spaces are daily used from the mathematical analysis, form the abstract algebra, from geometry: this makes topology one the big unifying ideas of mathematics.
The general topology (or point-set topology) defines and studies some useful properties of spaces and maps, as well as their connectedness, compactness and continuity.
The algebraic topology is, on the other hand, a powerful instrument to study topological spaces and maps between them: it assigns them "discreet" invariants (for example numbers, groups, or rings), easier to calculate, often using functors. Algebra and algebraic geometry were highly influenced by the algebraic topology.
The great motivation of topology is that some geometric problems don't depend from the exact shape of the involved objects, but from "the way in which these are connected with each other". For example, the algebraic topology's hairy ball theorem says "you can't comb a hairy ball without creating a cowlick". This is obvious for many people, even though, reading the formal statement of the theorem ("A continuous vector field on a spherical surface has at least one zero") they wouldn't think so.
As for the Seven Bridges of Königsberg, the result doesn't depend from the exact shape of the sphere, but can be applied to irregular spherical forms and generally to every type of object (as long as its surface satisfies some requirements of continuity and regularity) that doesn't have holes.
It's essential, to deal with problems that don't rely on the exact shape of the objects, to clarify what are the properties of the objects that we can count on: hence the notion of topological equivalence. The impossibility of crossing each bridge just once applies to any arrangement of bridges homeomorphic to those in Königsberg, and the hairy ball theorem applies to any space homeomorphic to a sphere. Formally, two spaces are topologically equivalents if one can be deformed into the other: in this case they are called homeomorphic and they are exactly identical. A continuous deformation of a mug into a bull. The continuous deformations are formalized into the notions of homeomorphism and homotopy.
An homeomorphism is usually defined as a continuous bijective function, endowed with a continuous inverse, which is not very intuitive even for someone who already know the meaning of the words used in the definition. A less formal definition clarifies what said before: two spaces are topologically equivalent if it's possible to deform one into the other without cutting or gluing pieces of them. For example, a mug and a doughnut are homeomorphic. An introductory exercise is to classify the uppercase letters of the English alphabet according to topological equivalence. The result is this one:

{A, R} {B} {C, G, I, J, L, M, N, S, U, V, W, Z}
{D, O}{E, F, T, Y}{H, K}{P,Q}{X}
There's a weaker notion of equivalence: the homotopy. Informally, this notion allows transforming objects into each other in a slightly freer way: it's possible, for example, to transform a Q in an O, progressively shortening the foot of the letter Q, until it disappears. We obtain these classes:

{A, R, D, O, P, Q} {B}
{C, E, F, G, H, I, J, K, L, M, N, S, T, U, V, W, X, Y, Z}

This last notion essentially distinguishes the letters according to the number oh holes: {A,R,D,O,P,Q} have one, {B} has two, all the other none. The number of holes is invariant; it's a quantity useful to distinguish objects. This quantity is formally realized through the concept of fundamental group". Source: Wikipedia.

The modelling of the shapeless space and the animation create new possibilities of expression, new ways of the future living.

To be fair, what is theorized and experimented in the initial digital project, and expressed through an astonishing creativity, is missed since the first work realized by the same author: the Korean Presbyterian Church in New York, in which the diagrams are reduced to an usual architecture, "already seen", while it takes form.

The topological geometry was the basis of a very interesting contest that took place in the end of 1990, in which Peter Eisenman, Jean Nouvel, Toyo Ito and Daniel Libeskind grapple with the theme of the "Virtual House".

Virtual house doesn't mean "wired building" with very sophisticated technologies, but it means "creation of new spaces of body and mind". The "virtual house" of this contest is a house in which, through plans, construction and intelligence, it's possible to generate newer connections; the house is set up, organized or inclined to allow the highest potential of unpredicted relationships. It's a space not completely determined by fixed qualities, because it's dynamic and has no limits. Its geometry doesn't come from fixed points. It's characterized by an absolute new virtual space that changes in time to allow shape and movement to be free. It's not predetermined; rules can change depending on what happens in it.

As an obvious result, the four interpretations of the authors are very different between each other.

Jean Nouvel uses a very sophisticated technologic tool: the transposition of a classic model, the Palladio's Villa Malcontenta. In his project, the textures, transparencies and multiple reflections transform the Palladian space, through manipulation of the light.

Toyo Ito's proposal is very different; he doesn't design a virtual house: he thought that such a thing would have been possible only when architecture is be able to eliminate the gap between the unconceivable opposites of space fruition. He decides, then, to design a "temporary" house for his beloved ones. A house with no windows, in which indoor space is the mirror of their existential conditions. The house is synonym of "family place", a temporary house, related to the durance of the family itself (due to the fact that, inevitably, for various reasons, their lives will be separated).

Peter Eisenman and Daniel Libeskind reactions are more technological and less sophisticated. Eisenman introduces an experimentation on the shape, and of the non-shape generated by the combination of fractalic geometries. Starting from a digital simulation, he "freezes" the tracks of a random moment of time, originating the volumetric idea on which house project is superimposed. It doesn't matter anymore, to him, the hierarchy between the idea of the space and the creation of the same: he superimposes them. The "virtual" is based on the infinite possibilities of shape and space. Unique and unrepeatable solutions and configurations are the result of the arbitrariness of the choice.

Libeskind draws 365 concentric circles, the days of the year, which rotate

around the axis of an "empty" centre that represents the architecture. His "virtual infinity" has no scale.

These four projects have something in common: the "space-time" research, the concept of chance, the mutability of the space, the instability, and they prefigure the future contemporaneity. The project is the tool used to represent, communicate and realize our idea (using common conventions).

But it is, of course, more than that: it's the representation of the world vision of the architect, it's the synthesis of many questions, and it's a possible solution to a complex problem. One of the possible solutions, the one that, in the architect's point of view, better satisfies the many requisitions. And it's, above all, a moment of synthesis. The project is the Idea. It's the solution that joins all architect's knowledge, his experiences, his history and his feelings; and, maybe, his own architectonic "theory" as well. It's the solution that joins all architect's knowledge, his experiences, his history and his feelings; and, maybe, his own architectonic "theory" as well. The abstract reflexion represents that complex and deep entanglement that connects technical, artistic and critic activity of every architect (not always all together) to his vision of the world.

In every period critic, project and theory interact with each other, as they implicate themselves in the perspectives that characterize the great movements of thought of a particular historical period: these paradigms are useful to guide the scientific research and every type of research, even that project-theoretical in architecture.