

The Tools of the Architect

EAHN Conference, TU DELFT and HNI



22-24 November 2017

The Tools of the Architect

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of the Technical University in Delft, in collaboration with Het Nieuwe Instituut.
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*Delft University of Technology / Jaap Bakema Centre
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Aalborg University

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Bergische Universität Wuppertal

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Columbia University

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University of Copenhagen

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Piero Medici

Delft University of Technology

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University of Queensland

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University College London

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KU Leuven

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University College London

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University of Antwerp

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Delft University of Technology

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Stefano Milani

Delft University of Technology

Round Table: The Digital Tools of the Architect in the Archive

Thursday November 23, 14.15 - 16.15, Het Nieuwe Instituut

A special session organized by Het Nieuwe Instituut, including a tour through the State Archive of Dutch Architecture and Urban planning

In this session we will explore the radical changes in the tools and practice of architecture by digitization and the challenge of researching, collecting and preserving born digital architecture archives. Often, technical concerns dominate debates about the archiving of the digital. This session aims to make space in the discussion for the cultural and historical value of the materials and the question of how to make choices in what should be important to preserve for contemporary and future research. Does digitization lead to new approaches of collecting? What does the academic research community, the 'users' of architecture archives, expect from the 'keepers' of these archives? Het Nieuwe Instituut will present the recently acquired digital archive of MVRDV as a case study.

Moderator:

Suzanne Mulder, Het Nieuwe Instituut, curator of collections

Participants:

Tom Avermaete, TU Delft, professor of Architecture,

Kim Förster, Associate Director, Research at the CCA, Montréal

Marcel Ras and Ania Molenda, Het Nieuwe Instituut, project Digital Archives

Birgitte Saugé, National Museum Oslo, Architecture Department, senior curator

Programme

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- 12:00 Registration | Orange Room
- 12:45 Opening words by Tom Avermaete, Merlijn Hurx | Orange Room
- 13:00 Keynote lecture by Mari Lending | Orange Room
- 14:00 Paper Sessions | Room K, Room E, Berlage Room
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- 16:30 Paper Sessions | Room K, Room E, Berlage Room
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Thursday 23 November 2017

- 08:30 Registration | Orange Room
- 09:00 Paper Sessions | Room K, Room E, Berlage Room
- 11:00 Paper Sessions | Room K, Room E, Berlage Room
- 13:00 Bus transport to HNI, Rotterdam | Zuidplantsoen
- 13:45 Lunch at HNI | Het Nieuwe Café NHI
- 14:15 Paper sessions at HNI & Round Table | Auditorium, Room 1, Vijf Midden
- 16:15 Coffee and Visit to exhibitions at HNI
- 17:00 Keynote lecture at HNI by Michiel Riedijk
- 18:30 Conference dinner | Het Nieuwe Café NHI

Friday 24 November 2017

- 08:30 Registration | Orange Room
- 09:00 Paper Sessions | Room K, Room E, Berlage Room
- 11:00 Coffee | Orange Room
- 11:15 Paper Sessions | Room K, Room E, Berlage Room
- 13:15 Lunch | Berlage Room
- 14:00 Keynote lecture by Anthony Gerbino | Orange Room
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- 17:00 Plenary Concluding Session | Orange Room

The Tools of the Architect

Tom Avermaete, Merlijn Hurx

Architects have for their activities of drawing, writing and building always depended upon the potential of particular tools – ranging from practical instruments such as straight edges, French curves, compasses, rulers and pencils to conceptual apparatus such as working drawings, collages, photographic surveys, infographics, diagrams, casts and mass models. As technologies advanced the toolbox of architects has changed and expanded. Today architects have an extraordinary array of sophisticated tools at their disposal, nevertheless they still rely on many of the same tools as their 18th and 19th century peers. Working drawings, pencils and tracing paper continue to appear in the designer's studio while their role and potential is being redefined.

Time and time again, architects have engaged with new tools. The quest to find the most appropriate and adequate tools to articulate, test and communicate design ideas has never ended, and in this pursuit architects have appropriated tools from other disciplines, such as art, historiography, sociology, philosophy, computer sciences and engineering. Out of this perspective the tools of the architect have become a field of intense exploration of the encounter of architecture with other disciplinary perspectives.

Inventions and innovations of tools throughout history have not only provided better answers to questions of analysing and representing the built environment, but they have also pointed to new ways of conceiving and intervening in the built environment. Ellipsographs made it possible to precisely draw an elliptical space in the 19th century and computer-aided drafting software has allowed for a new conception and construction of complex geometries in the 20th and 21st century, while augmented reality tools and BIM are likely to redefine communication between architect, builders, and client. New tools have continuously affected the imagination, character and qualities of architectural projects.

Generally the realm of architecture has held overly positive understandings of the roles that tools can fulfil. The architect's tools have been often understood as harbingers of change and transformation. They have been conceived as the very loci of innovation in the architectural field. The strong belief in the performativity of software programmes at the end of the 20th century and the enthusiasm about various forms of virtual and augmented reality at the beginning of the 21st century, are just the latest expressions of this firmly rooted belief into the inherent progressive qualities of the tools. At the same time the tools of the architect have also been perceived as pacifiers of new developments or even as obstructions to innovation. Many architects have been casted as retrograde because they did not, or not sufficiently rapidly, engage with revised or new tools.

The tools of the architect have also functioned as main elements for the definition of discriminative architectural positions. Architects have acted as early adopters of certain tools and thereby claimed an avant-garde position in architectural culture. At the same time some designers have persistently refuted the newest developments of

tools and thereby defined themselves as an exceptional *arrière-garde*. The choice of architects to work consistently with a particular tool has been looked upon as a marker of certain architectural sensibilities, linking for instance the use of pencils to a more phenomenological conception of architecture and the use of computer software to a more rational understanding, and vice-versa. Tools have also acted as discriminators with other professional groups. Hence, the watercolour pencils of the architect have distanced him from the engineer, who shared the knowledge of the technical pen with the architect but not that of the artistic painting tool.

Tools have also functioned as discriminative elements that not only differentiate between various architectural practices, but also regulate the access to the profession. Knowing how to operate a particular box of instruments or conceptual tools has been a main prerequisite to be part of the profession. To be able to handle the pencil or to steer the curve, was as much a requirement to enter the world of practice in former times, as the practical knowledge of particular drawing software programmes is in the present. Until recently, it was self-evident that an important architect also fully mastered the tools of the trade and that this capacity was one of the main distinguishing factors between the master and the apprentice. In the course of the 20th century an important transformation seems to have taken place, where some master architects –wholeheartedly or bitterly– came to strongly rely on younger generations of collaborators to handle some of the newest tools.

Against the background of the various functions of the tools of the architect, it comes as a surprise that only a small amount of studies exist that have profoundly engaged with their characteristics and role. Moreover, in the historiography of architecture there has to often been an understanding of tools as purely instrumental devices. Studies have identified the relation between a specific task and the use of a particular tool, but far less investigations have tried to understand the cultural dimension of the instruments and conceptual apparatus of the architect.

This conference wants to make a contribution to a more profound cultural investigation of the tools of the architect, understanding both their capacities and limits. Our ambition is to cast new scholarly light on the concrete and conceptual instruments of the architect, not only to nuance our architectural historiographies but also to reveal the importance of tools –in the past and the present– as central actors in architectural culture.

Wednesday 22 November 2017

14:00-16:00

Paper session 1

Papers and Models

Location: Room K

Session Chair: Jeroen Goudeau

Radboud University

How to Draw the World: From the Architectural Plan to an Architectural Storytelling

Sophia Banou

The University of Edinburgh

Today one is able to hold the world in the palm of one's hand. The Blue Marble view that Google Earth brought to every personal computer in the 2000s (Dorrian) has been surpassed by the Google Maps app's popularisation of planimetric view conventions to a wider public. Yet, while we are thus almost literally able to hold the earth in our hands, our architectural representations are increasingly turning their gaze away from this subject, abandoning the 'aerial' view of the plan and succumbing to the utopic virtuality of 3D rendered or Photoshopped simulations (Carpo), of architectures often designed to precisely satisfy the likeability of their image.

This paper is concerned with the increasing contestation of the primacy of the plan as a tool of conceptualization and communication in architectural practice. Along these lines, the paper traces the origins of this ever-widening schism between the representational possibility of the plan and the definitive simulation of a nowadays 'digital' perspective, to the 'crisis of representation' of the 1960s. In doing so, the paper seeks to shed light on the continuities and creative possibilities that emerge from this oscillation between abstraction and simulation, by not simply tracing the differences but also revealing the similarities that can tie the latent potential of such new tools of visualization to historic and inherent architectural conventions.

To this end, the paper proposes a critical inquiry on the representational techniques of Superstudio, considering their work as a useful 'hinge' for the understanding of the emergence and instrumentality of a narrative form of representation that was rooted in a representational tradition of abstraction despite being shaped under the influence of a visual culture of the 'Spectacle' (Debord). This visual culture and the conditions of subjectivity it suggests (Beller) can be considered as a historic predecessor of the digitized yet not-essentially-digital modes of perception and visualization that have been increasingly infiltrating architectural practice and communication in recent years.

Collage, video, installation and narrative performance are some of the representational techniques that Superstudio incorporated in their work, reacting to modernist rationalism and in part drawing from the communicative tools of the systems that they critiqued (advertising, cinema, science fiction). All of these can in turn be considered as predecessors of an iconic language of simulation that seems to divert from a conventional tradition of orthographic architectural drawing. Nevertheless, this paper proposes that the primary conceptual, and eventually representational tool that these techniques served and enabled in Superstudio's work, can be defined through a common practice of 'storytelling', one that is derived from the intersection of symbolist poesis with a pop cinematic culture rather than a sterile pursuit of iconicity. Examining the very origins and influences of

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Superstudio the paper draws from literature and discussions with Superstudio members and engages with the study of original drawings from the Drawing Matter Trust collection (Somerset, UK).

References

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Copies, Traces and Transparent Paper in the Workshop of an 18th-Century Swedish Architect

Anna Bortolozzi

Stockholm University

In the Early Modern period the common method to copy architectural drawings was the technique of pricking holes. The original was laid on the paper intended to receive the copy and the principal points were transferred to the copy by pricking through the original with a very fine needle. This process, used by architects to copy their own drawings and to make copies of the drawings of others to use as models, inconveniently resulted in the damaging of the original. Moreover, producing the copy was almost as laborious as the drawing of the original. An alternative and more efficient technique of reproducing drawings was the use of paper impregnated with linseed, walnut or other vegetable oil to make it transparent. The original would have been laid under the transparent paper and a tracing made with great precision and ease, with no loss for the original. Methods for making transparent paper have been known since the Middle Ages, but collections of architectural drawings provide little evidence for its use before the end of the eighteenth century. Architectural drawings on transparent paper are very fragile and in the majority of cases they have been destroyed by time or lack of care, also as a consequence of their chiefly functional character. Quite the exception, the Cronstedt collection in the Nationalmuseum of Stockholm preserves over 350 large size tracings (in Swedish *kalker*, from the French *calquer*) produced by the Swedish architect Carl Johan Cronstedt. Between 1732 and 1737 Cronstedt spent five years in France and Italy as part of his education, and a group of drawings on transparent paper date for certain from the beginning of his Roman sojourn in 1735. My contribution will examine the corpus of the tracings of the Cronstedt collection (their subjects, drawing conventions and material qualities), and their relationship with the other Cronstedt drawings with the aim to understand their use and role in the workshop practice. It will also try to establish where Cronstedt learned to trace drawings on transparent paper, a method of copying apparently unfamiliar to earlier Swedish architects.

Between the Layers: Transparent Paper as an Architectural Design Environment

Fabio Colonnese

Sapienza University of Rome

A sheet of paper is often the first and more sensitive interlocutor of an architect. It is the place where single shots from the whirling stream of his or her thoughts suddenly take shape producing a system of graphical signs that belongs no more to the world of ideas but is something autonomous that can visually feed-back and orient the creative process. Far from being only a visual and cerebral process, drawing is also the consequence of the bodily sensations that result by pressing and moving the tip of the pencil on the paper surface. Like every instrument, paper is neither innocent nor neutral and its features, its opacity, microscopic fabric and visible texture, can deeply influence the path of a drawing and even the developing of an architectural project.

Innovative businesses dedicated to developing specialized papers and tools for drafters emerged between 1800 and the 1950, providing revolutionary changes mainly in materials and copying techniques. In 1794, sheets of paper with rectangular grids printed upon were put up for sale by Dr Buxton in London. They were considered “very useful for a great variety of purposes, that every person engaged in astronomical computations, or indeed, in physical-mathematical inquiries of any description” and a wide range of both orthogonal and perspectival grids were soon made available. Around 1830, treatment with acid allowed the industrial production of transparent tracing paper, which allowed both drawings on other supports to be easily copied and, with the advent of blueprinting in the 1880s, early light-based mechanical reproduction of drawings.

The diffusion of strong transparent paper had first the consequence of favouring copying and combining pieces and styles, possibly mining students’ imagination and inspiring eclectic languages as deplored by Gottfried Semper in 1834. Secondly, it re-structured the way the architectural space was perceived by the architect who was designing it by providing the opportunity to visually compare different solutions and to literally see an architectural project as a pile of layers. This sort of analogical model of the building suggested a parallel between architectural and archaeological practices and in the XX century influenced both the cinematic practice toward the animation movie making and the operative structure of CAD and photo-retouch software. At the same time, the practice of seeing drawings immersed in the “virtual” depth produced by overlaying transparent sheets and the unpredictable optical effects of their mutual movements fed a long-lasting critical process whose effects affected the XX century architecture and art.

Together with the squared one, the accessibility to transparent paper contributed to deeply reorienting not only the drawing process but also the design process of architects, turning the paper itself from a simple visual support into a sort of design environment..

Architectural Model-making - the Invisible Trade supporting Architecture

Jane Insley

University College London

St Paul's Cathedral in the City of London holds one of the most famous architectural models in the world - the Great Model made for Sir Christopher Wren in 1674. Much less well-known are the names of the people who actually made that model, and the fact that the Cathedral owns a number of other architectural models which combine to make one of the most important collections in the country. Surveying these models has shown that the business of model making as an architectural tool has been variously ignored, celebrated or taken for granted, flickering in and out of fashion.

The collection and its wider context have been considered with actor-network theory in mind, as this concept allows inanimate objects to be fore-grounded. In general terms, the models have been associated with named architects, while being made by others, unrecorded. The Cathedral has an important architectural archive, within which a handful of items clarify some of the intent behind the creation of and subsequent interventions to the building; these combined with details found elsewhere throw more light on how and why these models were made.

For most models their moment of greatest publicity and exposure comes when the maker hands it over. The role of the model can be to inform discussion about just what work should take place, or to help persuade or convince the client that the work should go ahead; examples of both are found in the Cathedral collection. What also became clear was that the secular staff serving the cathedral, including the Surveyor of the Fabrick (the architect in charge of the maintenance of the building), were also at times ignored or taken for granted by the Cathedral authorities. Even as late as the 1950s, the status of the architect oscillated between admiration (for the high art of architecture), and invisibility (as with essential carpentry, plumbing and masonry work carried out by artisans).

Models in the collection illustrate ideas for construction during the original build, detail study of component parts for analysis of weight transfer for structural support and monitoring geological features in the surrounding area to ensure the ongoing stability of the Cathedral. How the models were used when they were first made, and how they have been used since, reflects institutional attitudes to the way the architects and their helpers were viewed, and how official forgetting can take place in an institution partially at least dedicated to memorialisation.

The role of the Surveyor of the Fabrick (today as in the past) includes presenting a public face to the wider community, and the models continue to play a part in the offer of one of the most identifiable visitor attractions in London. Despite being rendered invisible, the model makers have contributed to how the Cathedral works its past, for the benefit of its future.

Shaping architecture. Models in design processes of the 1960s

Ralf Liptau

Technische Universität Wien

When German architect Rolf Gutbrod developed his design for an assembly hall in 1966, he got entangled into the agency and performance of a peculiar tool or material: plasticine. In the opened process of modelling, Gutbrod and the shapeless stuff entered into a „dance of agency“ (Pickering). Photographs of the physical models show how the plasticine influenced the final shape of the project.

My presentation deals with the process of modelling in architectural design in the 1960s. It focuses on the impact that models exert as both material and tool. I ask: What does the mutable material of a model „do“ within the design process? In which sense does it function as nonhuman actor (Latour) and, thereby, interact with the architect? How can an architectural design process be understood as a material-escorted knowledge process?

To tackle these questions, I compare the design practices of Gutbrod with those of the architect Frei Otto. In order to develop Germany's exhibition hall for the world fair of 1967 in Montreal, Otto used soap films to „find“ the most efficient form for the housetop. In comparison to Gutbrod, the material engagement seems to be quite different: While Gutbrod treated his plasticine in a manual way, Otto prepared the test arrangement in which the material could then act „by itself“.

I shall argue that the role of the physical model helps to understand the impact of materiality and tools in architectural design. Following Hutchins, I see modelling as a „thinking [which] is interaction of brain and body with the world“ and as a striking example for the material engagement theory elaborated by Malafouris and others. The comparison of the two examples does not only show, which ways of interaction come into play when using different materials. They make clear, how materials and tools have shaped (modern) architecture in general.

Wednesday 22 November 2017

14:00-16:00

Paper session 2

Mathematics

Location: Room E

Session Chair: Jorge Mejia Hernandez

Delft University of Technology

Pier Luigi Nervi's Designing Tools: Geometry and Calculation in Structural Analysis

Micaela Antonucci, Sofia Nannini

Politecnico Milano

Extraordinary architect, professor, contractor and entrepreneur, Pier Luigi Nervi (1891 - 1979) was one of the protagonists of 20th century architecture and engineering. He experimented with the construction possibilities offered by reinforced concrete and was celebrated worldwide. A key factor of his success was his capacity to invent new shapes and new ways to build them, through an original method that combined two elements of his own invention: "structural prefabrication" and "ferro-cement". The calculating method used as one of the main tools within this design process has been an unexplored field of research so far.

An interesting case study is the *Manifattura Tabacchi* (Tobacco Factory) in Bologna, designed by Nervi after World War II and built between 1949 and 1964. During his career, Nervi designed many industrial buildings, combining functional and structural needs into aesthetically surprising forms. The *Manifattura* is known for its poured-in-place concrete slab system, using Nervi's patented system of *ferrocemento* formwork to produce visually expressive slabs for the high-rise portion of the factory, and shell construction for the warehouse. The research on this building, led by a team of the University of Bologna together with Iowa State University, has focused on its history, on the analysis of its structural systems and on the relationship between process and production. Within this research, the analysis of the original calculation reports written by Nervi clearly shows his design approach, which develops from his pivotal academic education in the University of Bologna.

Nervi graduates in Civil Engineering in 1913 at the School of Engineering of Bologna. In particular, two professors played a key role in Pier Luigi Nervi's academic education: Silvio Canevazzi (1852-1918), professor of Structural Mechanics and Attilio Muggia (1860-1936), professor of Construction Technology. Led by Canevazzi, Nervi learns the importance of critical thinking applied to structural calculation, which is not a mere reproduction of numbers and equations, but a keen use of what the professor himself used to define as «tools» and «solutions». Placing critical thinking before calculations is the main lesson which Nervi learns in Bologna - a lesson which has developed within this School across the decades until the teachings of Piero Pozzati (1922-2015).

In his calculation reports, Pier Luigi Nervi shows that at the core of every structural system there has to be a theoretical thought, which is the direct proof of the existence of each static solution. Numbers become a tool to verify design solutions, whose working principles are known by Nervi thanks to his deep static intuition. Moreover, this investigation has shed light on Nervi's personal notes, sometimes almost didactic: in fact, he uses them as tools to describe his design process. Geometry and Structural Mechanics take priority over iterative calculations and define themselves as Nervi's main tools. The case study of Nervi's calculation reports written for the *Manifattura Tabacchi* not only represents a valuable contribution for the structural analysis of these buildings, but also offers a new interpretation on his designing tools.

Graphic Methods for the Design of Complex Curved Surfaces in 20th Century Architecture

Leda Dimitriadi

ENSA Paris-Malaquais

The use of curved surfaces in architecture is almost as old as architecture itself (the dome being one of the most ancient examples), yet when it comes to represent double-curved surfaces in two dimensions there is a difficulty, because they are not contained in a plan. In simple cases, for example surfaces extruded from a plane curve or rotational surfaces, orthogonal projections are sufficient for the design as well as the construction processes. When the geometrical object is slightly complicated (and especially when we have to know the real forms and dimensions of intersections between geometrical objects), the usual drawings (plans, sections, elevations) cannot provide all the information necessary for the construction. "Practical geometry", that is empirical geometrical methods developed for the cutting of stone (stereotomy), provided more or less specific solutions to this problem in the past. Descriptive geometry invented by Monge was the scientific theory giving general technical graphic methods for resolving in 2D space (by the means of orthogonal projections) problems of 3D geometry.

20th century architecture rarely deals with that kind of problems: in most cases, architectural objects are composed of plane or, less often, curved surfaces unambiguously represented by the usual orthogonal projections. Descriptive geometry is being taught to engineers and architects, but is in practice of little use for architects. In the end of the 20th century, with the advent of computers and, later, sophisticated software integrating complex mathematical formulae, architects have the possibility to design complex curved forms with great precision in a 3D Cartesian space. However, some architects proposed and even constructed rather complex curved surfaces before the advent of computer-aided design tools. This paper proposes to analyse the graphic methods and the tools used by architects who did meet this challenge. Published as well as archive documents will be examined, interpreted and explained, in order to identify in which cases the usual architectural drawings are not sufficient and consequently in which cases the recourse to descriptive geometry or other graphic methods or tools is necessary for the representation or/and the construction of the building. We focus in particular to Le Corbusier, Xenakis, Candela, Utzon. Are used for this research private archives as well as La Fondation Le Corbusier archive and the archive of Institut Français d'Architecture (containing the archives of engineers having constructed conoid surfaces, as Laffaille and Sarger).

Casting the Net Wider: Complex Forms, Topology and the Conception of Design as a Process

Cornelia Escher

Kunstakademie Düsseldorf

In the 1950ies and 1960ies, new polygonal and complex forms emerge with new technologies of building and a new taste culture. These new forms go hand in hand with practical questions of design and representation. The material models employed by Frei Otto and Heinz Isler to model complex surface shapes have been extensively analyzed and have been credited as precursors of today's digital design tools. But the tendency towards more abstract, mathematical representations of architectural space and form that came up at the same time has so far been neglected in research. Both the material and the mathematical models were inspired by disciplines as biology and mathematics. Architects as Robert Le Ricolais, Lech Tomaszewski and David Georges Emmerich appropriated techniques and knowledge from crystallography, morphology and topology. They followed their interest in scientific modelling inspired by cybernetics and its effects on thinking time and space. The material and the mathematical models must be considered as complementary instruments to design new complex forms. They influenced today's design tools, but also furthered the use of new images, and had an important impact on shifts in architectural thinking that remains relevant today.

The paper will shed light on the origins of mathematical strategies and experiments of representation and analyses in the 1950ies and 1960ies. It will demonstrate how they led to a critique of modernist forms and spatial concepts. Architects that used new mathematical models and tools claimed that they could overcome the right angle as a main design feature of modernist architecture – a form that, in their opinion, resulted mostly from modernists' flat representational strategies. Moreover, they promised to turn away from a concept of functional space for which the architect singled out different categories of use and tried to accommodate them in the floor plan, neglecting the individual and social interactions with spaces.

Consequently the process of design was perceived in a new way. Progressivist thinking described design as a linear activity, proceeding from drawing to building to shaping the inhabitants lives. By contrast, the mathematical strategies originating around 1950 laid the foundation for a new approach that permitted to think of design as a networked process. Design could then be described as an interaction between the original concept, the tools and instruments that helped to shape it, and the use the inhabitant would make of the material result later onwards.

Mathematics Meets Aesthetics: the Experimental Tool of Iannis Xenakis for Philips' Pavilion (1958)

Elisavet Kiourtsoglou

ENSA Paris-Malaquais

In this article I present the mathematical tool used by Xenakis to define the hyperbolic paraboloids and conoids of Philips Pavilion (1958), which allowed him both to make aesthetic judgements and move on with calculations.

In 1956, Le Corbusier accepted the commission for the Philips Pavilion in Brussels. Xenakis, imbibed by his research on double curvature surfaces, transformed the sketches of his maître; hyperbolic paraboloids and conoids were now wrapping the space of *The Poème Electronique*. As Philips demanded, to proceed to the calculations phase and contact an construction office, Xenakis was obliged to determine geometrically, and in detail, the form of the new Pavilion. But instead of using abstract Algebraic formula, he came up with an experimental tool to help him visualise these forms and choose the more appropriate, in plastical terms. Two metallic linear sticks are joined by elastic strings, attached in equal distances on each one of these two sticks. The strings, placed in that way, define hyperbolic paraboloids whose form depends on: a. the distance between the sticks (in that case, the sticks represent the directrix lines); b. on the angle between the sticks; c. and the positions of any two strings. Afterwards, he traced these forms on paper, using descriptive geometry.

Xenakis has described the function of this tool briefly (1958, p.11-15), but questions arise when looking at the plans. First of all, how exactly does this tool work? Upon which mathematical principles does it function? Could we retrace the way Xenakis chose each one of the surfaces which constituted the final form of the Pavilion? Did he have a specific quality criterion for doing so or was he merely concerned with quantity and measurement?

I argue that this experimental process has permitted Xenakis not only to define the geometry of the pavilion but also allowed him to observe changes of forms in real time, so to be able to make an aesthetic choice. In other words, he has not used it merely as a mathematician, even if he trained as a civil engineer in the Polytechnic school of Athens (1940-47) and followed classes of descriptive geometry and graphostatics. It was a tool of invention, allowing ludic and imminent exploration and experience of forms, a process that was dear to eminent engineers in the beginning of 20th century (Gaudi, Bernard Lafaille). In this light, it could also be a concrete example of the "scientific aesthetics" of the period, discourse and teaching in pursuit of scientific and rational modes of judgement in art and architecture (André Lurçat, Miloutine Borissavliévitch, Gustave Umbdenstock.)

The article proposes to retrace the above process, based on the material of Xenakis family's archives and the Fondation Le Corbusier (books, manuals, plans, sketches) and answers the questions posed above.

Measuring the Universe: The Path from Modulor to Unitor in Justino Serralta

Ingrid Quintana Guerrero

Universidad de los Andes

In 1948, the young Uruguayan architect Justino Serralta (1919-2011) arrived in France and became an intern at Le Corbusier's Parisian studio. During the final months of his practice, Serralta contributed to the improvement of the main Corbusian composition tool: the Modulor, a product resulting from research started in 1943. With Serralta's assistance, Le Corbusier applied the Modulor to several of his most defining projects, such as Marseilles and Rezé-les-Nantes *unités d'habitation*; *Claude et Duval* Factory in Saint-Dié des Vosges; etc. Several drawings made by his Uruguayan collaborator were included in the second volume of Le Corbusier's *Le Modulor: "La Parole est aux usagers"* (1955). Inspired on Egyptian geometrical algorithms, Serralta and the French architect André Maisonnier (his co-worker at "Corb's" studio) conceived the "1, 2, 3, 4 square", a pattern of composition applied to many latest Corbusian architectures. Despite being recognized in *Le Modulor 2* by Le Corbusier as crucial, Serralta's sketches for developing this pattern had not been deeply studied yet; only Uruguayan researcher Jorge Nudelman (2011) has analyzed its association to works from the first period of Serralta's career in Montevideo: Caterpillar shell (1955); Maspons Building (1955); La Mennais chapel (1958); etc.

Anita and Jorge Stirling (Serralta's daughter and son-in-law), in charge of the architect's archives, currently work on the organization and release of drafts, paints and texts related to the creation and application of his own tool: *L'Unitor*. Based on those documents and primary sources from *Fondation Le Corbusier*, this paper aims to recreate the main guidelines from Serralta's contribution to Modulor towards the creation of his Unitor. Like the Corbusian tool, the Unitor was also presented by means of two books (1st volume: "*Des outils pour architectes et autres techniciens qui interviennent dans la production de l'espace aménagé ainsi que pour les autorités compétentes et les usagers, pour tous quoi!*", 1981; 2nd volume, co-edited by his son Charles, 1995). However, Serralta's invention went far beyond architectural and artistic considerations: its creator described it as a scientific tool for understanding the whole cosmos and projecting a united society.

Unitor is not about one single tool but a set of economic, sociological, and physical tools, which included the "Programator"; the "Comunitor" and the "Grid for Public Management". Mystic and didactic at the same time, the Unitor took advantage of Serralta's pedagogical experiences in *Universidad de la Republica* (Uruguay) and *École d'Architecture de Rennes*, in order to be born, nourished and reformulated. The complexity of the system and the richness of the materials preserved by his family might be the most relevant legacy of Justino Serralta's work. That is why the knowledge of this process is still relevant not only for experts on Le Corbusier's thinking, but for architectural historians interested on Latin American Modern Architecture and for scholars in charge of studios and courses in architectural projects, inside faculties of architecture, fine arts and design.

Wednesday 22 November 2017

14:00-16:00

Paper session 3

Drawing instruments

Location: Berlage Room

Session Chair: Eva Röell

Utrecht University

Parallelogrammum Prosopographicum: an Early Modern Instrument for Drawing with Parallel Lines

Gregorio Astengo

University College London

During the mid-15th century, Alberti first publicly attributed to the architect a preferred drawing technique, today known as parallel projection, warning at the same time about the risks of perspective representation. Plans and elevations, Alberti argued, are the most reliable techniques in the architect's communicative toolbox because, unlike perspective, they are measurable and proportionate. However, whether attempts to assist and mechanise perspective drawing through pointers, grids, doors and glasses were not uncommon during the Renaissance and early modern times (e.g. Leonardo, Dürer, Cigoli, Wren), the same cannot be said for parallel projection. Given its reliance on such notions as infinite space—i.e. 'point at infinity'—parallel projection has been, for the most part of its history, a practice with no unequivocal operative theory. It has therefore grown essentially through graphic approximation, making attempts at a rigorous mechanical experimentation more problematic.

This paper presents a yet unknown early modern drawing instrument made with the intention of drawing from life through parallel lines, fully maintaining size and proportions of the model. The design for this tool appeared in 1673 in the *Philosophical Transactions of the Royal Society of London*, together with a brief treatise in Latin. The device, called Proposographical Parallelogram (*Parallelogrammum Prosopographicum*), was invented by instrument maker George Sinclair, who at time was working in London around the circle of the young Royal Society. The device was meant to rethink Christoph Scheiner's Stereograph, a version of his well-known Pantograph (1631). Scheiner's Stereograph, designed to assist perspective landscape drawing, was turned by Sinclair into a functioning instrument to mechanise parallel projection by adopting multiple parallel viewpoints and a true, 'mathematical' projection plane (*planum vero mere rationale, sive mathematicum*). Sinclair's intention was in fact to correct perspectival foreshortening and to produce precise and measurable 'elevations', maintaining proportions and scale. Sinclair, of whom very little is known, was familiar with Kepler's *Dioptrice* (1611) and Euclid's *Elements*, with the theory of shadows and astronomy, and probably drew from texts on practical perspective such as Accolti's *Lo Inganno degli Occhi* (1625).

In lack of a proper epistemic foundation for understanding and theorizing infinite space, the Prosopographical Parallelogram acts as the ultimate embodiment of artisanal and practice-based investigations into a realm of mathematical and philosophical knowledge still highly obscure in the late 17th century. Desargues and Descartes, while accepting the idea of point at infinity, during the 1640s were still treating it as a particular case of perspectival view. Around the early 1670s both Newton and Leibniz were also still formalising their studies on calculus and infinite series.

Continued on next page >

This paper introduces the functioning principles of the Prosopographical Parallelogram as well as the efforts of its inventor at a theoretical discussion on drawing *per radios parallelos*, in order to assess its relevance within a history of early modern architectural drawing tools and techniques. The paper also locates the discourse within the crucial larger context of late-17th century epistemology, especially around the Royal Society and with special focus on the still very ambiguous concepts of 'space' and 'infinity'.

Experimenting with Technical Tools in the Architecture of the Russian Avant-Garde

Ivan Nevzgodin

Delft University of Technology

The cover design of a booklet, published in Moscow in 1927 to present the students' projects from 1920-1927 of the architectural faculty of the Higher state artistic and technical workshops (*VKhUTEMAS*), attracts everyone's attention. Why was the Faculty of Architecture represented by a hand and compasses? It seems that in the 1920s nobody questioned such visualisation of the architectural profession by the designer of this cover, El Lissitzky. The importance of the drawing tools for an architect was generally accepted in this leading school of the Russian Avant-Garde. El Lissitzky's preoccupation with the Crafted Hand, the Designer's Eye and Compasses dominated his interpretation of the image of a Russian artist in the 1920s. Thus, already in his brilliant collage 'Tatlin at Work on the Model for the Third International' of 1922, the compasses had been exaggerated in size in comparison to the body of Vladimir Tatlin. In this work El Lissitzky nearly literally visualized the famous quote from an ancient Greek historian Diodorus Siculus: 'the Egyptians drew with the compasses in their hand, whereas the Greeks held the same instrument in their eye', cited in the standard Russian manual on perspective drawings by Pavel Markov, *'Rules of linear perspective'*, from 1875. 'The Constructor' of 1924, the iconic self-portrait of El Lissitzky, again with compasses, clearly shows how important this instrument and tools in general were for his self-identification.

Another influential figure of the Russian avant-garde, Yakov Chernikhov, focused on technical drawings in his work and pedagogical activities. With an extraordinary love and dedication Chernikhov drew the draughtsman's equipment for one of his famous publications. He tried to expand the tools of an architect and even used a microscope in creating his graphic masterpieces, that today look to be impossible to produce without a computer. He applied the graphic experiments as a tool to generate architectural innovations.

Two main architectural groups in the Russian avant-garde: OSA and ASNOVA, experimented with their practical tools in different ways. While ASNOVA was preoccupied with perception of architectural form, the OSA mainly focused on analytical drawings. Disciples of the leader of ASNOVA, Nikolay Ladovsky, elaborated in the 1920-1930s the didactical tools, which still are applied in the majority of the Russian architectural schools, while some of the instruments invented by Ladovsky, to test and improve visual capacities of his students, are completely forgotten. In their conceptual tools both groups show more similarities. They tried to integrate the new knowledge from other disciplines into architectural design and applied collages, diagrams and infographics in presentation and popularisation of their ideas. Such Russian artists as Alexey Gan, Alexander Rodchenko, Varvara Stepanova as well as an Austrian expert, Otto Neurath, enriched the palette of the architectural instruments.

In my paper I would like to present a comprehensive analysis of the application of different tools by the architects of Russian avant-garde.

From Compass and Ruler to Books and Buildings: Claude Perrault's Transformation of the Architect's Tools

Sjoerdieke Nicolson-Feenstra

Leiden University

As is well known through the work of amongst others Wolfgang Herrmann, Antoine Picon, and Anthony Gerbino, Perrault's theory on architectural proportion as explained in the '*Ordonnance des cinq espèces de colonnes selon la méthode des Anciens*,' (1683) was highly influenced by his scientific work as a member of the Academy of Science. This paper would like to further expand upon these studies by focusing upon the consequences of this scientific basis for the architect's tools. The scientific practice of the second half of the seventeenth century relied heavily on new instruments and Perrault took pride in inventing many of them. Increasingly, these instruments such as proportional compasses, quadrants and telescopes came to replace conventional practices and knowledge, serving as intermediaries between theory and practice. Due to this new position, instruments contributed to an increased stratification of knowledge. Because of their strong theoretical basis, these devices could only be invented by scientists, made by specialist instrument makers, and used by well educated people. This paper would like to argue that, in analogy to contemporaneous scientific instruments, Perrault's modular system for the proportion of the orders and its accompanying architectural theory envisaged a stratification of the architectural practice.

In Perrault's commented translation of Vitruvius of 1673, the author emphasizes that the art of architecture encompasses both theory and practice. Proportions had traditionally served as an intermediary device between the two realms. The descriptions of proportions by Vitruvius and Alberti bore strong analogies to the actual construction process of a temple or column. Instead, Perrault's proportional system for the orders held no relationship to the seventeenth-century stone cutting practice. It was solely based upon his anatomical research and the working of the human mind, in which he distinguished between the cognitive capacities of people. The modular order of his system was intended for ease of memory by the mason. The ratio's between the parts, on the other hand, could only cause an effect of beauty in the mind of the professional architect and other savants because they had, at an earlier stage, become acquainted with this kind of beauty. They had done so through the study of authoritative examples, either through the aid of perspective drawings as published in print or in situ. Next to increasing the importance of the relatively new tool of the book this even changed buildings into theoretical devices. Traditionally, buildings had been the principal instruments of knowledge production but this function now only came available for a selected group on the basis of their learning. The last point this paper would like to argue is that Perrault also added a new participant to the field of architecture who stood at the basis of this widening gap between theory and practice. Ultimately, it was the scientist who laid down the theory underlying the specific tools and who invented new instruments, such as the modular system for the orders.

Morality letter and Tablet of Architecture (Zij) from Qajar Period. Belonging to Malek National Library and Museum

Noshad Rokni

Malek National Library and Museum

This article is an introduction of a tablet being kept in the storage of Malek National library and museum. This wooden work has regular checkered networks coated by bowl oil (Lacquer) and has Nastalique inscriptions on its both sides which seems to be an architecture morality letter (Photovvat Nameh) with sentences for being repeated during the work with different tools like set-square, plummet, mason's trowel and string. In this research we discuss the history of architectural design and drawing maps in Iran and also we review the possibility that this kind of tablet as a drawing board for Qajar architects. Afterwards we read and introduce the text of the tablet and discuss the history of using the title of "painter" for the owner of the tablet which it should be a name for drawers or architects in Qajar era. Finally we pose some questions and mention the gap of the researches on morality letters and their relationship with crafts specially architecture, the history of morality and the peak and decline of writing morality letters, repeating sentences during the work and their past in morality letters, hierarchy of architecture from the engineer to the apprentice and mercenary and existence or absence of writings on working tools in architecture and other crafts.

Wednesday 22 November 2017

16:30-18:30

Paper session 1

Mapping

Location: Room K

Session Chair: Jaap Evert Abrahamse

Cultural Heritage Agency of the Netherlands

Drawing Cities from Triangles: Mapping as a Tool and Technique in Urban Planning

Min Kyung Lee

Bryn Mawr College

Western maps and plans produced after the mid-eighteenth century are often categorized by historians of cartography as technical drawings, and art and architectural historians have generally accepted this classification. The result has been that these images have been overlooked as contested sites of spatial production. Moreover, they have often been used to justify built forms rather than considered both product and productive of spatial logics of which built forms are one of many outcomes that include the formation of bureaucratic offices, regulatory bodies, and educational institutions. By framing mapping as an aggregation of practices and tools for describing, analyzing and producing space, this presentation will provide the context of how mapping acquired authority to shape cities, taking Paris as a key example.

By the nineteenth century, all governmental plans of Paris were based on ground surveys using triangulation. An expensive and laborious task that required building towers and hauling heavy equipment, only two surveys of the city were conducted from the French Revolution to the Third Republic, the period of the city's greatest physical transformation. Surveying consisted of translating the urban terrain into an orthographic and gridded image through an imaginary chain of triangles, calculating their distances based on a standard and consistent measure. This geometric practice of triangulation and its rendering into a grid replaced literati based practices of drawing maps. These representations also marked a critical shift from earlier perspectival depictions of the French capital. Unlike perspectival images, orthographic ones were not only descriptive. Through their grids, they equalized space into a totalizing flat surface that valued lines and voids, and allowed for multiple temporalities—descriptive and projective—to share a common surface. This quality allowed architects, engineers and administrators to visualize the city as a coherent object and to draw their plans on surveyed descriptions. The cartographic grid served as a tool of projective composition, situating, anchoring, and ultimately generating the formation of new spaces in Paris.

The presentation offers two examples of how the geometric methods of triangulation and the orthogonal grids of plans served to condition the development of two public spaces – the new commercial quarter of *Les Halles Centrales* and the alignment and opening of the *Place de l'Opéra* – considering specifically the relations of street, building, and block and their changing definitions based on these new geometric mapping tools and techniques. The presentation makes an argument about orthographic modes of representation informing architectural and planning practices, tracing them to the scientific values of the Enlightenment. Moreover, it also discusses how mapping was supported by new legal and administrative structures that defined urban planning in nineteenth-century Paris, and that still resonates with contemporary planning practices.

Wor(l)d and Image: Saul Steinberg's Embodied Cartographies

Andreea Mihalache

Clemson University

How can we analyze and represent the environment in ways that describe not only its visible reality, but also those unseen qualities that ultimately turn out to be more significant than the quantifiable and objective parameters? In architectural education and practice, site analysis, site diagrams and site maps usually precede the design process and explain neutral and unbiased conditions such as orientation, circulation, zoning, sun path or green spaces, offering conventional, if necessary, information.

By examining a series of maps drawn by the architect-trained artist Saul Steinberg, I attempt to show how site maps have the potential to become not only tools of analysis, but imaginative devices that “chart” the embodied experience of a place. I propose that site maps have an integral place within the design process not only as explanatory, but also as generative tools.

Born in Romania in 1914 and educated as an architect in Italy, Saul Steinberg settled down in New York City in 1941. He produced a body of work difficult to place under a particular movement or genre, which ranges from regular contributions to *The New Yorker* and other magazines, to gallery and museum art in a wide range of media, as well as murals, fabric designs, stage sets, and advertising art. Escaping categories, his art reflects upon a variety of issues from common places, stereotypes, and details of everyday life, to warfare, modern alienation, and – a recurrent topic – maps and cartographies. A map of New York City is divided into regions described through the ethnic drinks consumed by their specific inhabitants: Slivovitz, Bordeaux, Grappa, Perrier, etc. A flight map across the Atlantic charts one's journey through the meals served and the mood swings experienced while up in the air.

The title of one of his most enigmatic maps is an invented word: “Autogeography” (1966) suggests both an autobiography (i.e. one's writing about oneself) and a geography (i.e. writing on the surface of the earth) as it tells both a personal and a collective narrative. The drawing is a bird's-eye view that shows the artist's life (then fifty-two-year-old) as a river flowing on the surface of the earth. Through cities and places, the map charts one person's memories, but also reflects upon larger issues of remembering and forgetting. The cities are not fictional, but their connections are personal and each of them could tell a different story known only by the author. We meander through life as we meander through a landscape. As we start reading the names, we enter the drawing moving along the path that takes us from one city to the next.

While Steinberg's embodied cartographies open up unseen worlds, they also remain highly personal events. Through our engagement with the drawing, we discover and imagine things that we do not see and thus a site map goes beyond a mere tool of analysis and becomes a *locus* of the imagination.

The Project of Mapping

Martino Tattara

KU Leuven

Since a few decades, architects have started dedicating more of their time to research activities. Among different approaches to architectural research, mapping spatial conditions throughout the world has become a common task for many practices and academic research groups and a field in which architects have been able to deploy traditional tools originally meant for the process of building construction to produce spatial knowledge. Among the tools used to perform mapping activities, drawing large-scale, diagrammatic, interpretative, or conceptual plans has become common practice. Yet, some of these plans cannot be confined within the framework of representation. While representing a certain condition, the architect is forced to select, reduce, and interpret available data, engaging therefore in nothing less than a projective process.

Although mapping activity today is often criticized for being a neutral and unending process of production of (plan) drawing representation, some of these plans go clearly beyond the field of representation and contain an implicit projective dimension, overcoming the threshold between mapping and design activities. Gian Battista Nolli's plan of Rome is a clear example of this approach. A large-scale plan representation of Rome, Nolli's drawing was not simply a plan of Rome's accessible monuments giving form to the public dimension of the city, but an implicit idea of what he understood as the fixed component of the city and what conversely could be changed, and therefore what ultimately the project of the city was about. The paper aims, through a selection of exemplary plan drawings, from Aldo Rossi's survey of the ground floor of the city of Zurich developed with students at the ETH Zurich to Mario Gandelsona's abstract plans of Chicago and Bernardo Secchi and Paola Vigano's work on large-scale plans for cities such as Brussels and Paris, at bringing to light this specific disciplinary tradition in which the critical representation of a condition is seen as a fundamental step in order to propose its transformation.

Wednesday 22 November 2017

16:30-18:30

Paper session 2

Digital

Location: Room E

Session Chair: Tino Mager

Delft University of Technology

Digital Design Media in Architects' practices and impact on Architecture Archives and Museums

Birgitte Sauge

National Museum of Art, Architecture, Design, Norway

Digitization and technological advances have introduced new possibilities into the architectural design process. Moreover, architects have engaged proactively in the creation and use of digital tools to achieve results that would not be possible using analogue tools (Zardini 2013: 6). *The Digital Turn in Architecture 1992 - 2012* (Carpo, ed. 2013) gives a good introduction, as do publications and exhibitions connected to the research project *Archeology of the Digital* by The Canadian Centre for Architecture.

Curators in architecture museums have historical expertise in architect's creative processes, forms of expression, and artistic means of production, including knowledge of conventions in models and drawings created to convey an architectural concept or design (Sauge, 2003). However, as Greg Lynn has pointed out, despite the impact digital tools, representations, and processes have had on architectural design, the inclusion of 'born digital' material in museum collections, archives, and in exhibitions of architecture has only recently begun to be explored (Zardini, 2013:139). Born digital materials range from 2D CAD-models to parametric 3D models such as BIM. Except for the publications from CCA, the topic lacks proper historical studies. The topic of born digital architecture materials in museums is also absent in museology literature, although digitization in the museum sector is a large research field (e.g. Kidd 2014; Perry 2007). Archives are facing a similar situation. Especially challenging are the lack of strategies for preservation of CAD 3D models. (Ball, 2013).

This study investigates this 'practice gap'. The questions focus on how digitization of the architecture sector are impacting practices in architecture archives and museums. How is digitization changing the ways in which professionals in archives and museums interact with archive and object collections? How does digitization impact on the understanding of and future research on visions, design processes and the realized architecture and built environment? A comprehensive survey conducted in 2017 of digital tools in use in Norwegian architect firms is the starting point of the exploration.

The study will provide an account of born-digital architecture in architecture history and especially contribute to the understanding of contemporary architecture.

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Technical Indeterminism: Toward a Sensible Architectural Tool

Tom Shaked, Aaron Sprecher

Technion - Israel Institute of Technology

In his acclaimed work, *On the Mode of Existence of Technical Objects* (1958), the French philosopher Gilbert Simondon considers automation to be a low degree of technical perfection, a mode of operation which sacrifices potential uses due to its control by economic or social vectors. He suggests an alternative: relating to the margin of indetermination inherent in the machine in order to increase its sensitivity to outside information. Sensitivity of machines to information, rather than an increase in automation enables technical ensembles to reflect a new relation between human, object and tool. What matters here is that introducing indeterminism in a technological context contradicts some discourses regarding automation that are prevalent in architecture today, for instance, notions of optimization and performance as mathematically deterministic processes that feature prominently in the field of digital architecture.

As automation increases, the distance between man and his tools increases. In light of the fact that digital fabrication tools are physically detached from their operators, the question arises: how do we define a new approach that allows for sensible indeterminism when the apparatus is no longer situated in our hands. In this article, we take into consideration Simondon's notion that the function of a tool is realized by a continuous relation between the body of its operator and the manufactured object. Inspired by anthropologist André Leroi-Gourhan's *Gesture and Speech* (1964), computer scientist John Hart extends this definition by proposing craft as a possible framework for that relation as it offers continuity between the body of the craftsman and the object through knowledge of specific gesture-enabled functions.

We argue that Simondon's philosophy provides a context in which to assess the relationship between man and technological tools in the field of digital architecture, noting a few seminal works on the subject: *Liquid Architectures in Cyberspace* (Marcos Novak, 1991), *Earth Moves* (Bernard Cache, 1995), *Embryological House* (Greg Lynn, 1999), *Digital Materiality in Architecture* (Gramazio & Kohler, 2008), and *Material Synthesis* (Achim Menges, 2015). All these projects question the nature of architectural operations and tools in the age of automation, the role of the architect in a post-human condition, and the importance of the sensory dimension of the tool.

We propose to outline a progression in the sensitivity of the architectural model starting with generative models of virtualization capable of displaying algorithmic sensitivity, to models of actualization that incorporate automated manufacturing. These models exemplify a new form of digital craft, most recently expressed by the widespread use of low-cost open-source electronics and the popularity of do-it-yourself culture. Architects are moving toward a physical model that promotes a new relationship between operator and tool that employs indeterminism and sensitivity as a new platform for exchange.

The Generative Tools of the Architect

Hanan Kataw

In generative architecture, the architect, rather than designing an architectural artefact, designs a generative system. The system then, based on a number of parameters, generates the architectural design. This paper investigates the architect-tool relationship in generative architecture. To understand the role that the generative tools play in these design processes, the evolutionary solver Galapagos, built within Grasshopper plugin for Rhinoceros, was studied. The solver was analysed in the light of the evolutionary algorithms underlying its performance and their relation to theories of natural evolution. The paper then follows an anthropological approach to the human-tool relationship and offers a co-evolutionary understanding of the relationship between the architect and the generative tool where the architect and the tool engage in a pedagogical conversation allowing them to evolve simultaneously. The paper also addresses the different agencies acting in the generative design processes. For years, tools were seen as an extension of the architect. Even the first digital tools were not an active agent in the design process. However, today, with the introduction of generative tools that are equipped with the ability to generate results that are not fully controlled by the architect, a new understanding of the role and the agency of tools is needed. The paper underlines the importance of addressing the architect's agency as well as the tool's agency by utilising feminist standpoint theories. It highlights the problematic aspects of an apparent objective, scientifically optimised generative architecture that undermines the social, political, and economic aspects of architecture. With the rapid development in the field of generative tools, the role they play in architectural design processes and our understanding of them might change. Many of the issues presented in this paper need to be repeatedly readdressed in the light of these changes. Nevertheless, overlooking these issues can create a gap in the discourse that allows for all kinds of misappropriations. This paper proposes a situated approach to generative architecture that allows for a continuous discussion around these tools.

Smart Sketching

Carolyn Lange, Thomas Schmitz, Anja Neuefeind

RWTH Aachen

The paper proposed for the theme ‚The Instruments of the Architect‘ takes the framework of the research module ‚smart sketching‘ as the starting point to regard how digital drawing tools inform drawing strategies of the architect.

The research module ‚smart sketching‘ started in 2017, operates in the scope of *Werkzeug-Denkzeug* (2012) which explores the interaction of the hand, the brain and the tool with a transdisciplinary approach. Here, drawing tools are defined as tools to think rather than tools of representation. With our fundamentals in the research on embodiment in architecture and collaborations with the disciplines of informatics and gesture research, ‚smart sketching‘ also topics the interwoven state of digital drawing tools with traditional drawing techniques.

For architects the role of drawing is gradually shifting from generating pictures to its use as a tool to think. This process of ‚thinking through drawing‘ is established in the medium of the workbook: a pencil on paper. Most digital drawing software imitates the traditional hand drawing and its aesthetics. But these ‚smart‘ drawing devices do more than translating the analogue into digital. They include in their data processing nature new features to draw and to think. In that, they serve its user new concepts and strategies: we copy and paste, we travel in time, we are confronted with bugs, we design (think) in layers. We zoom in and out, we re-scale, we reproduce, we synchronize and we share.

The digital image is comprised of different manifestations of data, stored in a binary form. Its characteristic is its modifiability (P. Lunenfeld 2000). The surface of a digital produced drawing may employ traditional stiles. Its basis structure though is generated by fundamentally new methods. These new methods also come with a price: a digital drawing process lacks in sensuality regarding the interaction of user and tool. Moreover the software deliberately seeks to dismiss coincidence, luck and failure: all key factors of the design process. To not limit but to extent the drawing process with these new devices, the module leaves the perspective of the user for the perspective of the developer.

The workshop ‚DIY digital drawing pen‘ examples this approach: individual low-tech versions of digital drawing pens were created in making use of the online DIY-community, hacking optical mouses and modifying sketch-codes in the open source program ‚processing‘. With this first modest developing experience in mind, we are now exploring high-end products (graphic-tablets, pen-abled devices and digital drawing pens). Here we trace down bugs and errors, miss-use features for our purpose and reflect on the intention of tool (developer). Here we explore drawing strategies that are specific for the digital environment. As a tool determines actions, methods, operations and thoughts (Schmitz, Groninger 2012), ‚smart sketching‘ explores how new devices extend thinking

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in architecture. In the framework of the conference, we are delighted to present the first conclusions and open the discussion on how 'smart' we are using our new thinking tools.

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Affective Indices

Pari Riahi

University of Massachusetts Amherst

The widespread use of digital media in architecture makes them the primary set of tools through which architectural ideas find their ways into realizable forms. Over the past thirty years the spread of the digital has homogenized the mainstream architectural drawings to the point of utter monotony. However, new forms of drawing have emerged through individual practices that display unexpected results. While in the pre-digital world, one's drawings were synchronous as one's style, the post-digital brings forth built-in conditions, where the affective and atmospheric aura of drawings are multi-layered entities made of pre-existing forms and images as well as novel ones. Some architects and critics contend that the expressive potential of digital drawings is one of their most essential attributes. Identifying this facet of drawing as the fifth dimension of architecture and coining it "donegality", Neil Spiller argues for drawing's ability to convey a specific aura or create a unique atmosphere.ⁱ The paper investigates the role of digital media in maintaining or augmenting architectural drawings' affective power by surpassing pervasive tools and methods. Since the affective facet of drawing is one that carries the most individual trace of its author, inevitably, debates on this subject revolve around comparisons between analog and digital. Mark Garcia questions the premise of analog drawings being 'the most intelligent, interesting, effective and efficient way of translating and communicating images and contents of our imagination' by suggesting that the invention of "new drawing and imaging technologies, materials and media" which are by nature more intelligent is bound to yield more imaginative drawings in the future. ⁱⁱ Garcia's argument is plausible since the multiplicity of visual sources and new technologies offer a richer canvas for developing drawings in the first place. By looking into a set of examples, the paper compares processes of **superimposition, addition, fragmentation,** and **assemblage** as strategies that have been at work pre and post digital to test the boundaries of architectural imagination and expression.

Highlighting the nuances of drawing practices of pre and post digital, the work recognizes that drawings of today are more complex and mediated, calling for technical prowess and technological alacrity. New computational methods, embodied experiences, animated and simulated environments have filtered through the architectural scene, making the arena of drawing more expansive and the palette to work from more elaborate. Observing that over a very long period of time simple analog drawing methods have showed enormous power in capturing the viewer's attention and emotions, the work questions how the more complex digital processes fare in that regard. Looking into drawings that are in keeping with the tradition and those that confront it, the paper looks for signs of the indices of affective expressions as a potent and critical facet of drawing.

Wednesday 22 November 2017

16:30-18:30

Paper session 3

Treatises and manuals

Location: Berlage Room

Session Chair: Merlijn Hurx

Utrecht University

Between Instruction and Implement: Nineteenth-century Architects' Handbooks as Disciplinary Scripts

Erik Carver

Columbia University

Haunting any history of architects and tools is the question, "are architects workers?" While today we ask whether architects belong to a digital proletariat, in the early nineteenth century the question was whether they were builders. Played out between leading architects, institutes, and journals, this debate accompanied the rise of general contracting in England. As we know, architects emerged with white collars firmly in place. Yet the struggle gave birth to several new contrivances, including the architect's handbook. These, along with specification books, challenged clear divisions between specific instruments and general instrumentality; they were neither client's instructions nor worker's implements. Instead, they outlined a medium zone of standard commands, properties, techniques, and norms. In doing so, and in dividing aesthetic from technical production, they shaped the modern architect as much as they shaped modern buildings.

Handbooks emerged to coordinate architecture as a technical-discursive system, centralizing and diffusing "architect's data" for use in drawings and specifications. While reflecting prior epistemic ordering and progressive conceptualizations of calculability, they also opened up unprecedented possibilities for authorial and cultural expression, even as they confirmed divisions of labor.

Imperial industry perfected in the handbook a new vehicle for portable data. In the Anglophone world, its most prominent authors included architect John Trautwine, who left William Strickland's office to build infrastructure in Colombia and Panama, engineer Guilford Molesworth, who planned railroads in Sri Lanka; and Frank E. Kidder, who left Ware and Van Brunt to work as one of the first American "consulting architects."

By the 1870's, engineer's and mechanic's handbooks permeated the construction industry. In providing dimension and performance standards, they facilitated the calibration of complex practices outside of apprenticeship and academic institutions. In the 1880's, architectural handbooks joined them by editing and expanding their contents, often with articles from architectural journals and encyclopedias as well as manufacturers' circulars.

Combining treatise, catalog, and *vade mecum*, these pocketbooks testify in practical and epistemic terms to the idea that any strict division of architect and engineer before the late nineteenth century would be premature. Yet at the same time, the standardization these books abetted supported new notions of design agency. While earlier pattern books had united design and construction knowledge for the use of regional builders, Pocketbooks severed this relationship, allowing authorial architects to float free from now-routinized craft practices, into globalized forms of composition like the Beaux Arts.

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When computers first appeared in the large architectural offices of the 1950's and 60's, it was not CAD, but rather text-centric routines and databases that first pulsed across their screens. Our digital tools are built on top of standards, specifications, engineering formulae, and cost estimating data initially compiled in the gilded age. As we contemplate a new gilded age of data, it is worth looking back to the previous one, to appreciate the collective work these tools represent, their scripting of architectural subjectivity, and the structures of inequality they helped naturalize.

Jørn Utzon's tool for designing the Sydney Opera House (1958-1966): The 1925-edition *Yingzao Fashi* [Chinese Building Standards]

Chiu Chen-Yu, Meltem Gürel, Helyaneh A. Tabrizi

Bilkent University

In his 1958 study trip to China, Danish architect Jørn Utzon (1918-2008) acquired two copies of the 1925-edition *Yingzao Fashi* [*Chinese Building Standards*], first published in 1103 AD, with the help of his colleague in Beijing - Professor Liang Sicheng (1901-1972). The *Yingzao Fashi* meticulously documented the imperial building practice in feudal China with numerous reconstructed illustrations and vibrant colours. The *Yingzao Fashi* would later become one of the most important monographs for Utzon's study of the design, structure, construction and decoration of Chinese monuments during his lifetime obsession with Chinese building culture. Previous scholarship has much argued the importance of Utzon's *Yingzao Fashi* in his Sydney Opera House design proposal (1958-1966). However, the precise role of perceived ideas and ideals from the *Yingzao Fashi* in Utzon's Opera House design has been still unexplored.

This paper, as the first of this kind, clarifies the role of *Yingzao Fashi* as an instrument used by Utzon to articulate, test and communicate his design ideas and ideals of the Sydney Opera House. To this end, it constructs a series of comparative analyses based on the analogies between the illustrations from the *Yingzao Fashi* and Utzon's design proposal. These analyses were conducted after surveying *The Utzon Archives* and the architectural collection of Utzon's family, as well as interviewing Utzon's staff and colleagues. These analyses indicated how Utzon had perceived the *Yingzao Fashi* and interpreted imperial building practice in his Opera House design. This paper argues that the *Yingzao Fashi* served not only as a conceptual means to initiate Utzon's design concepts but also as practical implements for him and his team to solve the problems of design and construction, before their forced resignation in 1966.

This paper shows how the *Yingzao Fashi* had an important impact on the aesthetic vision and architectonic character and qualities on Utzon and his team's design process and inspired principles for the Sydney Opera House design. It also indicates the subsequent difficulties in constructing the inspired built forms and the conflicts with their clients and engineers, especially in the unrealized Opera House interior and glass mullions. This paper further questions whether or not the *Yingzao Fashi* was the most appropriate and adequate tool for Utzon and his team to apply for the Sydney Opera House project. That is, could the use of the *Yingzao Fashi* as the tool by Utzon and his team made the completion of their Opera House impossible?

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Furthermore, Utzon's interpretation of the *Yingzao Fashi* provides a channel for us to critically assess his understanding of Chinese architecture as a synthesis of varied ideologies and artefacts. This helps us to review the important knowledge making and transformation of Chinese architecture with a specific cross-cultural context. Utzon's perception and interpretation of Chinese architecture seen in his Opera House design further deliver us new ways of conceiving this still mysterious monograph - the *Yingzao Fashi* - and its referred imperial building practice in feudal China.

A Design Tool for All Seasons: The Construction Manual of the City of Tehran (1933-1968)

Seyed Mohamad Ali Sedighi

Delft University of Technology

In the aftermath of the First World War, the Iranian government in collaboration with the Municipality of Tehran developed one of the most extensive and novel urban transformation programmes in the Middle East. As part of Iran's modernisation project undertaken by Reza Shah since 1921, this programme was so designed to re-organise traditional urban structures of Iranian cities, and to improve the hygiene condition of urban areas. To facilitate these objectives in the capital, the Municipality of Tehran developed a planning manual, known as the Construction Manual of the City of Tehran; and the design expertise needed for this endeavour was largely brought about by European-educated Iranian architects such as Gabriel Guevrekian, Ali Sadegh and Naser Badie. Forming an important instance of transnational planning between the 1930s and 1960s, they designed the manual as a mediator between the language of the International Style and the architecture culture of Iran, and as a tool to involve urban residents in the development of the city. While the manual outlined regulations for the construction of houses, residential buildings, and public spaces such as streets and squares, Iranian architects used the manual to develop a new housing typology in East Tehran known as Kuy-e Chaharsad-Dastgah (1946-48). Building upon a brief analysis of transnational influences such as the early CIAM conferences, this paper reveals how local architects used the Construction Manual to design Kuy-e Chaharsad-Dastgah and to promote a new urban life in Tehran. This paper also poses questions about the role of modernist Iranian architects in developing the manual, and the ways through which they incorporated modernist planning ideas into the manual. Subsequently, investigating the development of Kuy-e Chaharsad-Dastgah might demonstrate the extent to which the application of a design tool such as the Construction Manual of the City of Tehran would enable architects to imagine an alternative way of city making, and to involve urban residents in the development of their cities.

Planning Manuals as Tools for Modernization and Nation Building: The circulation of ideas through German-speaking architects and urban planners in Turkey, 1923-1950

Fatma Tanis, Carola Hein, Herman van Bergeijk

Delft University of Technology

In the early 20th century, the modern movement triggered the international circulation of knowledge through architects and urban planners. One mode of this dissemination was the invitation of French- and German-speaking architects and urban planners to build modern cities in foreign countries. A notable example was the case of Turkey. Between 1923 and 1950, a number of German-speaking architects and urban planners had considerable impact on the country's built environment. During this period, German building manuals became tools for the dissemination of architectural ideas and consequently played a crucial role in modernization of the Turkish nation, founded in 1923. This paper investigates the function of the building manual in the process of nation building in the early republican period in Turkey. Through an analysis of key publications, including Camillo Sitte's *Der Städte-Bau nach seinen künstlerischen Grundsätzen*; Reinhard Baumeister's *Stadt-Erweiterungen in technischer, baupolizeilicher und wirtschaftlicher Beziehung*", Theodor Fischer's *Sechs Vorträge über Stadtbaukunst*, the paper offers an analysis of the key figures and ideas involved in this process, and the relationship between architectural and political ideals that emerged through the manuals.

The new Turkish Republic sought to establish itself as a modern nation that was distanced from the Ottoman Empire. The invitation of foreign experts to advise on the design and planning of Turkish cities was part of this modernization process: for example, Carl Christoph Lörcher was assigned to work on Ankara's plan in 1924, Herman Jansen's plan for Ankara came into effect in 1928. In addition to working directly with the government, these practitioners were also involved in the development of the Turkish architectural education system. Ernst Egli, for example, was assigned as a professor to Istanbul Fine Arts University in order to reshape the architecture programme. The influence of German architects continued during the Second World War. When the Nazis took power in 1933, a number of German professors began to work at the Turkish universities. German speaking professors also worked as practicing architects, such as Clemens Holzmeister, Martin Wagner, Hans Poelzig, Bruno Taut, Paul Bonatz, etc. These figures introduced key European ideas, including the *Siedlung* and the "Garden City", in written and built form which subsequently influenced the production of Turkish manuals, and thus influenced the construction of the modern nation.

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The circulation of the ideas during this construction has been seen in several directions. The architects and urban planners were invited by the government, so that they carried their knowledge which is under influence of Sitte, Baumeister, Howard etc. Sitte's 1889 dated book *Der Städtebau nach seinen Künstlerischen Grundsätzen* was translated in Turkish by Celal Esat Arseven in 1926; Kemali Soylemezoglu translated the lectures of Theodor Fischer *Sechs Vorträge über Stadtbaukunst* (1919) in 1941, 1942 and 1945 in the Turkish magazine called "Arkitekt".

Acknowledgements

The paper is derived from project, which is granted by EFL and developed by Prof. Dr. Ir. Carola Hein, Dr. Herman van Bergeijk and Dr. Cor Wagenaar. "*Der Städte-Bau nach seinen künstlerischen Grundsätzen*"; "*Stadt-Erweiterungen in technischer, baupolizeilicher und wirtschaftlicher Beziehung*", and "*The art of Town - building*" are selected books by the co-applicants for the EFL project.

Thursday 23 November 2017

9:00-11:00

Paper session 1

Travels and recording

Location: Room K

Session Chair: Gabri van Tussenbroek

University of Amsterdam

Tools Of Taste & Erudition: Object Culture & Mimetic Praxis Of Architects In Britain, 1700-1780

Elizabeth Deans

George Washington University

The decades following the British Restoration period brought global trade, commercial prosperity, and increased literacy to England, propelling and permitting able and interested individuals to pursue avocations. Intersecting with the reconstruction of London, the public need for architecture generated a widespread passion for building. Amateurs dabbled in architectural hobbies and traveled in the mode of the grand tourists around Britain in pursuit of architectural knowledge which in turn created a need for increased production of tools for self-learning. Advancements in book production, paper quality, and ink coincided with London's burgeoning production of instruments. Dilettantes equipped themselves with these recording materials and instruments to practice drawing, recording, and rendering for peripatetic periods of study. This new wave of non-elite architectural tourism furnished "dabbling designers" with portable equipment. Pocket-sized cases containing small, specialized instruments encouraged more sophisticated drawings to be produced. Growing popularity amongst amateur architects ushered in luxurious materials over the course of the century; simple wooden and brass implements lost favor while solid silver protractors, ivory rulers, and cases covered in tortoiseshell and stingray skin, for instance, became highly coveted. Leather-bound albums were an essential tool employed to record and chronicle notes and designs. Albums, too, grew into more elaborate and upscale objects, reflecting the individual's evolving quest for articulating skills and owning tools as legitimizing expertise of the architectural trade. This investigation aims to elucidate a discrete cultural history of the pursuit of architectural education amongst the middling sorts, who have received very little scholarly attention in architectural history.

This critical analysis interprets the material culture of amateur architects in the eighteenth century, illustrating developing social, cultural, and scholarly interests growing in Britain as a result of economic success and increased intellectual curiosity as part of the greater Enlightenment. By looking at portable objects this paper offers a highly evocative essay underscoring the necessity of instruments alongside books as tools reflecting taste and erudition between different social strata. Each object submits a unique snapshot of the culture of architects and their things, and how travel and knowledge were made possible prior to the establishing of formal design academies in Britain.

Embodied Memories, Retroactive Traces: Le Corbusier's Travel Sketches in Le Modulor

Panagiotis Farantatos

University of Oslo

Following a short trip to Turkey in October 1948, Le Corbusier revisited the carnets from his 1911 "journey to the east" and subsequently reworked selected sketches with measurements from Mt. Athos and Pompeii. Along with material from recent travels, redrawn copies from Gustave Le Bon's *Les Premières Civilisations* (1889) and references to his own work, the sketches were published two years later in *Le Modulor* (1950). Constituting the bulk of the chapter "Material verifications and Coda", they "document" the Modulor's assumed validity in historical buildings and works of art.

Infamous for his ambiguous stance towards the past, Le Corbusier was, nevertheless, keen on restaging his work in the meanders of architectural history, often through the agency of travel sketches which legitimized his theory and practice. It is, however, in the Modulor that his travel sketches attain their maximum performativity; in the "Verifications" chapter multiple layers of interpretation coexist, shaking the foundations of what is actually depicted: the works themselves (often restored by archeologists), the actual measurements linked to the author's corporeal experience, or the superimposed Modulor values.

This paper seeks to explore the operational range of the architectural travel sketch and to consider its potential value in the age of digital design. Drawn in carnets or random sheets of paper, travel sketches correspond to a first interpretation of the architectural phenomenon as the drawing hand abstracts and reconstructs. This same sketch, when later consulted, redesigned, edited, published, commented and juxtaposed to other visual material, acquires the agency of direct or subtle intervention. Thus, the travel sketch - initially a means of representation - is simultaneously a means of remembering, distorting and forgetting. It does not only intervene in the present, but, most importantly, in the past; it is the past that is being re-contextualized according to the strategic needs of the present. The sketch becomes a palimpsest operating in serial mode.

Based upon original research in Le Corbusier's archive, *carnets de voyage* and published work, the paper explores his method of (re)drawing, discussing the very materiality of the sketches included in "Verifications". Furthermore, it reconstitutes the genealogy of those visual references in their previous appearances within Le Corbusier's published corpus.

I discuss this process of redrawing as a literal "manipulation" of memory leading to the contemporaneity of the material, to a synchronization of past and present: a "spatialization" of time. Moreover, I argue that the process constructs "prefigurations" of his Modulor system and an *a posteriori* narrative of progression; the references presented

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in “Verifications” are acquiring their “true” scope only after the creation of the Modulor system, as if they had been “waiting” for its inevitable emergence.

Finally, building upon concepts from social and cultural studies (P. Connerton, A. Assmann, P. Bourdieu), I discuss the drawing hand that not only performs but also “remembers”, and approach the travel sketches as an embodied-memory device, capturing the very act of measuring and drawing, and providing a link to a corporeal experience that is constantly rewritten.

E.W. Godwin and the Pocket Sketchbook as Professional Tool and Autobiographical Trace

Richard W. Hayes

Hayes-Roberts

E.W. Godwin (1833-86) was one of the leading architects of the Aesthetic Movement whose career encompassed architecture, furniture design, journalism, criticism, dress reform, and theatrical scenic design. Throughout his multifaceted life, drawing and note-taking in a pocket sketchbook formed daily constants which he pursued over the course of thirty-five years. Now in the archives of the Victoria and Albert Museum, Godwin's sketchbooks—approximately seventy of which remain—offer an unparalleled record of the architect's professional, personal, artistic, and intellectual life. My paper examines the role of the pocket sketchbook in Godwin's career as architect while exploring the expanded uses Godwin made of this tool. Forming at a young age the habit of drawing every day in his sketchbooks, which typically measured 6 by 3 ¼ inches, Godwin quickly came to rely on them as an essential agent of his *habitus*—the skills, routines, and dispositions integral to his practice. Contents include exactingly precise measured drawings; quick jottings of ideas for buildings and furniture designs; initial delineations of new wallpaper patterns; rough drafts of theatre reviews; portrait sketches of fellow artists in bohemian London; snippets of overheard conversations; mementoes of travels with his mistress, the actress Ellen Terry; and ambitious series of sketches undertaken in the British Museum and the decorative arts collections of the South Kensington Museum.

Initially, I place Godwin's sketchbooks in the context of Victorian note-taking and sketching by fellow architects of the Gothic Revival. I then seek to clarify the ways in which Godwin recalibrated the pocket sketchbook as a vital instrument for the broadened purview of practice which his manifold career manifests. As an advocate of "judicious eclecticism" in architecture, Godwin depended upon his pocket sketchbooks for graphic documentation when researching historical styles. Godwin also recommended the habitude to apprentices as an optimal method for developing their skills. In 1880, for example, he stated "Careful drawing is an exercise the young architect cannot have too much of; therefore, always keep about you a fair-sized pocket book."

Finally, I review Godwin's sketchbooks in terms of the important role of the notebook as wellspring of modernism. From Baudelaire to Rainer Maria Rilke and Susan Sontag, the fragmented narrative in a daily journal has become a modernist talisman. While avoiding a narrowly proto-modernist view of Godwin, I analyse the autobiographical aspects of the architect's sketchbooks in terms of his anxiety about securing a place in posterity. Instrumental tools of his practice, E.W. Godwin's pocket sketchbooks now serve as autobiographical traces of one of the most inventive figures in British design culture of the nineteenth century.

Messbildkunst in Berlin: Albrecht Meydenbauer and the Invention of the Photographic Survey

Emma Letizia Jones

ETH Zürich

In 1868, the little-known architect and government building surveyor Albrecht Meydenbauer (1834-1921) climbed to the top of the Rotes Rathaus in Berlin to shoot the first 360-degree photographic record of the city. In contrast to the idealistic, hyper-real clarity of a more famous painted panorama of Berlin made only 30 years before, Eduard Gaertner's *Panorama von Berlin*,¹ Meydenbauer's photographs are shaky, blurred, unstable. In contrast to Gaertner's crisp survey, Meydenbauer's, though technically more accurate, betrays the limits of its new technology. Meydenbauer nonetheless continued to experiment with film in the scientific recording of the city, becoming a pioneer in the use of early photographic technology to survey buildings and map terrains - a process he called *Messbildkunst*. He also used the photographic survey image - or photogram - to document important buildings for posterity: a process that proved immensely useful for German reconstruction efforts after the Second World War. The Meydenbauer archive, containing around 20,000 similarly staged photographs of Berlin and its environs, is an example of one of the earliest uses of architectural photography for the documentation and preservation of the city.

To better record and survey his landmarks, Meydenbauer developed a photogrammetric camera that combined all the features of a commercial camera with a wide-angle lens suitable for capturing urban scenes. From his photographs alone, Meydenbauer could then plot the extent of a building in plan without the need for direct surveying, relying instead on two known systems of spatial interpolation. Both of these methods derived the geometric properties of an object by using a process of restitution derived from a perspective image; that is, by working 'backward' from the perspective (in this case the photograph) to the orthographic drawing using the conventions of projective geometry. Meydenbauer described the process in his publication *Handbuch der Messbildkunst in Anwendung auf Baudenkmäler- und Reise-Aufnahmen* (1912).

While the photographic tools Meydenbauer invented to make his surveys were new, the principles he employed were not. The same processes of geometric reconstruction the architect used to turn his photographs into orthographic surveys had long before been described in Swiss optician J H Lambert's 1759 drawing manual *Freye Perspective*, published whilst Lambert was in residence at the Prussian Academy of Sciences in Berlin (Lambert's projection system was subsequently used extensively in the teaching of architectural drawing in Berlin, contributing to the education of a generation of architects including both Friedrich Gilly and his pupil, Karl Fredrich Schinkel).

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1 Gaertner's work was painted with the aid of a camera obscura; Meydenbauer's made with a camera.

Lambert's premise of restitution is what makes Meydenbauer's photographic surveys so fascinating: they are part of a system by which a form of representation considered to be both absolute and universal (represented by orthographic projection) develops directly out of one assumed to be contingent, empirical and relative (the photograph, taken from the subject's point of view). Repeating a preoccupation of Berlin architects since at least the eighteenth century, Meydenbauer's Messbildkunst develops from the 'point of view' to the universal view, entirely reversing the more common lineage of architectural representation.

Portable 'laboratory' or memo-pad? The personal sketchbook of Cornelis Anthonisz (ca. 1500-1558)

Daantje Meuwissen

Vrije Universiteit Amsterdam

This paper explores an important yet little studied source: a 16th-century sketchbook, recently identified as the personal notebook of the Amsterdam-based artist Cornelis Anthonisz, who was active in printmaking, maritime cartography, panoramic woodcuts of historical battles and surveying.¹ Anthonisz is best known for his *Bird's-eye view of Amsterdam* (1538 painting, 1544 woodcut), and his many moralizing woodcuts.

The pocket-size sketchbook (10 x 14 cm), now kept in the *Kupferstichkabinett* in Berlin, dates from ca. 1520-1535 and contains over 100 quickly drawn sketches in pen and ink that testify to Anthonisz' engagement in various practices. In addition to motifs meant for artistic reference and training (such as ornament, figure and drapery studies), it includes many studies after nature (animals, human corpses, etc.) to expand the artists' repertoire. A good 40% of the booklet relates to architecture: sketches of Amsterdam buildings seen from high vantage points, church-facades and interiors, studies of ornaments in Renaissance style, 'micro'-architecture and possibly festive architecture, sketches of pillars, basements and geometrical principles and many studies of perspective, amongst others after Leon Battista Alberti.²

Based on this last mentioned group of sketches it is tempting to hypothesize that Anthonisz was, possibly by opportunity, active as architect as well and that he used his sketchbook as portable 'laboratory' to note down ideas and possibly preliminary designs. It is indeed known that in 1549, together with the Utrecht artist Herman Posthumus, Anthonisz designed and executed a large triumphal arch for Philip II's joyous entry into Amsterdam; other three-dimensional projects by his hand however are not known. But as Anthonisz was one of those typical Renaissance artists who combined artistic skills and worked in areas defined today as different disciplines, we might as well be dealing with a 'designer' who mastered the new architectural language and used his booklet as a 'memo-pad' in his creative processes.

This paper will explore how Anthonisz used his sketchbook and what the function of the architectural sketches might have been: a) *designs* for (festive or micro) architecture relating to unknown activities of Anthonisz in this area, or b) operable *tools* for visual inquiries that testify of the fluidity of movement between the arts in early modern times, showing interconnected manifestations of artistic expression.

1 D. Meuwissen, 'Attributing the Berlin Sketchbook to Cornelis Anthonisz.', in: *Simiolus. Netherlands Quarterly for the History of Art*, 39-1 (2016), pp. 15-43

2 O. Kik, 'From Lodge to Studio. Transmissions of Architectural Knowledge in the Low Countries, 1480-1530.', in: P. Lombaerde (ed.), *The Notion of the Painter-Architect in Italy and the Southern Low Countries*, Turnhout 2014, pp. 73-88.

Thursday 23 November 2017

9:00-11:00

Paper session 2

Photo and film

Location: Room E

Session Chair: Dirk Van de Vijver

Utrecht University

Photography and the architect: the tool and the gaze

Iñaki Bergera

University of Zaragoza

My long research experience on the relationship between architecture and photography has allowed me to explore many specific case studies that not only concern the nature of the disciplinary nature of this association as a subgenre of photography, but its instrumental condition in the hands of the architect. The gradual professionalization of architectural photography, which during the Modern Movement extolled the virtues of the photographer as an essential ally of the architect –as an extension of his own eye– was never a detriment to the role that the architect has given to photography as a tool and instrument for personal use.

This instrumental role is certainly more explicit and inalienable when we refer to the journey of the architect. It is here where it seems that the camera has supplanted the pencil as the tool the architect uses to record what his eye has gauged from his observations. Cases such as that of Bernard Rudofsky –which I have had the fortune to analyse in depth– are surely the most illustrative of the mediating role of photography as a tool to articulate the visual narrative of the architectural discourse.

The architect analyses, investigates and designs with his eye. The plastic and formal nature of architecture obligates the architect to collect images –first in his retina and then on photographic paper or on a screen– which will serve as a reference and catalyst for the resulting creative processes. While reference has been made to Rudofsky, we might likewise support this argument with the figures of Charles and Ray Eames as a paradigmatic example of visual designers. Hungry for images, they sensitively but inordinately captured everything that surrounded them in their daily lives, confident of using their photographs to discover and bring to light ideas for present and future designs. While the scale model is also an essential design tool for the architect, it is necessary that the architect, camera in hand, explores and compares this three-dimensional model in order to obtain a reliable two-dimensional and synthetic portrait. Thus, photography documents and reports on the visible, but it also explores and interprets. Seeing with the camera, for the architect, means verifying and contrasting.

Through Frank Lloyd Wright, Erich Mendelshon, Gunnar Asplund, Richard Neutra, Robert Venturi and Aldo Rossi we can also explore the scope of the instrumental use of photography, not to mention the contradictory Le Corbusier who, on the one hand, saw the camera as ‘instruments for the idle’, but at the same time supported his entire discourse on the valued conferred to images. Finally, John Pawson and Eduardo Souto de Moura are two good contemporary examples of the inescapable value of photography as a tool.

The proposed contribution does not pursue a documentary or exhaustive description of a particular case study, but a rigorous transversal analysis of the theoretical nature of the object of study, while offering a specific, we could say operative, overview of the real implications and practices of photography as a tool for the architect.

The Ceaseless, Seamless Real: Cinematic Visualisations in the Neoliberal Age

Hugh Campbell, Igea Troiani

University College Dublin

Since the 1990s, the advent of advanced visualisation techniques and, more recently, of Virtual Reality (VR) modelling has - supposedly - closed the gap between the representation of, and the experience of, buildings. Previous to this, even the most compelling and meticulous of perspectival images or the most elaborate of three-dimensional projections could offer only a partial or abstracted encounter with an architectural design. Now, even at the earliest stages of a project, the new tool of the fly-through has become a common currency, opening spaces not yet realised to highly realistic view.

The recent film for the BIG (Bjarke Ingels Group) development, 2WTC, at the World Trade Center by the London-based creative studio and production house, Squint/Opera, is a particularly elaborate instance of the genre, including within itself an on-site introduction by the project's 'author' Bjarke Ingels and culminating in a looping, giddy ascent through the planned tower.

Ubiquitous at the upper end of the neoliberal architectural market, such animations are generally a form of seduction, used to win and to promote commissions. The emphasis is on offering an experience which is seamlessly and ceaselessly real - even more markedly so in the case of VR. This paper will argue that this pursuit of the ceaseless, seamless real acts to mask the conditions of production of such animations and to sever them from the cinematic models from which they borrow, and ultimately serves to neuter their potential within the design process.

The paper is divided in three sections. Firstly, we look at how cinematic language has been co-opted in the construction of the architectural fly-through. In particular, we examine how the tracking shot - with its promise of spatial and temporal continuity - has become co-opted as a leitmotif of the genre. While approximating the formal properties of the tracking shot through the overlaying of footage shot on location with motion graphics, CGI and other film editing techniques, the fly-through nonetheless misses out on the critical and narrative capacity of its cinematic antecedent: it is form without content.

Secondly, we discuss how the outsourcing of animation has shifted the terms of architectural authorship and has redefined architecture's relationship with neoliberalist drives for marketisation and globalisation. When commissioned by an architectural firm to create an animation, specialised architectural visualisation agencies such as Squint/Opera, Luxigon, DBOX and Factory Fifteen engage collaboratively with the architect designers in the design process, sometimes modifying or developing the

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design themselves. The traditional design labour of the architect becomes a shared endeavour. However, the creative potential of such hybrid modes of production is usually suppressed by the drive towards the flawless, finished realism. The concluding section of this paper will consider the potential of alternative modes of visualisation which might, by means of breaking the flow and letting the seams show, disrupt and lay bare the hidden processes of production, while also offering a more open-ended, critical and imaginative tool for architecture.

Architectural photography as tool of aesthetic inquiry

Angelo Maggi

Università Iuav di Venezia

Hand in hand with digital bloggers and old-fashioned photojournalists actively enrolled for trendy magazines, architectural photography makes images of the built environment accessible to the world. The acceptance of photography as a reliable tool with the capacity of creating *true* representations of reality makes architectural photography as a vital instrument for architectural historiography. The architectural historian James Ackerman states that “modern history of architecture had its origins in Western Europe at about the time when photographs of buildings became available to scholars”. Revealing that photography goes beyond the functional to reflect the aesthetic, intellectual, and cultural concerns of time, my paper proposes that each photographic image of architecture can be studied both as a primary visual document and a tool of aesthetic inquiry. Architectural photography gradually subverted a long tradition in painting, drawing, printmaking and architectural rendering. The history of architectural photography parallels both the development of photographic techniques and the visual communication assumed by the medium in its different expressions. Can we consider the photographic image of a building an active rather than a passive object? For instance, the multiple versions of the Flatiron building in New York photographed by Stieglitz, Coburn and Steichen, combined a new function that constructed how images communicated architecture during the first decade of the twentieth century. The photographer Tim Davis in a recent project emphasized the transformative power of the architectural image as photo-object. He literally diminished the iconic status of the *Colosseum*, showing a scattering of nearly two dozen digital cameras, all with the Colosseum miniaturized in their viewfinders. The main aim of my paper is to demonstrate that architectural photography should be interpreted as a constructive and productive tool instead of its general acceptance as passive object. I will discuss several photographs recently acquired by Archivio Progetti at Università IUAV in Venice.

The dynamic semantics and syntax of photomontage: visualizing monumental architecture in Italy

Jennifer Shields

California Polytechnic State University

This paper will discuss the lineage of photomontage methods in Italy, specifically comparing the semantic value and syntax, or technical methodology, in the work of Piranesi and Superstudio, suggesting that they have more in common from both perspectives than it might initially appear.

Collage has long been an instrument for the visualization of architectural space, employed by artists, architects, landscape architects, and urban designers - for perhaps centuries. Collage is a diverse medium that can be precise or gestural, represent two or three dimensions, and result in pictorial or abstract images. Despite its scope, collage is precisely defined as an assembly of various fragments of materials which are combined in such a way that the composition has a new meaning, not inherent in any of the individual fragments. Photomontage is a type of collage in which *photographic* fragments are extracted from their sources and recomposed to create a new image. While photomontage has been cultivated as a tool for architectural visualization in a variety of geographic locations, an important lineage in the development of photomontage methods can be found in Italy.

Photomontage is dependent on the technology of photography - but there is precedent for this methodology that pre-dates photography's invention. The etchings of Giovanni Battista Piranesi, the eighteenth-century Italian artist, are a critical precursor to photomontage. Working before the advent of photography, Piranesi constructed new worlds drawn from existing cities and his imagination. While Piranesi's etchings give the illusion of reality in a synthetic image, his *Vedute* (Views) of Rome were often montages of Roman monuments reconstructed in a single perspectival view. The strategy of appropriating existing architectural fragments and recombining them to envision an alternative reality reemerged in late nineteenth and early twentieth century innovations in photomontage. According to the Italian architectural historian Manfredo Tafuri, Piranesi's images: "present an alternative that departs from actual historical conditions, one that pretends to be in a metahistorical dimension - but only in order to project into the future the bursting forth of present contradictions." These contradictions embedded in a rhetorical suggestion about alternative or future cities is noted by Colin Rowe and Fred Koetter in *Collage City*, in which they posited: "Could this ideal city behave as a theatre of memory and a theatre of prophesy?" While Rowe and Koetter were interested in collage for its metaphorical value, collage as an act of making necessarily addresses this dichotomy between memory and prophesy as well. From the Italian Futurists to the radical architecture group Superstudio, photomontage became a primary medium to visualize the present and future of architecture and culture, with varying attitudes about history

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and technology. Superstudio suggested that: "it is a 'moderate utopia' to imagine a near future in which all architecture will be created with a single act," a concept evident in the subtractive nature of their photomontages in which portions of the existing context of the image were removed, and replaced with a neutral and rational grid. While it might seem that Piranesi and Superstudio occupy opposing positions as visualizing theatres of memory and theatres of prophesy respectively, an analysis of their work provides evidence for analogous semantic and syntactic characteristics.

Thursday 23 November 2017

9:00–11:00

Paper session 3

Drawings and Narratives

Location: Berlage Room

Session Chair: Tom Avermaete

Delft University of Technology

Drawing utopia: Manuals, diagrams, and orthogonal projection in early 20th-century Bangkok

Lawrence Chua

Syracuse University

This paper examines the shared characteristics of religious illustration and technical drawing in illustrated manuals that circulated in early 20th-century Bangkok. It argues that these manuals were not only instructive technical tools used by the nascent Siamese architectural profession and the Chinese secret societies that organized the city's migrant construction labor, but were also speculative apparatuses that reimagined architecture as an integral part of a utopian nationalist project. Although most histories of the manual, the diagram, and orthogonal projection place them within the emergence of a technologically-driven modernity, this paper draws on Thai- and Chinese-language archival sources to chart another, related trajectory that has been overlooked by historians of European architecture. By deploying representational conventions from both the Chinese *tu pu* 圖譜 and illustrated cosmological *samut khoi* สมุดข่อย or concertina-folded religious manuscripts in Siam in the 18th and 19th centuries, the *Tamra ang yi* or “Secret Society Handbook” and the *Baeb nawakam* or “Styles of Nawakam Kowit” reveal much about the encounter between migrant Chinese “magician-carpenters,” Siamese nationalists, and European building experts in the early 20th century.

The *Tamra ang yi* is a set of illustrated rubrics or *tu pu* that use diagrams of Chinese architecture to plan the lodges of the secret societies that organized migrant construction labor in 19th- and early 20th-century Bangkok. Such manuals had been of critical importance to trades in China like skilled carpentry, which used manuals like the 15th-century *Lu Ban Jing* 魯班經 that combined knowledge about technique with mythopoetic narratives about the origins of the profession, its rituals, divination practices, and the correct uses of “building magic.” In lieu of trade unions, such manuals—and the secret societies that organized the trades—were instrumental in communicating not only craft and technology, but in protecting its practitioners, who would have had singular access to “supernatural” powers that could produce either auspicious or harmful domestic environments.¹ The *Baeb nawakam*, meanwhile, is a handbook of schematic drawings published by the Siamese Ministry of Religious Affairs shortly after the first general strike of migrant workers in 1910, to show how provincial Buddhist abbots might construct monastic complexes without the labor of skilled Chinese craftsmen. While intended as a technical guide, it also draws on older conventions of representing religious space, dynastic patrimony, and architectural detail to conceptualize an ideal national architectural style. This paper offers a new way to understand the utopian imagination that developed amidst the reorganization of the building trades as new trans-regional migrations of construction labor (between the

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1 Joseph Needham described the scientific and technological pursuits of early Chinese history as undertaken by “technician-magicians.” Joseph Needham and Wang Ling, *Science and Civilization in China, Volume II* (Cambridge: Cambridge University Press, 1954), p. 134.

southern coast of China and Bangkok) and architectural expertise (from Turin to Bangkok by way of St. Petersburg and Istanbul) intersected in early 20th-century Bangkok.²

2 Pirasri Povatong, *Chang farang nai krung sayam* ชาวฝรั่งในกรุงสยาม (*Foreign craftsmen in Siam*) (Bangkok: Faculty of Architecture, Chulalongkorn University, 2003); Phusadi Thiphat, *Chang farang nai krung sayam* ชาวฝรั่งในกรุงสยาม (*Foreign craftsmen in Siam*) (Bangkok: Chulalongkorn University, 1998).

The Tools of Analysis: The Comics of Everyday Life in Housing Research and Design

Dalia Dukanac

University of Belgrade

In the process of outgrowing their brand as genre for children, cartoons and comics have often been used as tools of representation in architecture. Though they appeared on more occasions as an aftermath of the design process, aiming to popularize architectural practices, I would argue that comics have played an important role in research of everyday life and its impact on architectural and urban design.

Deep roots of graphic narrative as a tool of architectural analysis and representation can be traced all the way back to Le Corbusier, and most notably his *Lettre a Madame Meyer* (1925) which in a cartoon-like way rendered the practices of everyday life in architectural design. Following the postmodern exploration of alternative visual language of architecture, the application of graphic narratives in architectural research and design parted. The Anglo-Saxon pop culture in architecture embraced comics and cartoons as preordered tools of marketing. In another context, that of French and Italian scholarly research, comic-books were addressed and studied as academic topics and thereby absorbed into high culture. Somewhere in between these two directions, the post-1968 reform of university education in Belgrade had a particular outcome in the establishment of the New School of Architecture (1971-1973), within the Faculty of Architecture, that introduced new models of research and education which encouraged cartooning, comics and fiction as alternative, yet potent tools of analysis and design. Though the forward-looking New School was short-lived, it still resonates the faculty curricula and education methodologies.

This paper investigates comic art as architectural tool of analysis of everyday life in Belgrade based on three case studies in architectural research and design spanning over a period of almost sixty years. Echoing the New School methods in different ways, all three cases focus the role of everyday life in housing designs, whether it is the continuous practice of comic art by architect Dejan Nastić published by different periodical magazines (1960s), design for housing estate Resnik - Avala Grad in Belgrade suburbia by architect Aleksandar Djokić (1980), or the most recent research in socially, financially and ecologically sustainable housing by interdisciplinary collective "Ko gradi grad" (2014).

The advantages of graphic narrative that comics and cartoons offer, appear to have been recognized in different cultural and social contexts of Belgrade as prolific in the analysis and representation of everyday life and its role in architectural and urban design processes. I would argue that comics as architectural tool of analysis had no continuous evolution in the local context of Belgrade, but rather emerged sporadically, thereby essentially approaching, yet graphically departing from global tendencies and trends. In conclusion to this research, I propose a new interpretation of comics as a tool of transnational and transcultural exchange of knowledge and experiences in architectural design and analysis.

The Narrative Drawing – Explorations Through the Work of NATØ

Claire Jamieson

University of Hertfordshire

This paper will discuss the potential for architectural drawings to express narrative, through an examination of the work of NATØ (Narrative Architecture Today) – a group of architects who emerged from the Architectural Association at the start of the 1990s. The group are perhaps best known for their dramatic failure in their final year at the school by external examiners James Stirling and Edward Jones, who described their portfolios as ‘little more than a bunch of sketches with a few cartoons at the end.’ Focusing on those drawings, alongside others produced by the group between 1983-87, this paper will explore NATØ’s conceptualisation of narrative and how this was developed and expressed via the drawing.

Inspired by the raw vitality of London during the 1980s, and by urban culture including nightclubs, new-wave fashion, post-punk music and video, product design and subcultural style magazines, NATØ sought a mode of drawn expression that could break from the strictures of conventional architectural drawing. Their perception of contemporary architecture as mute and insular drove them towards architectural explorations that were by contrast highly expressive, exaggerating the present moment through meaning and sensation – an approach they defined as narrative architecture. Eschewing the static architectural orthographic drawing, the group experimented with vigorous sketches, paintings and collages – drawing on influences from video art, painting and sculpture to produce images that were dynamic and temporal.

This paper will present analyses of different types of drawings and images from across NATØ’s oeuvre, identifying the ways in which they departed from conventional architectural techniques and the effects of such approaches. In particular, the paper will examine techniques of fragmentation, deconstruction and montage, and the spectatorial journeys created both within individual drawings and between collections of images. Through these analyses, the paper will reveal how the tools developed by NATØ enabled them to express a form of urbanism that was participatory and purposefully ‘loose fit’ – formed through a ‘collation of incidents and processes’. Framing this discussion within the context of architectural theory on the drawing, the paper will also draw upon narratological studies on pictorial narrativity by Werner Wolf and Marie-Laure Ryan – employing terms and concepts from outside architecture to interrogate the ways in which spatial narratives can be expressed on paper.

Architecture Between the Panels. On the use of Graphic Narrative as a Tool for the Exploration of Architectural Space.

Carlos Machado e Moura, Luis Miguel Lus Arana

Faculdade de Arquitectura da Universidade do Porto

In his 1975 text '*The Electric Decade: An Atmosphere at the AA School, 1963-1973*', Peter Cook described the years of his tenure as a Unit Master as a time of effervescent creativity, where the crisis of the traditional understanding of the discipline reflected on an embracement of different means of representation. In this context, and in this very text, Cook surprisingly vindicated the role of cartoons and comics 'as a teaching device'. Cook argued that a new kind of architecture arose around the comic strip, one that stemmed from the need to wrestle with the doubts and paradoxes of the time. Archigram had indeed brought comics and cartoons into the architectural arena of the 1960s, making them a sort of 'default mode of expression' of the architectural avant-garde. Cartoons, along with other items imported from popular culture had a sustained presence in the publications of the counter-culture: from *Archigram* to *Utopie*, from Ant Farm's *Inflatocookbook* to *The Whole Earth Catalogue*, they helped shape the aesthetics of the strongly anti-establishment alternative architectural press, introducing a much wanted subversive streak. Soon they also entered schools, via student magazines such as *ARse* (1969-72), *Outnow* (1970), *Street Farmer* (1971-72), *AA Newsheet* (1971-74), *Ghost Dance Times* (1974-75), *Dupé* (1976-80) or *AAQ* (1968-82).

More specifically, comics and graphic narrative became particularly useful as a representational means at a point where architecture became progressively more indeterminate, freeing itself from the tyranny of the built object. Sequences, when paired with the 'open', fluid, cartoonish graphic style of comics presented a special ability to capture and communicate designs where form was less important than performance, undefined yet, or simply undefinable. Actually, the use of graphic narrative as a tool for the representation of architectural space is as old as modern architecture itself, and can be traced back to Le Corbusier himself, who famously used sequential images in his Letter to Madame Meyer amidst his evolution from the 'promenade architecturale' to spatial 'enjambment'. The 1970s only expanded on its possibilities, in an ideological-engaged period where the icons of modernity were substituted, in the students' universe of referents, by Instant Cities, Metamorphosing Towns, Bio-architectural systems, or ecologically-conscious transmutations. Unsurprisingly, comics, their language and their mechanics, also permeated into architecture design studios, where students embraced them along with DIY strategies, psycho(geo)graphical drifts, fun, irony and satire. Cook's unit in the AA's 5th Year was such an environment, where soon-to-become unorthodox professionals Mark Fisher, Piers Gough, or Stuart Lever found in comics a way to represent designs that were at the limit of what could be considered acceptable, or simply *architecture*.

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Half a century later, deep into the digital age, comics reemerge as a valuable asset for architecture. At a point where the affinity of architecture with narrative and fiction is strongly reevaluated, a new generation of professionals and architecture educators integrate comics in their work and teaching, not only as a visualization device, but also as a tool for alternative explorations of space and as a generator of architectural form. 'Architecture between the panels' offers a review of the different ways in which comic have been used as a pedagogical tool, in order to help establish their potential both as a teaching device and in their intersection with disciplinary architecture.

Thursday 23 November 2017

11:00-13:00

Paper session 1

Communication in practice

Location: Room K

Session Chair: Petra Brouwer

University of Amsterdam

Covert Communication Tools: Architectural Design Statements in Mid-20th- Century Portugal

Ricardo Costa Agarez

Évora University

Design and construction statements are mandatory in every building permit application in Portugal since 1909. By mid-century these bureaucratic documents had become essential means of expression - alternative communication tools, I posit - for architects and non-architects to convey arguments other than those merely functional and technical: to detail their design principles and understanding of site and context, the proposal's zeitgeist, the local traditions and particular circumstances of their context. Written in anticipation of the need for justification, upon request to elaborate or for far less self-evident reasons, such texts were more than mere formalities: they were opportunities for designers to translate their concerns and intentions, put their ideas into words, push the boundaries of their regulatory framework, defend their proposal from criticism or to overcome resistance. Using the design statement as a prompt, agents on both sides of the bureaucratic counter would expose or hide their agenda, dispute or accept impositions, try to open new possibilities in their context or insist on preserving the status quo.

Often echoing pressing debates in the architectural scene - from the modernist vs. conservative disputes and the new understanding of tradition in the 1950s, to the role of semiotics, the humanist turn, the redefinition of the public-private boundaries and postmodernist tenets in the 1960s and 1970s -, the designers' writings were submitted, assessed and subsequently archived and forgotten. Importantly, they were not meant to be read by anyone other than the officials involved and, rarely, the clients, making them a source for architectural history that is not only unconventional (and inexistent in many other contexts) but also complex, with its blurred public-private status. Yet they illustrate the built-environment culture of their authors, as well as that of bureaucrats, officials and politicians engaged in rule- and decision-making procedures, and can be seen as an outlet for the (otherwise invisible) discourse of myriad agents who did not publish their reflections by conventional means; furthermore, they can substantially complement the published output of better-known designers.

This paper will draw on a case-study of design statements written for works produced in Portugal between the 1950s and the 1970s, ranging from better-known pieces to more everyday initiatives, to interrogate their potential to be read as fundamental tools developed by architects, in their circumstance of time and place, to articulate, test and communicate their design ideas as well as their take on concepts borrowed from concurrent fields such as art, sociology and philosophy. While some of these writings can hardly be seen as comprehensive theoretical arguments, I suggest that they nevertheless form the outline of their authors' intellectual understanding of architecture, offering

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important glimpses to how (internationally) discussed ideas percolated into built artefacts, and how designers used this parallel means of expression to complement their projects. In this light, design statements in mid-century Portugal can be understood as tools of intervention for the architect to participate in the definition of the built environment and in the broader cultural conversation associated with this production.

Drawing from afar as instruction, artefact and activity

Lisa Godson

National College of Art and Design, Dublin

This paper addresses drawing as an instrument of the architect in relation to its tripartite status as *instruction*, *artefact* and *activity*. It has as a central case study the hitherto-undocumented drawings for the design and construction of buildings in West Africa by Irish architects from c.1948-1966. These were produced in Europe for missionary orders in the field in Africa by architects who rarely, if ever, visited the sites where their buildings were constructed. They were instructions for a situation where there was no supervisory architect on site, and for the construction of buildings by direct labour, typically under the direction of an amateurbuilder.

The conditions of their making, reception and use mark the drawings in particular ways:

As they were dispatched from Ireland to Africa and their interpretation unsupported by further supervision or communication from the architect, the drawings perform an exaggeratedly instructional role. For example, they are often highly detailed about basic modes of construction, including formwork and foundation-digging. The drawings include explanations for not only *how* but *why* certain techniques were to be used. Intended for conditions beyond the personal experience of those who drew them, this was sometimes in overstated fashion, particularly in relation to climate. As such, they draw stark attention to the limitations inherent in typical modes of architectural representation and the conventions of drawing as a mode of communication.

The drawings were *pro bono* work, typically produced by young architecture students employed for short periods of time in key practices. The naïvety of their execution and the range of hands involved evokes a richly varied Africanist imaginary in the extra-architectural details. All architectural drawings provide an artefactual record of contemporary visual culture beyond their instrumental and informational status. This is particularly emphasised in this case as the drawings include improvised and recurring motifs such as the sun, exotic vegetation and people dressed in the imagined clothing of Africa.

The activity of producing the drawings was partly dependent on manuals and periodicals that promoted a particular approach to designing modern architecture for 'the tropics' such as Maxwell Fry and Jane Drew's *Tropical Architecture in the Humid Zones* (1956). However, while certain elements were drawn from existing models, in time the Irish architects also devised their own conventions and details that expose the fault-line between modernist ideals of universally legible system and programme and the reality of physical distance and local conditions.

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An exploration of these seemingly most basic and rational instruments of the architect show them to be haunted by the competing emotions that typify architectural drawing of this era, thrown into exaggerated relief by the specific conditions in which this particular corpus was produced and understood. These include a sense of individual liberation from convention and tradition, and the frustration inherent in drawing as an instrument that situates the architect at the distal end of physical construction. Underpinning the paper is a reckoning with Carlo Scarpa's famous observation that 'drawing is the architect's only medium' and the 'principal material object that architects themselves produced.'

Faxing Architecture

Sebastiano Fabbrini

University of California Los Angeles

In the late 1980s, Aldo Rossi opened a satellite office in New York, turning his practice into a supranational organization. Most of the projects of the following years were developed along the Milan - New York axis, sending drawings back and forth with fax machines. This relationship is key to understanding the last decade of Aldo Rossi's career. Two sets of photographs, both taken in 1988, highlight the different ways in which the two spaces were conceived, calling for a close reading of the terms "studio" and "office." At its core, this dichotomy speaks to a back and forth between an artisanal and a corporate approach to architecture. In Luigi Ghirri's well-known photographs, the Milan studio was presented as Aldo Rossi's *wunderkammer* - a highly aestheticized environment, full of manual tools and devoid of both laborers and machines. On the other hand, a set of pictures taken by Aldo Rossi himself shows the different model at work in New York - a model that responded to the organizational logic and the physiognomy of the typical American office. In this information age interior, the work was almost completely computerized. This distinction reflected a division of labor within Aldo Rossi's practice, which involved both the modes of production (hand drawing or computer drawing) and the content being produced (presentation drawings or technical drawings).

The *trait d'union* was the fax machine, which allowed materials and ideas to be continuously exchanged across the Atlantic. A key aspect of faxing was that, while participating in the mechanization of architectural design, it did not quite belong to the digital world. In fact, the fax machines used by Aldo Rossi's generation were still based on analog technologies. While the advent of the computer was related to a new digital age, the fax embodied the swan song of an analog world that still had paper as its indispensable medium. The printing technology used by fax machines is particularly interesting. Until the mid-1990s, faxes used thermal printing, employing a special fine paper, coated with a chemical that changed color when exposed to heat. The particularity of this so-called thermal paper was its extreme lack of durability. Not long after the printing, the image-forming coating tended to detach from the medium, destroying the document. In other words, the drawing self-destructed after a few years. And this is why fax paper is not accepted by most archives. So, the cult of the drawing that accompanied Aldo Rossi's first Transatlantic crossings went hand in hand with the development of a technology that, while enabling architecture to circulate globally at an unprecedented velocity, reduced the drawing to a short-lived, non-archivable object.

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In a period in which architects were involved in the semiosphere up to their necks and linguistic theory was king, nobody seemed to recognize the impact of a tool that could actually turn drawings into language and then back into drawings on the other side of the world. In fact, the fax was designed to scan and transmit images through the telephone system, in the form of audio-frequency tones. Each scanned line was transmitted as a continuous analog signal. Then the receiving machine interpreted the tones and reconstructed the image, printing a paper copy. From this perspective, architecture was literally being sent through the telephone line. And this suggests an interesting parallel between the analog technology of the fax and Aldo Rossi's notion of analogy - the core of his theory of architecture. Canaletto's *veduta* of Venice with three Palladian monuments, none of which was actually in Venice, was often referenced in Aldo Rossi's writings to explain the mechanism of his "analogical design method." The geographical transposition of multiple objects was meant to produce an ensemble that could be immediately recognized, even though it was a place of purely architectural references. If early projects like *The Analogous City* for the Biennale of 1976 were done by copying, cutting and pasting drawings on top of each other, this design method took on a new dimension in the last phase of Aldo Rossi's career, as drawings started to be sent back and forth between the Milan studio to the New York office. The fax was the ultimate analogy-machine.

Developing innovative multi-scale and multi-disciplinary tools for environmental urban design. The case study of Xiamen Master Plan, China

Morand Lucie

Paris-Est University- Malaquais

Massive urbanization in China raises urgent ecological and social issues which become part of the global attention on sustainability and urban research. In this context, the doctoral research investigates how current Chinese planning approaches can provide new tracks of environmental strategies, with effective planning solutions adapted to the speed and scale of its urbanization. The hypothesis of the study is to consider the key role of Plan's design to engage cities in environmental choices and realizations, with the rise of new graphic techniques and tools for urban designer and architects. From this point of view, we explore the innovations and the potential development of Plans, as a multi-scale and multi-purpose modeling tool for environmental urban design.

The research is based on the analysis of one particular case study: the City of Xiamen in the Fujian Province, whose city planning is considered as a pioneer and successful environmental strategy represented within an original Master Plan Design. The remarkable example of Xiamen leads us to avant-garde planning methods and documents made since the early 1990's. In one hand, plans are used as a central tool for creativity, using graphic codes and design strategies in order to develop innovative city concepts. In another hand, plans are no longer designed only for functional or communication purposes, but are also mediator documents between the different actors and protocols of the project, assuring the link between the concept and the built reality. Finally, plans are becoming interactive and multidisciplinary tools, with adapted media and language.

The research focuses on three axes of analysis: 1) historical heritages and modern evolution of urban representations in China; 2) innovations in urban design techniques using new codes, tools or technologies; 3) assessment of construction sites in accordance with the project plan. The paper will briefly introduce the three main axes but will be focusing on the second approach, with the introduction of Xiamen Eco-City Plan and its innovations in terms of graphics and technologies.

Thursday 23 November 2017

11:00-13:00

Paper session 2

Social and Collective

Location: Room E

Session Chair: Sofie de Caigny

Architecture Institute Flanders

Tools for the Unknown: Design and Building Practices of the Open City Group, Chile.

Oscar Andrade Castro

Delft University of Technology

This paper focuses on the architectural methods and tools developed in the context of the experimental practice of the Open City group in Chile. Characterized by exploring the relationship between poetry and trades, this community of architects, designers, artists, and poets, has built diverse projects to accommodate both public and intimate life in the Open City terrains. Each one of these projects has been originated by a poetic act, which consists of a collective game done on the construction site and lead by the poets. With the realization of the poetic act, the group seeks to reveal an unforeseen and novel singularity of the place, that can be collected in the form of a poem or plastic event such as a mark or sign. What the poetic act brings to the project, is the possibility of a departure point as an unknown and indeterminate field, making of the project one of open-ended nature.

Following the opening of the poetic act, the trades of architecture and design have to undertake the process of generation of this open-ended project, by interpreting or deciphering its singularity understood as an unknown. Under this approach, the conception and materialization operations involved in the project become a highly experimental process characterized by questioning the logics of planning, as both operations actually occur simultaneously in the exercise of thinking while building. This paper will analyze three particular practices developed by the group in order to creatively deal with the open-ended nature of their projects: the *Ronda* (Round), Architectural Observation and the *Pormenor* (Monade). The *Ronda* is the approach of the group to collective action; a way to work in common by articulating individualities through a dialogue based on consent and the production of common knowledge. Architectural Observation can be understood as the direct contemplation of space and the acts of life by means of drawings and brief writings. This creative practice is constituted as a habit during the realization of every project by constantly Observing the project as it emerges. And finally the *Pormenor*, an architectural invention intended to address the incompleteness of an open-ended work. It consists of a fragment or discrete unit that ciphers an essential trait of the total, and at the same time is concluded in itself, allowing to sustain the materialization process in the consistency of a day, as consecutive conclusive fragments.

The research methods employed to study these approaches comprehended two main strategies. Firstly, the analysis of the design and building processes of some of the group milestone projects, through archival documentation and interviews. And secondly, 1:1 experimentation by taking part in the realization of concrete projects engaging with the Open City group design and building practices and principles. Concerning this last point, this paper presents a more in depth analysis and outcomes of one of the case projects developed by together with the group in the context of Documenta14 the year 2017.

The Tools of the 'Architects' in Informal Settlements: The Case of the Builders of the Brazilian Favelas*

Ana Rosa Chagas Cavalcanti

Delft University of Technology

This article addresses the notion of architecture in informal settlements. The intellectual reflection derives its roots from an in field research of almost four years in Brazilian *Favelas*. According to the author's experience, there are tools and strategies that the so called 'architects' of favelas use to build their houses but they are unwritten in the traditional architecture study. The research identifies several unwritten tools and modes of experiencing architecture in the favela. In the current paper they are described and classified as tools of perception, tools of conception and tools of negotiation.

As it is widely known, the favelas aren't built by professional architects. Usually the spaces are designed by a network of experienced masons in the community; or, through owners' auto-construction (*autoconstrução*) or even, through joint efforts of groups of inhabitants (*mutirões*) of the community.

Often, the layout of houses in the favelas does not derive from official plans. In poorest settlements, inhabitants and builders may use sticks to draw the limits of houses in the floor of the field of intervention. Sometimes, putting the furniture of their future houses on the floor of the terrain of construction can be also a way to both guess, speculate and measure the size, the proportion and the layout of the future house. On the top of the drafted limits, around the furniture, inhabitants usually build a frame, shaped as a grid, in which an infinite amount of materials are assembled in order to constitute the walls of the house.

These are only some the many accounts of the numerous calculations and tools adopted by the 'architects' in informal settlements, that have a particular system of signification for those who live in the favela and that can be also in contrast to the principles and norms that current architecture adopts. For example, the foundations of many houses in the favelas can consist of locally available materials casts (such as shells of *sururu*, in the *Favela Sururu de Capote* in northeast of Brazil).

The analysis of strategies adopted in the favelas to design space opens a debate. On one hand, on how to address planning in the *Favelas* based on principles of dignity in the building practices of informal settlements (i.e. safety and hygienic standard). On the other hand, current architecture bases its foundations on principles and notions sometimes distant from the functions and practices of inhabitants. This implies in a broader discussion between the technical apparatus of architecture and the logics of doing architecture in the field, with limited resources, as a way to both discuss architecture as a technocratic apparatus, and to build a debate based on the challenges that arise from the communication of the practices of inhabitants and, non parochial theories.

Devising Flexibility: Mass Housing, Self-management and Architectural Industry

Tijana Stevanovic

University College London, University for the Creative Arts, Newcastle University

Post-war housing has seen proliferation of various design and building systems, deemed 'flexible' as answers to the mass housing's fall from grace. Nicholas John Habraken's research published as *Supports (De Draggers, 1961)* and ensuing project developed in SAR (*Stichting Architecten Research*), Eindhoven was one of such efforts: a proposal for architects to be closely involved with industry for the design of basic, modular structure that would enable users to choose the finish of their individual dwelling units. This research, developed for Dutch dense inner city blocks was later mobilised in different legal contexts internationally, for self-help building in developing countries; in the 1960s and 70s it also particularly well resonated with socialist Yugoslavia's experiment in the workers' self-management, when a specific carcass prefabrication system (IMS) was favoured by both industry and architects for its alleged versatility for users and contractors. This paper interrogates through which disciplinary (knowledge) devices such design-industry complex considered flexible and synonymous with open prefabrication involves more than a mere technical innovation.

Belgrade architect Branko Aleksić insisted that apartments realised in IMS system harboured potential for future users's self-devising of 'tools for conviviality', assuming the system's intrinsic openness. The concept was in line with the popular critique of institutionalisation and industrial co-optation of knowledge, theorised by Ivan Illich in 1973 in the book bearing the same title, and favoured by the critics of both governmental and corporate housing programmes. The argument presented in this paper is that favouring 'open prefabrication' could not simply be regarded as reflection of freedom for architect's poetic gesture or user's free choice, but it also exemplifies disciplinary operation that facilitates sustained eradication of wider social objectives from architectural profession's interests. Furthermore, if self-help and self-management principles are deemed design approaches that aim emancipating the user, we need to also consider building industry's operational logic in order to broaden understanding to what extent 'open system' is a socially-conditioned and politically-charged concept, not merely rational one. The freedom embraced by designers in this particular coupling had also economic, workforce and skills-related effects, often overlooked by architectural history's preferential treatment of buildings' formal repercussions. In the self-managed economy of socialist Yugoslavia, architects' reluctance to engage with the building standards have been then characterised by critics as correlated to the building industry's market-induced natural contempt towards regulation. However, all too often the endemic division of labour—enabling architects' own tools for detachment from building industry through their institutionalised knowledge—is overlooked. The paper proposes that such examples of open prefabrication, though deemed simply rational solutions, have lasting social footprint on the sphere of architectural work and the limits of architectural knowledge, as evidenced in today's further severing of disciplinary boundaries between architecture and building industry.

Building the Minimum House: The South African Building Research Institute and the Social Survey, 1947-1952

Rixt Woudstra

Massachusetts Institute of Technology

In November 1952, at the first Regional Conference on Housing Research South of the Sahara held in Pretoria, the South African architect Douglas Calderwood presented various “minimum standard” type designs for low-cost, subsidized housing for Africans. Seemingly ordinary, the small square brick houses with thatched roofs were the result of several years of sociological research. In housing design, Calderwood explicated, “the designer is... faced with the problem of knowing man before he can plan.” Social surveys could help the designer understand family size, family income, but also living habits, even the use of furniture, and thus provide better housing, the architect claimed. More specifically, for Calderwood, a Principal Research Officer at the South African Building Research Institute, sociology provided a scientific method to understand the *nie-blanke*, the non-white. “In Native Housing,” Calderwood continued, “house design faces numerous unknowns and it is only from social research that the designer can approach his task with any degree of confidence.” Instead of relying on personal knowledge, sociology offered the architect objective knowledge about the inhabitant. In this paper, I examine how the South African National Building Research Institute used social surveys as a design tool for housing design for *nie-blankes* in South Africa.

While scholars have pointed to the fact that housing organizations employed sociologists to conduct social surveys to understand the dwelling needs of the new inhabitants of the government-funded, mass housing projects arising on the fringes of European cities in the late 1950s, it is less well known that similar tools were deployed as a design method for low-cost housing projects outside of Johannesburg in the late 1940s. Calderwood’s “minimum standard type houses” were part of a multi-year research project on minimum housing standards for *nie-blankes*. From 1948 until 1951, in an attempt to find a solution for the burgeoning urban black population in cities such as Johannesburg and Cape Town, Calderwood and his colleagues worked on developing the first national legal housing standards for Africans and a ‘minimum standard’ house. Stimulated by European ideas about minimum standards in housing—specifically the first CIAM conference in Frankfurt in 1929 on the *Existenzminimum*—architects such as Douglas Calderwood, in collaboration with sociologists like Hans van Beinum, conducted research about people’s housing needs.

Presenting the social survey as a method to understand people’s dwelling needs, the final report echoed contemporary debates about the provision of social welfare. In practice, however, the social surveys allowed architects such as Calderwood to present architectural form as the objective outcome of scientific research, in other words, to separate design from apartheid politics. One of the surveys, for example, pointing to the lack of furniture in houses in the townships, resulted in an even further reduction of the minimum spatial standard. Culminating in the construction of thousands of ‘minimum standard’ houses across South Africa’s townships, the National Building Research Institute helped construct a deeply racially segregated society.

Participatory Architecture from the Tools Perspective: Constructing a Social Historiography

Dikla Yizhar

Technion, Israel Institute of Technology

The proposed paper will explore the potential contribution of “tools” as a framework for reading architecture as a social project. From the epistemological perspective, the Aristotelian notion of “*techne*” (τέχνη) as a form of disciplinary knowhow may be applied to explain how tools articulate architects’ perception of the social – as the various ways in which people relate to, use and exist in space. The tools architects develop also reflect their positioning vis-à-vis the social structure in which they practice and work. Latourian frameworks help further develop this notion, by demonstrating how knowledge is produced in the transition across disciplines, as well as within the architectural discipline – from the perceptual through the conceptual to practical. From this perspective, tools operate as a dynamic social setting, as objects of inquiry and knowledge generation, constantly refining and articulating schools of thought and scientific inventions. Reading architectural tools as a perception, a positioning and an apparatus can provide an integrated analytic framework for a historiography of the social in architecture that transcends modernist paradigms.

Architectural tools will be used in the proposed paper as a framework for exploring the 1960s and 1970s’ participatory turn in architecture. Scholars tend to explain participatory architecture on the ideological level as an expression of postwar critique in the face of changing economic and political realities. The paper will argue, however, that the postwar school of political thought, which integrated concepts such as freedom and empowerment into architectural practice, was conceived not only on the ideological level, by demonstrating how the question of participation was engaged by architects on the disciplinary level – as a rethinking from the tools of discipline.

The paper will present a comparative analysis of tools developed by three architects: John Habraken’s pictograms, Walter Segal’s construction manuals and John Turner’s organizational diagrams. It will analyze them as “translating” or refining tools borrowed from other disciplines and explain how their non-formalistic and non-representational characteristics articulated a new understanding of the material world and its social implications as a form of action and in terms of construction, production, or organization. The paper will also demonstrate how the instruments reflect each of the architects’ different positioning within the societal structure in which they acted.

The paper argues that the ways that these participatory tools articulate new perceptions of the sociality and materiality challenge Euclidean traditions, which have undergirded the primary instruments of architecture to this day. This is particularly relevant to today’s rapidly changing sociopolitical environment and multiple practices and knowledge bases, contributing to our ability to evaluate how our practice can generate change from within social structures.

Thursday 23 November 2017

11:00-13:00

Paper session 3

History

Location: Berlage Room

Session Chair: Koen Ottenheym

Utrecht University

“After-the-fact” Measured Drawings: a conduit between architectural historiography and practice.

Lori Gibbs

University of Pennsylvania

Practicing architects have redrawn historical buildings for centuries and, in this sense, define architecture’s historical “past” through documentary evidence. Measured drawings are frequently used as the pictorial convention of choice, giving shape to the material “facts” of architecture’s historical qualities. This study will investigate the discursive dimension of such drawings by questioning the objective framework and clarity of fact, measured orthographic drawings often imply. Although such documents appear to be records of the “past,” this study aims to illuminate how they can function as a historiographical tool, used subsequently by architectural historians to craft larger narratives, and as a creative source of architectural knowledge tightly interwoven with the realization of design practice. Exploring this intersection of activity entails that architectural knowledge created by documentation is neither static nor stationary, but rather recombinant and ever shifting in quality. In this capacity, such measured drawings function as a conceptual device, permitting the practicing architect to navigate reciprocally between a form of historical analysis and the projective demands of design.

A comparative and interpretive analysis between two case studies will further explore this issue in detail. Measured *Archeo Projet* drawings produced in the early 1920s at the University of Pennsylvania will be analyzed relative to measured drawings created by the Historical American Building Survey (HABS) in the 1930s. In this comparison, measured drawings gain and lose different discursive qualities with the application of different graphic techniques.

The Beaux-Arts *Archeo Projets* are methodical, highly detailed, and carefully executed measured drawings rendered in watercolor. These drawings also graphically express architecture’s immeasurable qualities, conveying ideas such as: mosaic, entourage, modeling of atmosphere, and an implied sense of masonry or stone construction (with the graphic technique of *poché*). While current scholarship maintains direct ties between the Beaux-Arts trained architects as the creators of HABS surveys, this study posits that graphic systems from practice (such as construction drawing conventions) permeated the measured descriptions of historical buildings by HABS in the 1930s. (Significant aspects of these graphics can still be observed in current methods of heritage site documentation). By re-casting the “past” into graphic conventions associated with construction and contemporary design practice, the expression of immeasurable qualities fell largely absent from the HABS documents, marking a significant difference between these documents and Beaux-Arts precedents. Besides illustrating the variety of nuance permeating measured drawing as a pictorial framework, an expansion in scope of historical subject matter by HABS included newly considered American buildings, extending beyond the Beaux-Arts canonical examples.

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This shift in pictorial representation of architecture's historical "past," begins to illuminate the discursive dimensions of measured drawing for the architect creatively engaging with a multiplicity of temporal dimensions (both reflecting on precedents and designing in the present). This mode of discourse, through graphic expression of material remains, is argued to be an intermediary link between the architect's analysis of the past, while simultaneously serving as a creative ground for the practitioner to explore the possibilities for new interventions.

The Body as Sensory Tool: Phenomenology and Our Understanding of Space

Allyson McDavid

Parsons School of Design

The study of history has been indispensable in the design process of our most respected architects. For them, the act of physically inhabiting iconic buildings was necessary to fully grasp why certain structures endure in the architectural pantheon; certainly, these spaces continue to stir the senses and solicit response long after they were first built, through their exquisite proportions, materials, and deft manipulation of light and sound. The atmospheres created by these buildings long ago, and which remain palpable to the present day, inevitably enrich the architect's conceptual registry. Often, the experience of these earlier works is later recalled for inspiration, and consequently the past is used to answer design questions of the present.

These architects understand that phenomenology - the study of human experience, of sensorial consciousness, of emotional sensibility - can be engaged to craft spaces of profound resonance. They look to the body as a sensory tool to direct their creative process, from conceptualization through realization, to create buildings that are intended to awe; in so doing, they admit as their priority a desire to elicit similar reaction from those who would later inhabit their work. This paper will discuss the body as a sophisticated architectural tool in the understanding of space, and that in honing this accessible tool, we may advance our tireless quest to build what will in turn, inspire others.

This paper looks at the traditionally underestimated role of the phenomenological in architecture as a tool to be consciously activated in the design process. It will position all the senses - including visual, aural, tactile, and olfactory - as an indispensable device for architects, one that may be consistently refined through study of the material past. How this sensorial toolkit was deployed by architects will be illustrated through various examples: (i) early modern design inspired by the 18th century Society of Dilettanti who surveyed ancient ruins in Europe, Africa, and the Near East; (ii) the Classical training of architecture students of the *École des Beaux Arts*, who graduated to build cities of modernity at the turn of the 20th century such as Paris, London, and New York; (iii) the design processes of modern and contemporary architects such as le Corbusier (*Notre Dame du Haut*, *Ronchamp*) and Peter Zumthor (*Therme Vals*, Switzerland) who relied on their knowledge of history to create some of the most acclaimed architecture to date. The paper argues for a more rigorous engagement of the sensory legacy of architectural history as a source of creativity for practitioners; that in activating this aspect of history, architects may become better equipped, and more inspired, to design and build.

History, a renewed tool for architectural practice and research? Postmodern France as a case study.

Nina Mansion-Prud'homme

Université Bordeaux Montaigne

This paper aims at analysing the way History established itself as a renewed tool for architectural production and research in France in the late 1970s. In the early years of that decade, concerns were raised among architectural historians and architects regarding the state of the French architectural heritage and the lack of interest towards Architectural History. At the same period, the renewal of History - which boundaries and subjects had been transformed from the *Nouvelle Histoire* to the « tournant critique » - brought it back into the spotlight and established it as a role model for all human and social sciences. In that context, the nascent field of architectural research set the ground for the return of History. As early as 1974, the first published call for projects invited research projects related to history and famous historians such as Michel de Certeau or Manfredo Tafuri who had been called as experts and jury. Architectural History was not a new field of research in France at that time, but it had accessed the status of an academic discipline by imitating the methods developed by History during the second part of the 20th century. For example, Architectural History drew inspiration from the methods of the *Microstoria* that mainly led to the development of the monographic approach as the dominant one during the 1980s and the 1990s. Meanwhile, several decades after the *Annales* campaigned for an active use of primary sources, Architectural history rediscovered its own sources - architects' archives - and redefined its methods.

Simultaneously, a few French or French-speaking architects - all related in one way or another to the concept of Postmodernism - found in History a tool for formal but also theoretical renewal and political statement. Among these few, we want to focus our paper on a network of architects who turned to History to protect the shape and the essence of some European cities they felt were endangered. Focused on the central figure of Maurice Culot, we will read into the involvement and the links between stakeholders such as Bernard Huet, Léon Krier, Antoine Grumbach, Philippe Panerai and Jean Castex,... Inspired by Aldo Rossi and Manfredo Tafuri, they wanted to protect the historical continuity of the city and its architecture. Most of them had given up the creative part of architectural practice to become historians and we consider their theoretical production as a great example of the use of History to rebuild the architectural practice. What kind of History did they draw on? Has History managed to establish new methods and subjects as strongly as Philosophy, Sociology, Communication, Anthropology did? To what extent can we consider the science of History as a tool or rather the Past as a source of inspiration ?

In a twofold perspective, this paper aims at demonstrating how the return of History as a tool for architectural practice and research encouraged Architectural History to rethink and rebuild itself.

Focussing the Past. History as a conceptual tool

Freek Schmidt

Vrije Universiteit Amsterdam

Of all the tools available to the architect, history is probably the most versatile one. In terms of knowledge, it is also the least exact and most malleable part of the epistemic history of architecture (Wissensgeschichte der Architektur). This paper investigates history as a conceptual tool, and how it has been used by architects to make sense of the architectural production of the past. It will focus on how interpretations and representations of architecture of the past have shaped, and still are shaping narratives to legitimize specific design concepts and interventions.

This then, is a historiographical study that focuses on the vision and the focal point of the architect/historian, and the lenses employed. Special attention will be devoted to the mechanism that 'modernizes', or even de-historicizes (and decontextualizes) past architectures, to make them understandable to the architect at a certain point in time. This process, which can take on very different guises, is often overlooked in architectural history, and particularly in the study of early modern architecture. The thorough recontextualization of influential studies of Italian Renaissance architecture since the late 1940s, by scholars like Rudolf Wittkower and Colin Rowe, has made clear how these readings were constructed in close relationship to contemporary architectural design thinking, thus demonstrating the links between architectural history, theory and practice. Especially the work of Wittkower fuelled similar investigations in other countries, interpreting sixteenth and seventeenth-century buildings and landscapes within modern knowledge systems, using modern toolboxes and a modern vocabulary, as a result reading early modern architecture through modern lenses cut for modern architects, looking from a functionalist perspective.

To demonstrate how diverging opinions, or less straightforward modernist thinking were much more present than we assume today, this paper focuses on the historiography of Amsterdam's ring of canals, a UNESCO World Heritage List since 2010, and how its interpretation and evaluation varied extremely over the last century. At the centre of this investigation lies a book published in 1946 as *Bouwen van Woning tot Stad* ('Building between Home and City') for the expansion and reconstruction of Amsterdam, with detailed plans by prominent architectural offices crafted during the Second World war. This plan has hardly received serious attention since its publication in 1946, presumably due to its rather unusual ('radical'), non-modernist nature. For our purposes, it will be analyzed because of its rather specific claims on European and early modern town development to reinforce contemporary urban planning, and the similarities it presents with Siegfried Giedion's *Space, Time and Architecture* (1941). By recontextualizing various interesting and telling historical interpretations on Amsterdam's urban evolution and how these reinforced distinct narratives, this paper should clarify how history serves as an influential analytical tool in the service of new concepts or interventions.

The Use of Historical Patterns and Local Knowledge in the Architectural Design Process

Herman Vande Putte

Delft University of Technology

Knowledge is a major instrument for the architect. Historical knowledge, which ranges from the single case narrative to the empirical law (Prigogine & Stengers, 1984), is an important part of that 'knowing' (Downton, 1998, p. 15). Historical knowledge is used by architects a.o. as a catalogue from which they copy or make liberal interpretations (see e.g. Quatremère de Quincy, 1823), as a vocabulary to communicate about a design or to compare a design against (see e.g. Leake, 1996), as a means to precisely determine the dimensions and materials of a design (see e.g. Mortelmans, 1981). Famous through their use of history are architects like Andrea Palladio (1508-1580), Roberto Venturi (°1925), Aldo Rossi (1931-1997) and Philip Johnson (1906-2005). But also Hendrik Petrus Berlage (1856-1934) was much inspired by historical precedents.

Given the current stage of knowledge development in the built environment, the knowledge used by architects is, next to scientific laws, also stored in precedents, patterns, types, habits, traditions, styles, craftsmanship, legislation, local knowledge, rites, myths, religions, literature, arts and many kinds of narratives. Some of these storages contain facts from a single case, others integrate series of facts from different locations or different periods of time. Braudel (1949, cited in Hunt, 1989) posited three levels of integration that correspond to three different units of time: structure (or *longue durée*), conjuncture (or medium term) and event (or the single case).

This paper investigates the way architects may use historical patterns of the '*longue durée*' and the knowledge stored in these patterns to study particular properties of a design, such as its feasibility, which covers acceptance by the commissioner up to institutional buildability (Vande Putte, 2017). Author argues that structural historical patterns are a productive knowledge system for this purpose as they can capture local architectural knowledge (Geertz, 1983) and effectively insert this knowledge in the architectural design process.

This argument is made plausible through a tree step discourse. First the accommodation history of a large organisation is reconstructed. This reconstruction covers a period of about 150 years (Vande Putte, 2008, 2009). Then patterns for accommodation demand and design are distilled from this reconstruction, whereby the method to construct these patterns is well explained (see e.g. Clark & Pause, 2005; Guney, 2014). Eventually the use of these patterns in an architectural design process to study the feasibility of the design is described and evaluated.

The result of this paper is a series of historical patterns of the accommodation of large organisations and a substantiated reflection on the use of structural historical patterns in architectural design processes. The outcome is a more balanced attitude towards the use of history in design processes, a re-appraisal of the knowledge of the past, and an understanding of the way local knowledge is embedded in architectural realisations.

Thursday 23 November 2017

14:15-16:15 | **HNI Rotterdam**

Paper session 1

Professionalism

Location: Auditorium, HNI

Session Chair: Amy Thomas

Delft University of Technology

Clients, Architects, and the Contracts that Hold Them Together

Athanasίου Geolas

Cornell University

“Perhaps no one thing is more important for the client to remember throughout the building of his house,” advises North American architect C. Matlack Price, “than the fact that, after engaging an architect, he has entered upon a business relationship.” Published in 1916, Price’s *The Practical Book of Architecture* is one of a series of “practical” guides; this one offers advice on how to navigate the relationship between a client and an architect. At the heart of this liaison lies the contract. These documents are the primary tools for defining the roles of both the client and the architect while managing the expectations of each. Unlike other architectural instruments, the contract is a tool that works on the articulations between people, rather than material and space. The set of Standard Contract Documents distributed by the American Institute of Architects (AIA) in the early twentieth-century provide insight into how architects conceptualized, executed, and entered into relationships toward the completion of an architectural project.

Architectural History often moves quickly between architects and their projects—assuming in this shift that the aspirations of one can be found in the mute matter of the other. One effect of this belief has been to contribute to the effacement of architects as people in the world and the relationships they engage in before the process of construction begins. Documents are a form-of-thought with which architects manage (and are managed by) knowledge, material, labor, oversight, and even reputation. By focusing on the document as a conceptual tool that is deployed towards practical ends, it is possible to reinterpret architectural practice. As one such document, the contract is both a conceptual tool helping to conceive of and regulate roles and services, and also a practical tool insofar as the paper on which it appears may be circulated, signed, and filed away to secure the details of those expectations. In other words, contracts both constitute something so abstract as a relation amongst discernible parties, and they materialize that abstraction making it legally binding in the process.

Contracts intervene in the built environment that already exists. For better or worse, they are also a primary condition under which it is possible today to speculate on and potentially rebuild that reality. Looking back to the moment in U.S. History when this became standard, it is possible to diagnose the instrumental role of the document in how architects thought about and practiced their discipline. Contextualized in the debates within influential institutions like the AIA, this paper takes a closer look at these socially, economically, and political tuned relationships leading up to 1916. When discussing the difficulties of selecting an architect for a new building project, what compelled Price in his 1916 *Practical Book* to remind potential clients that “in general, he should know that the architect is a human being, like himself”? Ultimately, what do we gain by taking Price’s central claim seriously and acknowledging the contract as a tool in the execution of architecture via a business relationship?

The Danish Great Optimization (1945-75): Instruments and Tools to organize an Efficient Practice

Angela Gigliotti

Aarhus School of Architecture

Starting from the WWII the research field of “Architecture and Labour” has widely developed from the first addressing of three modes of production within the profession: the horizontal atelier, the vertical assembly line and the corporation (Hitchcock, Drucker, 1945-47). Scholarships that mainly combine modes of production within the architectural practices with changes and theories related to Labour. In this frame what it’s relevant to address here is the *Organization for Efficient Practice*, as it was named an early 60s inquiry on *Architectural Record*. I refer to all those “hidden recipes” published in manuals and specialized journals after the WWII that, while introducing prominent architectural practices, aimed to lead their peers to success focusing also the on the specific instruments, tools, and rules applied in the workflow by the architects. A part of the inquiry mentioned above series, another example of this was also the issue 8/1961 of the Italian journal *Zodiac*, where successful organizations from the US were promoted to an Italian audience as the basis to transfer the know-how on affairs management, and hopefully the same size commissions.

The spotlight in the field of research has been, for many reasons, mainly focused on the United States, however also in Scandinavia, the dissemination of this sort of “toolkit” was widely promoted, in particular by Tarras Sällfors. Known as the father of the Great Optimization, the Swedish economist was able to change the mode of production of a generation of “white-collar” workers, also influencing the architects.

My paper addresses this niche and considers the “*Organization for Efficient Practice*,” or *Tegnestuens Organisation*, referring in particular to the Danish case and to the set of instruments and tools codified for local architects to promote the best efficient workflow within their practices under the Golden Years of Welfare State (1945-75).

Specifically, in this paper, based on my ongoing Ph.D. research, I look to some paradigmatic documents, collected with an archive work related to the architectural profession in that particular timespan. First the “*Haandbog for Bygnings-Industrien*” (Langkilde, 1937) especially in the chapter related to the instruments needed to optimize the architectural workflow. Secondly, the Architectural Exhibition “*Tegnestuens Organisation*” (Akademisk Arkitektforening, 1943) focused on how five leading Danish architects organized at that time their workflows and modes of production, showing detailed tools and instruments. Lastly the monographic publication in *Arkitekten Magazine* (1/1945) on the latter exhibition.

Analysing the data collected through an interpretative research, I argue that the particular Labour conditions blossomed during the beginning of the Welfare State in Denmark, was shaping the praxis of architecture intentionally using as mean the dissemination of toolkit composed of successful strategies, instruments, and tools.

This paper aims to show that those toolkits for the architects at that time were meant to transfer proficiency in the office organization as a basis to get also the one in the building constructions. The belief was that the organizational and the architectural ability were consequent, but I aim to demonstrate how they were clearly detached into the everyday praxis.

The Mediating Instruments of Professionalism

Bryan E. Norwood

Mississippi State University

Professionalism is constituted by a collection of instruments roughly divisible into three categories: instruments of organization, instruments of gatekeeping, and instruments of duty. That is, professionalism aims to gather an exclusive body of practitioners, to ensure that the members admitted to this body are properly qualified, and to define what these members should do with their authority. On a non-cynical reading, the legal and material instruments of professionalism are implemented because there is some specific body of disciplinary knowledge that is valuable—socially and financially—that should be protected and promoted. However, defining this knowledge for architecture has presented difficulty. What does the professional architect know that laymen or members of other professions like engineering do not? What knowledge are the instruments of professionalism deployed by architects in order to protect?

By focusing on the instruments of professionalism themselves, rather than the content of architectural knowledge, I will attempt to outline an answer to these questions. That is, rather than rooting the profession in the discipline, I will root the discipline in the profession. To do this, I will focus on the example of a network of architects, mostly in New York and Philadelphia, who attempted to establish an American architectural profession in the early nineteenth century. Fundamentally, I will argue, the instrumental positioning of the work of the architect as the mediation between client and builder drove their definition of architectural knowledge.

The organization of the American Institution of Architecture in 1836 by thirty-three self-identified architects will serve as a starting point. As one of the first collective movements towards modern private-practice professionalism, the Institution stated its aim as “the advancement of architectural science in the United States.” I will describe the character of this professional body through its founding documents and the goals of several archetypal members. I will then describe the gatekeeping mechanisms of the Institution by exploring what its members meant when they claimed to be “regularly educated architects.” Finally, I will explore the way these first professionals defined duty by looking at how members used contracts and drawings to characterize their mediation between client and builder as a form of ethical disinterestedness (while nonetheless protecting their own financial interests).

Rather than through the protection of the workshop or through guarding access to craft tools, the members of the American Institution of Architects attempted to control their domain through the protection of the design (for example, they created stamps in the form of rings, with which the architect would mark original drawings). It is towards the control of the design as a tool of mediation that I will suggest professional instruments were directed. By studying these instruments, we can see how design was defined and positioned as disciplinary knowledge in the Early American Republic.

Designing Jurisdictional Interlock: Prefabricated Steel Houses, Labor, and Automation in Postwar America, 1943-1968

Manuel Shvartzberg Carrió

Columbia University

Seeking techno-managerial relevance, modernists like Walter Gropius saw the division of labor as a crucial tool for homogenizing distinct areas of jurisdiction—from different zoning regulations, to modes of production, to engineering standards, to claims of competence from other professionals in the building industry. Conceived as a meta-tool of intervention nesting architectural expertise within broader legal and political frameworks, the promise of ‘jurisdictional interlock’ appeared to re-unify the rarefied skills of modernist architects into a master-science of logistical coordination that could assemble corporate growth seamlessly into the growth of the national economy. Thus, a priori incommensurable strata of professional and managerial sovereignty could be harmonized—ensuring not only jurisdictional coherence across markets and territories (from particular design skills, labor markets, building components, to regional housing markets), but also enshrining the architect at the top of the design process hierarchy. In its most extreme form, this coherence came at the expense of unskilled manual labor through the deployment of design techniques for automating construction in the factory (through mechanized prefabrication), and in the building site (through rationalized sequencing methods).

A case in point for this particular intersection between national-corporate capitalism, the division of labor, and architectural managerialism during the postwar period, is architect Donald Wexler’s seven prefabricated houses from 1962, in Palm Springs, California. The self-contained nature and sophisticated managerial complexity of this architectural housing system—built entirely in steel as test prototypes for mass-produced housing, and underwritten by the nation’s largest corporation, US Steel—contrasted radically with the situation of Palm Springs’s Native American tribe and the town’s workers, who, marred by legal uncertainty and systematic neglect, were housed in a slum in the heart of the town. This radical asymmetry, however, was not merely circumstantial: it was intrinsic to the jurisdictional interlocks designed-in by Wexler’s standardized housing system. In his decade-long collaboration with US Steel Corporation, we can trace the development of automation in steel design, production and distribution—framed by federal policies against corporate monopoly on the one hand, and by policies of “free labor” on the other, as twin mechanisms for national-corporate economic growth—affecting the course of the nation’s troubled housing history. Navigating the radically different technical, professional, and legal requirements involved in designing prefabricated steel housing required re-casting the architect in the role of meta-manager: harmonizing the burdens of the factory, local utilities, and the legal frameworks of the developer, the client,

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and the different stakeholders of the project. However, while such meta-rationalizations—announced by modernist architects since at least the Bauhaus—made mass-steel housing appear ever-more affordable and universal in the horizon, the paradoxical result was the creation of ever-larger pools of redundant (and in some cases, homeless) laborers, as the construction industry itself became ever-more automated and efficient.

Thinking about the architect's tools of intervention in terms of jurisdiction over different spheres of rights and competence must therefore be considered together with the problem of capitalist innovation and the division of labor—at once a technical, a legal, and a socio-political problem.

Thursday 23 November 2017

14:15-16:15

Paper session 2

Displaying competence

Location: Room 1, HNI

Session Chair: Marie-Therese van Thoor

Delft University of Technology

Architects on the Verge: Re-tooling for Post-modernism

Janina Gosseye, Don Watson

University of Queensland

Between 23 and 26 May 1980, the New South Wales chapter of the Royal Australian Institute of Architects (RAIA) held its annual conference in Sydney. The principal guests invited to speak at this conference were Michael Graves, George Baird and Rem Koolhaas. To feed the discussion, the conference organisers invited twenty prominent Australian architects, including Daryl Jackson, Glenn Murcutt, Edmond & Corrigan and O’Gorman-Watson-Andresen (OWA) to submit a design to fictionally complete Engehurst, a 1830s villa in Paddington (Sydney) originally designed by architect John Verge, of which only a fragment still existed. All schemes were presented in a small exhibition that took place in parallel with the conference, with Graves, Baird and Koolhaas invited to comment. All submitted design panels, along with a reflection on the schemes by Andrew Metcalf, the conference organiser, and Neville Quarry were published in full in the April/May 1980 issue of *Architecture Australia*.

The design brief was quite ambitious. Beyond stipulating that the house was to be freestanding and responsive to place and climate, it also urged contributors to comment on urban and suburban typologies in relation to the genealogy of the Australian house; explore issues of public and private space in its functions; and comment on ways of living and human habitation, both in social and political terms. In terms of presentation format and tools, the brief was more flexible. Other than stipulating that each exhibitor was allowed two sheets of A1 size, it advised entrants to ‘remember that the work should remain clear and be capable of reproduction in magazine form ... when considering photographs and graphic medium’.

The ‘tools of intervention’ employed by the exhibition participants varied greatly. Designing ‘a home for Mr & Mrs Graeme Blundell – and all their friends’, Edmond & Corrigan, for instance, used narrative and storytelling as a conceptual tool of intervention, and presented their design in a series of colourful semi-sketch, semi-collage pop-art inspired visuals. On the other side of the spectrum was OWA who, while conceptually drawing on the palimpsestuous history of Engehurst, uncompromisingly relied on computer-generated visuals to present their design. Reflecting upon the entries in the *Architecture Australia* issue, Andrew Metcalfe, remarked: ‘this exhibition will show an architecture relieved of its missionary social role and looking more interesting for it.’

Analysing some of the key entries, including the comment and feedback formulated by the conference organiser and participants, this paper posits that the divergence of conceptual and practical ‘tools of intervention’ used in the redesign of Engehurst not only presents a cross-section of 1980 Australian architecture culture, but also demonstrates how the profession, now ‘relieved of its missionary social role’ was retooling itself for a new architectural order down-under.

Daniel Libeskind's Three Lessons in Architecture: An Allegory on the Tools of the (Post-)Modern Architect

Ersi Ioannidou

Kingston University London

For the Venice Biennale 1985, Daniel Libeskind constructed Three Lessons in Architecture. The project consists of three large machines; The Reading Machine, The Memory Machine and The Writing Machine. Libeskind claims that he built these machines in order to retrieve the experiences of making architecture by handicraft, intellectual control and industrial production. The underlying argument is that 'the weapons' of modern architecture – methods of drawing, making, thinking and writing about architecture that originated in the medieval monastery – were slowly becoming defunct;¹ the architecture of humanism and its respective technology of the mechanical machine were about to end.

Libeskind stresses that his machines do not work in the realm of objects but in the realm of ideas. They are means of investigation rather than finite objects in themselves. They are experiments in different forms of realism: technical, functional, social and psychological. In this sense, they are 'objects of knowledge' similar to early scientific experimental instruments; they demonstrate a belief. Architectural objects – particularly models – are often made to emphasise the materiality and three-dimensionality of architecture. In Three Lessons in Architecture, while materiality and functioning are still important, ultimately the purpose of the object is the representation of a possibility. The actual workings of the machines matter in as much as they give a vivid image of the metaphor constructed 'between the axis of technology and the axis of architecture.'²

Three Lessons in Architecture is a visual allegorical tale. It appropriates past technological imagery to discuss the tools of the architect in a moment when the existing 'weaponry' is about to be supplanted by new ways of thinking and making; as a result, it is both nostalgic and visionary.³ Nostalgic in the outward appearance of its handcrafted constructions and its erudite referencing of the past; visionary in its statement with regard to the future of production of architectural knowledge and experiences. Three Lessons in Architecture uses allegory as a potent tool for design exploration which brings into architecture knowledge from a wide range of fields. Allegory allows the architectural object to become 'metaphysical equipment'⁴ and making to be deployed as a critical tool articulating theory. This paper analyses Three Lessons in Architecture as an allegorical project that uses of the machine as medium to construct a 'figurative theory'⁵ of the tools of the (post-)modern architect.

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- 1 Daniel Libeskind, 'Three Lessons in Architecture: The Machines'. In Daniel Libeskind, *The Space of Encounter*, New York: Universe Publishing, 2000, p.189.
 - 2 Ibid., p.183.
 - 3 Lebbeus Woods writes, "Of course, as hand-crafted constructions (a bit too 'Renaissance' for comfort, as was Tatlin's Flying Machine), they are at once nostalgic and visionary, the latter if we believe that technology is not the main issue at stake in architecture." In Lebbeus Woods, "Libeskind's Machines", at <https://lebbeuswoods.wordpress.com/2009/11/24/libeskinds-machines/> (accessed 12 June 2017)
 - 4 Libeskind characterises his machines as 'metaphysical equipment'. Libeskind, 'Three Lessons in Architecture: The Machines', op. cit., p.187.
 - 5 The term 'figurative theory' is used by Penelope Haralambidou in Penelope Haralambidou, 'The Allegorical Project: Architecture as Figurative Theory'. In Tim Anstey, Katja Grillner and Rolf Hughes (eds.), *Architecture and Authorship: Studies in Disciplinary Remediation*, London: Black Dog, 2007, pp.118-129.

The Architect-Designed House in Contemporary Japan: A Tool to make Discourse, a Device to intervene in the Urban Context

Cathelijne Nuijsink

Delft University of Technology

House design has played a crucial role in the portfolios of Japanese 'atelier' architects ever since the reconstruction period after the Second World War. So much so that the design of the single-family house turned into a shared topic of discussion and took the form of a discursive debate within Japanese architecture culture. The debate especially played out in Japanese architecture journals, and led to a continuous redefinition of 'house' and 'home' over the following decades. This intense theoretical examination of what makes a 'good house', in turn, is what drove the production of a series of radical house experiments. Within this discursive context, a significant change in attitude occurred in the late 1990s. Rapid economic growth and urbanization in the 1950s, 1960s and 1970s had already made the city a major design preoccupation, but such discussions had always remained on an abstract level, largely ignoring urban realities. But as the summer 1999 issue of *Japan Architect* made clear, a new tendency appeared at the end of the millennium: Japanese architects no longer approached the house as an antagonism to the city, but as an 'intellectual operation' on the boundary between house- as-object and its immediate physical surroundings. Through a close analysis of *Ani House* (1997) designed by Atelier Bow Wow and *Moriyama Apartment* (2005) by Ryue Nishizawa, my paper re-examines this recent shift to demonstrate that the private single-family house changed from a 'tool' with which to make discourse about spatial composition, in the vocabulary of the Japanese architects, into a device to actively intervene in the urban setting. In other words, the house became an apparatus used by architects to express their dissatisfaction with the status quo of the modern Japanese city and a means to introduce an alternative lifestyle, one diametrically opposed to the introversion implied by the existing housing stock. Based on analytical drawings, site visits and personal interviews, my study takes the two housing projects of *Ani House* and *Moriyama Apartment* as case studies - within a much larger housing debate - to not only exemplify a major new concern of architects in Japan at the end of the millennium but, moreover, as projects that had a significant influence on an entire younger generation. For these architects, the house could no longer be designed as a private shelter in the city, but needed to be understood as an *environment* that extended conceptually beyond its tight physical boundaries. This changed understanding led the new generation of architects to offer their clients an alternative way of living, one in which residents were encouraged to interact with things and people outside the house instead of withdrawing from the city. What can we learn from these small house designs, which represent a critique of and alternative to large-scale urban planning, and what are their implications for the city and for the architecture field in general?

1 Yoshiaki Hanada. 「二分法をこえる眼差し」 'nibunhō o koeru manazashi'. [Seeing Beyond Dichotomies]. *Japan Architect* 34 (Summer 1999): 17

Brussels Architects' Houses as a Tool for the Architect during the Belle Époque: Full-Scale Business Cards to Showcase Expertise

Linsy Raaffels, Inge Bertels, Stephanie Van de Voorde,
Barbara Van der Wee

Vrije Universiteit Brussel

During the design of his personal residence and/or atelier, the architect is mostly solely guided by his own creative and technical ambitions during the design and construction process. Therefore, with this project, the architect can exceed most limitations of designing for a client. Hence, their personal residences often evolve into a tool to redefine their architectural language, to formulate a statement within an ongoing architectural debate, or to test new materials or construction techniques. Accordingly, because of this unique client-designer relationship, architects' houses bear witness to the architectural beliefs of their creators. Thereby, they often become the physical representation of the architect's business card, such as The Glass House (New Canaan, USA, 1949) of Philip Johnson (1906-2005) or the VDL Research House I (Los Angeles, USA, 1932) by Richard Neutra (1892-1970). Nevertheless, in contrast to developments in international architectural and construction history research, many of these houses in Brussels remain unexplored until today.

In 2016, a first register of architects' houses in the Brussels Capital Region (1830-1970) was drafted, which currently includes 274 private houses designed by architects as their personal residences. From a preliminary study (regarding the ambitions of the architect, the urban context, the use of materials and construction techniques, etc.), it was noticed that the incorporated features often became the architect's signature for later work. For instance, Louis Herman De Koninck (1896-1984) fine-tuned, and experimented with, construction techniques of reinforced concrete in his own residence (Ukkel, Brussels, 1924), after which he was mainly approached by new clients because of his expertise with the material. Another example is the residence of Gustave Strauven (1878-1919), situated on a narrow, oddly-shaped parcel (Brussels, 1902), which generated similar design assignments to develop qualitative housing on comparable difficult plots.

This paper thus analyses the personal residence as a tool for the architect (as being his business card) to steer and formulate his architectural language: how are these houses articulated to attract a specific clientele, and thereby influence the oeuvre? Are these houses therefore situated within the geographical area of activity of the architect? Do the design and material decisions taken for the personal residence thereby become a prejudice for the later oeuvre?

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These questions are studied by means of articles on architects' houses in architectural periodicals such as *L'Emulation* (1874-1939), *Bâtir* (1932-40) or *Architecture* (1952-70). These articles serve as an important primary source to reveal the design intentions of the architect (when written by the architects themselves), or shed light on the perception of architects' houses by contemporaries (when written by other architects or editors). For some houses, this is complemented by archival research (e.g. analysis of building permits and the broader oeuvre).

As a result, this paper approximates architects' houses as a tool for the architect by examining their representation as a business card.

Projects as Design Tools: Housing Type Projects in Romania in the 1960s and 1970s

Dana Vais

Technical University of Cluj-Napoca

Type projects – understood in the narrow sense of pre-designed serial plans – have been extensively used as tools of design in communist architecture. Instruments of political, social and economic control, they were perceived by architects as means of limitation, rather than tools of architectural conception. However, type projects were themselves the subject of much professional research and debate – a kind of design tools that were continually and creatively redesigned.

The aim of this paper is to look into this debate and research and to critically analyze how the notion of type was defined, how type projects evolved and how they determined the housing production in Romania during the 1960s and 1970s. Housing typification was closely related to the political objectives of accelerated urbanization and industrialization. The paper examines the shift of interest, from building-scale type designs to larger scale urban typologies, which occurs during this period. A point of this paper concerns the problematic relationship between typification and prefabrication: in the urge to continually reduce the costs of mass scale housing production, type projects seem to have been, paradoxically, often competing rather than concurring with the schemes of prefabrication.

Another point of this paper is that authorship was still an issue and that quite a few architects' names emerged in this context. Type projects were design tools produced by "typifiers" in specialized design institutions, in a centralized manner; there was a small margin of freedom left to the rest of the professionals working in ordinary design institutes, who used them for actual buildings. However, at a closer look, a quite diverse picture of hierarchies and modes of use emerge. The paper focuses on the various ways architects related to this tool, from acknowledged authorships, recognized by prizes, to the condition of mere "adaptors" at the periphery, and from "perspective types" and "directive plans" to reusable projects and "frozen" type-building projects.

One particular aim is to see how housing typification in Romania related to the larger European context of mass housing production. The late 1960s and early 1970s were the years of maximum openness in the entire Romanian communist period. Unlike in the 1950s, when Soviet models had been imposed on them, architects who designed type projects now were able to choose other models of inspiration. What foreign sources informed local architects' housing-types research?

How did the "prospective" trend influence the conception of housing types in Romania? By the early 1970s, prospective design became an issue for Romanian architects. Housing composed as ensembles of objects evolved towards a kind of spatial urbanism, more dense and compact, designed as a combinatorics of housing modules. But at the same time, theoretical research start diverging from the actual construction. Between the scientism of the objective optimal solution, based on complex systems research and abstract calculations, and the design approach of a plan that was spatially and aesthetically imagined and perceived, how did the tool of type projects evolve in reality?

Thursday 23 November 2017

14:15-16:15

Paper session 3

Embodied Values

Location: Vijf Midden, HNI

Session Chair: Heidi Sohn

Delft University of Technology

The Undetermined Hand: Architectural Technicities

Stavros Kousoulas

Delft University of Technology

A *stilus* is any writing utensil, any small-sized tool used to either mark or shape, any of the digital pens used nowadays to assist software navigation and design. A *stilus* however is not only a technical object: it is part of what Simondon calls *reticular technicity*, a relational mode between humans and their environment. It shouldn't come as a surprise then, that the very root of the word style, a familiar term for architects, comes directly from *stilus*. To belong to the same style refers directly to the tools shared and not just to the intentions. Therefore, one comes across style when one examines how an assemblage operates, both internally and also in relation to other assemblages, both in its consistency and in the moments it stutters, producing and following architectural novelty. In that sense, an architectural style belongs to no one but the assemblage itself. Put differently, the hand, when approached as a problem itself, can withstand an analysis of the differential relations that continuously determine it. One of the most important relations that determine the architect's hand, is that between a synchronous *generalisation* of its own development, and the *concretization* of the tools that it has at its disposal: the differential that produces the affects of any architectural technicity.

The question, then, is why one should stop at the determination of the architectural hand. If we can understand the *individuation* of the hand in terms of the differential relations that produce it, then why shouldn't we approach all that a hand can do in a similar manner. Influenced by the thought of Leibniz, Deleuze, Leroi-Gourhan and Simondon, I will examine the reticular technicities that a set of fingers and a *stilus* produce, the architectural styles that should not be only approached in terms of classifications and typologies, but also on the potentials of the differential relations that condition them. Accordingly, the problematic field of the hand and the *stilus*, should be examined on the differentials that constitute it as an assemblage and on the singular and ordinary points it produces. Put succinctly, between each finger and each pencil, each hand, mouse and click, each hammer and drill held, lies a difference which produces the singularities of any technology, the ones that determine it via its technicities while, reticularly, determines us back. If, therefore, architecture wishes to expand its technicities –at least to correspond to the high concretization of the technical objects it has at its disposal and to the equally concretized sets of objects it wishes to intervene to- perhaps focus should be given on the affective amplification of its sensorial and sense-making apparatus, then one which makes new spaces and subjects emerge.

Cast in Stone

Eireen Schreurs

Delft University of Technology

This paper builds on the suggestion that studying the tools of architecture, whether it concerns their utilization towards analysis or intervention, is inextricably related to a discussion of the values embodied in architecture. Acknowledging the ascription of values to architecture may offer a necessary perspective on the more scientifically objective study of the 'tools' of architecture.

The argument addresses the longstanding disjunction between the instruments of architecture and their socio-cultural meaning. While this issue originates with modernity, there is a renewed interest in the problem, as new technologies have given rise to new possibilities in the domains of material, ornament and fabrication. In this context, there is a need to re-examine which potential transformations are engendered by these developments and the question how architects judge them.

This tipping point may well compare to the late nineteenth and early twentieth centuries, when rapid developments gave rise to new forms and the need to situate them in a broader cultural discourse. In his search for the origins of architecture, the German architect Semper studied how social and cultural values attach themselves to materials and form. Working within material constraints and potentials, he tried to disseminate particular features of architecture, leading, amongst others to the theory of *Stoffwechsel* or material change, the 'transfer of knowledge [when changing] from one material to the other, leaving traces of its history¹.'

A relevant tool for the workings of *Stoffwechsel* is the now obsolete technique of plaster casting, in itself a clear example of material change. The history of the cast as architectural object of display reveals the values that are at stake: that of the relation between original and copy. This is even more apparent in the production of the cast, when the maker determines what 'knowledge of the material' is considered essential, and how he/she should represent the 'traces of its history'. In generating new insights and ideas, the plaster cast demonstrates that material change and value change are dynamic processes that offer insights into how new architectural knowledge is created.

1 Definition by Prof.Dr. Ákos Moravánszky

Values as tools of intervention: architecture's tacit knowledge engaged

Lara Schrijver, Margitta Buchert

University of Antwerp, Leibniz Universität Hannover

In this paper, we suggest that a closer look at the 'tools of analysis' and the 'tools of intervention' by necessity requires an underlying examination of their relation to the values often ascribed to architecture.

The tools of architecture are crucial to the manner in which it presents itself, and thus merit thorough and careful reflection. The work presented in this paper departs from a collective research project on tacit knowledge, where in hindsight, the research has made a shift from an earlier epistemological focus in the examination of particular instruments of architecture, to a more holistic inquiry on the role of values in the practice and the reception of architecture.

The research initially began with a dissection of tools and modes of representation, exploring what precisely was conveyed by particular images, narratives, words or drawings and models. This work became richer as the instruments *in se* became positioned in relation to their specific conditions, their effects, their intersubjective and transdisciplinary qualities, and their impact on material reality. As such, it was the tools themselves that almost naturally evolved into questions of values and sensibilities. This evolution suggests a number of things. First, that these values by their nature operate in a spectrum of continuity between analysis and intervention. Second, that the ability of the architect to intervene is situated in a similar spectrum of continuity between imagining a potential future and analyzing the conditions within which this may be realized or vice versa. Third, that the historical term of *Einfühlung*, or empathy, may have renewed relevance as transdisciplinary attitude that enhances the ability to discern and employ values as a tool of intervention.

This paper will develop the above provocations of the call through some of the initial material of a research network on tacit knowledge, in order to show that values themselves can be seen as tools of intervention. These values lead to ways of imagining a project, which lead to conceiving ways of intervening, yet at the same time are rooted in a preliminary analysis framed by these values. As such, this paper will build on a (limited set of examples) number of examples in order to: examine the quality of values as a tool of intervention; illustrate how this tool of intervention already incorporates forms of analysis; and suggest how refining the practice of empathy and developing sensitivity may contribute to architectural practice in the twenty-first century.

On the Creative Power of Observing Bodies: A Prosthetic Perceptual Apparatus as a Tool for Critique and Subversion, Action and Mediation.

Izabela Wieczorek

University of Reading

In *Techniques of the Observer* the art critic Jonathan Crary explores the vast field in which perception and its comprehension were transformed, tracing a particular taxonomy of visual apparatus, in which immersive experiences – anticipated already in the nineteenth century – relocated vision within a “carnal density” (1992, 150), converting the human body into an integral and active part of visual machinery. Drawing on Crary’s conceptualisation of the observer as both receptor and producer involved in a dynamic and kinaesthetic relationship with other bodies and surroundings, the intention of this paper is to reflect on the agency of perception and to provide an inventory of perceptual apparatuses that constitute a larger disciplinary expansion in the field of architecture and design, which notably occurred in the 1960s. This genealogy of perceptual devices and techniques has been revisited by later generations of architectural practitioners and educators seeking once again to redefine limits of embodied knowledge.

Within this genealogy are the experiments of the Austrian avant-garde such as *Kleiner Raum* or *TV-Helmet* (1967) by Walter Pichler, *Gelbes Herz* (1967-1968) by Haus-Rucker-Co, *White Suit* or *Soul Flipper* (1969) by Coop Himmelb(l)au, or the whole series *Le Immersioni* (1968-1971) by Ugo la Pietra, belonging to the parallel Radical Italian Movement. Many of them had a prosthetic character. As bodily extensions, they served as a medium for raising physical awareness and sensitivity, conquering the realm of interiority or merging it with the surroundings. They were conceived as sensorial activators, intensifiers of phenomena, or orchestrators of emotions. Others, such as, for instance, *Environment Transformers* by Haus-Rucker-Co, or Ugo la Pietra’s experiential apparatuses under a heading *Sistema Disquilibrante* were meant to alter sensory impressions that were very often taken for granted, thus becoming devices of defamiliarisation. That is, vehicles for subversion of the regulated fabric of a contemporary city; “point[s] for critical and imaginative reflection on the context itself,” to paraphrase La Pietra’s words (1972, 226).

In conclusion, through the analysis of the selected works and processes and their theoretical and historical contextualisation, the aim of this paper is to present the notion of a perceptual apparatus beyond its scientific and technological connotations. That is, as a tool for constructing, testing and communicating new arguments and radical thoughts by means of experience and reflection, opening up a wide range of modes of engagement (individual and collective) with the material world. A projective interface: qualitative, performative and affective.

Continued on next page >

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Crary, Jonathan. 1992. *Techniques of the Observer. On Vision and Modernity in the Nineteenth Century*. Cambridge, Massachusetts, London: MIT Press.

La Pietra, Ugo. 1972. 'The Domicile Cell: A Microstructure within the Information and Communications Systems.' In *Italy: The New Domestic Landscape. Achievements and Problems of Italian Design*, edited by Emilio Ambasz, 226-231. The Museum of Modern Art.

Friday 24 November 2017

9:00–11:00

Paper session 1

Surveys

Location: Room K

Session Chair: Isabelle Doucet

University of Manchester

“Knowing in Order to Intervene”. Analyses, Surveys and Reports as Tools for a New Definition of the Italian Architectural Discipline in Second Post-war Era. A Comparison Between Generations (1945-1965)

Patrizia Bonifazio

Politecnico di Milano

“Knowing in order to intervene” is one of the slogans characterising the panorama of Italian architectural culture of the Second Post-war era.

Analyses, surveys, reports – literary, economic, sociological – thus become recurrent elements in the post-war urban projects. Architects and planners use them to face the new democratic public they address and to renew the tools and techniques of their work to redefine their profiles as intellectuals and technicians who are able to guide the reconstruction of the country.

The performance of these analyses involved some new professional and non-technical people – like social workers – and set up operational summaries (using social sciences and urban geography) that provide cultural and technical stimuli to a new period of interventions and projects.

Through the in-depth study of some very important core analyses – such as the analysis promoted by the American programme UNRRA-Casas (The United Nations Relief and Rehabilitation Administration for housing) in the South of Italy, and in particular in Matera with the sociologist Frederick G. Friedmann, from 1952 to 1956; the questionnaires promoted by the American sociologist Paul Campisi with the cultural mediation of the anarchist Carlo Doglio for the Plan for Ivrea (1952-1954); the survey for the Plan for the Canavese Region, promoted by the Movimento Comunità, 1954-1957) – and thanks to an original documentation, this paper aims to propose a reflection on the formation of interdisciplinary teams in Italy in the '50s; and on the origin and declination of categories used in these important analyses and survey linked particularly with the Anglo-Saxon world and with the pre-war Italian culture.

Lastly, the focus on the circulation of models and cultural debates produced by analyses and projects, enables the perception of a sort of prosopography of groups intervening in the reconstruction of the country and how the different generations of architects and planners face change, with diverse strategies (acquisition, resistance or innovation capacity); and how the acquisition of analysis techniques enriches and becomes an integral part of succeeding projects.

Surveying the World: Doxiadis' City of the Future Research Project, 1959-61

Filippo De Dominicis

Independent Scholar

In 1960 the Athens-based architectural consulting firm Doxiadis Associates (DA) received a considerable fund from the Ford Foundation. Funds were granted to implement the City of the Future research project (COF), a first attempt to collect data and pattern of urban settlements from all over the world. The final aim of the project was eminently addressed to design: it would have provided the main tools for foreseeing and proposing future alternative plans and models for human settlements on a global scale. Extending his field of action worldwide, Doxiadis needed an extremely powerful instrument of analysis, and the survey of the entire world emerged as the first, essential step to accomplish his professional commitments.

Since February 1959, while drawing up the plan for the new capital of Pakistan, Doxiadis Associates had been already exploring the idea of the future of cities. The incremental layout resulting from Islamabad's planning - the so-called Dynapolis - arose as the design model that the COF research project would have stressed up to the worldwide scale. In 1960, after explicitly addressing the Dynapolis to the City of the Future concept in two keynotes at Warsaw and Oslo, Doxiadis had already framed the theoretical background against which projecting his ambitious plan: the rate of transformations affecting cities all over the world - but especially those in underdeveloped countries - would call for a model that should disclose its "freedom to develop freely naturally along a predetermined course", both in time and space, and even beyond national borders. Aiming at establishing a new worldwide post-political order, Doxiadis' Dynapolis was intended as the support apt "for any place and for any foreseeable time horizon". A similar challenge required the implementation of an immense background of data. Intertwined with an educational structure laid over the four continents, it could provide the tools needed for attaining the global city Doxiadis was yearning for.

The COF project was launched in 1960 with American funds, involving more than 100 people amongst planners, engineers and social scientists. Dispatched to the four corners of the world, they were charged to survey all aspects of human life embedded in Doxiadis' Ekistics grid. Apart from Greece, Africa was the first and the largest part of the world to be surveyed; from 1960 to 1961, as a DA's partner, the Egyptian architect Hassan Fathy visited, amongst others, Cairo, Kano, Lagos, Dakar, Abidjan, Khartoum and Ouagadougou, providing drawings, maps, photos, statistics and interviews. From that moment the entire continent started playing an essential role in DA's activity. As the largest-scale platform where the idea of Dynapolis was applied, Africa served as a testing ground for stressing and tuning up strategies, trends and models for the global settlement. The paper aims at unfolding the launch of the COF project - and the role of Africa as the first terrain of investigation - to frame an incredible instrument of analysis that, while crossing all scales of intervention from the basic cell to the entire world, intended projecting design toward an unprecedented global dimension.

Urban Surveys: Architectural Education Through Visual Ethnography in the Porto School (1960-1969)

Gonçalo Canto Moniz, Nelson Mota

Delft University of Technology

The criticism to the Beaux-Arts pedagogy entered in the Porto School of Architecture in 1940 by the hand of Carlos Ramos. Drawing on Walter Gropius's methods and tools to promote a modern education, Ramos prepared the field for a major paradigm shift in architectural education in Portugal. He encouraged the development of a new study plan, with less focus on artistic matters and more on social issues. Octávio Lixa Filgueiras, a young teacher that was part of Ramos' first batch of students, soon became the most important supporter of this approach. From the early 1950s on, Filgueiras begun exploring research tools borrowed from the social sciences, especially from ethnology. His diploma thesis, presented in 1953, was the first step to develop analytical methods and tools with a provocative research titled "Urbanism: a rural theme". When he became a professor at the Porto School of Architecture in 1958, Filgueiras swiftly introduced a new research agenda in the students' curriculum, which would be thoroughly discussed in his thesis "On the Social Role of the Architect", presented in 1962. The most notorious pedagogical innovation was the introduction of a new analytical tool, the Urban Surveys, where students should "experience in order to understand".

The Urban Surveys were designed to be an introductory course for first- and second-year architecture students. Instead of analysing the classical orders and the architectural canon, the students were now stimulated to leave the classroom and to analyse the built environment surrounding them, equipped with the sketchbook and the photographic camera. Furthermore, they were encouraged to investigate vernacular social and spatial practices as a medium to raise their awareness on the living conditions of the urban poor. Using a particular kind of visual ethnography, the students translated into meticulously detailed India ink drawings the result of their surveys inside people's homes and urban communities. A special focus on the ordinary became a trademark of Filgueiras pedagogical project. Nevertheless, while some students and faculty members celebrated Filgueiras' approach to the social role of the architect, others saw it as an attempt to downplay design as the core business of their education.

Our paper aims at going deeper on this debate, examining how and why Filgueiras used the Urban Surveys as part of his pedagogy and discuss the role played by this analytical tool in architectural education in Porto in the 1960s. We will also study its influence for a generation of architects that would eventually be engaged in social housing projects under the aegis of the SAAL operations that came about in Portugal's post-revolutionary period, in 1974. We will use as primary sources the original drawings and reports produced in Filgueiras' Urban Surveys and interviews made to his former students. Our paper will contend that the visual ethnography produced through these Urban Surveys was more than an analytical tool. It was, instead, an instrument to encourage architectural approaches with a strong social engagement, which can be considered the first pedagogical experience of participatory design in Portugal.

Tools and Practices of the Architects during the War in the City

Armina Pilav

Delft University of Technology

The aim of this paper is to analyze, describe and represent how architects used their expertise and changed accustomed methods of work during the war in Sarajevo (1992-1996) in order to understand how the role and tools of the architects can change in any other war context. In times of war in Sarajevo, the conventional way of investigating, which involves for example visiting the site and sketching the location, was too dangerous. The city is located in the valley. It was besieged for four years and subjected to constant bombing, gunfire and attacks by tank. We can observe a military destruction of the city by means of bombing, distant occupation and control of the public space from the sniper positions as the processes of un-doing architecture, the city, and at the same time as an extraordinary condition of reproduction of ephemeral spaces by citizens' for protection and survival. The military siege rescaled the urban landscape and peoples' homes, as well as transformed the architectural program of typically modernist dwellings into self-programmed spaces, unique from one another, each containing the resources for specific human lives, as documented in 1994 by architect Zoran Doršner in his drawings entitled "Destructive Metamorphosis". Relying on existing documents made by architects in Sarajevo during the war, I found that destruction of the city by bombing and citizens' spatial reaction to it, introduced individual, self-chosen methods by the architects to observe and document the city. Ivan Štraus was witnessing destruction of the city and buildings that he designed from his terrace and wrote a diary entitled "Architects and Barbarians". Lebbeus Woods visited Sarajevo in 1993 and presented his pamphlet "War and Architecture" taking the role of journalist because during the siege coming in and going out of the city was controlled and limited, and media workers were in the group of the ones who could access the city. In order to understand the role and analyze the tools of architects in the wartime city, I will rely on the interviews I made with Sarajevo architects and different documents they produced during the war as above mentioned diary, reports on the city destruction published in *Warchitecture* magazine in 1993, archival photos, sketches and drawings related to the war destruction. Finally, this paper will serve as a pedagogical intention to initiate a research lexicon of words and drawings learned from the methods of work of Sarajevo architects and citizens' spatial practices during the war. It will include identification and naming of ephemeral architectural materials made by destruction and citizens reaction to it, analysis of employed tools of architects during the war in order to contribute to the existing academic research and teaching programs related to the contemporary war/post-war production of space and society.

In the Hand of the Architect: Tools and Early Modern Architectural Survey Drawings

Geoffrey S. Taylor

Savannah College of Art and Design

A vast and distinguished bibliography has addressed the products of Roman architectural practice during the sixteenth century, but a crucial question of how do the drawings convey the learned techniques of survey and mechanical construction has gone relatively unexplored. In fact, the traditional scholarly gaze forms an image of the architectural workshop from the building history of St. Peter's basilica and the organization required for the construction of monumental architecture. The exceptional circumstances of the *fabbrica* of St. Peter's now formalize investigations of architecture, urban form, and written documents. When the acknowledgement of this ill-fitting model occurs, the origins of modern architectural practice rely on the various editions of Vitruvius' treatise *De Architectura* and Raphael's Letter to Pope Leo X de' Medici as the advocates of architectural representation. My reading of architectural drawings addresses the artifacts of construction and considers drawings as archaeological sites, framed within the edges of the sheet. Below the surface of the final representation, done most often with pen and ink, remain the unexplored layers of preparatory marks and annotations. These marks assemble a different image of the architect at work and reveal the codification of training during the decades after the Sack of Rome and before the formation of the Accademia di San Luca. Turning over the preference given to the resolved, final drawing lifts the underdrawings from their buried strata and reveals marks made with specific tools, and more importantly the transcript of the tools used to survey built work and the evolution of site. From the resulting uncovered patterns I reconstruct the organization and exchange of drawing habits amongst groups of draftsmen and architects.

Drawing techniques provide the evidence of architectural training. Bound within the marks on the sheet is the evidence of the tools and techniques used to survey complex sites and record the artifacts of both Antiquity and what was considered to be the expressions of modern invention. Rather than merely defining the state of the building at particular historical moments or as evidence of the evolution of the design, drawings and the the accompanying annotations display unexamined legends which link the drawing to the tools of the architect by the use of coded key labels, regulating lines, notational systems, and dimensional information. Where the sheet seems to contain a single drawing, the archaeological study reveals multiple layers thereby constructing a previously unseen complexity within the drawing. Incised lines, traces of the compass, annotations at the edge of the sheet, and symbols collectively reveal the range of tools in the hand of the sixteenth-century architect.

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My research and methodological approach grows out of my profound preoccupation as a practicing architect, to whom every mark on the sheet speaks of a process. The lifting of what might be considered the arcane turns over the dominant image executed with pen and ink in favor of the process of drawing. In focusing on questions of process instead, I examine the consequence of every mark on the each sheet. When the act of viewing is reconfigured with this preference, the sheet begins to reveal the underdrawings, and these marks unravel the implementation of specific tools, the making of the drawing, and the training of the architect.

Friday 24 November 2017

11:15-13:15

Paper session 2

Education

Location: Room E

Session Chair: Willemijn Wilms Floet

Delft University of Technology

Building by Drawing: Bridging the History Gap

Ljiljana Blagojević, Nemanja Zimonjić, Milica Lopičić

ETH Zurich / TEN

The paper explores architectural design methods and related tools of drawing in research of historical cases and interpretation of architecture theory by a new generation of digital design trained architects and students from the University of Belgrade (Serbia), University of Zagreb (Croatia), ETH Zurich (Switzerland) and RWTH Aachen (Germany). The object of study is modern architecture in the Mediterranean, and the historical cases are two summer houses designed by the architect Nikola Dobrović (1897, Pécs- 1967, Belgrade), on the island of Lopud in the Adriatic: Villa Vesna, designed in 1937 and constructed in 1939, and the unrealized design for the architect's own house from 1965, for the site by the sea shore in the intermediate vicinity of the first house. The paper is based on archival and photographic documentation and sources that were studied and interpreted in the process of conceiving and executing the architectural drawings exhibition "Originally on Nikola Dobrović: Contemporary Architecture Drawing Glossary", held in the gallery of the Cultural Centre of Belgrade as part of the Belgrade International Week of Architecture, BINA 2017. The paper addresses issues related to, consequences and effects of using architect's tool of drawing analysis and digital drawing techniques in history and theory research and design theory.

We will open with a glossary of terms theorized by Dobrović in 1950s and 1960s in his text books *Contemporary Architecture*, volumes 1-5, as interpreted sixty odd years later by M. Arch. students in the elective course work "Contemporary Architecture Theories" through analytical drawings of Dobrović's modernist architecture. The two - glossary and drawings - formed the basis for a series of international workshops on architectural drawing and on exhibiting architectural drawing. The main discussion focuses on 15 detailed analytical drawings produced by digital means, that came through the workshops. Drawings present the outcome of a convoluted process of teaching and learning by delving into and demystification of Dobrović's technique of building and design, through detailed re-projecting the meaning of chosen notions such as "stich", "volume", "trace", "water", "level", "landscape", "Mediterranean", "lightness", "heaviness" and "textile". Study focused on construction details and joints of materials and functions, whereby the existing villa served as a manual for construction drawings of the unbuilt house next to it. Considered equal, the built and the unbuilt were studied in parallel as contemporaneous to each other, despite a 30-year gap between the two projects, aiming to extract from the historical cases the theoretical notions that are usable for current design preoccupations. In conclusion, we will discuss issues of exhibiting and public, that is, lay perception of architectural drawings, executed and presented not as actual project drawings but as artwork in a gallery. How abstract are concrete construction details when drawn as part of an art project; is the drawing a medium that allows both abstract projection of the lay beholder and concrete projection of the trained eye; finally, could it be argued that the building lays in the eyes of the drawing's beholder?

Kenneth Frampton's Pedagogical Tools

Kim Förster

CCA Montreal

Amid education reform, as architecture education was redisciplinized and academized in the period following 1968, architects adapted and applied tools already established in art and architecture history, to teach relevant concepts, values and methods that answered to the new cultural and societal conditions of postmodernism. In this paper, I will draw upon the exhibition „Education Architects. Four courses by Kenneth Frampton“, which I conceived and curated, shown in the Octagonal Gallery of the CCA in Montréal, Canada from 31 May to 24 September 2017. This exhibition, based on records from Frampton's private archive, which the CCA acquired only recently in the fall 2006 and presents for the first time, focuses on courses in history, theory and design, which Frampton, known worldwide as an architectural historian and critic, taught at Columbia University within the new graduate program in architecture and planning during the 1970s and thereafter, i.e. the theory seminar „Comparative Critical Analysis“, the history lectures „Thresholds of Modern Architecture“, and the „perimeter block“ typology in the housing studio. The fourth course on display is „Studies in Tectonic Culture“, which he began teaching in the early 1990s as part of Columbia's history and theory curriculum. In this historiographic exhibition, the syllabus - a paradigmatic didactic writing - functions as a structuring device. Didactically speaking, Frampton applied different pedagogical methods and tools, linked to his teaching objectives: the comparative approach to analyze spatial qualities of modern classics, based on a certain set of criteria, producing colored coded floor plans; the typological approach to design housing, which allowed for an urban block characterized by a careful stratification of public and private spaces; the contextual approach parallel movements, their breaks and ruptures, to understand modern architecture as represented by “Modern Architecture. A Critical History“, which with several re-editions and translation into 13 languages turned into his ultimate course book; and the architectural approach of model making to comprehend expressive construction in a hands-on way. This focus on Frampton's pedagogical tools allows me to discuss how and to what extent he as pedagogue, who always thought and taught as an architect, has had a multigenerational influence, applying and refining his toolkit throughout his career, also internationally.

Cultivating Rome: The Hortiarchitectural Experiments of Gustavo Giovannoni, 1909-1929

Clelia Pozzi

Princeton University

The history of the urban modernization of Rome at the beginning of the 20th century is typically told as one of brutal surgical excisions that “disemboweled” the city center to make way for avenues and cars. Under the pressure of epidemics, political propaganda and the coming of motorization, block after block of Rome’s historic center fell under the careless blows of pickaxes and pneumatic hammers—veritable hatchets disguised as scalpels by the surgical rhetoric of many provocateurs, from the Futurist artist Filippo Tommaso Marinetti to Benito Mussolini. Unknown to many, however, in 1913 the Roman engineer, preservation expert and architectural pedagogue Gustavo Giovannoni (1873-1947) conceptualized urban renewal through the lens of a different scientific vocabulary that put the pickaxe to a far less violent and far more edifying use: horticulture.

This paper addresses the educational dimensions of the protocols of controlled demolition that Giovannoni established between 1909 and 1929, looking specifically at his theory of “diradamento ambientale” (contextual pruning) in relation to horticultural techniques and the gardening exercises developed in Montessori pedagogy. In decades characterized by drastic political and infrastructural transformations and desires to nurture modern individuals for the state, horticulture emerged in the Roman cultural scene as a powerful vehicle for cultivating modern minds and environments. For a pedagogue like Maria Montessori, repetitive exercises in plant care such as pruning, furrowing and watering disciplined children through an ethic of personal sacrifice. Similarly, Giovannoni brought a new sensitivity to bear upon horticulture as didactic tool for modern architects and urban dwellers. With its repertoire of pruning, grafting and transplanting practices, horticulture afforded the language and techniques to frame urban demolitions as necessary cuts, all the while bringing attention to the survival and prospering of the architectural matter inherited from the past. But most importantly, horticulture—and especially pruning as its primary gesture—required architects and their audience to subscribe to a logic of selective sacrifice that, unlike surgery, would educate the modern subject’s perception, spatial comportment and emotional response to progress. Once pruned through careful blows of the pickaxe or disassembled and transplanted to accommodate the demands of cars and urban hygiene, the old buildings of the historic center of Rome would accustom the citizens’ eyes to the effect of change.

Focusing on Giovannoni’s projects for the Renaissance quarter and his “La Burbera” masterplan, the paper analyzes a range of preservation techniques—some remedial, such as selective pruning and ornamental grafting, others perspective, such as technological trellising. In their breadth, these “hortiarchitectural” experiments shifted attention from individual monuments to the city as repository of architectural knowledge where citizens could learn to cultivate the past in accordance with modern needs. In consequence, their study offers an opportunity to problematize in new ways the disciplinary tools of architecture and their potential to sensitize people toward a conscious inhabitation of space.

The Role of Instruments in Architectural Education: Evaluation of Changing in Architectural Design Instruments in Iranian Architecture Schools during the 1960s.

Yahya Sepehri

Shahid Beheshti University

With the establishment of the School of Fine Arts at Tehran University in 1940, The Academic architecture education in Iran began. In this school, training methods were adopted from École des Beaux-Arts. Faculty of architecture in National University of Iran, Second architecture school of Iran, established in 1960 and in the beginning the training methods were almost similar to the first school. At these schools, certain instruments of architectural design were used for drawing and rendering; such as Chassis (Wooden frame usually covered with Canson or Whatman paper), Graphos pen, Lavis and Sepia, Fixateur. From the mid-1960s, architecture design instruments gradually changed and new tools such as Rapidograph pens, stencil, Zip-a-Tone and Letraset film became common and chassis replaced by tracing paper in the final rendering. Changing in design instruments took place simultaneously with changing in architectural education methods in Iran. This study introduces instruments of architectural design in Iranian universities in the 1960s meanwhile study how changes in instruments associated with changes in architectural education. This study indicates how tools changed in order to simplify and speed up the Architectural drawing and rendering. This paper has a historical approach and Benefited from the techniques of oral history.

Friday 24 November 2017

9:00-11:00

Paper session 3

Diagrams

Location: Berlage Room

Session Chair: Dirk van den Heuvel

Delft University of Technology / Jaap Bakema Centre HNI

The Diagrams of the IMS: Articulating the Building of Housing in Socialist Yugoslavia

Andjelka Badnjar Gojnić

RWTH Aachen University

The abstract addresses the role of the diagrams developed at the Institute for the Study of Materials of Serbia (IMS) with regard to the building of housing in socialist Yugoslavia (1948 - 1988).

The paper sets out from 1948 and the break with the USSR partly caused by the Yugoslav First Five Year Plan (1947 - 1952) aimed at the forced industrialization of the country in an attempt to bypass the Stalinist model of agrarian bureaucracies. The root of the conflict - the opposition between the interests of the local and central bureaucracy - figured in Yugoslavia through the abandonment of the prewar economic structure based on agricultural production. However, the industrialization of the country would not have been possible if it had not been economically supported by the countries of Western block pointing to Yugoslavia as a case of exceptional socialism with regards to the USSR. Thus, it was through foreign equipment, once installed, further kept in good repair, replaced, and expanded, that the industrialization of Yugoslavia assured the dependence from a qualitative point of view on the West. ¹

Resonating with the import of equipment and process of land redistribution, state building operative gained role of articulation of habitable space by creating a material framework for transfer of population from rural to urban areas. As a prototype of this framework, the research focuses on the role of the IMS, the leading research institution that develop production in regard to the prefabricated IMS system. A department Centre for Housing CS developed within the IMS institutional branches with a two-fold function: the design of housing projects for Yugoslavia and abroad and scientific research work called habitological analysis that focused on the compatibility of housing and the IMS pillar prefabricated system. ²

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1 Castoriadis, C., "The Yugoslavian Bureaucracy", *Political and Social Writings Vol. 1, 1946 - 1955*, University of Minnesota Press, Minneapolis, 1988

2 Čanak, M., "Centar za stanovanje IMS", *ARD Review* 38, 2011, p.19 ("Center for Housing IMS", *ARD Review* 38)

Within the overarching role of diagrams within the IMS, this paper traces further arguments:

- a. Employees operated in specific conditions of work that gathered together architects, engineers and sociologists. Their research trips will be argued as relevant in regard to gathering of knowledge from the differentiated East and the West.
- b. This was accompanied by the scientific research. Diagrams were developed by data analysis of comparable international standards, by simulation with live models with regard to industrial equipment, by research into modular coordination, and finally by the testing of conclusions as experimental practices in the state housing projects of Yugoslavia and abroad.

Finally, the paper argues that, resonating the Yugoslavian position within the Cold War, the diagrams developed at IMS mediated the discrepancies between the import of machinery in the process of industrialization and the migration of inhabitants from rural areas.

Serial Diagrams: A Mechanistic and Linear Approach to the Design Process

Fehmi Dogan

Izmir Institute of Technology

This study explores the role of diagrams in shaping the design process. Different from other studies inquiring the use of diagrams in architecture as a tool of representation, the main premise of the study is that diagrams since their prevalent use in modern architecture have either been considered as tools that shape a linear progression in the design process or as tools that expands the design exploration space. In the former, diagrams are considered as tools that define the rationale behind a linear progression towards a single alternative while in the latter it comes to represent a multiplicity of design alternatives among which one gets to be picked by the designer.

In early modern architecture, as exemplified in Hans Meyer's diagrams, diagrams established a direct link between program analysis or environmental factors and form generation. Other variations of diagrams express a design idea, a conceptual beginning, such as Louis Kahn's diagrams. These representations are generic abstractions often allowing an architect to explore variations of an idea, therefore, expanding the creative process by way of offering alternatives. In the late nineties diagrams came to represent not just an idea but also the actual building itself as exemplified in Sanaa's work. These diagrams convey the lightness of the structure and almost the dissolution of the boundaries of spaces.

A late variation of diagrams is serial diagrams, or dynamic diagrams, representing a sequential series of design steps. In this particular type of representation the design project shapes itself almost automatically through a succession of often environmentally induced interventions, indicated by arrows representing vectoral forces acting upon a pure solid. The designer's intention is hidden or effaced and design decisions are represented as mechanistic responses to outside factors. One can clearly see and understand the rationale behind the design moves and design becomes a self-shaping act. The legitimacy of the design object, in turn, is acquired not through the intentions of its designer but through the serial steps of formal transformations. The observer can't but be mesmerized with the clarity of the design process but what is lost is the potential of the diagram in expanding the design space through implicating a series of related possibilities.

Serial diagrams became prevalent in current architectural practice, such as in the work of MVRDV and BIG, and media. A common strategy in formulating these diagrams is to start with a pure three dimensional solid such as a prism and let it transform its shape by series of moves. In this sequence, alternative moves are not represented neither implied. The design process evolves, rather, towards a single design alternative which is presented as an emergent and therefore the indispensable alternative to a particular design situation. In this use of diagrams, they cease to be the abstract machines of Deleuze and Guattari continuously morphing and transforming and become merely mechanistic tools whose validity or appropriateness is exempt from questioning.

Sociogram Fever: Study Cases of New Universities in Spain

Débora Domingo-Calabuig

Universitat Politècnica de València

When Jacob Levy Moreno published the second edition of his foundational work on sociometry, he added new chapters to the original 1934's volume, among which one devoted to 'The Architectural Planning of a Sociometrized Community'. Here, he stated: 'The architect of the future will be a student of sociometry' (*Who shall survive?*, 1953). Sociometry was born as an analytical science with therapeutic applications to study the interrelations of individuals within a group, and sociograms were to chart the responses of any sociometric procedure (1). Yet, the author heralded that sociometry was cross-cultural, and was 'ready to tackle -step by step- some of the new problems'.

A decade later, these graphs were a common tool in the architect's repertoire. Context favoured this fact: modernism shift emphasised the value of human relationships (*Team 10 Primer*, 'Ideagram of net of human relations' PDS, 1962) (2), even more, architects firmly believed that they might direct social behaviour patterns through their work (Lipman, 1969). Looks towards sociology became unavoidable and together with synthetic and graphical abstraction of diagrams, set the scene for a sociogram fever.

Graphs were drawn to analyse any type of relationship between users -even a simple layout of an office (*Techniques et Architecture*, 1972) (3)-, but undoubtedly the new campus planning debate and the sociograms met their match. Universities addressed complex functional programs, with 'inter-linking' structure of organisation and a high demand for flexibility that should allow them to change and grow, and consequently, research was conducted through diagrammatic presentations of students' activities. The study case of the University of Reading, developed by the Centre for Land Use Built Form Studies at Cambridge, aspired to convert the analytical tool into instrumental in the design process (*Architectural Review*, 1970) (4). At the same time, in the University of Leeds, Chamberlain, Powell, & Bon relied on a multitude of surveys to draw up sociograms, which showed the necessary contacts between departments (5).

This study aims to address in detail the use of this type of diagrams in the campus planning, its precise propositional value within the design process. In Spain, several competitions for new universities produced varied proposals that followed the European mainstream, and therefore, this paper focuses on two particular cases. Antonio Fernández Alba's design for the competition of the Universidad Autónoma de Madrid was accompanied by drawings that evolved towards the aesthetic of computational organisations (6). Meanwhile in Valencia, the proposal for the Instituto Politécnico Superior analysed the contacts between departments to set a topological diagram that played the major role in the final design (7). In both cases, a documented analysis confirms the following statements: Firstly, sociogram's representative orthodoxy has acquired expressive autonomy within the architectural discipline; Secondly, architects found objectivity in these methods that gave supposedly veracity to their designs; Thirdly, there was a certain roughness within the transformation of diagrams into built form.

Circulation Diagrams: between Architecture and Political Economy

Dennis Pohl

UdK Berlin

Diagrams have been recognized in the philosophy of science as *immutable mobiles*, to borrow a term from Bruno Latour, crossing and cutting the edges of disciplines, involved in the production, systematization, circulation and stabilization of knowledge (Latour 1999, 307-308). But how do diagrams precisely share knowledge and which disciplines do they cross? Throughout the 1980's the discourse of architecture theory (Herdeg 1985; Rowe and Koetter 1978) realized the role of diagrams as an architectural tool, employed both for the formal analysis (Wittkower 1998, 69; Rowe 1998, 22) and an integral part of an authorless creative process and therefore a tool of intervention (Eisenman 1994, p. 44; 2007).¹ Even to such an extent, that the diagram has been either described as the fundamental technique and procedure of architectural knowledge since the second half of the twentieth century (Somol 1999) or objected by dating back the origin of diagrams to the late eighteenth century (Vidler 2000).

However, most of the academic accounts focus their inquiry on the general analysis of diagrams without distinguishing further specific types.² Although diagrams are recognized in their 'spatio-temporal multiplicity' (Deleuze 1988, 34), literature from architecture theory either considered only *static diagrams* in their spatial dimension, or reduced the temporal aspect of diagrams merely to the design process itself (Höfler 2013; Hinterwaldner 2013). Circulation diagrams as an aleatoric tool in the planning process received so far very little attention.³

How do circulation diagrams produce knowledge and what kind of knowledge(s) can be distinguished? What is the entanglement with other instruments? And are these really a genuine architectural tool of intervention?

Drawing upon extensive research in the historic archives of the European Council, this contribution will elaborate how circulation diagrams became an integral part in the ten year long design process of the Justus-Lipsius building in Brussels. Furthermore, it will analyze how the design in the circulation of documents, services and people influenced the political development of the institution as such. Beyond that it will focus on the entanglement of diagrams with statistics and draw attention on the speculative forms of knowledge involved in the planning.

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- 1 A complete historic elaboration on the discourse of the diagram in architecture is not the aim of this research paper. An overview over the discourse is given in (Garcia 2010; Pai 2002)
- 2 A distinction between different types of diagrams can be found in the visual comparative analysis of (Clark and Pause, 2005). However this work does not aim at a deeper theoretical inquiry in the forms of knowledge or interdisciplinary entanglement implied in the various types of diagrams.
- 3 The very few exceptions are (Moulis 2010; TenHoor 2007).

Out of this, the contribution aims to suggest a genealogy of circulation diagrams as a social technique, strongly intertwined with the rise of political economy as a science, which could allow to reconsider the works of Le Maître, Rousseau, Ledoux and Boullée in the light of early economic theories in physiocracy by Quesnay and Turgot. (Rabinow, 1989)

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Diagram, the Machine Abstraite of Contemporary Architecture

Xavier Van Rooyen

University of Liège

The diagram, *machine abstraite*, following Deleuze, « does not work to represent, even something real, but build a real to come, a new type of reality » (1). This capacity of abstraction that constitutes the diagram, in his capacity to create a form of visual thinking, has been used, in the architectural history to summarize a process, to illustrate an idea, such as the DOM-INO system of Le Corbusier, but has served as a way of analysing architecture for the architects. Peter Eisenman, head of *wire*, used the diagram as a visual abstraction to understand the process of the composition of Terragni in his thesis *Formal basis of Modern Architecture* (2). Later, some publications have focused their interest on the diagram : for example, *OASE n°48* or *ANY 23*. Both insist on the fact that the diagram play a double role in architecture . It works as an analytical abstraction and representation (3), but is also a model of thought, generative. It is often argued that the diagram is postrepresentational form of explanations and analysis. It represents in a different way from a sketch or a plan building. Regarding the contemporary production of architecture, the diagram is a model a representation but is also generative of the architecture, or as Somol said in *Diagram Diaries* (4), the diagram is the matter of the architecture. It is in that, that the diagram has focused our attention, in the change of paradigm that it represents. Eisenman theorized the use of diagram in *Diagram Diaries*. He gave us up a dichotomy of its use in three approaches : anteriority, interiority and exteriority. The anteriority, inseparable of interiority of architecture, of the language of architecture, its composition, its formal grammar, tries to establish an historical continuity of architecture in order to be used in the design process to produce new arrangement, new spatial complexity. Eisenman's use of diagram, analytical in first instance and thus generative, has a potential to create new arrangement into the stratum of architecture. It is exactly what Koolhaas did when he focused his attention at the beginning of his career, in *Delirious New York* (5), on the skyscraper. The section of the Downtown athletic club has become, by a process of abstraction, diagrammatic in essence, the generator of the competition entry for La Villette, in 1989. Sou Fujimoto in his book *Primitive future* (6), shows a chart of 24 spaces, in which are illustrated diagrams. These have the intention to provoke spatial interactions (7). These architects, like Eisenman did in 1963, by analysing architecture in a diagrammatic method, representation, shows us that the diagram, through its capacity to conceptualize and to produce new spatial arrangements, have gone further than the *tendenza* typological model. The clear process of the *machine abstraite* in architecture, as a tool of the architect, has increased its role from analytical to generator of the contemporary architecture.

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Friday 24 November 2017

11:15-13:15

Paper session 1

Words and Narratives

Location: Room K

Session Chair: Klaske Havik

Delft University of Technology

The written Word discloses the architectural Idea: the writing Process as essential Tool of Bruno Taut

Paola Ardizzola

Antalya International University

The written oeuvre of Bruno Taut (1880-1938), one of the eminent German architects leading the development of the social housing construction in Berlin during the so-called *Goldene Zwanziger*, matures in the context of a theoretical assumption that originates from the praxis of architectural doing. His literary work – books, articles, essays, manuscripts and diaries – includes about four hundred titles. An impressive number, if related to the dynamic activity as architect and professor and considering that he died relatively young at the age of fifty-eight. Most of his texts are accompanied by an important iconographic apparatus, drawings, plans, sketches, drafts and photographs so much that for many writings we can talk about a graphic-literary work. To have an overview of his systematic texts, ranging from 1919 to 1938 (the year of his death), it is possible to summarize his written discourse in five distinct phases: the first phase on the constructive utopia, the second one about how running the modern architectural projects in the construction process, the third on the contemporary western architecture, the fourth on the architecture of Japan, where the architect had fled in 1933 because of Nazism, and the last one on the experience in Turkey, where Taut lived working successfully the last two years of his life. The themes of essays, articles, pamphlets and booklets Taut wrote, especially for some of the most important German journals of the time, either reflect the individual stages of his architectural ideas within the larger publications, or represent very specific focuses on current design innovative topics. Taut critically analyses and interprets the coeval architecture of his epoch and the ancient history as well, that is perceived as unlimited resource of inspiration and education. The critical approach of the written word is for Taut a means of training and knowledge for the accomplishment of a real architectural transformation, which can epitomize the features of modernity and meeting the new social expectations. Taut's writings corroborate the architectural praxis in order to obtain a clear goal of cultural renewal, which embodies the spirit of the *Neues Bauen*. But probably, the most revealing writings used as necessary tool for reflecting about architecture are the daily journals and notebooks such as *Istanbul Journal*, *Thoughts about Katsura*, *Japan Tagebuch*: here the architect writes his intimate thoughts, draws what he daily sees according to his aesthetic approach, remarks the fundamentals of his architectural beliefs. Until the very end of his life, he gave great importance to the practice of writing as means of reasoning about the relationship between theory and praxis, as methodology for facing the construction process related to concepts, and a way for spreading ideas. Considering the voluminous corpus of Taut's writings, this paper means to analyse the literary architecture project used as essential tool by such a prolific militant architect.

Oral History and Architecture. How can Personal, Participative, and Individual Narratives become a Tool to Rethink Architecture?

Vittoria Capresi

Technische Universität Berlin

How can people's memories contribute to our understanding of the built environment? How can narratives about spaces shed new light on the mechanisms that govern architecture and buildings? The interpretation of architecture is linked to the direct explanation of material space. The built landscape is usually analysed through the forms of and spatial relationships between individual buildings. The functions of the buildings and the spaces around them provide more information, which can be used to better understand the interactions between the constructions themselves. What happens if - as an additional level of interpretation - we add the narratives and memories of the inhabitants? What new insights can the analysis of oral histories of a built space offer us? Can shifting our perspective from an academic narration of a site to a personal, and emotional one become a tool to expand our understanding of the built environment?

In recent time oral history has been more and more accredited as an important source of data to investigate architecture and town planning, providing a different perspective of analysis. In the case of modern architecture, narratives directly linked with the buildings and surrounding spaces could add precious hints to integrate the description of the architecture beyond its physical appearance, the printed sources and - if existing - the technical and functional explanations by the architect and decision-makers in the design and construction process. If considering architecture built under a totalitarian regime, oral history methods could even play a more essential role, suggesting an interpretation which definitively overthrow the propaganda image of that time.

The paper aims at exploring the effects of analysing architecture through a holistic approach which includes also the narratives of the users, investigated by means of oral history methods. As a case study the new towns built under Mussolini in Italy and in colonial Libya will be presented and discussed. The interpretation of these new fascist settlements is always linked to the propaganda of that time: the historical photos and descriptions in the press offer only a partial and misleading impression of how life was in the centres. Today the buildings and spaces which still exist allow a partial understanding of the original uses and functions. How can narratives offer a tool to compose a different image of these spaces? How and how much can diaries, private pictures and letters add essential information for a more comprehensive interpretation of that architecture and urban spaces?

The Architectural Treatise as a New Tool? The Case of Antonio Averulino's *Libro architetonico*

Caterina Cardamone

Independent scholar

Filarete's *Libro architetonico* (1460-64) provides a relevant case study for an epistemological reflection on the function of writing and its role in the transmission of technical knowledge during the Renaissance. The question that arises in the lines of the text - "*ridicolo e sciocco*", according to a successful historiographical tradition - concerns the use of the treatise itself, and its value as a new, potential tool for fifteenth-century architects. Written words, in Filarete's view, do not capture the complexity of spatial description; writing is slow in describing ornamental details, technical and construction processes. Above all, writing cannot transmit the knowledge needed for the *firmitas* of the building.

Incidental but consistent remarks on the priority of *fare*, and an unconcealed scepticism towards *scrivere* and *dire* in architecture are distinctive marks of the technical and construction-related passages in Antonio Averulino's treatise. They testify to an ongoing reflection on the respective potentialities of writing and drawing: that is to say, on information that is better conveyed by writing and by drawing, an issue still worthy of discussion at the time of Filarete's *Libro*. It is interesting to note, for instance, that dimensional information in Filarete's treatise is transmitted principally through the text, probably because of the way in which the manuscript is reproduced.

The aim of my paper is to offer an excursus on Filarete's reflection on writing as a tool. Writing certainly has different potentialities. *Fare memoria* is one of them, that is to say, assigning to paper common choices of the architect and the *signore* (Libro VI). Again, in Libro VII, when Galeazzo starts learning the principles of architecture and *disegno*, writing reveals itself as necessary to tackle *argomenti scabrosi*, and to deal with complex proportional and design, and construction-related issues. In Filarete's treatise, writing nonetheless proves incapable of replacing empirical observation and direct learning in the construction yard.

Filarete's reflection on writing is clearly linked with patronage dynamics, on the one hand, and with the contents conveyed in technical and construction passages on the other. Writing on building techniques has a self-evident rhetorical value for both the architect and the *signore*, a value that seems, however, to be inconsistent with Filarete's overt scepticism, and that is nonetheless closely linked with the transmission of technical and construction contents, and their relevance for his contemporaries.

Filarete's discussion, moreover, still needs to be contextualised within the broader framework of the history of science. Even if, in certain fifteenth-century architectural treatises, experience and direct observation prevail over the authority of the ancient written tradition - as is the case in *De re aedificatoria*, for instance - it is not easy to find an equivalent for Filarete's case. This could bear testament, moreover, to an impact between two cultures, around 1460, when the status of the architect began to change. The unwritten artisanal transmission of knowledge was then confronted with court exigencies - if we consider Filarete's *Libro* as a technical treatise written for the education of a courtly public - and this impact emerges throughout the manuscript.

The Scenario Method: a tool for conceptualizing plausible architectural and urban futures

Annie Pedret

Seoul National University

Architects activity is always about creating futures – future cities, buildings, and landscapes. Sometimes they envision future societies – idealistic societies (Glass Chain), and possible scenarios such as cities of leisure (Situationist City), expendable cities (Archigram), cities in motion (Futurist city) of light and ordered cities (The Radiant City). The visions of the future in the history of architecture are based on conceptions of future societies based on a simplistic way of conceiving the future that identify a single feature – leisure society, expendability – or solve a particular problem – need for mobility, light and air, or, more recently, the degradation and depletion of the natural environment. Although architects are obsessed with the future, they do not have methods or systematic tools for examining the future as a subject, or society as a complex systems formed by multiple factors. In this paper I propose that architects who are curious about the future engage in “designing” plausible futures using the scenario methods as a precursor to designing the physical form of the future.

The scenario method is an analytical, synthetic and conceptual tool that allows architects to systematically reflect on the future to produce “scenarios” in the medium range future of 30-35 years. Scenarios are “heuristic narratives” of equally plausible alternative hypothetical futures of complex systems like cities that could develop and which can serve as a basis for action. There are several typologies of scenario production by futurologists that range in goal, design, content, and purpose for employing it while sharing a process.

In the paper I discuss the capacity of the scenario method to respond to particular subjects and contexts to produce more complex visions of “plausible” futures, to supplant the “possible,” and often impossible futures. This paper examines the methods of the scenario method, as it is practiced by futurologists, as a tool for the culture of curiosity and examples of the “design” of

scenarios and projects within those scenarios, and examples of a scenario and the projects designed within those scenarios using this method. It also examine the valuable contribution architects make to this method through their ability to produce “visual narratives.”

The paper examines the features of the scenario method that produce more complex visions of the future beginning with its responsive capacities to address particular subjects and contexts and its aim to produce more complex visions of “plausible” futures. The scenario method demands that architects to consider key factors beyond those usually considered by architects that also affect “the imagination, character and quality of architectural projects,” and operates in an inclusive time frame that considers the past,

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present, and future. The focus of data collection extends beyond merely accumulating data to understanding the interaction between key factors. As a projective tool, it considers a longer time frame of 30-35 years rather than the span of designing a project. Most importantly, the scenario method provides architects with a powerful tool to imagine alternative and complex visions of the future that can serve as a basis for their architectural, urban and environmental designs. It provides them with agency.

How to Build Things with Words: Cedric Price's Generator and Architecture's Performative Linguistics

Johanna Sluiter

New York University

Although most of his projects were never built, Cedric Price's iconoclastic and interdisciplinary design methods have become well known. From his notion of "anticipatory architecture" to partnerships with radical theater directors and computer scientists, Price continually pushed the boundaries of architectural thought and structure. Championing relational ideas of changeability, interaction, and ephemerality in his writings, Price sought to translate theory into built form; yet for Price, "architecture" was as much a conceptual operation as it was a material product.

Crossing the literal and lexical poles of his architectural output, and serving as both design metric and inspiration, performance became instrumental in the architect's theoretical practice and praxis alike. Beginning with *Fun Palace* (1960-1), Price incorporated tangible aspects of performance design (i.e. catwalks and suspended screens) through collaboration with Joan Littlewood and sought to embed responsive software within the building's mechanical armature through a process partnering cyberneticist Gordon Pask termed "scripting" - thereby likening the writing of computer code to an act of dramaturgy.

"Performance" took on greater valences in Price's *Generator* (1976-80): a proposed performing arts center and corporate retreat for the Gilman Paper Company in White Oak, Florida. For this project, Price conceived of a structure that necessitated user input for assembly and operation to be gleaned through written questionnaires, oral surveys, persuasive conversation, and logic games. With *Generator*, Price endeavored to realize a self-organizing architecture of pure feedback, wherein ephemeral desires would be simultaneously translated into digital code and physically articulated in the built environment. Moreover, *Generator* proposed a new and imminently flexible architecture in which language was immediately concretized in built form, and where speech and action coincided.

While *Generator* has primarily been understood through the lens of systems theory, I propose reading the project as an attempt to literalize British philosopher J.L. Austin's theory of performative linguistics, as outlined in his seminal work, *How to Do Things With Words* (1962). This paper proposes language as the primary tool in Price's architectural thinking and its performative operations within his designs by focusing on archival material associated with *Generator* and contemporaneous texts, including, "Technology is the Answer, but what was the Question?" (1979). Considering Price's work as architect and polemicist, I argue that the temporal dimension and evolutionary structure of language closely aligns with Price's practice, while performative linguistics served as a model for architectural enunciation at the dawn of cybernetics and participatory planning.

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- 1 DELEUZE Gilles, *Mille Plateaux : capitalisme et schizophrénie* 2, Paris, les éditions de minuit, 1980
 - 2 EISENMAN, Peter, *The Formal Analysis of Modern Architecture : Dissertaion* 1963, Facsimile, Lars Muller Publishers, 2006
 - 3 OASE architectural journal, n°48, 1998
 - 4 SOMOL R.E., *Peter Eisenman : Diagram Diaries*, London, Thames & Hudson, 1999
 - 5 KOOLHAAS Rem, *Delirious New York*, Oxford University Press, 1978
 - 6 FUJIMOTO Sou, *Primitive Futures*, INAX-Schuppan, 2008
 - 7 LUCAN Jacques, *Précisions sur un état présent de l'architecture*, PPUR, Lausanne, 2015

Friday 24 November 2017

11:15-13:15

Paper session 2

Drawing techniques and conventions I

Location: Room E

Session Chair: Pieter Vlaardingebroek

Utrecht University/M&A Amsterdam

The Tool between Tools: the Analogical Process in John Hejduk's Work

Luca Cardani

Università luav di Venezia

In architecture the contamination with arts and sciences rather than with their tools, has always supplied the impulse to the renovation of the language and to the discovery of new forms: consider the example of Le Corbusier and the influence played in its architecture by the arrival of industry and machinery.

What allows to put in relationship the results of different knowing process is the mechanism of analogy. Analogy is the cognitive instrument that establish a proportion of similarity among different objects. Establishing an exact equivalence of relationship between already-known things allows to suppose a new knowledge, as the result - or the variable - of this proportion.

In this regard the work of the American architect John Hejduk (1929-2000) is characterized by an intense use of analogies, motivated by the belief in the contamination between disciplines seen as an opportunity for the inspiration and development of architecture, as he stated: «Architecture is filtered through the parallel disciplines of painting, literature, and medicine (...) architecture is an art of approximation»¹.

The first part of his career is characterized by an intense study of cubism basing his researches on a formal analogy between art and architecture whose result is a new language that represents a new spatial condition.

In the second part of his work he extends the use of analogy in architecture referring to other disciplines as philosophy, literature, poetry.

In his series of projects called "*Masque*", developed from 1979, he builds an analogy between town and theatre therefore architecture as a theater mask becomes the synthesis of all the sociocultural aspects of a place and a representation of characters of its inhabitant.

The first project of that series called "New England Masque" want to represent the spirit of New England through a process of accumulation of meanings due to the cultural heritage of this land. Here, we could find Edward Hopper's paintings, the Paul Strand's photographic campaign, the literature of Hawthorne and Melville, the drama of Eugene O'Neill.

This method manifests itself through the compositional technique of *collage*, where pieces and elements of architecture and fragments of other things are put together to build a new form which include all the meanings in a new, more extended one.

Analogy in Hejduk's work develops as a mechanism of translation from a cultural form to another passing through their formal substance and an instrument to fabricate the character of the architectures.

According to Hejduk the architect is "a builder of worlds": all this considered Architecture is not only the existing buildings, but also each architecture still to be built as possible answers to all the ideas in search for a form. Analogy is thus the only tool between tools of the architect to overcome disciplinary boundaries and promise new discoveries.

1 J.HEJDUK, *The flatness of depth*, in "Mask of Medusa: works 1947-1983, Rizzoli, New York, 1985.

The Development of Ambiguity and Michelangelo's Drawings for the Porta Pia

Jordan Kauffman

Brandeis University

This paper traces the beginning of a particular form of sketching within architectural practice that commences with Michelangelo's drawings for the Porta Pia in Rome. It locates these drawings within a longer history of architectural drawings stemming from the Gothic in order to reveal their novelty. Prior to these drawings, drawings in architecture were distinct, linear in quality, and used to reveal errors in ideas. The drawings for the Porta Pia, however, develop a design within the same space, collapsing the inherent temporality of process. They exhibit qualities of indistinctness from which new, unforeseen ideas can arise.

Michelangelo's process for the development of the Porta Pia was employed in order to reconcile differing geometries and models. But these practical considerations gave rise to a new use of drawing within the architectural design process. The marks, made by the movement of the hand, allow for the intellect to relinquish some conceptual responsibility. While all ideas necessarily begin in the mind in some fashion, and while the architectural decision always lies with the architect, the notion that design must be conceptualized within the intellect gave way to the realization that the marks produced by the designer could spur the imagination and hence the intellect to previously unforeseen forms and relationships. Sketching provides for this more active relationship between the designer and their drawings.

30-60-90, 45-45-90: Axonometric Projection with and without Set Squares

Luca Di Lorenzo

Università luav di Venezia

This proposal analyses the relation between the revival of axonometric drawing today and the tools historically associated with it.

In a world where 1924 Theo Van Doesburg's prophecy in *Tot een Beeldende Architectuur* is coming true - "...the plan must disappear completely. The two-dimensional spatial composition fixed in a plan will be replaced by an exact constructional calculation. [...] With the aid of calculation that is non-Euclidean and takes into account the four dimensions, everything will be very easy" - this new spring of parallel projections seems anachronistic, because it is no longer related to the use of 30-60 and 45-45 degree set squares and drafting machines. Architects have sophisticated and advanced technologies, but they still rely on old-style drawings: precise orthographic projections or handcraft-like collages. This phenomenon could be read as "a resistance movement [that] grows after the domination of realistic images made by digital techniques and advanced software" as Wonne Ickx recently wrote in *Arquine 60*, due to the will to re-emphasize the division between manual and intellectual work, but also due to the struggle in operating complex systems and to the emotional distance of their outputs. Between romantic nostalgia for the architectural discipline and reaction to populist renderings, the return to axonometric projection shows a desire to re-establish architecture as something more than a professional and direct answer to the market. If it is true that the computers are standardizing the outputs, drawings emerge as something refreshing.

Bruno Reichlin in 1978 and Yve-Alain Bois in 1981 were the firsts who elevated axonometric projection to the status of «*symbolische Form*» as perspective was for Renaissance for Erwin Panofsky. Axonometric view cyclically appears bound to different ideologies: it was the perfect tool to represent the modernist four-dimensional model of reality, and it showed the new dimension - time - as something that the architect can see and control. Peter Eisenman from *Oppositions 15/16* divided what existed before Modernism - perspective: subject-centred view - and after - axonometric: object-centred view. Axonometric projection changed the relation between the architect and his building, destroying the human-centred world of perspective and opening the doors to an objectual and more abstract control of the design process. Although originally axonometric projection was also economically advantageous, today digital tools erase that gap, in time and difficulty of production, with perspective. It is no longer a modernist abstract machine for designing and thinking, but a rhetorical and instrumental device to convey a message that goes beyond the project itself. As photography pushed art to abstraction, reproducing reality better than a painting, today computer visualization has done so to traditional drawing, constraining it in a metaphysical field.

Seeing through Cross-Sections

Andrea Oldani

Politecnico di Milano

Despite centuries of use and remote empirical origins, the theoretical and practical process of intersecting an object in a three-dimensional space with a plane and representing its shape, commonly known as “cross-section”, it is still the foundation of each descriptive process and design activity.

As well as Durand, who used horizontal sections as a way to classify types, establishing a rigorous design method, Le Corbusier reminded the “plan” as “the generator”. In his theory it is considered as a theoretical space, where the architect can apply his imagination without losing control, avoiding “disorder” and “arbitrariness”. On these bases several Italian scholars (Muratori, Rossi, Caniggia, Maffei) applied these principles to the study of the historical city defining a precise relationship between types, urban morphology, and territorial order, basing their studies on the horizontal cross plane as a way to disclose the complex relationship existing between the intimate structure of the buildings (typology) and their relationship with urban fabric (morphology), also highlighting the “strategies of adaptation of the city to specific physical site conditions” (Gregotti).

From another point of view the critical and inventive possibilities linked to the vertical description, made possible by the cross-section process, do not take advantage of a so wide theoretical speculation and practical experimentation. If the plan (horizontal section) well expresses the logic, the rigor, the hierarchies and the functionality required by the design process the cross-section (vertical) opens to the emotional. The vertical section is the representation of “the world between ground and sky” (McNamara), a powerful tool to conceive and express the relationship between gravity and light, deepening the poetical content of architecture. The oculus of the Pantheon magnificently expresses the connection between earth and sky and the vertical section drawn by Piranesi penetrates the constructive reality of the building, well emphasizing the game played by the light through the use of shadows.

Just as the plan, the vertical section could be used to investigate the urban dimension of the city and the landscape, nevertheless the experiences related to this way of use are less practical and theoretically deepened in comparison with those on the plan. Few years ago Stefano Boeri denoted a persistent “zenithal arrogance”, wishing for a new type of description, in form of an “eclectic atlas” able to find out new correspondences between space and society. In this sense the extension of a well known descriptive procedure, usually applied to the plan, to the vertical dimension, allows the discovery of sometimes underestimated matches. Likewise, the combination of section drawing and photographs extends the reading potentials and critical power of description, allowing the association between measurability and sensation.

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The occasion of some researches and projects in the field of infrastructure architecture gave the possibility to deepen the practical and theoretical aspects previously exposed. Such reflection allows underlining the indispensability and continuous possibility of renewal that belongs to a simple tool like that of the cross-section. These topics are addressed to the attention of the conference through the presentation of theoretical considerations and original visual materials.

Friday 24 November 2017

11:15-13:15

Paper session 3

Science

Location: Berlage Room

Session Chair: Anthony Gerbino

University of Manchester

Artificial Intelligence as a Game-changing Tool of Analysis

Carola Hein, Beate Loeffler, Tino Mager

Delft University of Technology

The global history of architecture is an imperfect narration, both complex and sophisticated. Nevertheless, it is a continuous story of long-lasting ideals, of developments, inspirations and variations. Throughout the centuries, architectural creations did not emerge ad hoc. Historical knowledge was a key tool for design. Architects carefully studied existing buildings and trained on the masterworks of the past during their education, but also on the Grand Tour, or through professional (hand)books and journals. They adapted, improved and enhanced architectural forms and techniques and merged them into something new. References to global precedents and local historic conditions are still an important design tool, however, the possibilities of inspiration and information have multiplied.

The ongoing digitalization of whole archives provides vast amounts of heterogeneous text and image materials for the fields of architecture and architectural history. Architects' inspiration is no longer restricted to select iconic buildings, but can build upon extensive repositories and the worldwide wide web to provide examples of architectural representations (plans, drawings, models, photographs etc.). In order to be useful as a tool of analysis and design, the vast amount of historical precedents and references requires critical assessment using new methods and technologies in addition to established approaches. The conceptual innovations that are needed and possible to handle the quantity of data also bear the chance for a non-hegemonic and balanced global history of architecture.

This paper explores how new approaches to accessing and structuring hitherto unmanageable and unorganized sources will have lasting effects on architectural creation of the future. This paper builds on research done as part of the ArchiMediaL project (TU Delft/VU Amsterdam), set up in cooperation between historians of architecture and urban form and computer scientists (Hein, Loeffler, de Boer, van Gemert, Schubert). The project investigates the automatized analysis and identification of architectural representations by artificial intelligence methods and it generates new means to facilitate the development and linking of metadata and image content. Moreover, it engages architectural questions that speak to new and huge sets of data, going beyond conventional historical and cultural context. Therefore it provides a new category of tools of analysis for architects.

Taking the Repository of Colonial Architecture and Town Planning from TU Delft as a starting point, the paper critically explores the potential of computer-based methods to handle, overcome, and critique the inherently colonial structures embedded in most of the available data. It presents new approaches to unbarring and interlinking of currently siloed repositories and linking them to the web. Hereby it shows how automatized

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recognition of architectural representations can lead to a more holistic activation of source material, mainly by overcoming linguistic barriers and entrenched structures. Besides addressing our experiences with the difficulties of breaking down established approaches to architectural history and design, the paper provides first results for a globally balanced analysis of built form around the world, negotiating new methodological approaches for future-oriented architectural research.

Revealing the Invisible. The Scientification of Architectural Forms in Postwar Italy

Lukas Ingold, Ilaria Giannetti

ETH Zürich

In the aftermath of World War II novel scientific tools start to influence the architectural culture in Italy. These tools originate from analytical methods in structural engineering and are mainly based on the use of physical models. Instead of the primary purpose for the verification of structures by the visualization of stress fields, the physical model studies are applied in the design process as source for forms. This innovative employment of engineering tools, ranging from the photoelasticity method to experiments with soap film models, affects widely the emblematic architecture of the postwar period.

During the 1930s, the Italian scientist Arturo Danusso (1880-1968) started to research on the field of photoelastic stress analysis. This optical technique enabled to display visually the stress paths in a component under load: Physical models made of transparent material were irradiated by polarized light, the gradation of different colour fringes allowed to depict the stress trajectories. Dunusso's scholar Pier Luigi Nervi (1891-1979) was one of the first, who applied such analytic methods as a design tool for the construction of the Wool Factory Gatti in Rome (1951). What originally displayed a graphical representation from the stress analysis, was in this case directly translated into an architectural motive. The rips illustrated the trajectories of the stress field of the slab. This structural pattern provided an expressive reference for the postwar architecture in Italy and abroad. While Nervi's explorations revealed the manifold potential of such analytic techniques to articulate the architectural space, Sergio Musmeci (1926-1981) followed a similar approach with his explorations for novel structural forms. His method was related to the use of several innovative tools, such as soap film models. In these experiments a simple metal wire defined the boundary conditions, while the soap film allowed to derive a self-generated surface. The resulting minimal surface, in which the stresses can distribute equally, was directly translated by Musmeci into a novel architectural form. This early example of form-finding was transferred into practice with the construction of the Basento Bridge in Potenza (1967-76).

In a larger context, the attempts of protagonists like Danusso, Nervi and Musmeci were part of an international movement of thought. The theoretical and cultural milieu can be framed by D'Arcy Wentworth Thompson's famous treaty on *On Growth and Form* (1917) and the exhibition *The New Landscape in Art and Science* at MIT (1956), curated by Gyorgy Kepes. By employing the inherent potential of engineering tools to reveal the invisible stresses of component under load, structural engineers addressed exemplarily the modernistic ideal of a reciprocal dependency between analytic sciences and creative processes.

The Foucault Device: Forty Years On

Andrew Leach, Luka Skansi

University of Sydney

In 1976, the Institute of Architectural History, directed by Manfredo Tafuri at Venice, became the Department of Architectural Analysis, Criticism and History, signalling an institutional wish to expand the methods and premises for the study of architecture. This paper looks at a symptomatic event in this history of the Venice School. Tellingly called *Il dispositivo Foucault* (The Foucault Device, 1977), it was among the most open overtures by Italian architectural culture to French discourse, reflecting in part the baggage brought to Venice by Georges Teyssot; but marking, too, a moment of change in a sustained enquiry into new modes of architectural history that borrowed actively from “external” historical fields like the histories of technique and of the *longue durée* alongside the realm of philosophy—bodies of knowledge that architecture would embrace across the 1980s.

This paper will first reflect on the conference itself, exploring its “genealogy” and identifying the contributions of its four *relatori* by exploring the eponymous book in which it resulted: Franco Rella (on the political economy of the body), Massimo Cacciari (on the “problem” of politics in Foucault and Deleuze), Teyssot (on heterotopia and spatial history) and Tafuri (on discursive practice). By recalling their various engagements with francophone historiography and philosophy it will position the “Venetians” in relation to the uptake of an emerging mode of analysis in architecture in which discourse itself takes on significance as a subject—and, therefore, in which Foucault sits alongside Gilles Deleuze, Félix Guattari and Jean-François Lyotard as key authors. It will locate this event in the culture of experimental historiography fostered under Tafuri at IUAV and at the intersection, therefore, of intellectual agendas that were at once complementary and in competition.

Our assessment will go on to reflect on how the subject and lessons of Foucault and his historiography sits alongside the other subjects around which Tafuri and his circle gathered in these same years—Le Corbusier, Benjamin, Borromini, Piranesi, modern Vienna and Renaissance Venice. It will then look to the status of the “Foucault device” in the work conducted in Venice across the early 1980s and the implications, in turn, of this *dispositivo* for the way Tafuri and his colleagues argued a position for historical discourse within contemporary architecture. Chief among the implications of this event for architecture is the significance of historical “reconstruction” in analysing the “historical space” of conflict—a question on which Tafuri differs greatly from Foucault, and around which the reception of his studies in architectural history by architectural culture pivots in the 1980s. Two studies exploring Venice, in particular, come to the fore in these reflections: *L’Armonia e i Conflitti* (1983, with Antonio Foscari) and *Venezia e il Rinascimento* (1985), which test, one after the other, the possibilities and limitations of the *Annales* historiographic tradition.

The paper therefore positions *Il dispositivo Foucault* between the apparent Venetian embrace of historical distance from contemporary architecture and its own aspirations to delve deeper into its machinery.

Anatomy as a Tool in Early Modern Architecture: Anatomical Observation as a Way of Life in the case of Claude Perrault

Katerina Lolou

National Technical University of Athens

The idea of the architect as champion of modern science concentrated much of its legitimacy upon questions about the appropriate and effective application of scientific ideas and practice to architecture. In this paper I will suggest that the idea of the architect as a rational creator was complicated by the perennial concern with how to live, interpreted in diverse ways during the 17th century. Such considerations prompted questions about the authority of models provided by antiquity or nature, and more deeply, the relation of thought to action. I would like to discuss a different perspective on a significant figure in the early modern architectural theory, linked to this 17th century idea of the architect: Claude Perrault. While discussions of this figure have drawn attention mainly to the Cartesian mechanism of passive perception as a tool of scientific knowledge, I will propose that Claude Perrault understands observational practice as a kind of spiritual exercise, aiming to a deep assimilation of a rule of life - namely testing the truth of what one thinks and feels- which could help the individual in reaching and maintaining a universal perspective.

The analogy of therapeutic philosophy to architecture as a disciplined way of seeing things is founded in their common effort to show a relationship between things. The main tool for the exploration of this relationship was anatomy, inherited from the anatomical practice of Renaissance. Anatomy described not only the actual dissection of cadavers, but also the philosophical activity of analyzing the meaning of words, and was a tool enabling the late Renaissance Academies' projects for the reformation of the arts, through their common relationship to rhetoric and literary language. It is significant that Barbaro, in his commentary on Aristotle's *Rhetoric*, offered a comparison between medicine and rhetoric, and in his commentary on Vitruvius, suggested that architectural objects should be treated with the thaumaturgic powers of Reason and of Art.

How could the new natural philosophy contribute to the theoretical foundation of architecture? I suggest that Perrault's reformation of architecture adopted anatomical observation not to be legitimized by it, but as a strategy aiming to modify the experience of the evident. Anatomical observation must rely on a new epistemological modesty whose model was Harvey's epistemology. Perrault was keenly aware of the deep tension between the gaze of the architect aspiring to building up, and the gaze of the anatomist leading to anatomical destruction, embedded also in tensions within the Renaissance languages of life. Yet he still retained the idea that the probable proportions of the architectural orders are important, so as to maintain an analogy to the body. He was not concerned with an intellectual analysis of eloquence, but with the possibility of an observationally based and carefully organized account of the parts of a body, on which he could relay an optical economy of the anatomical experience. To see relationships between things calls for a trained observing, mind and body must be trained to working together so as to master the anatomical evidence.

Bernard Bijvoet and Jan Duiker: 'Architecture must become a Science!'

Jan Molema

STAG

In their article '*Essence and future of architecture*', the building engineers-architects Bernard Bijvoet (1889-1979) and Jan Duiker (1890-1935) proscribed in 1926 the path architecture should follow.¹ In the rather complex article the two related architecture to modern science. It preceded the Maison de Verre (Bijvoet & Chareau, Paris 1926-1931) and the Sanatorium Zonnestraal main complex (Bijvoet & Duiker & Wiebenga, Hilversum 1926-1928), in which the possibilities of innovations would be broadly investigated.² The Maison de Verre and Zonnestraal were both spatial and technological experiments; in a way ensembles of prototypes for industrial production. Bijvoet and Duiker explored new materials, products and constructions in their buildings. Therefore they used new devices, such as the calculator, the sliding ruler and the drawing machine, in their studios. In my contribution to the conference I shall show the influence of such devices on the designs, subsequently the buildings, in relation to the article.

Some quotes:

'Building technology that is truly modern would have as its aim, above all else, to perfect making purpose and effect observable, and not only search for the pure articulation of the purpose but also should, as with the beautiful modern machine, represent as a structure the tensions resulting from above mentioned articulation as purely as possible.'

'To accomplish this, building technology should evolve towards greater precision in the parts, which, analogous to the modern machine [are] mass-produced articles produced in painful precision, will have to be assembled in the same meticulous way.'

'Also, in a future social culture, based entirely on mass produced items and clothing, today's building technology would fit poorly.'

'And yet it is such a social culture that will transport the life of the average man to a higher plan than ever before, certainly, at least, in terms of purity as it relates to decorative unity.'

'Seen in this way building technology is still in a desperately infantile stage, though in utility works, the domain of the engineer, something is beginning to dawn that looks like a purifying of principles.'

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1 *Het Bouwbedrijf* (July, 1926), p. 270. Published as: "Meeningen van anderen".

2 Jan Gerko Wiebenga (1886-1974), civil engineer.

Bijvoet and Duiker contributed their share to the 'purification of principles' in architecture. Yet questions arise about how they thought to implement these ideas and what they could achieve in their practices. What new methods -in the studio and on the building site- did they apply? What modern means were available, which did they purchase or rent? **Blueprint device, calculator, drafting machine, sliding ruler, stereo-camera, theodolite, automobile and plane.**

What can we conclude from their factually built heritage? I will show in my paper how the new 'equipment' changed their architectural practice. I shall present some of my research results a propos their most important projects, common and individual ones. Especially Duiker's later buildings show his growing fascination with geometry, and physics. His entry for the beach hotel in Zalesly nad Labem (1929) is a mathematical revelation, as is the Open Air School in Amsterdam (with Bijvoet, 1926-1930).

Friday 24 November 2017

15:00-17:00

Paper session 1

Theories and concepts

Location: Room K

Session Chair: Hans Teerds

Delft University of Technology

The Tool of Plasticity: Framing the Processual in Post-Industrial Adaptive Reuse

Steffen Bösenberg

Leibniz Universität Hannover

In post-industrial architecture adaptive reuse seems to be a key element of sustainably developing our built environment. The remains of industrialization are vast and excessive: The more efficient production processes have gotten, the less economical and less ecological industrial architecture became. Integrative conversion strategies would be a reasonable approach towards their sustainability. Yet studies show that such an integrative re-embodiment of the industrial heritage into the urban surrounding is rare – a lack of architectural strategies is part of the problem.

Certainly adaptive reuse itself is not a contemporary phenomenon. Countless examples of ‘architecture without architects’, such as the famous back-and-forth transformation of the Roman theatre of Arles, showcase not only adaptive but transformative approaches: Iterative strategies that rely on the morphological history of the place and recycle space as a resource for future use. A thread that continues in the appearance of the loft in the 20th century and in consequence of the “right to the city” movements of the 1960s. In contemporary architecture adaptive reuse has become a distinct feature for offices like Lacaton & Vassal or EM2N.

These morphological approaches rely on individual and/or implicit knowledge of the practitioners. To derive explicit strategies applicable to the architectural challenges of post-industrial adaptive reuse, it is not merely about the morphological, but the explicitly processual: The ability of framing the dependencies between the past, the present and the future. And it is here that the term plasticity might offer not only a suitable adjective but a creative tool for (re-)incorporating the processual nature of architectural geometries into strategies for adaptive reuse.

Even though architecture seems so closely related to the term and the morphologic qualities it inherently describes, plasticity in architecture lacks a complex definition as it is present in other scientific areas. Various fields have gathered around its potential, prominently in the theory of French philosopher Catherine Malabou, and, of course, in Neurobiology where it is regarded as a core concept and substantiated term. Neurobiologist Jaques Paillard called it a “heuristic tool” in 1978, Malabou went as far as naming it “the most productive exegetical and heuristic tool of our time” forty years later.

In its ability to link temporal factors to morphological systems, the concept of plasticity might also be a container for those architectural strategies needed for the contemporary challenges when facing the obsolete. And thus it may contribute to a future “long-term-stability” (Uta Hassler) of post-industrial adaptive reuse.

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In the context of the conference, plasticity is to be understood as a proposal for a tool outside of architecture's usual means, a more conceptual and strategic instrument. While a definition of plasticity provides a practical set of rules, it is also about rethinking - or: rediscovering - adaptive reuse, introducing perspectives from outside the profession, and implicating the dependencies of life-cycles and their interactions with the fundamentals of architecture. This contribution is based on the author's research for his doctoral thesis "Plasticity. Architectural strategy of industrial conversion" (Dissertation Supervisor: Dr. Dr. Prof. Margitta Buchert, Leibniz University Hanover).

“Against Formalism”: Michel Roux-Spitz’s Useful Organism and the Politics of Équipement

Michael Faciejew

Princeton University

In “Contre le nouveau formalisme” (“Against the New Formalism”), an essay published in a 1932 issue of *L’Architecture d’aujourd’hui*, the French architect Michel Roux-Spitz denounced modernists for designing *clichés*, facile and empty forms derivative of airplanes and ocean liners. Tacitly condemning peers such as André Lurçat and Le Corbusier, Roux-Spitz asserted that modern architecture needed to reflect the climate of austerity that permeated French society after the stock market crash of 1929. The role of the architect was first and foremost “to organize,” to “classify all the data” so that a highly regulated, impersonal, and efficient architectural solution emerged. This new architecture, which Roux-Spitz termed a “useful organism,” would be perfectly calibrated to its context and its users, an antidote to the modernity of the reproducible, acontextual, and degenerate building ‘type’ advanced by the avant-garde.

Despite Roux-Spitz’s polemics against Le Corbusier’s “formalism,” his projects nevertheless took cues from the Corbusian discourse of *équipement*. Having opportunistically shifted his practice in the early 1930s from residential designs for the French elite to public projects, including several large-scale buildings for the French Administration of Postal Services and Telecommunications (PTT) and the renovation of the Bibliothèque nationale de France in Paris (originally designed by Henri Labrouste and completed in 1868), Roux-Spitz composed buildings according to the logic of “normalisation”: an architecture of mechanical systems, standardized furniture, and organizational protocols. While Roux-Spitz’s architecture has been discussed as a “renovated classicism”—a restrained and nationalistic style that sought to negotiate scientific modernity with French tradition—it was also mobilized as an organizational instrument for the production of a new intellectual, social, and moral order. *Normalisation*, not coincidentally, was one of the key proposals of the Vichy era’s Commission de Normalisation du Bâtiment, which sought to “regenerate” France from its decadence through a normative aesthetic of construction.

Drawing from theories of scientific management, Fayolism, and organicist sociology which informed Roux-Spitz, this paper discusses the political and epistemological repercussions of the interwar discourse of *équipement*, whose alleged “neutrality” lent it to an eventual sympathy with Vichy-era policies. Focusing on the renovation of the Bibliothèque nationale de France and its appendix the Dépôt Annexe de Versailles—a highly regulated architecture developed in accordance with new techniques and standards of intellectual labor—I examine how an anti-modern doctrine of counter-revolution was imminent in Roux-Spitz’s conceptualization of the architect as an “architect-organizer” and in the project of modern architecture itself.

Framework for Tectonic Thinking, a Conceptual Tool of the Architect

Udo Garritzmann

Aarhus School of Architecture

This paper is a contribution to the understanding of the term tectonics in the field of architectural design theory. It considers tectonic thinking as a 'tool of the architect' to analyse and interpret buildings from the past, to be operative in design practices of the present, and to trigger imaginations for the future.

Contextualisation:

In architectural theory the term tectonics was introduced not until the first half of the 19th century, to more or less disappear from it again with the rise of the modern movement. Only from the 1980ies onwards the term has gained renewed critical attention (Gregotti, 1983; Frascari, 1984; Frampton, 1983, 1990; Vallhonrat, 1988; Kollhoff, 1993; Hartoonian, 1994; only anticipated by Sekler, 1965), most prominently with Kenneth Frampton's magnum opus *Studies in Tectonic Culture* (1995). The book serves as a great inspirational source for architects interested in the topic. But by mostly concentrating on the loadbearing structure and its representation, it underexposes other types of tectonics that can be identified both in architectures from the past and in contemporary approaches. This paper will propose a broader understanding of term tectonics.

At the same time there is need for a more precise account of the differences between varying types of tectonics. Conceptual differences between very different types of tectonics are often obscured in professional discussions by referring to all of them with the single term tectonics. Architecture, both as a professional discipline and as a field to which the production of academic knowledge contributes, should consider this problematic. Therefore, this paper will also propose a differentiation of the term tectonics.

Research question:

How can we arrive at a broadened and differentiated understanding of tectonics in architecture?

Research method:

To answer the research question, this paper will develop an overarching Framework for Tectonic Thinking (FTT) by combining three different categories: loadbearing construction, type of construction and constructive expression with the following oppositional poles as distinguishing criteria: loadbearing construction versus non-loadbearing construction, solid construction versus filigree construction, and tectonic expression versus a-tectonic expression respectively.

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With this conceptual framework we will be able to differentiate a wide range of tectonic motifs and design positions. We do neither assume one single, supposedly right, meaning of tectonics, but several different meanings; nor do we attach a value judgement to any of the tectonic positions beforehand.

The FTT will be developed in parallel in writing and in hand-drawn mappings.

Research goal:

The Framework for Tectonic Thinking will suggest a broadened and differentiated terminology of tectonics.

It should foster the self-conscious employment of tectonic thinking in design practice and in academia. This paper will concentrate on the tectonic expressive spectrum of constructive expression; the a-tectonic expression spectrum will be touched upon, but elaborated in a different paper.

An Analogue - the Logos of the Universal Tools of Architects and Chefs

Anna Marie Fisker

Aalborg University

The fascination of the tools that we as architects work with is evident for most architects educated before the new millennium; the dry tactile touch and sound of sketching paper, the old drawing brush for cleaning the paper while sketching that has followed me since I was a student, the smell of the ink from the marker. However, it is tools that have competition from my battered baking form that I purchased very young, which faithfully has served me through life as a container for the utmost juicy baked tarts to the peppermill my first lover gave to me that loyally serves me every day.

My paper deals with the subject of finding the logos of the universal tools of the architect, and furthermore I ask if there are any parallels to find in the gastronomical and culinary world with potential for redefining the role of our tools.

Is there a discourse, a field of common rhetoric when we examine the tools of both the architects and chefs? Can we reason about the universal logos of these tools?

Both the architect and the chef have profound considerations about the materials they use. Whether it is the first carrot in spring or a special burnt brick, both the architect and the chef must contract with the material's quality and potential. Their work deals with forcing a design, a structure from the materials. For that, we have been using special tools through centuries.

As suggested by Peter Kubelka, man of cinema but also a gastronomist, seen in terms of cultural history, preparing food, supplying people with nourishment is even older than architecture that offered protection against rain and cold. Cooking and architecture, claim Kubelka, are both functional activities. They are poetry.

It is his proposition that this can be illustrated by the common origins of tools. The necessary tools for our specific purpose. Tools that are used for working on material things.

My paper focus on the event *Cibi e Riti* (Food and Rites) that was held in Berlin in 1981 with participation of Kubelka, but also the design icons: Richard Sapper, Ettore Sottsass, Alessandro Mendini, Achille Castiglioni, Peter Cook and the French fashion designer Jean Charles de Castelbajac among others. Alessi arranged the event as a workshop, building upon a new company dogma that from 1970 with a new line of company strategy introduced by Alberto Alessi, was reckon on new partnerships with designers and architects, occasionally also in cooperation with chefs. The *Cibi e Riti* seminar, under the auspices of Alessi became a historical and exceptional week where designers and architects reinvented the contemporary culinary ritual and its tools.

My paper deals with the question whether such interfaces between the creators of the table and the building have effect on the logos and praxis of architecture, and I explore this potential partnership.

Tools from Nowhere: Logical Positivism in Greek Architectural Magazines

Kostas Tsiambaos

National Technical University of Athens

Although modern architecture was embraced in Greece from its very first manifestations, in the early 1920s, its philosophical rationalism and methodological formality was not that well accepted. Few among the modern Greek architects moved beyond a classicist or romantic tradition that theorized architecture as a form of Art, as a pure spiritual creation of an individual. Constantinos Doxiadis was amongst those few who refused to follow this tradition by trying, instead, to introduce a scientific approach when studying the built environment by use of hard data, statistics, tables, charts, maps, and even Otto Neurath's ISOTYPE. In the midst of World War II, he was the head of an interdisciplinary team of experts who gathered data all over Greece in order to document the destructions caused by the war. And it was exactly on this documentation that the US aid in Greece (Marshall Plan) was based. What is little known, however, is that Doxiadis was not alone in this approach. Browsing through articles published in Greek architectural and broader technical magazines one can find as well other architects and engineers who had such a positivist view and wrote about architecture as an exact science which does (or must) follow its own strict schemes, tools and methods.

Based on the existing literature that connects modern architecture to the philosophical stream of Logical Positivism (Galison) I will try to expand this research field by focusing on a 'peripheral' paradigm. I am interested in discussing how the philosophy of logical positivism was diffused through Greek architectural magazines from the early 1930s to the late 1970s promoting new analytical tools, which could neither have been theorized nor used before. In the case of Greek architecture of the 20th century this becomes even more interesting since this positivist approach performs as a kind of architectural critique at the same time. In a context where the idealization of the regional (in terms of regional history, tradition, landscape, etc.) decisively shaped a local modern identity, by using these new 'sachlich' tools architects bypassed the already established ideological schemes and aesthetic references. Long before the Critical Regionalism of the 1980s, Logical Positivism triggered a radical critical re-action against regionalism and indicated an alternative, progressive direction. This radical effort, however, was not embraced by most architects since it appeared foreign, unbound by place, and without a local genealogy. These tools did not seem to have any reference to the past of Greek architecture, to its tradition, identity, or land. These were seen as strange, unfamiliar, alien tools coming from 'nowhere'.

In a post-truth era, the values of exactness, clarity and transparency that modern architectural discourse shared with logical positivism in a common vision to reshape an open, progressive and emancipated society seem rather distant. By studying the uses and misuses, advances and failures of these modern positivist tools through a very specific case study multiple issues related to the broader philosophical, ideological, and political dimensions of architectural discourse resurface. In this way, the tools that architects use start speaking about the users themselves.

Friday 24 November 2017

15:00–17:00

Paper session 2

Nature and Climate

Location: Room E

Session Chair: Christoph Grafe

Bergische Universität Wuppertal

'Binding Power Lines'—Notes on Herman Sörgel's World Project

Hollyamber Kennedy

Columbia University

At the 1930 World Energy Conference in Berlin, the German architect Herman Sörgel unveiled his technological vision for *Atlantropa*—an infrastructural hydroelectric network that tethered strategic territories in Africa and the Middle East to the industrial centers of Central Europe. Sörgel proposed sealing the Straits of Gibraltar with an enormous dam, the center of a system of subsidiary dams and power plants that stretched from the Dardanelles east to the Ural Mountains, down the Arabian Peninsula and encircled the African continent. The circuit closed at Gibraltar, *Atlantropa's* geographical origin point and the nucleus of its machinery. Once separated from the surging force of the Atlantic, Sörgel claimed, the water levels of the Mediterranean Sea would decrease, and immense new areas of arable land would appear along the changing coastal territories, reserved for European settlement. 'Instead of diving walls: binding power lines!' Sörgel proclaimed, 'Only a common high voltage network achieves a European Union.' Europe and Africa would form a double continent joined by the technological bonds of infrastructure. Concrete dams, steel levers, glass towers, copper conductors, and rubber cables were the fabric—and instruments—of *Atlantropa's* architecture.

This paper will argue that Sörgel's 20-year *Atlantropa* project exemplifies an under-explored genre of modern European architectural thought, shaped, epistemologically, by its techniques—both its geopolitical and material infrastructural technologies. The project illustrates an emerging discourse of 'world building,' framed by discussions of risk and remainderlessness (*Restlosigkeit*), that developed in the early decades of the twentieth century among architects and engineers who saw themselves as intervention-oriented planners. This discourse is marked by a shift in colonial practice, distinguished, as Dirk van Laak has noted, by a common European ideology of interventionist development, of opening up and cultivating foreign territories as material and human resources through investments in infrastructure. Sörgel's proposal bears witness to this shift in all its media-technological modalities. It provided both blueprint and technical apparatus—at its core a world power grid—for intervention, and loomed large in the imaginations of postwar planners. It has been argued that it laid the groundwork for numerous structural visions of European integration and intervention during the interwar and early postwar years—from the pan-European network plans developed by the League of Nations, the International Labor Organization, and the European Atomic Energy Commission, to the Schuman-, Strasbourg-, and Marshall Plans. Reading *Atlantropa* through its media-apparatus—its transcontinental cable lines, systems maps, and concrete dams—is to uncover a trend in modern architectural thought premised, in the words of Markus Krajewski, on the technocratic 'colonization of the environmental remainder.'

The Analytical Tool of the Element: Re-reading the Post-War Social Housing Estate Albertslund Syd

Lærke Sophie Keil

University of Copenhagen

In the post-WWII period 1945-1975, social housing became one of the pillars in the construction of the Danish welfare state, in an attempt to solve the need for affordable homes. Designers worked towards a refined spatial mediation between building and landscape, often in close interdisciplinary teams. However, while architecture historians have shown great interest in examining the building mass, the knowledge about the landscapes of these places remains sparse. In recent years, many of the Danish post-war social housing estates undergo large transformation projects, due to material decay, negative public images, new demographics and new urban agendas. In this reconfiguration, more substantiated knowledge about the capacities and challenges of the existing landscape is required. Thus, the question on how we can explore the landscape of these housing estates arises.

This paper studies the landscape of a particular post-war social housing estate Albertslund Syd (1963-1968), built as a low-rise high-density area with 1500 homes, in the outskirts of Copenhagen, Denmark. The housing estate became highly influential in architectural discourses of its time. The designers own descriptions of Albertslund Syd's landscape have been preoccupied with defining its meticulously planned system of different open spaces for different social situations: from small, highly private gardens, to collective spaces, to a large public park. Architectural historians have later repeated this perception of Albertslund Syd's landscape. Despite the large number and extend of its open spaces, critics from the year of the realisation, argued that the division between those spaces, in particular the way that each garden secluded itself with a 1,70 m. high fence made people feel "trapped and unprotected" (Kirstein, 1976). The recent comprehensive renovation plan for Albertslund Syd (2008), aims at dissolving the distinctive line between private and collective space, which makes the fence between private and collective space a key issue. The contested nature of this fence makes it a valuable starting point for understanding Albertslund Syd beyond the canonical perception.

Inspired by the British architectural historian Robin Evans' essay "Figures, Doors and Passage", this paper explores the fence as an element that are able to articulate and shape different social structures and discourses. This paper proposes a re-reading of Albertslund Syd's landscape, not as a stable structure, but focusing on the fence as an architectural element, through which to understand the mediation between each home and collective spaces. Through archive sources, literature and on-site explorations I study the fence and its relation to social processes, discursive and material shifts in the landscape from the time of inception until today. The aim is to contribute to substantiated knowledge about the capacities of post-war housing landscapes, for discussions on their past, present and future.

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Evans, R. "Figures, Doors and Passages", in: *Translations from Drawing to Building and Other Essays*, London, Architectural Association, 1997, pp. 54-91

Kirstein, T. "Halvprivat og halvoffentligt", in: *Arkitekten*, #11, 1976, pp.320-325

From the Trombe Wall to the Greenhouse. Architectural Inquiry about European Housing for a Circular Economy after 1973.

Piero Medici

Delft University of Technology

Background

This paper is part of a wider research that focuses on the 1970s, when architectural debate and practice saw an enormous increase in the attention for the various ways that architecture and the built environment relates to questions of energy, economy, natural resources and society. In effect before and after the 1973 oil crisis, such events happened: the drastic increase of oil prices at the beginning of the decade, the UN meeting in Stockholm culminating with the publication of *Limits to Growth*¹ in 1972, the financial crisis subsequent to the oil crisis from 1973 until 1976. Architects, scientists and researchers reacted to these events proposing theories, methods, tools and projects in order to: intervene innovatively in terms of energy efficiency, especially in relation to housing; rethink the relation between architecture, resources and energy. The paper analyse tools of the architect to intervene in the built environment in projects related to housing in the central western European climatic zone classified as Temperate Oceanic Climate². It focuses in particular on solar houses using as energy storages the thermal masses of architectural elements as: internal walls, external walls (e.g. *Trombe Wall*) and floor slabs.

Research Method

The research methodology consist of the analysis of the period through 10 of the most influential European architectural periodicals published between 1968-1982: *Architectural Design*³ and *Architectural Review* (UK)⁴; *Architecture d'Aujourd'hui* (France)⁵; *Domus*⁶ and *Casabella* (Italy)⁷; *Deutsche Bauzeitung* (Germany)⁸; *Revista Arquitectura*⁹ and *Arquitectura Bis* (Spain)¹⁰; *Forum*¹¹ and *De Architect* (The Netherlands)¹². Periodicals were chosen because, especially at that time, they were a kind of seismographic tool to trace influences on architecture.

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1 Meadows, Randers, and Meadows, *The Limits to Growth*.

2 Peel, Finlayson, and McMahon, 'Updated World Map of the Köppen-Geiger Climate Classification'.

3 Pigeon, *Architectural Design (AD) 7/1972 Designing for Survival Issue + Piano & Rogers*.

4 Richards, *The Architectural Review 1970 Volume 147-8 Nos. 875-884*.

5 AA, *Architecture de soleil, architecture d'aujourd'hui*.

6 Ponti, 'Domus Magazine Marzo 1973 520'.

7 AA, *Casabella. Rivista di urbanistica, architettura e disegno industriale, anno XXXVI, n. 370, ottobre 1972*.

8 Gerstung, *Untergehängte Brandrasterdecken, in.*

9 AA, 'REVISTA OFICIAL DEL COLEGIO DE ARQUITECTOS DE MADRID'.

10 AA, 'Arquitecturas Bis: Información Gráfica de Actualidad - Dialnet'.

11 AA, *Forum voor architectuur*.

12 AA, 'De Architect - Platform Voor Vakkennis En Inspiratie'.

Results

From the periodicals investigation emerged that architects in the 1970s became more familiar with tools and techniques derived from engineering and vernacular traditions. Solar collectors were embedded in a dark coloured thermal mass external wall facing south, called *Trombe Wall* as in: the solar houses in Odeillo, France by architect Michel Jacques and engineer Felix Trombe; or the *Maison particulière* in Argenteuil, Paris by architects Marc Vaye and Frédéric Nicolas. Greenhouses were part of the house as a meeting space also producing food as in the Integrated Solar Dwelling by John Shore, UK or in the self-sufficient communities of houses by the Hull school of architecture¹³, UK. Interior walls and floor slabs exposed to sun functioned as thermal mass, creating also a qualitative and liveable space, as in the Pilwood House, UK by Alan Colquhoun and James Miller or in the Greenhill & Jenner's design for public housing for the Royal Mint Housing Competition, UK. These design tools to intervene in the built environment, attempted also to address the architecture quality of the house in terms of: aesthetic, typology, morphology, materiality, and quality of living. In addition, architects were challenged with the graphical representation of their new prototypes as for instance: artistic impressions from the indoor looking outside, showing both quality of the interiors and technological devices, or diagrams illustrating cycles of resource flows for solar autonomous houses. Those constituted, at the same time: analytical tools for the architect's research and design process, and communicative tools to the outside world. These examples of interventions will show the remarkable development, already during the 1970s, of the integration between vernacular techniques, technologies and architectural quality in order to improve the house energy efficiency.

Though this research is historical in character it wants to inform the contemporary debate, especially concerning issues of circular economy¹⁴ and the built environment, which is a current urgent agreement to meet the Paris agreement on climate change¹⁵.

Continued on next page >

13 AA, 'Undercurrents, the Magazine of Radical Science and Alternative Technology, 1972-1984'.

14 Ellen McArthur Foundation, SUN, McKinsey & Co., 'Circular Economy Report - Growth Within'.

15 AA, 'United Nations Treaty Collection'.

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Finding Form: Tools for Mediating Sunlight and Shadow in the Work of Mid-century Modern Architects

Elizabeth Musgrave

University of Queensland

Sunlight and shadow are fundamental to the revelation of architectural form, for it is through the contrast of light and shadow that the eye understands solidity. This paper will investigate tools developed in the scientific era to assist the architect in the articulation of architecture by enabling the precise projection of shadow and shade.

Corbusier's description of architecture as "the learned game, correct and magnificent, of forms assembled in the light" is a truism that transcends Modern orthodoxy. It was Louis Kahn and others in the late modern era who more cogently verbalised the transactional and sensory potential of light for architecture's expression. Kahn's axiomatic, "Architecture appears for the first time when the sunlight hits a wall. The sunlight did not know what it was before it hit a wall" reveals the phenomenological and haptic dimensions of an architecture revealed by light and shadow.

Techniques for projection of precise shadows have always been important tool in the generation of architectural form. Skiagraphy relies on identifying for the purposes of projection, the precise position of a light source. But it was the sun path protractor, initially developed for the purposes of implementing climate design principles, that provided a precise reading of the azimuth and zenith angles of the sun's path at hourly and monthly intervals for every latitude on the surface of the globe. The precise identification of sun angles preceded the prediction and precise representation of shade and shadow. This highly technical information, today digitalised in tables rather than construed from the reading of a protractor, was initially used to facilitate the calibration of overhangs and sun shading devices essential to reducing thermal loading and achieving interior comfort levels. However the convergence of geometrical and enactive perception in design process also delivers a building's hermeneutical and architectural expression.

This paper will investigate the use of sun path protractors in passive climate design and through this prosaic act, its role as an enabler in the recovery of interest in the expressive capacity of architecture, an interest coinciding with the development of the brise-soleil and aided by architecture's synergetic relationship with the art of photography. It will extend a re-reading of Victor and Aladar Olgyay's writings by David Leatherbarrow and Richard Wesley, to include the writing of other influential twentieth-century architects including Jane Drew and Maxwell Fry, Marcel Breuer, Louis Kahn, Michael Brawne and in Australia, Harry Seidler. These architects were alert to the expressive capacity of sunlight and shadow and to the consequences of these for architectural form. This paper is particularly interested in how processes of design facilitated by tools, such as skiagraphy and the solar path protractor, have contributed to the evolution of new elements of form, new formal outcomes and through this the culture of an architecture situated in place.

The Modernist Shell Collection (c.1950-1970)

Freya Wigzell

University College London

During a 1953 lecture to his students at the Taliesin fellowship, Frank Lloyd Wright produced a large collection of shells. The collection had been a gift to Wright and his wife Olgivanna from the parents of their one-time student and later employee Eugene Masselink. The shells came from Florida, collected by Dr. Benjamin Masselink and Gertrude Masselink while on holiday. The message of Wright's lecture on shells was simple. Originally titled 'Science-Discovery-Housing' (later changed to 'Faith in your own Individuality' when transcribed for publication in *House Beautiful* (November 1955)), the lesson recounted by Wright as he handled the seashells was that they all came from "one idea", one logic, one structure, but none were the same, they avoided standardization.¹

Wright was not the only modernist to have a shell collection. His collection echoed and inspired other modernists: Walter Gropius, Le Corbusier, Renaat Braem, Carlo Mollino, Ray and Charles Eames, Paul Rudolph, and Bruce Goff, amongst others. Many of these architects displayed their shells in their homes and studios beside other objects and architectural tools, offering exciting visual blends and cross-fertilizations between disparate categories (machine and craft, natural and mechanical).² The shell collections also acted as didactic tools and paradigms for 'organic' architectural designs. For modernist architects practicing in the 1950s and 60s shells were a means to discover something much more diverse from the forms generated out of a systematic geometry. Indeed, the architecture inspired by shells occupied a paradoxical position between the inter-textual (to architecture and other architects) and highly distinct, signature builds whose complexity preempted later, computer-generated design.

With the exception of Le Corbusier none of these architects' shell collections have been discussed, nor have the conceptual impact of the shell collections on the designs and architecture of these protagonists been considered. In fact, that the likes Wright, Goff and Rudolph all owned shell collections and used them as conceptual devices, is hardly known at all. This paper proposes to look at the uses and conceptual impact of seashells as an instrument of the modernist architect on both sides of the Atlantic. The paper will demonstrate how the utilization of shells as an architectural tool was shared by a number of architects in the 1950s and 60s, each of whom discovered something different in them.

1 Wright, F.L. "Science-Discovery-Housing".1953. MS. The Frank Lloyd Wright Foundation Archives. Item 1014.066, Box 02. (The Museum of Modern Art | Avery Architectural & Fine Arts Library, Columbia University, New York)

2 Ibid.

Friday 24 November 2017

15:00-17:00

Paper session 3

Drawing techniques and conventions II

Location: Berlage Room

Session Chair: Fredie Floré

KU Leuven

The Grid and Anti-Hierarchy. The Limits of the Collaborative Design Practices of Atelier 66

Stylios Giamarelos

University College London

In 1981, Alexander Tzonis and Liane Lefaivre highlighted 'the grid and the pathway' as the major design patterns in the architectural projects of Suzana and Dimitris Antonakakis. Since then, their account has been established as the standard interpretation of the design practice of Suzana and Dimitris Antonakakis. However, Tzonis and Lefaivre's account was intuitive rather than analytical. Based on original archival research and interviews with the two Antonakakis and their peers, this article offers a nuanced account of the design practices of their architectural collaborative, Atelier 66. My research thus resituates Suzana and Dimitris Antonakakis' grid on the historical grounds of its use as an instrument of control of an allegedly anti-hierarchical collaborative design practice. In so doing, it also debunks Kenneth Frampton's mythologising account of the work of Atelier 66 as the product of a 'cultivated sense of "collectivity"' by a stable group of architects. It shows how the pursuit of an elusive ethos like anti-hierarchical collaboration is not only implemented, but also conditioned by the specific tools and structures that underlie these design practices.

When they formed their collaborative practice Atelier 66 in 1965, the Antonakakis consciously strived to devise an anti-hierarchical structure of working together with their peers. In so doing, they were attuned the broader international pursuit of the 1960s to transgress the individual authorship of the authoritarian modernist architect. What made Atelier 66 stand out from similar architectural practices of the period was its gradual expansion and constant renewal. The other groups did not eventually include additional partners beyond the original three or five architects. In the case of Atelier 66, a coequal group of thirteen collaborating architects was gradually formed without the obligation to be financially supported by the Antonakakis.

Although the rhetoric of the office emphasised coequal team work, the outward reception was that of a practice of (anonymous) associate architects led by the (eponymous) couple. Every work of Atelier 66 was immediately associated with the two Antonakakis. The other architects thus felt obliged to reproduce the Antonakakis' architectural idiom. This is why the implementation of the grid, and the exact metric relations between the various elements, were of utmost importance for the two Antonakakis. Underlying their designs, these grids guaranteed the fine-tuned appearance of the architecture of Atelier 66. The three-dimensional grid was an instrument of design control that defined the basic 'horizons' of a building that could then be safely elaborated in its individual details by one of the collaborating architects. In the final instance, it was always the Antonakakis who had the final word on the major design decisions.

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A constellation of factors, concerns and tensions that accumulated over time led to the eventual dissolution of the collaborative practice in 1986. However, this was not only owing to the 'inner life' of Atelier 66. The collaborative practice lacked a structure that would enable it to carry on and develop further into the future. Through the common use of the grid, the presence of the Antonakakis became so strong that it was difficult for any of their younger colleagues to rise to an equal level of design control.

Interior Design Presentation Tools of the Antwerp Interwar Architects

Marieke Jaenen

University of Antwerp

Today interior architects present their interior designs to clients, firms and the public by mood boards, collages, sketches and 3D-modeling. In the interwar period the interior designer didn't had these tools to work with. Even photography was rare; only from the 1930's onwards it became more commonly utilized by architects. So, how did the Antwerp interwar architects presented their designs and which tools did they use?

The focus of this research is on how the Antwerp interwar architects presented their interior designs, colours as well as materials. The data of this research is based on the imaged interior designs that were found in archival documentation of the architects Renaat Braem (1910-2001), Nachman Kaplansky (1904-?), Walter van den Broeck (1905-1945) and Eduard Van Steenberghe (1889-1952).

The result of this research demonstrates that the presentation of their interior designs can be divided in three steps related to three actors.

- The presentation of the interior designs to the client were coloured drawings of different rooms or furniture elements. In the 1920s these designs (ground plan, lay-out plan or perspective view) was very colourful conducted with water-based paint. From the 1930s the architects switched from paint to pencils. At that time the application of wood became more important in the interior design. Therefore, pencils gave the architect the opportunity to draw a detailed grain structure related to a specific wood species, which represented the surface decoration of the modernist furniture.
- When the client agreed with the presented coloured designs, the architect made a separate drawing for each interior element, for example lighting fixtures, chairs, tables and cabinets. These designs were addressed to cabinetmaker. They were simple and rational drawings in black and white. They were executed with a black pen indicating the necessary dimensions, measurements and construction methods.
- From the 1930's onwards the architect consulted a professional photographer to make images of their executed interior designs. The photographers even 'photoshopped' the images by deleting and editing backgrounds or window views. At the end, the architects used these photographs as promotional material for their own offices and sometimes for publicity in architectural magazines.

Fragmenting la Grille.

Rise and Decline of CIAM's tool.

Leonardo Zuccaro Marchi

Delft University of Technology

Urban illegibility and fragmentation is the 20th century condition that Modern architects had to tackle with new methods and tools of both design and research. This lecture deals with the complexity of contradiction in one of the last century's most powerful tools of analysis, of project presentation and comparison: CIAM's grid.

Within CIAM (*Congrès Internationaux d'Architecture Moderne*), "the official Establishment of architecture in our time" as claimed by Banham, the grid ("*la grille*") was an analytical system for presenting CIAM projects, defined by the ASCORAL group under the leadership of Le Corbusier and first adopted at CIAM 7 in Bergamo in 1949. The grid was considered a useful tool for comparing different projects presented by CIAM members by using the same rules, guidelines and dimensions, under the terms of the Athens Charter. However, "*la grille*," rather than an absolute universalising tool, soon became "a structure, and one moreover, that allows for contradiction," as highlighted by Rosalind Krauss. It was soon labelled as "a kind of logistical tour-de-force" which tried to force all the material into an arbitrary grid, according to MARS group.

The theoretical dispute between the functionalist doctrine of "*habiter*" and the socio-biological "*habitat*," and the new theoretical framework of the "Charter of Habitat" as a counterforce to the rational development methods of "The Functional City" of the 1930s, fomented these critiques of the grid.

This lecture deepens the study of the grid at the specific moment in the early 1950s when the passage from orthodox functionalism to open humanism, from the abstract machine-age interpretations to other regional variations, deeply affected CIAM. It investigates how this rise of a brand new attention to everyday life, to an anthropological human habitat deformed the grid as a tool of analysis, presentation and architectural thinking. Finally, the lecture aims to speculate on the meta-legacy of the CIAM grid, on the possibility of a universalizing tool in the rising complexity and ambiguity of our contemporary times.

Drawing Notations: The case of Franco Purini's 'Programma di fondazione grammaticale del linguaggio architettonico' [Programme for a grammatical foundation of architectural language] (1968)

Stefano Milani

Delft University of Technology

This paper considers the notation as a conceptual tool for a comprehensive formulation of architecture and for its subsequent development. This paper considers, therefore, the notation also as the focus of a rigorous disciplinary research aiming to redefine the system of relationships governing the architectural conception, though a system of signs. In particular, the paper discusses, the case of Franco Purini's research 'Programma di fondazione grammaticale del linguaggio architettonico' [Programme for a grammatical foundation of architectural language] (1968) and the annex work 'Classificazione per sezioni di situazioni spaziali' [Classification by section of spatial situation] (1968) that could be regarded as its conclusive statement.

Purini's Programma di fondazione grammaticale del linguaggio architettonico' is part of a larger research 'Una ipotesi di architettura' [A hypothesis of architecture] developed between 1966 and 1968 which includes also a series of experimental projects formulating a systematic critique of the object conventions regulating the architectural conception, and its experience. This series of preparatory studies led to the possibility to hypothesise a new architectural approach consisting of the preliminary definition of an architectural grammar; i.e. a set of relational rules, that is explored before making any proposal for an architectural object or form. In other words, the emphasis shifts from architecture's formal definition to the definition of the *poiēsis* of the project.

Influenced by Noam Chomsky's theory of language, by Donald Judd 'specific objects', by Arnold Schonberg's Twelve-Tone technique, Purini reformulates the grammar of architectural language by reducing all the main established notions of architecture to their 'zero degree'. The definition of architecture, the architectural project, architectural form, architectural figuration, architectural order, architectural composition, architectural techniques, architectural language, architectural representation, architectural typology, architectural elements, ornaments and details, the house, the place, the city, the landscape and architectural drawing all need to be reformulated.

After having introduced context and the main characteristics of the Purini's formulation of a new architectural language, the paper will specifically analyse the relationships established with the architectural drawing which is considered predominant. More specifically the text, and through a series of analytical drawing, will identify and thoroughly discuss two distinct types of relationships:

- First, the instrumental and constructive role assigned to drawing in the definition of the of Purini's notational system;
- Second, the conceptual and disruptive role of drawing in revealing the limits of the language system in governing the complexity of the architectural conception.



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Delft University of Technology

Faculty of Architecture and the Built Environment

Julianalaan 134

2628 BL Delft

The Netherlands

www.bk.tudelft.nl/en

Het Nieuwe Instituut

Museumpark 25

3015 CB Rotterdam

The Netherlands

hetnieuweinstituut.nl