



# ARCHITECTURE AS HUMAN INTERFACE 2012

The 4th Symposium of Architectural Research in Finland – The 4th International Conference on Architectural Competitions

*Mina Di Marino and Helena Teräväinen (eds.)*

## **ARCHITECTURE AS HUMAN INTERFACE 2012**

The 4th Symposium of Architectural Research in Finland – The 4th  
International Conference on Architectural Competitions

All published papers belonging to the tracks have  
been gone through a double blind peer review.

### **Editors**

Mina Di Marino, Post-Doc Researcher, Department of Architecture,  
Aalto University School of Arts, Design and Architecture,  
[mina.dimarino@aalto.fi](mailto:mina.dimarino@aalto.fi)

Helena Teräväinen, Senior Researcher, Department  
of Architecture, Aalto University School of Arts, Design and Architecture,  
[helena.teravainen@aalto.fi](mailto:helena.teravainen@aalto.fi)

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# INTRODUCTION

## **Helena Teräväinen**

Arch, PhD

Senior Researcher in Urban Planning

Aalto University

School of Arts, Design and Architecture

[helena.teravainen@aalto.fi](mailto:helena.teravainen@aalto.fi)

In 2012 October 26<sup>th</sup> – 27<sup>th</sup> 2012 the conference “Architecture as human interface” was held in Helsinki. The venue was the Department of Architecture, Aalto University School of Arts, Design and Architecture, in the Otaniemi campus, which is actually located in Espoo. This scientific conference was a joint venture between researchers in Finland and Sweden. The conference theme was developed in cooperation between the 4th Architectural Research Symposium in Finland and the 4th International Conference on Architectural Competitions (Sweden).

The aim of the Architectural Research Symposium in Finland has been to build a forum for researchers in the field of architecture –including different branches from art history to planning. This was the fourth conference since 2009 and the series is on-going annual event with the main organizing task shared between the three architectural schools in Finland: Helsinki, Oulu and Tampere. The symposium also has the intention of presenting and discussing contemporary architectural research in an international context. And now the other half, the conference on architectural competitions, confirmed the international impact of the event. The development of an international research network focused on competition as a common scientific object has also been going on for some years.

The conference had 78 participants from over 10 different countries, including such faraway countries as Australia, Brasilia and Canada. 30 of the presenting participants were from Finland and about 10 from the other organizing country Sweden – and then the rest from other European countries like France, Greece, Portugal, Norway and Italy.

The title of the symposium “Architecture as human interface” includes the main aims of the conference: Architecture is as a means, which acts for human beings as an interface. Interface is a word that is traditionally used in the context of information and communication technology; it is the meeting

point between the human being and the machine or program, making it possible to operate the machine, and also to receive the experience it provides. As technology is about to take the next step and turn ubiquitous, the problems and prospects of computer interfaces will become relevant to the whole built environment. However, architecture has always had its human interface: building facades have communicated their function, their social prestige, their history, and their aesthetics. Doors and windows have been used much before Microsoft revolutionized personal computer interfaces with its Mac-inspired Windows® user interface. But how much do we actually know about the way in which people use built environment, how they interpret the messages that architects send them, and how far their basic needs and feelings are touched by this human interface? Architects have developed ways of ensuring architectural and urban quality, such as architectural competitions, but should we now turn a critical eye on these institutions and traditions? As the ethos of co-design, collaborative planning, and user-oriented living environment dominates our current discussion, what kind of ideas of humanity and human agency are embedded in our thinking?

The words above were sent out in the call for papers ten months before the event. The organizers invited papers on all fields of architectural research. In addition, there were six

different themes organized as tracks from 1 to 6. In the conference the workshops were named according to the tracks but it was obvious from the beginning that the themes were not supposed to be followed exclusively and that all the themes would not be equally attractive among the participants. The symposium themes were Competing Architecture, Complexity and Contradiction in Architecture, Research and Design – Bridging the Gap, Human Oriented Living Environment, The Future of the Past, and Sustainability and Creativity.

The conference was lucky to have four remarkable keynote speakers: Professor David Wang from the US, Professor Sara Grahn from Sweden, expert and consultant Judith Strong from Great Britain and Professor Salim Elwazani from the US, being at the time in Helsinki.

Dr. David Wang is Professor of Architecture at Washington State University, where he has taught research methods to architects, interior designers and landscape architects for 12 years. Dr. Wang is co-author (with Linda N. Groat) of “Architectural Research Methods” (John Wiley, 2002, 2013).

His keynote lecture was titled “Design Research in the Age of the New Virtualism.” Professor Wang has kindly provided an article about the subject to be published in this book.

Architect Sara Grahn, professor of architecture at

KTH and practicing architect / Partner at White Arkitekter, gave her keynote lecture with the title “Competing on Architecture” and presented many of their latest interesting competition winning projects from different countries.

Judith Strong, consultant with extensive experience as a competition advisor at RIBA (Royal Institute of British Architects) and at IUA (International Union of Architects) gave her keynote lecture about the development of the competition system in England and presented a series of famous projects which have been started by international competitions. Judith Strong has also kindly provided an article based on her lecture.

Dr. Salim Elwazani is Professor of Architecture and Environmental Design at Bowling Green State University in Ohio where he teaches design, heritage conservation, and building systems. In 2012–2013 he held a Fulbright-Aalto University Distinguished Chair in Architecture in Otaniemi. Professor Elwazani’s keynote lecture was “The Heritage in the Midst, Chronology, Geography and the Thematic Argument.”

## COMPETING ARCHITECTURE

The theme *Competing in Architecture* was meant to cover the whole competition process; from prequalification of architect firms or design teams, development of the competitions program, design solutions, evaluation and ranking of the entries, to the appointment of the winner.

The competition track generated 20 papers from PhD students and senior researchers. After the peer-review process, the papers were accepted to be presented in workshops. They covered several topics from design ideas in one single competition to the question of politics in an architectural competition.

Kristo Vesikansa’s paper discussed the design ideas of Reima Pietilä and Raili Paatelainen in the Dipoli Student Centre Competition in 1961. Pedro Guilherme provided in his paper “Architectural Competitions as a Lab” a study on the competition entries of an international architect, Souto de Moura.

Three writers had an architectural historical approach. Tomas Hoffmann-Kuhnt presented a paper on the balancing act between historicism and monument preservation in some international competitions in Germany. Elisabeth Torstrup paper was “High Ideals on a Tricky Site: The 1939 Competition for the New Government Building in Oslo”. Eija



Merenmies described the question of style and the significance of the University of Helsinki 1931 – this paper was developed into an article in this book.

Four writers, Beatrice Manzoni, Magnus Rönn, Camille Crossman, and Charlotte Svensson examined contemporary competitions from the architects, organizers and the juries' point of view in their papers.

Five papers considered control, instrument and evaluation of competition processes: Carmela Cucuzzella addressed instruments aimed at sustainable design in use and the abuse of environmental norms in Canadian competitions in 2008–2011. Karitta Laitinen discussed methods for assessing implementation in architectural competitions in Finland – a case study from Lohja. David Vanderburgh and Carlo Menon developed a model for understanding governance in “Open Programmes, Tactics and Strategies, and Conflictual Model of Architectural competitions”. Angelos Psilopoulos analysed the situation in Greece in “A new call for quality: shifting the paradigm for the development of public and private space in Greece”. Leif Östman reported the use of land developer competitions in Helsinki in “An explorative study of Municipal developer competitions in Helsinki.”

Six papers had architecture competitions and politics as a theme. Jonas E Andersson wrote about architectural

competitions and the welfare state, and about how competitions have been used on a national level as a social-political instrument.

Clare Newton and Sarah Backhouse described a national initiative on moveable school buildings in Australia. Loise Lenné's paper highlighted President Mitterrand's architecture policy through the great projects of the 1980s. Antigoni Katsakou described the competition system in Switzerland and its ability to foster innovative design. Jean-Pierre Chupin examined competitions as way to be international through a comparative survey of Canadian competitions in 1988–2012. The global perspective and the use of international star architects in China were also central to Zheng Liang's paper “Re-imagining the city.”

The overall conclusion after the conference was according to the chairs in workshops, Jonas E Andersson, Magnus Rönn, Charlotte Svensson and Leif Östman, that architectural competition as a system really has the potential to develop into its own research field. The conference was seen as a fruitful meeting between the academia and the profession, and a platform for mutual exchange of knowledge in order to promote a creative competition culture in the international network.

Most of the papers in the competition track have been published in international journals after the conference, in

fact that was also the aim of the organizers already before the conference. Information on all published papers is included in this book (List of Publications)

## **COMPLEXITY AND CONTRADICTION IN ARCHITECTURE**

In 1966 Robert Venturi wrote his “gentle manifesto” against modernist rationalism and simplicity. Since then, the word complexity has gained momentum in a very different context: in our attempts to understand buildings and the city as complex adaptive systems. The role of new scientific understanding of urban dynamics – in addition to offering new tools for architects – challenges the way in which we used to conceptualize the role of design and planning in a time of continuous change.

The chairs of this track, Samuli Alppi and Anssi Joutsiniemi commented the papers presented here been from very different and varying viewpoints. Three of them are now, after further work, published in this book: Zriba S. and Ben Saci A. analysed architectural forms in a morphometric study of the Medina of Gafsa. Fabio J. M. de Lima et al. described how to use digital media in urban planning in Minas Gerais, Brazil. Teemu Metsälä presented “Nightlife In Urban Design.”

Anna Luusua presented her research on computing in the city and how to evaluate digitally augmented urban places. Sari Tähtinen’s article “Interface: between perceiving and receiving? Embodied experiencing and architecture at the age of the digital” and Toni Österlund’s article “Exploring the design possibilities of emergent algorithms for adaptive urban lighting control” have been developed by the authors to be published in the Nordic Journal of Architectural Research.

## **RESEARCH AND DESIGN – BRIDGING THE GAP**

Contemporary understanding of research is taking distance from a purely scientific and academic understanding of research, allowing also other forms of constructing knowledge through practice and design. Although discussed extensively by scholars during the last decades, the concepts of practice-based research or research-by-design have remained ill-defined, and researchers and designers still often remain in their respective silos, developing and defending their artistic or academic cultures.

In this track we were waiting for some new approaches on how universities and practitioners could bridge this gap, opening ways to new generations of knowledge and creativity.

The chairs Salim Elwazani and Sari Hirvonen-Kantola were very pleased with the results of the workshop.

Clare Newton and Sarah Backhouse from Australia tried in their second paper to redefine the relocatable and solve “the wicked problem of multidisciplinary design” – this paper is now after reviewing in this book. Tuuli Tiitola-Meskanen presented her research on multiple perspectives on the design of early learning environments in her paper “To Afford or not to Afford”. Jenni Poutanen investigated so called third places at the university campuses and tried to find their potential as new learning environments. Bechara Helal introduced in her paper “A Collective Brain in the Grey Zone of Architecture.”

Gareth Griffith’s paper “No competition – Perverse educational strategies in a simulation of practice” was among those, which after the conference were evaluated to be developed to be published in the Nordic Architectural Journal.

## HUMAN ORIENTED LIVING ENVIRONMENT

The track Human Oriented Living Environment and Sustainability and Creativity were joined together because only two papers were submitted for Sustainability and Creativity.

As buzzwords such as co-design, collaborative planning and user-oriented architecture raise the human being as the centre of our interest, we need to readdress the human – environment relationship. This track called for research on novel ways to produce the built environment and to provide services through rethinking what we call ‘the quality of life’. What is human oriented architecture or human oriented urban environment? Does eco-efficiency yield a human oriented approach?

Katri-Liisa Pulkkinen presented a paper titled “Is Sustainable Architecture News?” Eija Hasu and Aija Staffans presented their research on the resident’s view in urban planning and social sustainability. Minttu Kervinen et al. wrote about built/green boundaries as a source of human and ecological well-being. Katja Maununaho wrote about reflective design and a dynamic everyday environment.

Monica Säter from Chalmers presented her work about a user-centred lighting design process; this paper has been developed further and is published in this book.

Henrika Pihlajaniemi presented a paper called “Participation in Lighting Design for Dwelling And and for Urban Space”.

The chairs in this track, Mina di Marino and Helena Teräväinen, tried to find a connecting thread in the presentations: Traditionally, human beings have often been

conceptualized in abstract terms, as population with basic biological and social needs and they have been treated as objects in urban and housing policies that, unfortunately, have often failed due to a lack of understanding of the actual dynamics of urban change based on human experience and agency. Instead of abstract terms we should see human wellbeing an essential part of new development architecture. Human life is always spatial, and we engage with the environment through our mobility, our market behaviour, our political, social and cultural activities, as well as our design of the built environment.

## THE FUTURE OF THE PAST

Interest in history is what distinguishes architecture from other technical fields such as engineering. History for architects is not only 'nice to know'; it is considered an essential ingredient in the development of mature personalities able to contribute to contemporary architecture. Although historicism itself is no longer a topical issue in contemporary design, the problems of dealing with historical built environment, as well as our underlying theories of conservation, are as important as ever. The relationship between history and theory of architecture also calls for further reflection.

The chairs Aino Niskanen and Opa Koponen seemed to be quite satisfied with the workshop and some papers from this track have already been published elsewhere.

Christian Parreno's multidisciplinary paper was titled "Boredom and Modernity: a Spatial Mediation Psychology and Late Nineteenth-century Architectural Theory." Katja Huovinen introduced in her presentation the practice of the urban conservation in three European World Heritage sites. Iida Kalakoski developed the concept of "Patina, Material Aging as an Experiential Factor in Architecture." Michael Jasper presented his research "Practicing Close Reading with Peter Eisenman and the Case of Terragni".

## CONCLUSIONS

The attempt was to organize a dialogue-based approach in the workshops to promote the widest exchange of experiences possible among the participants. As a supplementary to presentations and discussions in the workshops there were special appointed "spies" who went around the workshops. They were asked to reflect on the conference and share their responses in a concluding panel discussion (Fig. 1 and Fig. 2).



*Figure 1 Panel Discussion.  
Photo by Fabio Lima.*



*Figure 2 Panel Discussion.  
Photo by Fabio Lima.*

The conference ended with the closing speech of Professor Kimmo Lapintie, Aalto University. He summarized the conference in a statement called “*The Helsinki declaration on Architectural Research with Creativity and Criticism*” as a common framework for discussion.

*The realm of the possible is the object of both design and research.*

*The role of architecture and architectural competitions in particular is to make possibilities visible. What is needed is critical analysis before, during and after competition.*

*In addition to the human body and the machine, architecture itself can be seen as one of the metaphors of science (basic research, foundations etc.) Thus it should also participate in the current paradigm shift towards the cyber/virtual.*

*Major changes in the interface between the human being and the environment – particularly due to modern technology – requires serious work in architectural research.*

# KEYNOTE 1



# TOWARDS A NEW VIRTUALIST DESIGN RESEARCH PROGRAMME

David Wang, RA, PhD

Professor of Architecture

Washington State University

USA

[davidwang@wsu.edu](mailto:davidwang@wsu.edu)

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## ABSTRACT

This paper considers how the influence of computer-cyber networks informs a new way of seeing on the part of designers as well as design researchers. In an adaptation of the notion of “virtual realities” made possible by computer technology, this new way of seeing is termed *The New Virtualism*. PART I suggests that this computer-cyber way of seeing is only the third paradigmatic shift in Western architectural history, preceded by the design paradigms of the human body (1) and the machine (2). These three paradigms, following Tzonis and Lefaivre, are termed *epiphores*. Ways in which the New

Virtualist epiphore impact *design* are summarized. In PART II, seven ways New Virtualism can impact design *research* are considered. While cyber technology vis-à-vis design might encourage some excesses of expression, cyber technology vis-à-vis research actually helps to return design inquiry back to constructs previous to the positivism inherited from the Enlightenment. In other words, a New Virtualist design research programme can accommodate the qualitative aspects of design research more comfortably than the science-based positivism derived from the machine epiphore. This in turn promises new *qualitative* horizons for design research.

### Key words

New Virtualism  
design  
design research  
epiphore

## INTRODUCTION

About five years ago, in an article written for a general readership, I coined a term, *The New Virtualism*, to denote stylistic trends in current architectural design. The term referred to the influence of computer-cyber networks on designers, specifically, on how they conceive of, and realize, physical forms.<sup>1</sup> The five years since have strengthened my view that this term is apropos, not only for design praxis, but now also for design research. In October of 2012, I delivered one of the keynote lectures at *The 4<sup>th</sup> Symposium on Architectural Research and Competitions in Finland: Architecture as Human Interface* in Helsinki, Finland. I spoke on the implications of The New Virtualism for design research. This current paper, published by FormAkademisk,<sup>2</sup> develops on the ideas I presented in Finland, but refined in light of the kind critiques of colleagues and participants at the symposium.

In what follows, Part I defines what I mean by The New Virtualism, and I offer some suggestions on how it manifests itself in design. This section concludes with some concerns about these characteristic traits. Part II addresses New Virtualism vis-à-vis research. I will suggest that cyber technology, whatever its excesses might be when expressed (currently) in design activity as such, is better as an immediate fit for



design research in that it can make more rigorous some of the qualitative approaches in this domain. I will also suggest that cyber technology might be able to recover for design, as a whole, what Alberto Perez-Gomez called the loss of mythos in his *Architecture and the Crisis of Modern Science*.<sup>3</sup>

## PART I: NEW VIRTUALIST DESIGN

### Epiphores and ways of seeing

The computer is revolutionizing how humans relate to nature, which is to say, *how the human constitution itself is understood*. This is what interpretations of nature have always produced in the arena of design theory. In Classical Greece, the human body was held to be the nexus between natural (and divine) proportions, and this conviction was reified in the architectural Orders.<sup>4</sup> But by the heyday of the Industrial Revolution, the machine substituted the human body as a basis for conceiving design. The machine not only reinterpreted architecture as a mechanical reality, the human body itself was re-conceived of as a mechanism. In turn, cities and houses all became, in Le Corbusier's memorable words, "machines for living in."<sup>5</sup>

Similarly today, cyber-technology, with the computer as its iconic physical object, once again stretches how "nature" can be understood; this present article entertains some implications of this emerging state of affairs for both design and design research.

In an article published in 1975, Alexander Tzonis and Liane Lefaivre wrote of the shift from the human body to the machine as the *epiphoric* objects upon which architectural design was based. They defined an epiphoric object as one that

impose(s) in a non-explicit manner the limits of the conceptual frame-work within which design ... can take place meaningfully. They are everyday objects. ... By accepting an epiphoric object ..., one accepts a conceptual framework in its entirety, which means not only an idea of the work as it is, but also as it can be and should be."<sup>6</sup>

In the periods regulated by these objects, not only were buildings unreflectively viewed first through the lens of the body, and then through the machine; these *epiphoric* objects gave sustenance to the overall worldviews of cultures in those periods. For instance, from the Parthenon atop the Acropolis to the Tempietto in Rome, human proportions were harnessed for the paradigmatic framework for design. In contrast, in the

Eiffel Tower and the Villa Savoye, the machine is the regulating epiphore. An epiphoric object, then, dictates how a person – but more to the point, how an entire culture -- unreflectively sees the cosmos, and then translates that view into the design of things for daily use and habitation.

But, again, Tzonis and Lefaivre's article appeared in 1975. At that time they wrote only of two epiphores, the body and the machine. (They were interested in the shift from the earlier to the latter epiphore in context of the French academic scene at the dawn of the Industrial Revolution). But now, for only the third time since the Greeks, a new epiphore is emerging: the COMPUTER. The computer is more than just another machine; what *this* machine enables is far beyond anything the Industrial Revolution was able to provide, or even to imagine.

The computer acts as a portal to an entirely new cyber-world, with the following implications. The computer-cyber epiphore redefines *distance*: For the first time in history, people the world over can truly be connected instantaneously. Thus, the computer-cyber epiphore redefines *time*. Instant connectivity erases the time needed for information to travel. It even reduces the time it takes to think; at least it rearranges the implications of what “instant thought” can mean. For example, Michael Speaks has suggested that “theory” itself may be a thing of the past, since rapid prototyping technology erases

the time lapse between thinking (*theoria*) and realization (*praxis*).<sup>7</sup> Furthermore, the computer-cyber epiphore redefines *scale*: at the macro scale, entire islands in Dubai are materialized with computer-driven equipment; at the micro scale, we now envision computers *in* our bodies in lieu of computers around us.<sup>8</sup> Finally, the computer-cyber epiphore redefines *function*: consider all of the uses packed into the tiny “smart” phone: camera, alarm, calendar, photo album, music player, GPS, language translator, to name only a few. The physical attributes of the object itself offers no clues that it can perform these functions. In the brave new world of the computer-cyber epiphore, form does *not* follow function.

So, by The New Virtualism I mean this:

*The driving force (or instinct) behind the design of objects of all scales that essentially derives from how cyber technology is redefining the human relationship to nature. This driving force, or instinct, is subsumable in the object of the computer, not in the sense of its physical dimensions, but in the sense of its cyber connectivity. Following Tzonis and Lefaivre, this computer-as-paradigmatic object is called the computer-cyber epiphore, and its varied influence on design and research is termed the New Virtualism.*

By “virtualism,” then, I mean to evoke the term often mentioned

these days in simulation research: “virtual reality.” Thus I don’t mean “virtual” in any moral sense, as in *virtuous*. I mean the capacity of cyber technology – and we are still at the beginning stages of how this technology will ultimately impact life as we know it – to create “realities” that are not indexed to the physical, perhaps orthogonal and fixed, dimensions that were associated with the machine epiphore. The *New Virtualism* is driven by the desire to create *new*, which is to say novel, realities birthed from cyber-informed imaginations.

Now, as is the case with design in any historical period, New Virtualist design results in a “style,” if by this word we mean a wide diversity of formal attributes that is nevertheless intuitively discernible as bearing a “family resemblance” to one another. The human body epiphore yielded buildings having feet, body, and head (consider the Classical column: base, shaft, capital/cornice). The machine epiphore first celebrated machined components evoking vastly increased power in relation to the human body (e.g., Eiffel tower); it then led to the machined surfaces – and the rejection of ornament – of the International Style. The next section itemizes some visual attributes of the New Virtualist design style.

## **Design in the cyber sea: key design characteristics of The New Virtualism**

A point I made in my earlier article is that architects always “swim in the sea” of the worldview of the dominant epiphore.<sup>9</sup> Just as Bramante (architect of the Tempietto) and other Renaissance architects *unreflectively* produced architectural forms aligned with the human body epiphore; just as Modernist architects *unreflectively* produced forms after the machine epiphore; today architects *unreflectively* design buildings informed by what they imbibe in the cyber sea.

The easiest way to underline this point is to recall what Thomas Kuhn said about how scientists work under an established research paradigm. For instance, during the era when the ruling Ptolemaic paradigm held that the sun revolved around the earth, scientists did not question that view; *they just conducted research so as to ratify it*.<sup>10</sup> Similarly, architecture of any era is produced in accordance with the epiphore that regulates it, and the visual attributes of designed objects ratify the worldview of the epiphore.<sup>11</sup>

Consider Herzog & de Meuron’s Bird’s Nest stadium in Beijing. The lacey strands that make up this “nest” bear striking resemblance to graphically depicted maps of the World Wide Web. The countless curvy strands graphically

representing a map of the WWW not only chart seemingly endless cyber linkages “out there”; these strands are also *in* us, and they go *through* us. It fuels a way of unreflective thinking and seeing. It cultivates a subconscious view of nature. Just as the human body epiphore cultivated buildings conceived of as a reflection of human proportions; just as the machine epiphore cultivated an attitude that nature can be conquered by steam shovels and locomotives; swimming in the cyber sea yields an instinct that human negotiations with nature need not be orthogonal; they need not be planar; they need not be *seamed*. Instead, they can be something like the form of the Bird’s Nest: porous, endlessly flexible, with curved things going through other curved things in wonderful complexities.

Again, the aim of Part II is to enumerate implications of The New Virtualism for design *research*. But let me first summarize some of the *design* characteristics of The New Virtualism -- in other words, the characteristics of New Virtualist *style*. This preliminary step is important because I will suggest that a New Virtualist research approach might be able to rectify – perhaps once again to humanize – some of the more excessive overreaches of New Virtualist design.

First, New Virtualist design is *asomatic*. By this I mean it is not indexed to the human body. Go to the National Aquatics Center (the “Ice Cube”) in Beijing and you will be hard pressed

to find the front door. This same diminution of human entry is also found at OMA’s Seattle Public Library. Or again: one look at the D-Tower in Doetinchem, the Netherlands, and you have the sense of the presence of something other than human. I will return to this problem in the research section below.

Second, New Virtualist design is *mutliplexic*. The best way to put this has been noted above: form does *not* follow function in New Virtualist objects and buildings. How could form follow function when it is the nature of New Virtualist objects to perform many seemingly unrelated functions, some of them all at once? Earlier we noted the many functions performed by the smart phone. As a matter of fact the total number of “apps” for the smart phone is too long to list. And the object itself does not “look like” any of these functions. Paul Andreu’s National Centre for the Performing Arts in Beijing typifies this trait. The edifice hovers, as it were, over a surrounding watery moat like some sort of oblong spaceship (the entrance is again hidden, accessed from *beneath* the waters). The form betrays none of the functions within: an opera hall, a music hall, a grand theatre, and related servant spaces.

Third, New Virtualist design is *placeless*. Because the multiplexic powers of New Virtualist objects are cyber-enabled,

they can function anywhere independent of local restraints and resources. At the scale of buildings, OMA's theory of "Bigness" is perhaps a symptom of this placeless aspect. Today's cyber-connected buildings cannot be limited to respond only to their physical-local contexts; their "site" is globally extended. Hence, Bigness.<sup>12</sup> As a result, OMA's CCTV tower in Beijing and its Seattle Public Library are two buildings that are interchangeable insofar as physical location is concerned. Both are global -- which is to say, placeless -- buildings.

Fourth, New Virtualist design offers the illusion of *sentience*. These days we not only want to use the objects around us, we want to have a *relationship* with them. GPS devices talk to us in attractive, even vaguely sexy, voices (e.g., "in half a mile, exit on So-and-So Road, then keep left ..."). Numerous on-line sites (e.g. Amazon.com) know our preferences, and tell us what we'd like to purchase before we can think of those things ourselves. Recently, the BBC featured the vision of an entire city likened to a nervous system, wired with sensors all interconnected to smart phones, so that real-time responses to all events are possible. Street signage, for example, can automatically redirect traffic during an emergency. Another example is users remotely controlling home appliances. All the demands of life are addressed on a real-time basis because a city -- and hence city life -- is more akin to the operations

of an organism rather than that of merely an organization.<sup>13</sup>

Thus, fifth, New Virtualist design features *distributed ontology*. In the human body and machine epiphores, objects were designed with discrete physical forms/boundaries. But increasingly design seems to involve systems rather than objects. The movie distributor Netflix recently rendered obsolete the previous model for marketing movies: Blockbuster. While the earlier operation was centered on a building, thereby requiring autos and parking lots and fossil fuels required to heat and cool the structure), Netflix has no location per se, at least in terms of its presence to the consumer. One can say that Netflix has a distributed ontology. This is also true of Facebook as a place for cultivating "community." Certainly the city-as-organism is an example of distributed ontology. More and more, distributed ontology characterizes the nature of services once requiring physical objects and venues.<sup>14</sup>

Now, these features of New Virtualist design -- diminution of the human body, placelessness, form not indexed to function, distributed ontology (thus without physical form), certainly the "sentience" of material objects from GPS devices to entire cities -- these features might raise concerns. After all, we remain embodied human beings, and daily life still engages intimately with the attributes of physicality: tactility, aromas, sights and sounds, the weather, daytime and nighttime, in short,

*locale*.<sup>15</sup> Even in light of obvious benefits such as energy savings when products and services are delivered virtually, the *loss* of simple human interactions (from which issues community) might be a deficit the extent of which has not yet been fully appreciated.

It might be that some of the exuberant variety of current New Virtualist design is an over-reaction to the dogmatic confines of Modernism's commitment to the machine, with its emphasis on utility and machined regularity. (The Postmodernist period was also a casting off of Modernist restraints). Prior to the restrained lines and planes of twentieth century Modernism, all derived from reference to the machine,<sup>16</sup> we might recall that the early stages of the Industrial Revolution also featured examples of excessive celebration of the machine epiphore, for example: exorbitant size (e.g., Boullée's Metropolitan Cathedral), or excessive celebration of function (e.g., Ledoux's Salt Works, 1770s; not to mention his phallus-shaped House of Pleasure, also 1770's).

But this is where we are *vis-à-vis* New Virtualist design, and it is difficult to prognosticate what a more "restrained" use of cyber capacities might look like as designers continue to swim in the cyber sea. As we turn to design research, I will suggest that cyber technology, in fact, might be more immediately compatible with the human-based research that has

always characterized design inquiry. As such, a New Virtualist research agenda might just give design research the *qualitative* gravitas it has struggled to achieve prior to the advent of the computer. Ultimately, this might also influence how New Virtualist design is realized as well, in perhaps a more restrained, humanly accommodating, manner.

## PART II NEW VIRTUALIST DESIGN RESEARCH

### The machine-based positivism of "research" and its problems for design inquiry

Let me first suggest that current standards of research rigor are essentially derived from a positivist outlook that emerged out of the same Enlightenment developments that gave us the machine epiphore. For research under this epiphore, "scientific method" is the path to true knowledge; all other claims to knowledge are, well, somewhat less robust. The standards of "scientific" research rigor are well-known: measurability, empirical verification, replication, statistical significance, "objectivity." It is not that these standards are off the mark (far from it!); it

is that they tend to overly define what *all* research must consist of. This hegemony has resulted in something of a divide in the academy between those who engage in discipline-specific knowledge largely compatible with the positivist outlook, and research in the design disciplines, which tend to be more interdisciplinary and qualitative in nature.

In the Nordic countries and more generally in Europe, Halina Dunin-Woyseth and her colleagues have led the way in efforts to broaden design education by defining it from a practice-based (that is, a profession-based) way of knowledge production.<sup>17</sup> And the practice of architecture and related design disciplines necessarily engages qualitative dimensions of human social behavior. Cyber technology delineates systems of human behavior as candidates for design, and this ushers a qualitative aspect right into the domain of rigorous research. For example, one researcher found that creating “spirit” is one necessary dimension for online classrooms to maintain enrollment.<sup>18</sup> This is knowledge of a qualitative sort that has traditionally been the focus of research in the design disciplines. In the following categories, I argue that the computer-cyber epiphore is inherently more accommodating of some of the qualitative emphases that have always characterized design inquiry.

## 1. New Virtualist design research emphasizes *projections* in lieu of predictions

The emphasis upon predictive power in research of any kind is itself a product of Enlightenment science. It assumes that we have true knowledge only when we can predict future occurrences of the object under study. But prediction is largely dependent upon experimental research, and my co-author of *Architectural Research Methods*, Linda Groat, has noted the limitations of this mode of inquiry: it reduces complex realities to a few independent variables, and its overemphasis on control might result in ethical limitations as well as dehumanization.<sup>19</sup>

Cyber technology, in contrast, accommodates a plethora of variables such that computer simulations of “reality” approach the complexity of the actual world. Rather than being reductive, it forges new ways for *inclusivity* in research designs. We see this in such computer programs as UrbanSim, which simultaneously accounts for the actions of households and businesses, governmental processes, land use inputs, market forces, to list a few, in a single interactive model of urban morphology and life “designed to maximize reality.”<sup>20</sup>

The outcome of these kinds of simulations is more *projections* than predictions. Projections are by nature more inclusive of human interactions; projections deal in what *can* happen, in

contrast to experiment-based predictions of what *must* happen as a result of manipulated variables. Now, what is interesting about projection is that it harks back to a more qualitative way of knowing, one that predates the positivist outlook by over a millennium. I am thinking of the Aristotelian notion of poetry as contemplation of what *can* happen. The poet takes into account all inputs of a situation and suggests a “universal” outcome that is nevertheless not fiction, but based upon a reasoned consideration of all possibilities.<sup>21</sup> The point is that similarities between poetic projection and cyber projection are striking. The latter allows for an inclusive accommodation of human freedom. In this sense, a computer-cyber approach to research not only accommodates inquiry by praxis, it is praxis that results in a projective kind of knowledge that retains the qualitative human dimension.<sup>22</sup>

## 2. New Virtualist design research is informed by simultaneity

By simultaneity I mean the ability of the computer to blur distinctions, for instance: between theory versus practice, or discipline versus profession. Research rooted in the previous machine epiphore thinks in distinctions: the sciences versus

the arts, for instance. It is this need for categories that perhaps forced Nigel Cross to classify design thinking as its own unique category of intelligence.<sup>23</sup> But swimming in the cyber sea of the computer epiphore yields research that may not root itself in traditional divisions of knowledge. An example: one day at the University of Pennsylvania, a cellular biologist happened to be strolling along for a cup of coffee when he happened by a conference held at the School of Design’s Non-Linear Systems Organization (NSO). The conference question: “How can scientific models of complex phenomena in mathematics ... be most effectively employed in the design and fabrication of structures for human life and enjoyment?” The biologist was “blown away” by the striking parallels to his work. This resulted in exchanges between the two seemingly distant disciplines.<sup>24</sup> The computer blurs distinctions between disciplinary silos because it addresses issues at a substrate level of cognition, a level having to do with similarities, metaphors, shared intuitions of likenesses between things, where “structure” has to do with the very fabric of reality before it puts on different costumes for different disciplines.

We already noted Michael Speaks’ point that computer technology erases the divide between theory and practice in that *theoria* can be instantly realized, for instance, by rapid prototyping (*praxis*). Speaks’ logic has limitations because



he is theorizing just by stating his point; hence theory still remains its own distinct domain. But this aside, cyber technology indeed blurs the gap between iconic theories applicable across generations, versus episodic explanatory frameworks having specific applications. It is (temporally) localized theory that seems to be more apropos under the cyber epiphore. This creates a connection between design theories and grounded theory in the social sciences, in which a researcher engages in “development of theory without any particular commitment to specific kinds of data, lines of research, or theoretical interests.”<sup>25</sup> That is to say, the researcher allows the facts of a particular case to yield the needed data. Thus design researchers, via cyber technology, have common ground with social science researchers in appeals to research rigor.

Simultaneity is also seen in the blurring of lines between discipline and profession. Consider this from Ken Friedman: “...one studies the disciplines that lead to professional practice -- design, law, medicine, etc. Once embarked in professional practice, one is not engaged in a discipline but in a profession or a field. If one goes back for advanced study or to teach, one returns to the discipline.”<sup>26</sup> But the rise of online education prompts reevaluation of Friedman’s distinction between profession and discipline, which implies that an individual is in one or the other at any one time. In the U.S., the number of

online courses has seen a meteoric rise in the last five years, some of this driven by returning professionals for continuing education.<sup>27</sup> The implication is that profession (*praxis*) must be simultaneous with *theoria* (discipline) if it is to keep abreast of rapidly advancing knowledge. And this vastly increases opportunities to integrate the silos of practice and academic research into one domain.

### 3. New Virtualist design research emphasizes democratic participation

Simultaneity in the cyber epiphore also blurs the traditional separation between designer and user. Threadless.com, an online vendor of T-shirts, asks its customers to submit designs online. “Make great ideas, share them with the world, earn fame and fortune, we’ve awarded over \$6 million to artists,” says its website.<sup>28</sup> Akin to the difference between prediction, which involves reductive experimental processes, and projection, which is accommodational and inclusive, cyber technology enables participatory design that democratizes the entire design process. Design research must evolve new tactics in which direct citizen participation is no longer merely on the level of statistical samples. Rather, *participation yields*

*the outcomes themselves.* The researcher becomes as much of a facilitator as he or she is an analyst – even as the facilitating instruments (such as the Threadless website) must necessarily be designed so as to yield robust results.

But if democratic participation is itself the outcome of research, then the platform for that participation – that is, the computer and the cyber connections it enables – is not itself an artifact per se. It is more like the air we breathe, or perhaps the space in which we live. A recent study found that the “Net Gen” generation of young people (those born between 1982-1991) consider the internet “oxygen ... they can’t imagine being able to live without it.”<sup>29</sup> And so this from Mark Poster:

The internet is more like a social space than a thing, so that its effects are more like Germany than those of hammers: the effect of Germany upon the people within it is to make them Germans ... the effect of hammers is not to make people hammers ... but to force metal spikes into wood...<sup>30</sup>

If this citation sounds strange, it is only because we are confronted by a technological innovation that has transcended object-tivity. It is now a system, and the effects of this system is so vastly extended that its ontology can be likened to a social space (such as, in Poster’s example, a nation). If indeed it is a social space, then experimental science is perhaps not the only basis for research inquiry in comprehending this domain. If

indeed it is a social space, then all of the qualitative research methodologies used to study social interactions come more to the fore.

#### **4. New Virtualist design research concerns the design of systems rather than (or in addition to) the design of objects**

In Part I, we noted that New Virtualist designs feature a distributed ontology, and cited the example of an entire city conceived of as an organism. More and more our lives are enabled by systems rather than by objects; an object such as the cell phone is deceptive in this regard, since it is useless without the vastly extended cyber networks that enable its operation(s). From shopping to banking to learning to news access; all of these services come to us via distributed networks. These days, even the pleasure of getting lost is no longer available to us because we are constantly connected to a system (e.g., the OnStar system). Even romance comes via the internet (e.g.: eHarmony.com). A recent *Economist* Special Report identifies three ways the cyber world interacts with the physical one: 1) the digital realm reshapes the physical realm, as in distributed office locations, online shopping, and the like;

2) the digital realm offers a separate world from the physical one, as in online games in which players distributed across the world interact simultaneously; and 3) physical demands also influence the digital world, as in “apps” that identify the distribution of tables available at local restaurants.<sup>31</sup>

All of this calls for design research to attend to the form of systems rather than the physical forms of objects. For instance, how to design a system of shared vehicles, the locations of which are all mapped unto smart phones, to service an urban area? Or: how to design a service for companies to hire office workers on an on-demand basis, all via cyber connections?<sup>32</sup> How does one design “sense of community” for distance participatory venues such as classrooms or “virtual townhall” meetings? These are examples of the kinds of questions *design* research under the New Virtualist epiphore should ask. It is about the design of systems, not (only) the design of objects.

## 5. New Virtualist design research blurs Simon’s inner versus outer worlds

Herbert Simon’s *Sciences of the Artificial* can rightly be hailed as one of the beginning salvos of the computer revolution.

But, published in 1969, perhaps even Simon did not fully appreciate what would become of his distinction between the “inner” versus “outer” environments. By this distinction Simon meant to say that any artifact – and all human innovations are arti-factual – has an inner constitution in contrast to the constitution of the outer environment within which it needs to function. A clock on a ship at sea, an airplane flying in the sky, a production schedule that optimizes return for investment; all of these are artifacts having inner environments interfacing with their respective outer environments.<sup>33</sup> Simon held that we do not have to exhaustively know about each inner/outer environment; we only need to know enough about the interface to assure that the performance of an artifact would “satisfice.”

*But what if the entire environment is itself artifactual?* As design focuses on systems, the *scale* of the systems at least calls for a reevaluation of Simon’s distinction. When we “swim” in intricate webs of global internet connections; when we live in cities-as-themselves-organisms, the distinction between inner and outer environments loses some focus. At the micro level, cell-sized computers in our bodies simulate disease scenarios, adjusting the body’s workings to avoid such illnesses.<sup>34</sup> At the macro level, consider the Corning Glass videos that depict “A Day Made of Glass” in the near future. In the latest release, a

medical exam room is entirely made of glass -- which interfaces cybernetically with a corresponding room across the world. Physicians talk to each other through a transparent wall, fully seeing each other while a patient's data is displayed on the glass between them. The patient at the distant location is then transported as a 3D actual-sized image to the local physician's examination bench. Diagnostics of the patient's brain are projected into space for the doctor to see, at his eyelevel, in his exam room.<sup>35</sup>

It is frankly not clear what radical transformations of *praxis* such as this implies for design research, other than to say the obvious: it affects every aspect of it. What happens when "video conferencing" approaches the tactility and environmental fullness of actual physical encounters, complete with the ability for participants to exchange physical items as if across a table? This implies entire buildings can be virtual, or at least just offer enough physicality to enable virtual presences all over the world. I have often said to my students that the world will radically change when we can fax a pizza from one location to another. (Roads and transportation networks will no longer be needed. What does that portend for neighborhoods, business districts, for entire cities?, etc). Here, a 3D image of a patient is "faxed" across the world for treatment. Aside from what this implies for medical advances, what does

it do for "sense of community?" For education? For business? For tourism? When the entire outer environment has become itself the inner environment of the cyber-artifact, how does this change the way life has been lived on this planet up to now? Questions such as these open up enormous avenues for design research.

## 6. New Virtualist design research concerns itself with a metaphysics of ornament

For the Greeks, the floral motifs on Corinthian capitals, the fluting on the columns, the *entasis* of those columns, were not ornament. Working under the human body epiphore in which every aspect of a building participated in a transcendent proportional order, the Greeks had no idea what "ornament" was. The awareness of ornament, or decoration, was a result of the advent of the machine. The machine epiphore created the divide between what was essential and what was ornamental, or non-essential. Essential was structure, functional utility, economic logic, geometric orthogonality, so on. By the time of Adolf Loos, *Ornament is Crime* (!). And for Mies van der Rohe, "Less is More."

But the cyber epiphore restores (what has been called)

ornament back to an *essential* dimension of design. This is different from ornament under Postmodernism. In that earlier phase, ornament simply erupted as liberation from the austere strictures of Modernist dogma (and so Venturi: “Less is a Bore!”). But look at any map of the World Wide Web and we see a cyber entity the twists and turns and convolutions of which are essential to its very nature. The possibilities for these elaborate forms seem to be endless vis-à-vis its power to inform (what a Modernist would call) *ornamental* expression. This research statement from Gramazio & Kohler, *Architecture and Digital Fabrication*, is representative of the reintegration of ornament into the essential logics of designed forms (italics added):

By positioning material precisely where it is required, we are able to *interweave functional and aesthetic qualities into a structure*. We can thus “inform” architecture through to the level of material. Our aim is to develop criteria for a new system of structural logic which can be applied to architecture and that is *intrinsic to digital fabrication*. We started with modules such as bricks as a basic material and are now expanding the spectrum to include fluid materials.<sup>36</sup>

The design implications of this return to ornament-as-essence are obvious. Today’s architecture students, in designing buildings with Rhino software, are producing

elaborate forms which, once again, makes it superfluous to discuss what is structure and what is ornament. We have returned to the Greek way of seeing form: as an organic production for which every part of the form is essential to its ontology. For its part, design research can identify rubrics for determining whether any instance of ornament is, indeed, essential to the cyber logic generating a form; or whether cyber power is simply being used to create outlandish expressions that have nothing to do with the essential logic of the production at hand. Perhaps at a deeper level, with a return to (again, what the machine outlook calls) ornament, I suggest that the cyber epiphore can return architecture and built environments back to an evocation of mythos.

## 7. New Virtualist design research accommodates a return to mythos

Of architecture under the machine epiphore (or what he calls “modern science”), Perez-Gomez laments thus:

The poetical content of reality, the *a priori* of the world, which is the ultimate frame of reference for any truly meaningful architecture, is hidden beneath a thick layer of formal explanations. Because positivistic thought has made it a point

to exclude mystery and poetry, contemporary man lives with the illusion of the infinite power of reason. He has forgotten his fragility and his capacity for wonder, generally assuming that all the phenomena of his world, from water or fire to perception or human behavior, have been “explained.”<sup>37</sup>

An overview of the trajectory of Western architecture underlines this point. Prior to the Enlightenment and its aftermath (read: the Industrial Revolution), architectural edifices sought to touch the transcendental realm. Whether it was the Platonic forms, or the realm of heaven in medieval Christianity, architecture was typically imbued with the power of mystery. The writer Alain de Botton speaks of an experience when, after a disappointing visit to a McDonald’s restaurant, he went into Westminster Cathedral, where he “entered into a cavernous hall, sunk in tarry darkness, against which a thousand votive candles stood out, their golden shadows flickering over mosaics...” He continues:

After ten minutes in the cathedral, a range of ideas that would have been inconceivable outside began to assume an air of reasonableness. Under the influence of the marble, the mosaics, the darkness ... it seemed entirely probable that Jesus was the Son of God and had walked across the Sea of Galilee...<sup>38</sup>

It is difficult to imagine this sort of epiphany in a building

answering to the machine epiphore. *But an edifice under the cyber epiphore might once again stir a sense of an encounter with mystery.* Cyber technology deals in numbers -- and scales -- of such staggering sizes that it raises, in addition to mathematical questions, theological ones. Consider this from a recent article entitled: “Is the universe just a computer simulation? Now, we can check”:

“... pretend that you’re a hyper-intelligent pan-dimensional being equipped with the sort of computer that hyper-intelligent pan-dimensional beings tend to have lying around. This computer works just like the computer that ... less-pan-dimensional humans are using to simulate a femtometer-sized region of the universe, except that, instead, it can simulate the whole damn thing. All of it. And that simulation would be impossible to distinguish from something ‘real.’”<sup>39</sup>

I am not suggesting that cyber technology can replace God; I am simply suggesting that cyber technology enables material expressions that was once driven by the human need for awe, for the sublime, for connections to the transcendent, in short, for all of the needs that somehow the positivism of the machine cannot (or can no longer) provide. I am simply saying that a New Virtualist design/research programme accommodates investigations into mystery, the sacred, and the sacramental.

## CONCLUSION

The above thoughts are by necessity speculative. But they are speculation based upon what we are obviously confronted with today: the enormous power of cyber technology and its iconic object, the computer. So vital has the computer become in today's globalizing culture -- after all, it *enables* the globalization of culture -- we can say that it has replaced the machine as the epiphoric object for design. In other words, the powers of cyber technology now inform, not so much how designers think (which it surely does), but how they instinctually see "nature," and themselves *in* "nature." Designers today swim in the cyber sea, and the designs they produce reflect their imbibing of virtual realities. Hence, the New Virtualism.

But we are at the beginning stages of this Cyber Revolution. Just as it was difficult to imagine what the machine would bring at the beginning of the Industrial Revolution, it is now also difficult to imagine what the computer revolution will ultimately bring. Any one reading this article can compare the computer's powers just five, ten, or fifteen short years ago, with what the computer can do today. The advances have been immense. Yet our better instincts tell us it will prove quite insignificant compared to where cyber technology will take us even ten or fifteen years from now. In this new heyday,

New Virtualist design exhibits the exuberance of youth, and this paper expressed some concerns over its tendencies to, for instance, not be indexed to the human form, to erase sense of place, to place the human being nowhere because cyber power is everywhere.

In contrast, a New Virtualist design *research* programme can play a role in balancing the excesses of New Virtualist *design*. In short, it can add rigor to precisely the human dimension of life experience that current positivist-oriented research strategies sometimes relegate to a lesser status. A New Virtualist design research programme *projectively* includes elements of human freedom in contrast to the reductivist nature of positive prediction. A New Virtualist design research programme is better equipped to erase categorical distinctions (e.g., theory/practice, discipline/profession, designer/user) such that the outcomes of its inquiry tend to be more phenomenologically reflective of immediate social conditions. A New Virtualist design research programme welcomes a diversity of aesthetic expressions not as unnecessary add-ons to some core essentiality, but rather as essence itself. And hence a New Virtualist design research programme can perhaps welcome a return to mythos.

Let me conclude with one recommendation for future research. Currently in the global zeitgeist, there seems to be

two conflictive design movements, broadly speaking. One is what I have termed the New Virtualism, exemplified by such works as the CCTV tower, the Seattle Public Library, the D-Tower, the Bird's Nest Stadium, so on. The other movement we can term Green Design. Indeed, "sustainability" is now a byword recognized by architects and designers the world over, even though it is a term difficult to precisely define. But representative examples of this movement make the general intentions of the sustainable design agenda clear. I am thinking of such hallmarks as William McDonough's Hanover Principles,<sup>40</sup> or his *Cradle to Cradle*;<sup>41</sup> Ken Yeang's books such as *Green Design: From Theory to Practice*;<sup>42</sup> Norman Foster's zero-carbon, zero-waste city of Masdar, Abu Dhabi,<sup>43</sup> so on. These two movements conflict because, while the latter stresses conservation of natural resources, the former's revelry in cyber-enabled forms tends not to respect green considerations. The CCTV Tower, for instance, has a mega structural frame held up by untold tons of concrete at the foundation, and the building's mechanical system is enormous. How to blend these two conflictive movements into a single theoretical framework and praxis agenda? It strikes me that this is a critical question as architectural design, and design research, continues to make progress. Perhaps it is green awareness that will ultimately lead architects to produce mature expressions

of twenty-first century architecture, even while they swim in the cyber sea.

## NOTES

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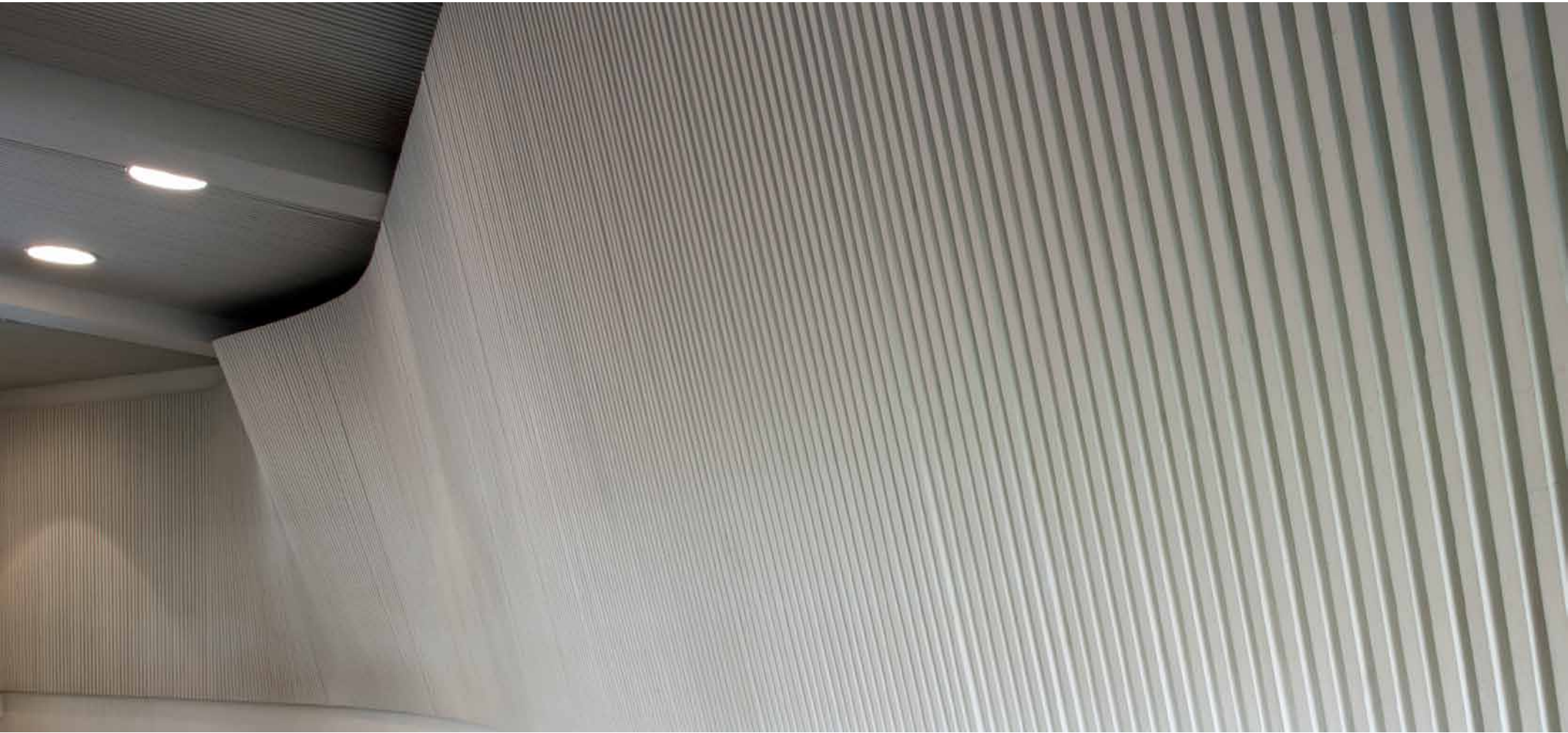


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- 12 OMA, Rem Koolhaas, and Bruce Mau, "from 'Bigness,' or the problem of large," in Harry Francis Mallgrave and Christina Contandriopoulos, *Architectural Theory, vol. II: An Anthology from 1871–2005* (Malden, MA: Blackwell Publishing, 2008), 566–568.
- 13 Katia Moskvitch "Smart Cities Get Their Own Operating System," in BBC News Technology <http://www.bbc.co.uk/news/technology-15109403>, September 30, 2011, accessed 18 November 2012.
- 14 "Product Service Systems" is an emerging field of study. The focus is on designing systems of business delivery in which both the product sold and the system in which it serves (in production, sales, use, recycling, etc) is designed to be less material-intensive and beneficial to overall life-cycle costs. I was first made aware of this literature by my doctoral student, Maryam Afshar. Representation articles are: Goedkoop, M. J., van Halen, C. J. G., te Riele, H. R. M., & Rommens, P. J. M. (1999). Product Service Systems, Ecological and Economic Basis: PricewaterhouseCoopers, N.V. / Pi!MC, Stormm C.S., Pre consultants; A. R. Tan, T. C. McAloone, "Characteristics of Strategies in Product/Service-System Development" in INTERNATIONAL DESIGN CONFERENCE - DESIGN 2006 Dubrovnik - Croatia, May 15 – 18, 2006. This article is accessible on at this URL: [http://orbit.dtu.dk/fedora/objects/orbit:46864/datastreams/file\\_2509203/content](http://orbit.dtu.dk/fedora/objects/orbit:46864/datastreams/file_2509203/content), accessed November 19, 2012.
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- 18 Alfred Rovai, “Building Sense of Community at a Distance” in *International Review of Research in Open and Distance Learning*, Vol. 3, No. 1 (April, 2002), 1–12. “Spirit” is defined as “the feelings of friendship, cohesion, and bonding that develop among learners as they enjoy one another and look forward to time spent together.” 4.
- 19 Linda Groat and David Wang, “Experimental and Quasi-Experimental Research” in *Architectural Research Methods* (New York: John Wiley & Sons, 2002), 270.
- 20 Urbansim, [www.urbansim.org/Main/UrbanSim](http://www.urbansim.org/Main/UrbanSim). Accessed February 13, 2012.
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# KEYNOTE 2



# AN OVERVIEW OF THE COMPETITION SYSTEM

**Judith Strong BA**

Arts & Architecture Projects

United Kingdom

[judith@judithstrong.com](mailto:judith@judithstrong.com)

## Abstract

Architects are well used to the process of competing for commissions by submitting designs in response to an outline brief. The first attempts to regulate the system were introduced during the middle years of the 19th century. While the basic principles remain unchanged, the system has been amended and interpreted in many different ways over the years. New practices have been introduced in response to political pressures; legislative requirements; client preferences, and attempts by the profession to limit the amount of unpaid work involved. This paper considers whether these changes have improved or undermined the system?

What are competitions for? Do they still provide opportunities for innovative solutions to be sought and for less well-established architects to demonstrate their skills or are they being used primarily to select a 'star' from amongst the already internationally famous.

If the aim is to raise the quality of design, what evidence is there of this being achieved?

## Introduction

I am not an architect but virtually everything I have done professionally over the years has been connected in some way with architecture and buildings – firstly as Competitions Officer at the Royal Institute of British Architects and then at the Arts Council of Great Britain where I managed the government's capital fund. For the last twenty years I have run my consultancy – Arts and Architecture Projects. All together, this has involved several hundred buildings, architects and design team professionals, and a very wide range of client organisations. The experience e gained also led me to write a number of books including *Winning by Design*.<sup>1</sup>

My interest has always been as much in the process as in the outcome – in analysing and in trying to understand – in recording and in passing information on. What follows is from the viewpoint of an interested and committed observer of architecture and of the architectural profession.

## Keywords

History  
Regulation  
Procurement  
Selection  
Design quality

## AN HISTORICAL OVERVIEW

Competitions have a very long history – as old, it is said, as the profession itself. Architectural historians have found evidence of alternative designs being invited for a project in Athens in 450BC, while one of the earliest documented competitions was held in Florence in 1419 – for the design of the Dome of the Basilica of Santa Maria del Fiore won by Brunilleschi.

By the end of the 18<sup>th</sup> century, competitions were already a regular occurrence. The system was used, with varying degrees of regulation, to select architects for major public buildings across the world. For example:

The White House, Washington – 1792 –  
though there were only 9 entries

The Houses of Parliament, London in 1834

The Federal Parliament Buildings in Ottawa 1859

The Paris Opera in 1860

The Reichstag in Berlin in 1882.

The nineteenth century was, in one sense, the golden age for competitions in the UK. More than 2,500 were held between 1850 and 1900, producing many prestigious buildings and an archive of drawings for historians. But the system was widely abused. Accusations were made of bias, general incompetence and widespread corruption. Architects began to try to regulate the system as early as 1839 in the UK. A similar initiative was made in The Netherlands in 1842.

By 1907 the UK rules had finally become mandatory. Building on its success, the RIBA Council continued to strengthen its regulations, eventually introducing conditions which safeguarded the architect to such an extent that they almost killed off the competition system – it has never really recovered.

By the middle of the 20th century, World War II had devastated vast areas of Europe. Housing was one of the first priorities and competitions were mounted to select the architects. To give just two examples, in 1945 a major competition was held in Norway to explore designs for social housing. In 1946, architects Philip Powell and Hidalgo Moya, both in their early 20s at the time, won a competition to design workers flats to house 5,000 people. The flats are still regarded as exemplary.

In Germany the need to rebuild the physical infrastructure was matched by democratic reforms to the whole structure of government. Encouraged by the National Association of German Architects, state governments promoted competitions for public projects such as schools, libraries, and hospitals. In some states competitions were obligatory for all larger projects. Similar competition cultures operated in both Switzerland and Austria.

The Nordic countries had begun to make an impact in the 1950s – their reputation for good design, in part, due to the competition winning building of architects such as Arne Jacobsen and Alvar Aalto. (Aalto won 25 out of the 58 competitions that he entered.)

The next country to pick up the system was France. Two events helped to instigate this: the revolution of 1968

which challenged the old establishment and the international competition promoted by George Pompidou for a new art centre – won by Richard Rogers and Renzo Piano. Its success, particularly amongst the young, gave credence to the system. The use of competitions for public buildings began to be encouraged both regionally and nationally and by 1980, the competition process was embedded in the national legal code – though the legislation was revised in 1986 to ensure that architects for government buildings were selected only through invited competitions and were adequately compensated for their work.

In the main English speaking countries – the USA, Australia, Canada and the UK – efforts to embed a competition culture were less successful, though both the USA and the UK did try. In the USA, an initiative by the National Endowment for the Arts led to a government programme ‘Excellence in Architecture’ which resulted in competitions being held for some federal buildings. In the UK, the Arts Council pressed for all projects in receipt of lottery funding to be made the subject of competition (this led to the interview system being recommended by government). In both countries initiatives were also hampered by ‘fair trade’ legislation. In the USA, the Federal Trade Commission took exception to the fee structure that had underpinned the American Institute of Architects’

competition regulations. In the UK a similar ruling (by The Monopolies Commission) resulted in the RIBA losing its ability to bar its members from taking part in unregulated competitions, leaving the doors open for clients to hold whatever form of contest they thought would serve them best.

While the Japanese economy was buoyant, competitions briefly flourished with younger architects beginning to gain commissions. These were augmented by a number of important International competitions some of which were won by foreign architects. One example is the competition for the Tokyo International Forum won by Rafael Vinoly in 1989. More recently there has been less capital investment and fewer competitions. International participation also tends to be limited in part by the documentation only being made available in Japanese.

Neither of the regions heading up the recent ‘building boom’ (the Pacific Rim and South American countries) have any established pattern of use except for Argentina where a well-regulated system provided opportunities for architects to expand their horizons. Elsewhere, competitions have occasionally been held for the most high profile projects, the better regulated ones following the International Union of Architect’s procedures.



## THE CASE FOR COMPETITIONS

Taken individually, competitions can be said to encourage innovation, enable new architectural talents to emerge and provide clients with the opportunity to consider a number of different approaches. Taken together, they offer a critical comment upon the architectural thought and expression of the age.

Many of the plans and drawings preserved in the archives of architectural libraries were produced as submissions for competitions. They demonstrate the gestation – the background thought process – of some of our best known buildings. As importantly, they show alternatives – often exemplifying issues which were current at a particular time or graphically illustrating a turning point in architectural thinking.

Architecture is a creative process which needs opportunities for ideas to be explored, for standard approaches to be tested, for discussion to take place, and for expertise to be shared.

But to explore new ideas and test alternative solutions, architects require briefs and briefs require specifics to be established – a defined use, an actual site, a set budget – providing a context and establishing the constraints. The competition provides the opportunities.

The exhibition and publication of submissions, along side analysis and discussion, also offer an invaluable resource for the whole profession allowing everyone to access the work of some of its most innovative and talented members. In this way, the competition system can be seen as providing the ‘research and development’ aspect of architectural practice – and contributing to continuing professional education.

In discussions on how the competition system benefits the profession, there is a tendency to focus on opportunities for young architects. While getting a foot on the ladder is a vital first step, the second and third commissions etc. are the ones that help a practice get established and grow. To survive in the medium to longer term, a practice needs to keep a steady flow of work.

Competitions are one of the few ways in which architects can draw attention to their skills. When drawing up short-lists for interviews, many clients select firms which have already successfully completed one or more similar projects. But very few of the most widely respected architects made their reputation by sticking to one type of building and there are countless examples of excellent and groundbreaking projects that have been designed by architects with no previous experience of the particular building type. Opportunities to break into new areas depend, to a significant extent, on commissions gained

through the competition system – initially through open competitions and then by being invited. Another reason for established practices to continue entering competitions is that they can serve to stimulate their less senior staff (often engaged in routine work) and attract talented young designers to join their practices.

The decision as to whether or not to hold a competition often lies directly with the individual client. In gathering evidence for my book *Winning by Design*, I asked previous promoters what their motivation had been. The responses were varied. Some promoters regarded themselves as patrons, others as discerning clients. Some used the system as a matter of choice, some in response to pressure or persuasion.

But once the decision to hold a competition has been taken, many clients found the process to be a rewarding one. They found that opening up briefing procedures to a wider range of interests could help to draw people together and make them more willing to contribute to a common objective. The discussions held in the briefing and assessment stages could also help clarify key issues and lead to a better understanding of what a project involves, strengthening the client's position during the subsequent design and development phases.

Competitions are widely used to project an image – to

influence people's perceptions by means of an 'icon' building. In the nineteenth century, the large manufacturing towns and cities proclaimed their growing importance by holding competitions for new civic buildings. One hundred and fifty years later, some of these same cities are holding competitions for the design of new 'icons' to stimulate post-industrial regeneration. Countries too, use competitions to secure buildings which show the world how forward looking they are – one example is Hertzog and Meuron's Bird Nest Stadium for the Beijing Olympics.

Some of the most innovative competition winning buildings are for the arts. This is no coincidence as such projects tend to be initiated and managed by people who are experienced in discerning the design merits of one work over another – a skill which those used to procuring on cost, size of practice, or previous experience may lack. When there is an established competition culture, the expertise required to make these qualitative judgments becomes more widespread. Clients building on sensitive sites benefit from having an opportunity to explore and analyze different approaches. Standard solutions can be reassessed and issues such as energy efficiency and the use of new materials explored.

There is also a more general interest to be considered which goes beyond that of architects and their clients. Whether

we own them or not, we all live, work, visit, and observe buildings. In the UK, and probably elsewhere, the standard procurement procedures provide little opportunity for the general public to express views or to make their preferences known. Competitions can open up the process – particularly for smaller scale, local projects where it is feasible to exhibit entries prior to the final selection being made. Press coverage can also serve to explain design concepts and the design process.

Where competitions become the norm, the general public learns to identify the merits of one design approach over another and has the opportunity to become more engaged with and discriminating about what is built.

## THE OTHER SIDE OF THE ARGUMENT

In countries which lack a competition culture, efforts to encourage the greater use of the system almost invariably meet with a mixed response.

One of the reasons is that far more publicity is given to the occasional failure than to the more frequent successes. Once a building is completed, the method by which it was procured is largely forgotten unless there are problems.

There is also a tendency to lump all competitions together

– making no distinction between those which are run in accordance with a properly regulated system and those promoted by people who either do not know that there are established procedures – or choose to ignore them.

And then there are politics – when winning designs are vilified merely because the project was initiated by ‘the wrong’ group or won by an ‘outsider’ architect.

Nevertheless, there are valid concerns to be considered.

Firstly cost: the cost to the client in promoting a competition and the cost to architects, individually and to the profession as a whole, in preparing submissions.

For the client, once the winning team is appointed, fees are normally payable on the same basis as for any other form of commission. The additional costs come up front. In terms of the overall project these sums are relatively small but they do add up and they are incurred regardless of whether or not the project proceeds.

But the client’s costs can pale into insignificance when compared with the costs incurred by the entrants. In an open competition for a major project, the cost to the profession in total hours spent (if calculated on a normal fee basis) can add up to something approaching the end cost of the building itself. This leads to particularly bitter responses when the winning design is discarded or the project abandoned. One example of

this happening was the Stockholm Library competition where well over a thousand entries were submitted, six developed in detail and a winner selected – before the promoters called a halt to the whole process for reasons which, it could be said, should have been sorted out at the initial briefing stage.

Entering invited competitions on a regular basis can also prove expensive, even for established practices. The premiums paid rarely cover much more than the expenses incurred. Theoretically practices have a one in five or so chance of getting a commission but in reality things do not work out that way – some firms are just more successful than others. To cite one instance of this, in the mid-1980s, Canadian architect Arthur Erickson's firm took part in a series of major invited competitions without gaining a single commission and then went on to suffer financial problems.

Architects are also concerned that they are giving away their most valuable asset – their creativity. Properly regulated competitions include clauses to protect intellectual property rights but once ideas are put into circulation it is very difficult to stop people picking them up and adapting them for their own use. In the first stage of a two-stage competition, for example, the promoter could well find approaches which are thought to be worth exploring further and then incorporate them into the next stage of the brief for all competitors to pursue.

Another observation which clients make when looking at selecting architects through architectural competitions is the amount of time required to get to the stage of appointing the design team. All building projects require careful planning and this takes time. Where competitions add time is in the preparation of documentation, the period for responses, the development and presentation of designs, and the assessment. These procedures can stretch over many months. On the other hand, by establishing deadlines, competitions can also serve to speed the process up. Decisions have to be taken and designs have to be ready by a given date (even if architects do tend to submit at the very last minute.)

The overriding concerns, however, tend to fall under the heading of 'Uncertainty of Outcome'.

To state the obvious – nothing in this life is certain – and this is particularly true of building projects. Whatever the means of procurement, situations can change, costs can overrun, and the best of schemes may need to be abandoned. History is littered with examples of projects which 'might have been'.

But those acting on behalf of others (i.e. commissioning a public or corporate building) often seek to safeguard their position by 'playing safe'. Should things go wrong, they have the defense that they were merely following standard practice.

Holding a competition tends to be perceived as being inherently more risky than selecting an architect on the basis of known work – and is therefore, the argument goes, best avoided.

Many clients also have concerns about what the final bill for the building will be – particularly where designs are unusual in their form or structure, explore innovative (i.e. untried) techniques, or are the work of younger architects who may be talented in design but inexperienced in taking a project through to completion.

These concerns have some validity. Open competitions for prestigious projects are known to attract large numbers of entries and this encourages some architects to submit designs which try to ‘catch the eye’ of the jury rather than present a thoughtfully planned but more simple solution.

When serving on juries, architects do not always stick to the job in hand – i.e. to determine the best solution to the given brief. They can be swayed by unusual or interesting entries – as they feel that selecting something which appears to be ‘anticipating the future’ will reflect credit back on them. Where entries are anonymous, jury members have also been known to try to identify the famous names – not always ‘guessing’ correctly.

The Scottish Parliament Building encapsulates many of these concerns. In an international competition in 1998,

the jury selected an intriguing but highly complicated design submitted by Catalan architect Enric Miralles. Sadly, the architect died before building work had even really started. The building was eventually completed three years late at a cost of more than 10 times the budgeted figure. This led to a public enquiry being held. Most of the blame was put down to poor project management rather than the procurement process but the complexity of the design did contribute to the problems.

Obviously, competitions can go wrong but the majority do not. Where outcomes have been analysed, the proportion of projects which are designed but not completed appears to be no higher for competitions. On the other hand, buildings designed through the competition process are far more likely to pick up awards. Even Miralles’ problematic Scottish Parliament went on to win the RIBA’s biggest accolade – The Stirling Prize for Architecture.

## RESPONSE AND CHANGE

European Union legislation has had a significant impact on the development of the competition system. The 1993 Services Directives extended procurement jurisdiction to include the services of the design team professions, requiring all tenders above a given threshold to be open to suitably qualified individuals and companies across the EU. The selection was to be made against stated criteria, including that of 'most economically advantageous'.

In their introduction to the book *Architectural Competitions*<sup>2</sup>, the Editors write:

*Two roots of modern competition, the academic and the market place, resulted in two different kinds of architectural competitions. The academic type aimed for maximum quality with a reasonable price, while the market place type aimed at a reasonable quality at the lowest possible price.*

Some fear that EU procurement legislation and, perhaps more significantly, the procedures which have been introduced as a result of that legislation are encouraging the latter type at the expense of the former.

Clients found that the EU 'Restricted procedure' (as

distinct from the Design Contest) enabled them to use a wide range of procedures. This led the UK government, working with the RIBA, to recommend the regulated 'Competitive Interview' system, where a qualified adviser is appointed to manage the short listing and selection process.

When 'best practice' guidance is followed, the new competitive formats can offer advantages to both clients and architects. Initial short listing by portfolios of work, face-to-face briefing sessions, interviews etc. can all help to:

Develop the brief

Reduce costs by limiting the requirement for design work to a few carefully selected teams.

Increase client confidence in the outcome by allowing them to meet the people they might work with (when interviewed, competing teams are expected to include the architects who will be responsible for the project on a day to day basis).

But methods applicable to one system (design team selection) have become merged with those commonly used in another (the procurement of standard goods and services). Increasingly, short listing depends on quantitative rather than qualitative criteria. Architects are required to complete

detailed pro-forma which tend to lead to a box ticking style of selection favouring larger firms. A report commissioned by the RIBA<sup>3</sup> found that the turnover requirements typically applied to public sector work above the EU threshold disqualified 85% of UK practices.

Intended to create a more open market, in some cases the EU directives appear to have had the opposite effect. For example, in both France and Germany open competitions have given way to invited competitions. Many of these changes may have happened regardless of EU legislation but it is, perhaps, indicative that at least initially, Norway (which remains outside the EU) continued to have a small but regular number of open competitions, run and regulated by the Directorate of Public Construction and Property.

'Significant' projects are still put out to competition but entry tends to be by invitation only. In the client's terms these competitions are often very successful, producing excellent outcomes by drawing on a pool of international 'names' – a 'premier league' of architectural practices which few can enter. To give just one example of many – the finalists selected to design a new skyscraper in Manhattan (2012) were Zaha Hadid, Rogers Stirk Harbour + Partners, Foster + Partners, and Rem Koolhaas, selected from a shortlist which also included Jean Nouvel, Herzog & de Meuron, Richard Meier,

Renzo Piano and KPF. All these architects built their careers through the competition system – a route now virtually barred to the current generation of possibly equally talented and ambitious designers. What will happen in the future is open to discussion.

Where architectural institutes and societies retain jurisdiction over competitions or regularly advise on or manage the process, they often recommend clients to include one or two less established practices on their shortlists but this is not standard procedure. One of the most significant, and long-lasting, initiatives to open up the system is European, a biennial housing design competition open to architects under the age of 40. The scheme began in France, but was rapidly extended to include the whole of Europe. By 2012, eleven series had been held with the latest involving 17 countries, 49 sites and nearly 2,000 entries. It probably fair to say that in overall terms outcomes have not always matched ambitions but the competition has provided opportunities for younger architects as well as establishing a co-operative organisational structure. The concept could, perhaps, prove a useful model for a European-wide system in which younger architects are enabled to compete for a wider range of publicly funded projects.

## SECTION 6 – CASE STUDIES

This paper closes with four mini case studies. These projects, all the subject of design competitions, are selected not as exemplary models but to illustrate different approaches.

### 1. The Millennium Bridge

The bridge crosses the river Thames in the centre of London, providing a pedestrian link between The Tate Modern Gallery and St Paul's Cathedral – one of the UK's most treasured buildings. Even the views of the cathedral from across the capital are protected by planning legislation.

The design team was selected through an open international competition organised by a newspaper (The Financial Times) in consultation with the authorities to the north and south of the river. Entries were invited from Architects, Engineers and Artists, individually or as teams, with the aim of finding a solution which would be both technically innovative and aesthetically rewarding. Anonymity was respected throughout the first stage.

The competition attracted over 200 entries. The six which were short listed to develop the design included a team led

*Figure 1. View of the Millennium Bridge over the Thames in London. Photo ©Nigel Young/Foster + Partners.*



by Foster and Partners, working with the British sculptor Sir Anthony Caro and Consulting Engineers, Arup and a team led by Frank Gehry with the American artist Richard Serra. Foster's team won.

The structure pushes the boundaries of technology. It is a very shallow suspension bridge, with a slim profile and a 320 metre span. The two Y-shaped armatures support cables that run along the sides of the deck while the traverse arms clamp onto the cables to support the deck (Fig. 1).



The bridge opened as scheduled in June 2000, with over 100,000 people queuing to cross it during the first weekend. But this level of use caused problems. The bridge swayed from side to side with the movement increasing as people tried to adapt their step to counteract the swing. Two days later the bridge was closed. Modifications were undertaken which involved placing a series of dampers – similar to car shock absorbers – underneath the bridge deck. After a prolonged series of tests, the alterations were deemed to have succeeded in arresting the swing and the bridge was re-opened in February 2002.

Even when a very experienced team wins a competition, problems can occur when the client is looking for innovation. But, the problems were solved – people now throng across the bridge – and the research undertaken by the engineers has resulted in changes to the codes for bridge building world-wide.

## 2. Housing refurbishment for the London Borough of Newham

The second mini case study is very different: no famous names, no prestigious site, and certainly no glamour. Its subject is the refurbishment of part of a run-down housing estate in

*Figure 2. Brook's Road: The 1950's housing blocks prior to refurbishment. Photo ©Bell Phillips*



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Newham, one of the most ethnically diverse and socially deprived areas of London.

Using funding from a government 'New Deal for Communities' programme, the local authority decided to hold an open design competition for the refurbishment 250 low rise units which had been virtually untouched since they were built in the late 1950's (Fig. 2). The units suffered from damp and condensation, inadequate insulation and ineffective heating, and were surrounded by general dereliction.

Perhaps surprisingly, the competition attracted an international response. Six designs were shortlisted and the architects

invited to present their schemes to a jury which made the final election. Tim Bell and Hari Phillips (at the time associates in two separate London practices) were appointed to carry out the work.

In many ways this was an ideal competition win for them. The £8.5million project was divided into phases which meant that the newly established practice was assured of a steady work-flow (and income) for seven years (Fig. 3). There are cases where practices formed on the basis of a competition win have struggled financially as other potential clients wait for the project to be built. Bell Phillips was able to attract new clients as soon as the first phase of the work was completed.

### 3. Manchester Civil Justice Centre

The third study is a somewhat rare example of a government-backed initiative to improve design standards in buildings procured through the PFI (Private Finance Initiative) system where a developer finances and builds a facility which is then leased back to the initiating client.

Manchester is a large, post-industrial city in the North of England. Its Courts of Justice and related offices were



*Figure 3. Brook's Road: Part of the completed project.  
Photo ©Bell Phillips*

scattered across the city. The Court Service (TCS), a UK government agency, aimed to bring everything together in one single building: 47 court or hearing rooms; 76 consultation rooms, 7 conference rooms plus accommodation for visiting judges, office and support space. The project comprised a total space requirement of 34,000 square metres at an estimated cost of £110 million.

This high value, high profile public project was the first to use a new form of procurement, referred to as 'Smart PFI'. The process followed the standard PFI model but only after the client had drawn up the brief, selected the design team, and supervised the development of the designs to outline planning stage. (RIBA Stage D.)

To start the process off, developers were invited to identify suitable sites and tender for the work. TCS agreed that it would lease the building for 35 years – after which time it could become a commercial office block if no longer needed by the Court Service. This requirement for a potential change of use formed part of the brief.

A team of technical, financial and design consultants was appointed, headed by a very experienced TCS project manager to prepare the brief and organise the competition. Advertisements were placed in OJEU (the official journal of the European Union) followed by a three stage selection process:



Figure 4. Manchester Courts of Justice: external view.  
Photo ©Tim Griffith.

short-listing, competitive interview, invited design competition (the final stage for just 3 teams with each being paid £50,000). The process ended with each of the three teams presenting their designs to the assessment panel (Fig. 4). The developers were not represented on the panel nor were they asked which design they preferred – though the technical assessment team which reported to the main jury was made very much aware of the need to consider both costs and buildability. TCS bore the whole cost of the procurement process including the fees paid to the winning team to take the scheme through the



*Figure 5. Manchester Courts of Justice: glazed atrium.  
Photo ©Tim Griffith.*

initial design stages. This would not have been the case with a standard PFI contract

Australian Architects Denton Corker Marshall won the competition and went on to work with the developers to take the building through to completion.

The result is a striking 15 storey block. The working courts and offices are expressed as long rectilinear forms, articulated at each floor level, and projecting at each end of the building as a varied composition of solid and void. All the courts link in to a glazed atrium, a space open to the general public space (Fig. 5).

To date the building has collected no fewer than 25 awards including a number for sustainability in use.

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#### **4. Halley VI Research Station, Antarctic**

The final project is an example of the system operating at its best – generating imaginative and technically advanced responses to an incredibly challenging brief. It was promoted by the British Antarctic Survey (BAS) for the design of a new facility to house its research team.

The site is located on the Brunt Ice Shelf, just 1,400 kilometres from the South Pole. The ice shelf moves 400m a

year and snow levels rise every year. Four previous research stations had disappeared under the shifting ice. Halley V was mounted on adjustable 'legs' so that it could adapt to the changing levels of snow but scientists warned that the shelf on which it stood could break away at any point.

In 2004, BAS held a symposium at the RIBA Headquarters in order to launch an international competition for the design and construction of Halley Research Station number six. The aim in promoting a competition was to raise the profile of Antarctic Science and at the same time provide living conditions that would attract new scientists to the project.

Finding a solution to the problem of changing ground and disappearing sites was just one part of the brief. The other technical challenges were huge. On the Brunt Ice Shelf temperatures drop to -56C and winds can run at 160 kilometres an hour. Access by ship and plane is limited to a three month window. Materials and components required to construct the new base had to be delivered during this brief summer period.

The competition attracted Architect and Engineering teams from around the world. From an initial short-list of six, the jury selected three designs. The teams responsible were taken on a site visit before being asked to develop their ideas further. Faber Maunsell and Hugh Broughton Architects were selected to do the work.

Their design consists of a series of linked modules on stilts that can be raised with far less effort than Halley V, allowing more of the team brought to the Antarctic to carry out scientific rather than maintenance work. The modules are also mounted on skis so that they can easily be pulled to a new location.

Modules are brightly coloured – strong blue for the science and sleeping quarters, and a vivid red for the largest, central module, which forms the base's social hub providing much improved facilities for the team during the long, dark winter months (Fig.6).

After considering the various options, the decision was taken to use GRP for the cladding panels, pushing the technology – more commonly used in aircraft or train construction – to its limits.

The construction process took four years with the building operational from February 2012 and officially opened in February 2013. To quote the promoter "The competition was an overwhelming success and exceeded all our expectations."

*Figure 6. Halley VI British Antarctic Research Station: the modules. Client: British Antarctic Survey. Architects: Hugh Broughton Architects. Engineers: AECOM . Contractor: Galliford Try. Photo ©Antony Dubber*



## ENDNOTES

- 1 Butterworth-Heinemann 1996. ISBN 0 7506 2493 0.
- 2 Cees W de Jong and Eric Mattie published by Taschen GmbH 1994.  
ISBN 10 3822889296
- 3 Building Ladders of Opportunity, How reforming construction procurement can drive growth in the UK economy. RIBA 2012

The image shows a close-up, low-angle view of a modern architectural ceiling. The ceiling is composed of large, curved panels with a fine, ribbed texture. Numerous circular recessed lights are embedded in the ceiling, creating a grid-like pattern of light. The lighting is warm and even, highlighting the geometric forms and textures of the ceiling. The overall aesthetic is clean, minimalist, and futuristic.

# ARCHITECTURAL COMPETITION



# QUALITY IN ARCHITECTURE – LEARNING FORM HISTORY, PRACTICE AND COMPETITIONS

**Magnus Rönn**, Associate Professor  
School of Architecture and the Built Environment  
Royal Institute of Technology Stockholm  
Sweden  
[magnus.ronn@arch.kth.se](mailto:magnus.ronn@arch.kth.se)

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## Abstract

The overall aim of this article is to clarify the concept of quality in architecture and urban design by investigating history and practice. Quality in design is connected to a set of values. The fact that the perception of quality connotes values, varies with time and is different among individuals does not free professional judges from taking a stand on essential quality questions. Therefore quality in architecture and urban design appears to be a fundamentally arguable concept that is subject to a wide range of interpretations. The hypothesis is that

quality should be understood as an open and debatable key concept resulting in disagreement and discussion. History and professional practice in competitions support this idea. New cases of quality arise continuously in architecture and urban design. The concept itself is value-laden and quality is interpreted with support of value charged criteria. Quality is something positive which meets with public approval. This type of knowledge is obtained by having good examples and interesting cases pointed out. The target is high quality. A

special historical understanding is needed to reach this goal. The concept of quality even reflects the holistic approach of the architectural profession to design projects. The built environment is of public interest. Thus there are different interpretations of the meaning of the concept quality, its scope and status.

### Keywords

Architectural quality

Architecture

Design

Judgment

Essentially contested concept

## 1. INTRODUCTION

‘Objective elements shouldn’t be relied on initially. Instead ‘go for quality first’ he said and meant that quality judgments were preferable’ (Hemlin et al., 1990, p 59). That statement made by an expert when appointing a professor of architecture in Sweden hits the nail on the head: what is quality in architecture and urban design? What do architects mean when they talk about quality? How do professionals understand

architectural quality?

In this paper I will discuss and clarify the concept of quality. The purpose is to demonstrate and explain how the questions of quality in architecture and urban design can be understood from a Scandinavian point of view. However, I hope the discussion is of general important for understanding quality as a key concept in design. Architecture is a field of knowledge embedded with values. Quality represents something good, a well-designed object. But what does it mean? The theory is that architectural quality as a key concept is basically disputable; this shows up in the design and appraisal of architecture and urban design projects as well as when the built environment is evaluated. Architectural competitions is a typical expempel of this understanding of quality expressed both in briefs, design proposals and jury reports.

How do you judge architectural quality? Which attributes in the build environment capture your discerning eye? Are your impressions of quality formed by practical reasons, rational considerations or emotional experiences? The Swedish National Encyclopaedia gives several different examples of this concept, which can be used as a starting point for the discussion. Quality can, firstly, be understood as a set of good attributes. Object O can be described as attractive: “O is of good quality”, “O has several good characteristics” or “O



Figure 1. Entrance to People's Park in Linköping, Sweden.  
Photo by Magnus Rönn, 2013.

has a high and even quality". Quality may also have negative implications: "O is of poor quality" or "O unfortunately has many shortcomings". A comparison may reveal that object O 1 is worth more than object O 2. These examples have in common that quality is a concept related to evaluation that can be open or hidden in a message. Quality is a trait that

either is good, bad or missing. In this case we want to be able to judge the worth of products and services.

Secondly, quality can be related to personal capacities, knowledge or inner characteristics of specific individuals. A person P may be described as being quality-conscious or well informed about quality questions. Examples of such descriptions are "P is an expert", "P is an excellent artistic leader", "P is a skilled architect with exceptional feelings for using concrete material" or "P is an exciting architect who has been winning several international design competitions." Quality in this sense has an evaluation aspect. It is a sign of competence based on an ability to judge aesthetic dimensions. Good judgment in quality questions results in confidence, personal and professional knowledge.

Thirdly, quality in a project can be understood as a specific relationship to a place and a function. It is typical for architecture and urban design. In this case quality is attributed to projects that represent a whole and fit into a unique context. This perspective is found in architectural policy programs in Europe. The Danish Architecture policy, *A Nation of Architecture Denmark*, from 2007 is an illustrative example. According to the policy program, there is a "widespread agreement that architectural quality is experienced when form, function and building techniques are brought together and implemented in

a complete, artistic idea. Architecture of a high quality relates to the surroundings as a co-player or as a challenger. The architecture stresses, strengthens and interprets the cultural character and uniqueness of the surroundings.” (p 9). From this point of view, there are no general answers to architectural quality issues. Places always have unique characteristics. For this reason, quality must be design based on the understanding of the existing architectural qualities of the plot, surrounding buildings and the location.



Figure 2. Sales of homes in the People’s Park, Linköping, Sweden. Photo by Magnus Rönn, 2013.



Figure 3. Award-winning wooden-house in Stockholm, Sweden, designed by Brunnberg & Forshed architect office. Photo by Magnus Rönn, 2011.

Fourthly, quality can refer to a certain type of material or technological production of a product. Perhaps a customer want to know how the quality was determined, what material was used or which performances the technical solutions should meet. The answer from the salesperson, supplier and manufacturer could very well be “Product P is a quality product which has received quality award Q” or “Service S can satisfy customer C.” That means that P and S has been approved after testing according to a number of quality requirements. We get a quality concept that is specified with the help of measurable parameters. The point of departure is the idea of quality as

something which can be assured by specific procedures; quality work, quality controls and quality management. Right quality is defined as zero defects and satisfying needs in the market. But it is not enough just to deliver the ordered products to generate a positive experience of quality. More is required if you want *good quality*. The design has to be connected to positive experiences and seen as valuable in the environment. Instead of looking for defects in products the design phase becomes a strategic in the production process. This is one reason for the interest in organizing architectural competitions.

The four statements link architectural quality to values, knowledge, places and quality assurance procedures. Quality is therefore understood from different perspectives in architecture and urban design. At the same time there is a common objective saying that architecture should be both enjoyed, suit its purpose and fit on the site. Since architecture has use as its fundamental goal the subject combines artistic ambitions and intentions with requirements for functions, design methods, material, economic solutions and sustainability. The concept has both aesthetic and technical dimensions. The quality concept may be compared with soap in the bath water. When we try to establish what architectural quality is, clarity slips between our fingers. Good solutions to design problems are visible, can be experienced and can be pointed out. But they

are very hard to grasp in precise words. The transformation of quality into the text stands out as problematic. There is something that escapes, is ambiguous, in the phenomenon and usage of the concept. Fault free and correctly dimensioned plans do not guarantee that a structure results in a positive quality experience. A well proofread manuscript free of typographical errors does not necessarily communicate an interesting message to the reader. Quality has to be more than zero defects. Absent friends do not promote good feelings. We need a generator. There must be an enhanced value for the object, an addition to the environment that communicates a feeling of quality to the user and the professional practice. This points back to the very heart of the concept of quality in architecture and urban design.



*Figure 4. Summerhouse in Skåne, Sweden, by architect Arne Jacobsen. Photo by Magnus Rönn, 2010.*

## 2. LOOKING BACK

The discussion of relationship between objective characteristics and subjective experiences are very old. We have to return to the Greek philosophers in order to find the background to the aesthetic dimensions and understand how the quality concept has developed. Democritus (460–371 BCE) tried to define the concept of quality by considering the natural state of an object in relation to man's perception of that object. He considered the characteristics naturally inherent in an object to be its objective qualities. Such is the case with weight, size and density. Taste, smell and colour, on the other hand, were considered by Democritus to be subjective qualities, which the object is accorded as a result of the human perception process. This view of quality as a mixture of "hard" objective characteristics and "soft" subjective feelings is now a part of everyday language and be seen in jury reports from competitions.

David Hume (1611–1676) and John Locke (1632–1704) divided quality into primary and secondary qualities based on Democritus' theories. Primary qualities are inherent in the object regardless of people. Secondary qualities are perceived. Locke (1983) uses a snowball to demonstrate the two-sided nature of quality. The snowball is able to evoke the sensation of a white, cold, round object in the eyes of the beholder.

This hypothesis demonstrates the primary qualities as an objective basis for the valued experience of the snowball or its secondary qualities. The key here lies in the criticism of the idea that aesthetic qualities are subjective, created in the eye of the beholder (Fink, 2002). Thus architecture projects can produce reviews, based on its design, which has a high degree of credibility.

Understanding quality as a combination of hard objective characteristics and soft subjective sensory impressions is based on a long philosophical tradition. The discussion has focused both on the object and on what basis people can express themselves about quality issues in a reliable way. The answer to the hard qualities has been sought in measurable factors. Quality is a requirement that should be defined, specified, controlled and implemented. Soft qualities are the effects that appear via subjective sensations and the values that objects are ascribed. Such quality judgments describe the object as well or poorly made. The aim of this approach is to attain high quality. Something good and attractive should be produced. Good solutions are seen as a goal worth striving for. Hume (1962) points out that quality has an experience value which can be determined and it is our subjective ability for evaluation – sharpened through education and practice – that makes it possible for us to say what is good or bad

about various accomplishments. This is also the case when there is dissent among competent judges in architectural competitions.

Practising architects need to interpret the signs of quality in objects. Quality in architecture and urban design is inseparably linked to an evaluating relationship to the project, building, and environment which should be assessed. It is impossible to point out a winning proposal in architectural competitions without ranking their quality. The fact that judgments can change over time and differ among individuals doesn't free members of the jury from forming opinions about quality questions. High quality is the recognition of something as good or well made. Poor quality represents a degree of rejection or failure. The lack of quality in such cases is noted by judges and their assessments are lowered.

Plato (427–347 BCE) raises the conflict between celestial values and worldly desires. In the Phaedrus dialogue Plato tells of a team of horses drawing life's chariot through the heavens. It is a team of two horses. On the one side is a white horse, a sensible and rational horse following the laws of logic. The white horse is "straight, with a high neck and finely-arched nose...devoted to honour, self-control and modesty, a companion of true opinion not in need of the whip, guided only by command" (Plato, 2001, p 343). On the other side runs

the black horse. Crooked, poorly built, short-necked, snub-nosed with bloodshot eyes, boastful and hardly obedient to the whip. The black horse represents feeling, an incalculable horse with a soul difficult to tame. Plato portrays the black horse – symbol of suffering and fantasy – as ugly, unwieldy and false. The white horse is hindered in its course. Art is demoted.

The horses pull in opposite directions all the time, one willing, beautiful and fast. The other riddled with faults. The image has become a myth, a poetical vision for posterity. According to Plato only in the realm of ideas do objects appear in their complete form. Here lies the foundation for architectural quality as a timeless value. It is a concept that is still valid among architects. For Plato ideas were eternal. They existed because of divine will. Plato viewed the world around us, the phenomenon world, as an unreliable mirror image of the idea world. Reality is the shadow of the idea world. Here art at best is a copy of the idea world. This suspicion of the subjective side of art returns in a pendulous motion throughout history. Feelings are set against common sense, spontaneity against rules, renewal against tradition, and functionality against aesthetic dimensions. The world is divided between classical ideals and romantic representations that are reflected in our position on basic quality questions.



Contrary to Plato, Aristotle (384–322 BCE) did not conceive of art as a deceptive phenomenon. Instead, Aristotle thought knowledge should be sought through the study of things and the human experience of them. Arts' aesthetic structure is described in *Poetics*. Aristotle's hypothesis is that poetry as an art consists in works portraying events in the real world. He takes an objective stand. Through systematic observation it is possible to arrive at specific signs of quality. The measure of poetry's quality is its capacity to set the audiences' senses in motion. For Aristotle the goal of tragedy is to arouse fear and compassion in the theatre audience: "compassion fills someone who has undeservedly experienced an accident; fear is aroused in normal people like us when they experience adversity" (Aristotle, 1994, p 41). According to Aristotle these effects are attained through the goodness of the characters, their adaptation to the role, the character's conformity with nature and consistent performance. Artistic quality is a question of a) poetry's form, b) the actors' performance and c) the audience's experience. The question is then: what is quality, how is quality *created*, and what is the *point of departure* for judging quality.

Using Aristotle as an inspiration, architectural quality may be sought in the process from the fundamental idea to the completed structure. According to Aristotle, the goal is to

identify quality that can be created, implemented, judged and experienced from different perspectives. Quality assessment in the design phase during competitions is based on representations; sketches, plans, scale models, and graphic illustrations. The jury is searching for the overall best solution to design problems in the brief.

Testing of the structure "in situ" takes place after the design has been transformed into a built environment. Then quality is a question of the experiences evoked by the architectural project and how the building – after completion – affects our senses and needs. When judging the quality a decisive element is the extent to which the environment fulfils the anticipated positive experiences for the users, visitors, proprietors and administrators. This assumes that the form of expression results in the intended impression, a foreseeable whole general impression. "In situ" quality judgments are part of the changing process of society. We continually get new viewpoints about what are good, desirable and suitable quality goals for our undertakings. The market makes us especially aware of the profitable trends in architecture and town building.

Professional quality assurance is attained in three phases; one defining quality, one attaining quality and one supervising quality work. The quality experience is left to the market. Two researchers who have greatly influenced the development of

the quality technique in trade and industry are the Americans Joseph M. Juran (1904–2008) and Willian Edwards Deming (1900–1993), both of whom emphasized the important role management plays in successful quality work. Another important researcher is Philip Crosby (1926–2001) who introduced the concept of zero defects. Zero defects is defined as the *right quality*. But zero defects is not enough to generate a positive experience of quality in architecture. More is required if you want a product with *good quality*. Fault free and correctly dimensioned plans do not guarantee that a structure results in a positive quality experience. A well-proofread manuscript free of typographical errors does not necessarily communicate an interesting message to the reader. There must be an enhanced value for the object, an addition to the environment that communicates a feeling of quality to the user. Quality in architecture and urban design needs a primary generator (Drake, 1979).

At the end of the 1970s Crosby was instrumental in extending the quality concept to the entire production chain. Stressing management's role in securing/assuring successful quality work in industry is generally referred to as TQM, or total quality management. Emphasis is on the early stages of models *before* manufacturing. Instead of looking for defects in products the design phase is seen as a strategic phase in the

production process (Moss, 1996). The transition from minimizing defects to maximizing quality is a way of identifying good characteristics and stresses design as the foundation for future quality experiences.

Satisfying a customer's requirements and meeting their expectations is an ever-growing goal for quality work in industry and trade. Quality has become a means of competing on the market. Quality is linked to communication; traits, values and experiences acquired through policies and markets. These require suppliers who can make quality visible and relate quality in an understandable way to customers and the general public; this again brings up the importance of design and aesthetics as key aspects of quality work.

## Key ideas

This paper is about how we can understand quality as a key-concept in architecture and urban design in a fruitful way. The methods are close reading of documents, conceptual analysis and re-use of interviews carried out 2005–2007 in a study on architectural competitions in the Nordic countries. 18 experienced jury members, architects and urban planners, from Finland, Norway, Denmark and Sweden were interviewed



*Figure 5 Restored houses for the dean at the Bauhaus school in Dessau, originally built in 1933 and damaged by the Second World War. Photo: Magnus Rönn, 2010.*

in a Nordic study (Rönn, 2011). The theoretical framework for the investigation consists of Gallie's idea of "essentially contested concepts", which he published in 1956 in *The Proceedings of the Aristotelian Society* and in 1964 in the book *Philosophy and the Historical Understanding*. Gallie provides a tool for the analyses of quality and how this concept is used in the building sector.

My reason for re-using interviews and documents in the investigation is the belief that praxis reveals how professional practitioners speak, think and act in quality issues. I think the interviews reflect a stable and deep understanding of excellence among practicing architects. In architectural and urban design quality concepts are communicated through drawings, sketches, illustrations, photomontages, plans, and descriptive

texts. Quality is a dynamic concept, changing as new models are introduced, established and scrutinized. There are also many answers to the question of quality in architecture and urban design. But even if quality is difficult to grasp, there are a number of fundamental criteria from which to start. These criteria are about how design ideas are expressed and how they influence the public, users, clients or citizens. Architects and urban planners use criteria to identify, interpret experience, understand and judge signs of quality in the design field. Prize-winning architecture and urban design are all based on this fundamental assumption. The premises is that quality is a concept which can be judged in society; there are undertakings, structures and environments created to be attractive, arouse interest and be of value in some way.

Throughout Western history, starting with philosophers in ancient Greece, quality is perceived as a conflict between an objective and a subjective position; as a relationship between objects and how we perceive them through our senses. The objective position can be seen as speaking of qualities and means an impartial judgment devoid of self-interest. But that is not the same as saying that quality is found in the objects and their designs. The demand for objectivity only means that the quality assessment shall be based on facts and good reasons and without bias. Objectivity in this case is an expression of honesty and the pursuit of truth on behalf of the judge. It should also be possible to control objective quality assessment in an acceptable way. But objectivity is not something that is either present or missing in an assessment; it is a scientific standard. It is a norm met to varying degrees when discussing quality in artistic undertakings, architectural works and designed environments.

A subjective position need not be problematic as long as the departure point is a personal meeting. Credibility in such quality assessments can be sought with the person who passes judgment and how it is justified. The subjective position is an aesthetic choice and is justified through learning and knowledge. The more educated the assessor is the more credibility is given to the subjective quality experiences. Stuart and

Hubert Dreyfus Hubert (1986) have proposed a influential model for learning showing the development of skills starting with beginner and ending as expertise knowledge. We trust the assessments of well-educated and experienced persons with good judgment. Quality as an experience requires an individual encounter with the undertakings and works; that a relationship is established which influences people. There are even some collective traits in people's quality experience related to their cultural backgrounds and professional practice.

Thus far linguistic usage doesn't present any great difficulties. Architectural quality is about distinguishing, describing, interpreting, understanding and explaining to the people around you what is good, better or poor in undertakings and structures. It sounds like a reasonable programme. The problem arises when we want to deepen the discussion in order to understand quality as a key-concept. Then the answer is no longer so obvious. To identify quality in product design, architecture and urban design in a meaningful way we need to choose a point of departure for the questions, a theoretical framework for the investigation. However, we can start in practice and study how designers, architects and urban planners express quality. Which qualities can be demonstrated in artistic undertakings, architectural works and built environments? How are qualities transformed to credible assessments? To

what extent may we trust evaluations and quality judgments? These crucial questions force us back to the starting point: how can quality be understood in architecture and urban design in a meaningful way?



Figure 6. Classrooms and labs at the Bauhaus school in Dessau, built in 1933. Photo by Magnus Rönn, 2010.

### 3. AN ESSENTIALLY CONTESTED KEY CONCEPT

Architectural quality appears to be a basically contestable key concept with a wide range of interpretations in architecture

and urban design. These thoughts were launched by Walter Bryce Gallie (1956) and later by Alan Janik (1991). Gallie was a British social theorist, political theorist and philosopher. He was a professor at three different universities. More important, he offers a starting point for the discussion, a theoretical framework that gives meaning to quality conflicts in the building sector. It was Gallie who first coined the expression “essentially contested concepts”. This is a concept that leads to endless disputes about the correct meaning of the notion. Linguistic usage has both aggressive and defensive traits. Such is the case with debates about art, democracy and championship. Gallie uses championship as an enlightening example. In the world of sports, championship is considered to be something appreciated and valuable, a winning concept. The concept changes meaning according to the circumstances. Championship is not only about being best on the field. A champion should also fight well and win the public’s heart.

Gallie’s description of an essentially contested concept fits quality well. In architecture and urban design, quality appears as a contested concept. The building sector is composed of professionals with different opinions about what quality is and how the concept should be understood. Architects use three types of rhetoric when describing quality: an offensive (aggressive) usage that attempts to create interpretation

advantages. Architects usually claim they are best at designing and judging quality in architecture and the built environment. There is a defensive rhetoric. Architectural quality in society is seen as an overall intention, which the profession guards by means of general language. The defenders try to coordinate the different interested parties with a common ambition. High quality is the requirement. The rhetoric is also used to disarm potential opponents. This is the third type. Few would like to deny the need for a good built environment. It is the positive value implications in the concept that give quality its unifying function. Thus, for example, architectural quality has been used as a common goal for the Danish architectural policy programme (Nygaard, 2006).

When architectural quality is considered as an essentially contested concept eight rhetorical functions appear. These signs are evident in linguistic usage, both in the interpretation of design projects, in a firm's internal policy document and in the European architectural policy programme, which can be found on the homepage of the *European Forum for Architectural Policies* ([www.efap-fepa.eu/indexb.php?lg=en](http://www.efap-fepa.eu/indexb.php?lg=en)). A close study of policy programs – especially from Denmark, Norway, Finland and Sweden – shows how quality is understood in this context. Here I would like to point out eight specific functions connected to quality as a key concept with support

of Gallie. From this perspective quality in architecture and urban design can be understood as an open concept promoting debates on values and identified by design criteria. The concept represents a whole, a special kind of learning and use of history, which express power in both the practice and the build environment.

### **An open concept**

1) Architectural quality is an *open concept* built on knowledge. To know what architectural quality is means that one can recognize, explain and account for illustrative examples. Knowledge about quality is obtained through education, professional practice and research. New examples of quality arise continuously in architecture and urban design. Changes create the need for revising, reinterpreting and specifying the contents of the quality concept. There is no final definition of what characterizes good solutions for design problems in architecture and urban design. The concept becomes meaningful through continuous dialogue. Communication is a prerequisite for architectural quality to continue to be a knowledge-based key concept, both for the profession and societal debate.

Architectural quality as an open concept creates

uncertainty. In architectural competitions for example the jury must be able to read and interpret drawings, drafts, illustrations and scale models. The challenge lies in understanding the competition's task and the design problems. Qualities in the design solutions become wicked problems (Churchman, 1967, Rittel & Webber, 1973). Wicked problems cannot be solved by traditional analyses. It is impossible to objectively evaluate the solution as being right or wrong. Churchman (1967) describes wicked problems in a social planning context as ill-defined problems that have unique causes, nature and solutions.

Design as a professional practice is embedded with wicked problems. You cannot define and understand design problems out of their specific context. The solution and the problem are connected to each other in architecture and urban design. This point is demonstrated by Cross (1992) when he is quoting an architect who says: "I don't think you can design anything just by absorbing information and then hoping to synthesise it into a solution. What you need to know about the problem only becomes apparent as you're trying to solve it" (p 20). Typical for architecture and urban design is also that there are always many good solutions to the same design problem in briefs. One solution is, generally, never overwhelmingly better than another in architectural competitions. This is a wicked problem from

the jury's perspective. Since there are several good solutions to choose from, the jury's quality judgment will be marked by *insecurity*, a fundamental doubt that normally remains up until the final assessment. This uncertainty is typical among the jury members in architectural competitions where you have to find a winner and it is a consequence of quality as an open concept.



Figure 7 Glass facade for building including classrooms and labs at the Bauhaus school in Dessau, built in 1933. Photo by Magnus Rönn, 2010.

## Promoting debates

2) Architectural quality is a concept that *promotes debate*. There are basic discrepancies in the different views of quality. The concept is controversial. Disagreement is a driving force. New design ideas can constantly be seen in the architecture, not only in international competitions. The breadth of the linguistic usage reflects the different attitudes toward what quality is in contemporary design, how quality work should be carried out and how quality goals should be expressed in architectural and urban design. At the bottom of the disagreement lies the desire to steer the agenda in order to acquire interpretation seniority, status in society and assignments. Architects maintain that they are best qualified to judge architectural quality thanks to their education and professional experience. Since there is no single way to solve conceptual differences the debate can continue forever. At the same time there is a need for common understanding within the professional building sector. Building is a collective process accomplished by many professional groups. Contradictions has to be bridged. Shortcomings in quality must be avoided during all phases. With this in mind a debate about quality is used to clarify the concept and help define appropriate criteria for the design and assessment of projects.

In the building sector the discussion on quality has an *aesthetic dimension* and a *technical dimension*. This is a typical foundation for disagreements between architects and engineers at construction companies, at least in Nordic countries. The aesthetic dimension of quality in architecture and urban design is a question of experience and evaluation. The technical dimension of quality concerns traits in products that can be controlled during the production process. These two aspects are very difficult to unite in a quality concept. There is disagreement as to what architectural quality *is*, how appealing environments can be *created*, and how they should be *assessed*. I think we have to accept the fact that there are different ways to understand the concept of quality. They represent different kinds of knowledge. Both the aesthetic dimension and a technical dimension are therefore legitimate in architectural design and construction. Based on this insight we should build “conceptual bridges” to ensure better understanding between the key players in the building sector.

The aesthetic dimension dominated the debate in Denmark during the 1990s. The architectural community launched architectural quality as an offensive and future-oriented solution to the problem of quality shortcomings in building (Nygaard, 2006; Christofersen, 2007). Architectural quality was a goal that had a significant impact thanks to its





Figure 8. Classrooms and labs at the Bauhaus school in Dessau, built in 1933. Photo by Magnus Rönn, 2010.



Figure 9. Wall mounted radiator 1933 at Bauhaus school in Dessau. Photo by Magnus Rönn,

positive force and ability to define a common direction for architectural policy. The aesthetic dimension in the concept received status and was included in the policy programmes in Denmark (1994 in *Danish Architecture*, in *Architecture 1996* and 2007 in *Nation of Architecture Denmark*). In Swedish discourse shortcomings in building were seen primarily as technical problems. It was expected that promoters and building firms provide the solutions. In 1994, requirements for

quality responsibility were incorporated into the planning and building laws. Shortcomings in quality were redressed through measurable requirements, internal controls, and certificates. The reforms stemmed from a technically oriented concept. The aesthetic aspects of the quality concept were highlighted later on in the Swedish debate. That was in 1997 when the government proposed a national policy for architecture and design called *Forms for the future* (Framtidsformer).

## Charged with values

3) Architectural quality is a *concept charged with values*. “This is quality” is a judgment expressed in a complimentary way. The concept infers valuation. Quality is seen as something basically positive, even if often expressed in terms of good/bad and beautiful/unattractive. Such values express either approval or dislike. Quality is then bound to values, which in a decisive way stray from the normalized quality concept incorporated into the ISO 9000 (standard). Quality in this technical perspective is seen as general characteristics, function and performance. They are characteristics that can be measured, guaranteed and controlled (Nashed, 2005; Nelson, 2006). The record is the proof of quality. This is regarded as evidence for how a proposal meets the specifications. The strategy is fault minimization. In this perspective quality is an operative concept used for controlling, defining and measuring qualities in terms of right and wrong. The difference in viewpoint may be described as the *right quality* and *good quality*. They represent two diametrically opposed ways of relating to the quality concept in the building sector. The right quality means zero defects. Requirements have been implemented. The delivery corresponds to the quality specifications. A product of good quality is accredited with positive worth and has

a certain number of desirable characteristics for someone or something. Good quality assumes that the delivered product is experienced as attractive or appealing.

## Value-charged design criteria

4) Architectural quality is a concept that is interpreted with the help of *value-charged design criteria*. Architecture is judged from criteria. They include opinions, values, ideals and impressions of desirable characteristics. Thus a architectural project may be evaluated externally using quality design criteria based on requirements for suitability to the surroundings, natural materials and a design that spreads joy to the users and visitors. According to Birgit Cold (1989), former professor at the Department of Architecture at the Norwegian University of Science and Technology, quality is usually ascribed to beautiful buildings with well thought through functions. That is an example of value-charged criteria describing an architectural attitude that includes values such as wholeness, durability, adjustment to the surroundings, genuineness, aesthetic honesty, beauty, readability, usefulness and professionalism. News-worthiness and originality are criteria that encourage renewal of traditions and overstepping conventions

and experience-based professional guidelines.

Another type of value-charged design criteria was found in a Nordic study of architectural competitions at the School of Architecture and the Built Environment in Stockholm 2005–2008. The evaluation criteria in briefs were examined during 1999–2000 (Rönn, 2010). These criteria vary from competition to competition. But there was also a stable pattern, a number of fundamental design criteria, which appeared time and again in competitions and influenced the jury's quality judgment on a deeper level. All competition entries, in principle, were judged by these design criteria even if they were not specifically outlined in the competition programme and combined with demands or objectives depending on the specific task in the competition brief. The following eight fundamental design criteria were found in almost every brief and jury statement: (a) *Wholeness and fundamental idea*; is there a powerful design idea in the project? (b) *Coherence and surroundings*; how do the proposals fit the site? (c) *Entrance position*; how has the competitor solved the entry into the area, site and buildings? (d) *Suitability and functional set up*; how has the competitor solved the spatial organization in relation to the planned activities? (e) *Economical and technical solutions*; How is the proposal technically produced? (f) *Development possibilities*. To what extent can the proposal be

further developed? These design criteria are part of an assessment based on dialogue and have two principal functions. They tell the jury members *what* is important to judge and *how* to proceed. The first step is to direct the juror's attention. This is the "what". The second step is a question and represents the "how". The jury acquires knowledge by posing questions about the proposal. Quality in architecture and urban design is revealed by these design criteria, representing professional ideas about good design.

## Learning form

5) Architectural quality is part of a *learning form* related to design and critical review. Knowledge is developed and expressed by design and the assessment of solutions. This evaluation of architecture and urban design is not true or false. Architectural values cannot be controlled as being scientifically right or wrong. There is simply no empirical support for such conclusions. On the other hand, it is of course possible to formulate well-founded and plausible judgments about what is good for some (designers, clients, end-users) in a specific context. This is what the jury members do in architectural competitions when they select a single winner after examining

the best design solutions. Competent assessors, with broad experience from similar cases, may examine quality in terms of goal fulfilment, efficiency, usefulness, technology, artistry and economy. The purpose is not to portray reality but to develop models, concepts and criteria to facilitate the two main aspects of quality work: design and assessment by architectural criticism. Quality is visualized and identified by seeing, comparing and interpreting. It is learning based on designated good examples, instructive cases, architectural reviews, critique and reflections about ideal solutions to design problems. Juries for architectural competitions use scale models in their final assessments when choosing a contest winner. Scale models are made of the best entries. These enable the jury to see with their own eyes how the design solutions will suit the site. Such models also enable the jury to pose clear quality questions to the participants. It's learning by seeing quality rather than by looking at drawings and illustrations. The qualified eye becomes crucial for judging design proposals.

## The whole

6) Architectural quality is the combination of elements that form *a whole*. This is fundamental for the assessment of

projects, especially in early stages, such as in architectural competitions. Quality in architecture and urban design is seen as a *holistic idea* among professionals. Here quality is viewed upon as an overlapping summary: a composite entity of aesthetic dimensions and technical aspects along with requirements for economy, environmental friendliness and social conditions. According to this view it is a combination of aesthetics, technology, economy and environment in a working entity that characterizes the quality concept in the field of design. It is typical for architectural practitioners in the Nordic countries. They understand the concept as a contradiction to the idea of quality as one of several limited aspects of design in architecture, urban design and town planning projects.

The idea of quality as an overlapping and composite entity is a consistent theme in the statement of the 1997 investigation *Architectural Quality* from The National Board of Housing, Building and Planning. The Swedish association for architect and engineering firms states that architectural quality should include aesthetic, functional, technical and social qualities as well as environmental and economical considerations. The Swedish Local Council Organization maintains that good architecture can be recognized by the successful blending of aesthetic, functional, economic and technical requirements. The County Government Board in Kalmar states that architectural

quality is a concept that has a wider scope than just aesthetic design. According to The County Government Board, architectural quality also includes the building's design with regard to function, material, building technology and adaptation to the surroundings. The same understanding of architectural quality as a combined weighting of aspects into a whole, can be found in the European architectural policy programme, as well as in Canada.

### **A specialized way of using history**

7) Architectural quality is part of a *specialized way of using history*. Architectural history produces models for both for understanding design problems and judging quality in architectural projects. Time does not move in only one direction. Architects are free to refer to timeless values in new assignments. There is a practical usefulness built into architectural history. Impressions of ageless values are characteristic of their times and solutions. Vitruvius, who was a Roman architect and builder, formulated a quality idea which is everlasting for the architectural profession. Vitruvius describes architecture as an indivisible combination of beauty (*venustas*), function (*utilitas*) and construction (*firmitas*). It is a 2000 year-old

tradition that is still flourishing, a canon to posterity that architects continuously refer to in their profession. The quality of architecture lies in the special way the unit is composed with regard to aesthetic form, function and construction. This is a professional, cultural and historically defined way of understanding quality in architecture and urban design (Rönn, 2009).

The historically influenced idea of quality has a practical point of departure. History is a useful subject. The history of architecture is a heritage of many instructive examples. They may be used as reference points for new assignments and inspiration for solutions to design problems. Even quality concepts typical for certain times such as classicism, national romanticism, functionalism, modernism, brutalism, postmodernism, deconstructionism, and new functionalism contain timeless elements in new settings. The everlasting in design is the result of proportions, volume, scale, sight-line, balance, harmony, rhythm and movement. The notion reflects architecture's Vitruvian relationship to fundamental quality questions. The relationships between forms, function, material and construction must be continuously worked on and critically examined.

## Interests and design power

8) Architectural quality is an idea linked to *interests* in society and *design power* in the building sector. Power is portrayed through architecture. Quality is produced by actors with different ideas about the notion's *content, scope and status*. A balance between private and public interests in planning and building laws is part of the balance of design power in society. This balance influences the reach and direction of quality work in architecture and urban design projects. Official statements about proposed changes in legislation are enlightening. Viewpoints concerning the 1997 investigation of architectural quality from The National Board of Housing, Building and Planning are informative. Several Swedish authorities, including the Gothenburg Town Planning Office, wanted to see the law changed so that roads, streets, bridges, town squares and public areas would be subject to architectural quality requirements. Those who oppose this viewpoint consider quality to be a private issue and would rather see the power of public authorities limited. This controversial question also touches upon the extent to which the concept of quality should include aesthetic, cultural-historical, technical, social, environmental and economical aspects.

In its statement Jönköping's County Administration



Figure 10. Residential buildings from the exhibition 1936 in Ystad, Sweden, on leisure. Architect, Erik Friberger. Photo by Magnus Rönn, 2010.

argues that it needs competence in architectural quality when granting building permissions and physical planning. The county administration means they need a city architect at the county level to coordinate the different interest groups in the planning process to reach comprehensive architectural solutions. The Swedish building owner's association on the other hand doesn't wish to see any changes in the law that would interfere with their right of disposition over their buildings. The crucial point is who should decide what architectural

quality is. On this matter the building owners association and the home owners association are very clear. The decision should lie with the private owner not the architectural organization, county town planning office or politically appointed persons. According to the National Homeowners' Association, building permission for the detail plan may never be undermined due to unpredictable, vague and poorly defined aesthetic requirements. The county should not be able to impose its aesthetic values on a home owner. Criticism of unpredictable requirements would be troublesome if architectural quality should include aesthetic and technical aspects as well as economical, social and environmental features in the design of the surroundings.

#### 4. DISCUSSION

From the descriptions it can be argued that the structure of the notion of quality is an “essentially contested concept”. Quality has a structure that leads to debate, differences and doubt. But to discuss the concept in a professional context as systematically as possible it is necessary to construct serious conceptions of what should or should not be considered quality in architecture and urban design. The life span and

stationary situation of a building makes it available as a public text-book on quality. The notion is also developed through discussion among stakeholders. Through historical retrospect you can learn about the quality ideas that were the focal point of debate during various periods and how architects used these models. Equally interesting is the study of quality questions in relation of solutions to design problems in architecture and urban design. This enables an analysis of vital ideas connected to the concept.

Architectural competitions produce knowledge about the future by design in a very early stage of the planning and building process. Professionals need well-founded recommendations describing how quality ideas should be understood and carried out in projects. However, not a formula with clear-cut criteria for what is “right” or “poor” design, but to find an *appropriate solution* to a design problem that fits on the site. The connection is very important because it gives meaning to the concept of quality. Architecture is an applied art. Architects and clients should both meet the end-users' needs for a well-designed space. The global goal is use *and* a future-oriented professional responsibility for quality in architecture and urban design. The assignment should result in surroundings utilized by people. Clarity and coherency in the design of architectural projects are aesthetic preconditions

for the future utilization of built environments. Therefore, I believe good solutions rely upon knowledge of the cultural setting where the project belongs.

The architect's task during the planning process is to give the project the characteristics, which upon completion – with application – generate well thought out values and experiences of architectural quality. The underlying idea is that already in the design stage, before production, the drawings and models enable you to predict future impressions. Scientific evidence can be found in the architectural competition by comparison winning design proposals and implemented projects as a built environment. The ability to design and assess architectural qualities that can be realized in projects and are evident when the consumer uses the building should be the core of professional competence. That is the fundamental challenge for education, professional practice and research in architecture and urban design. I hope that my investigation, demonstration and discussion of architectural quality as a key concept can contribute to this challenge. The concept has to communicate quality in architecture and urban design in a meaningful way in order to be useful in practice.

## ACKNOWLEDGEMENT

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# THE QUESTION OF STYLE AND THE SIGNIFICANCE OF THE UNIVERSITY OF HELSINKI

**Eija Merenmies**

Architect SAFA

Finland

[eija.merenmies@aepartners.fi](mailto:eija.merenmies@aepartners.fi)

**– The Competition for the Extension of the Main Building  
of Helsinki University in 1931**

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## ABSTRACT

Of many plans to extend the main building of the University of Helsinki, I have paid special attention to the architectural competition (1931) for the annex of the main building. This important competition crystallized the contrary views of functionalists and classicists.

The research question in this paper is how the main building (1832), by C. L. Engel, influenced the plans for the extension. This involves the issues of style, pastiche, and the

principles of building extensions. The research is a comparative qualitative case study.

The competition brief was criticized for having been influenced by the earlier designs. Many well-known architects such as J. S. Sirén, P. E. Blomstedt, Elsi Borg and Alvar Aalto submitted entries. Most of the 26 entries were classicistic and had a closed town block. The functionalistic entries preserved Engel's semi-open block structure. Both classicist and

functionalist competitors acknowledged the value of Engel's architecture. For the competition entries they transformed their styles towards a more conservative appearance.

The competition produced a lively debate. Some expressed fears that a functionalistic extension would diminish the prestige of Engel's building.

In 1934 Sirén received the commission for the extension. The decision makers of the University wanted the façades to replicate those of Engel's part, the extended building had to be one entirety. The massing came from Engel's Senate building. The extension conformed to Engel's architecture abundantly. The choice of Classicism had symbolic and political motivations.

### Keywords

University

Helsinki annex

Classicism of the 20's

Functionalism

Pastiche

Competition

## 1. INTRODUCTION

### Context of the Competition

The main building of the University of Helsinki could have looked very different to the one that we can observe today from Aleksanterinkatu (Fig 1). The entrance to Senate Square could, for example, have had a functionalistic extension with a small park in front of the old main building of the University, if another proposal had won in the competition for the annex. The competition was one of the most significant Finnish architectural competitions in the 1930's for three reasons. Firstly, the site is in the vicinity of the prestigious Senate Square. Secondly, it demonstrates the stylistic struggle between Functionalism and Classicism as well as for the relationship to Engel's

*Fig. 1. The extended Main Building of the University seen from Aleksanterinkatu towards the Senate Square in the year 2012. Photo ©Aarni Heiskanen, 2012.*



architecture and to the historic layout of Helsinki. Thirdly, most renowned architects of the time participated in the competition.

## Research Questions

The main research question in this paper is how the main building (1832), by C. L. Engel, influenced the extension proposals. This involves the issues of style, pastiche, and the principles of building extensions. The year of the competition, 1931, is in the period of the stylistic change from Traditionalism to Functionalism. The research tries to uncover the values that influenced the arrangement of the competition, the competition brief, the entries, the debate, and the commission.

## Methods

I have done extensive research on literature, minutes of Consistorium meetings and the building committee's minutes of Helsinki University, architectural magazines, press articles, photographs, and original drawings. My research is a case study for a comparison between competition proposals and

their response in the media. The research method is qualitative and comparative. My research includes scrutinizing the literary material, architectural analysis of drawings, comparing the entries with the other works of the architects, and comparative analysis of published architecture that was presumably known to the architects. Interviews with architects Nils Erik Wickberg, Arne Helander, Osmo Lappo and Heikki Siren, who knew competitors of the annex competition, have helped to find out important facts about entries. I have used perspective renderings to analyze closer how the annex proposals conformed to the original part.

Sub-questions of the architectural analysis of the extension proposals are:

1. How the volumes relate to the main building by Engel and to the Empire style townscape
2. What was the style of the designs, how they were influenced by Engel's section. How the proposal was different from the architect's characteristic style and what possible influences from other architects' work can be detected
3. What were the architectural characteristics of the design, and what spatial high points were present

4. How the competition brief, public debate or the advice of the building committee could have influenced the design.

Reaching the results of my research has required combining data from many types of material.

I have studied the context of the competition. For this purpose I have surveyed historic, political, economic, symbolic issues from literature, other research publications, archives, documentary films and interviews. There are some books and research on architectural competitions in Finland, but more research can be found about Scandinavian architectural competitions. They are valuable for gaining a larger picture of competitions in the 1920–1930's and for understanding the characteristics of competitions as a planning tool. For my research I have looked for two themes in the literature: the contrasting architectural principles and if the competitors have devised novel solutions for the design projects. These themes appear in many variations and the connection to competition brief and the criteria of the jury are often mentioned. In addition the research publications have demonstrated various types of research methods that can be applied in studying architectural competitions<sup>1</sup>.

## **2. BACKGROUND FOR THE SITUATION ON THE HELSINKI UNIVERSITY MAIN BUILDING LOT**

### **The Old Buildings of Helsinki University by C. L. Engel 1832–1834**

The main building of the University (1832) was designed by the esteemed German architect Carl Ludvig Engel. Plans to extend the main building of the University date back to the very first years of its existence.

The main building of the University is an important part of the architectural entity of the Senate Square of Helsinki (Fig. 2, Fig 3). In the 1830's, Finland was an autonomous part of Russia. With the splendid Senate Square, the Czar wanted to show to the Western nations how progressive and good governor he was to the Finns. The Square was enormous in proportion to the small Helsinki city. The Senate Square formed a refined rectangular space dominated by the Lutheran church. Flanking the square were nearly similar edifices: the Senate Building and the main building of the University. The Senate Square had all the significant institutions of the autonomous duchy, the square became gradually a symbol of



Fig. 2. The church dominating the Senate Square, the University is on the far left side, 1851. Lithograph by F. Liewendal 1851. Sources: the archives of Finland's National Board of Antiquities.



Fig. 3. The University, 1851. . Lithograph by F. Liewendal 1852. Source: the archives of Finland's National Board of Antiquities.

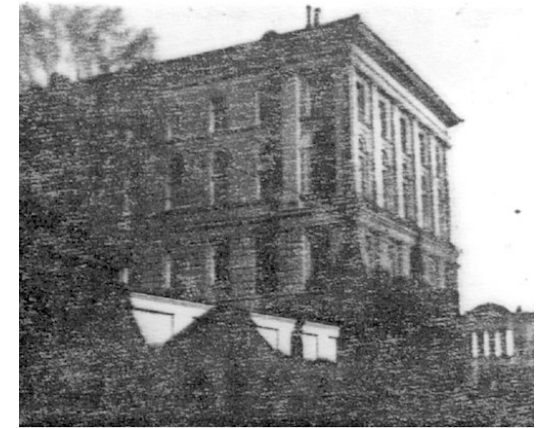


Fig. 4. View from Aleksanterinkatu towards the Senate Square before the extension. Photograph from P. E. Blomstedt's submission "ABC" for the extension of the Main Building, 1931. Sources: Helsinki University Museum.

Finland (Wickberg 1981, 16–23). The façade of the University building had columns of Ionian order, because the first academy was established in the ancient Greece (Pekkala-Koskela, 1989, 18)

The Russian Czar financed the construction of the University. It was pronounced that the purpose of the University was to produce civil servants that were humble and loyal to the Czar (Pöykkö, 1972; Klinge et al., 1989).

Most of the surroundings of the Senate Square were constituted of typical Empire style town blocks with characteristic semi-open structure. A distinctive feature on

the University lot was fire protection. The main building was protected by a fine rendered brick wall with gates, by the wide street, Aleksanterinkatu, by the open Senate Square and by the trees of the library lot. This all formed a varying rhythm of trees and buildings.

On the University lot, opposite the main building was a gymnastics building, drawn by Engel. It was replaced in 1896 by a larger gymnastics building, which had some features of the original by Engel. The paved courtyard was planted with some trees, and was called University Park (Fig. 4).



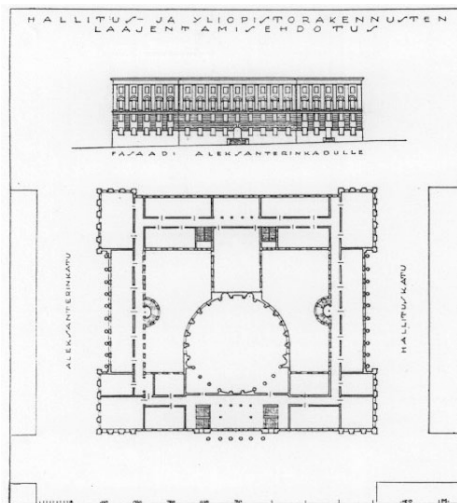
## EARLY PLANS FOR THE EXTENSION OF THE MAIN BUILDING OF THE UNIVERSITY

The University suffered from a shortage of space for a long time. From the early 1920's on the number of students increased significantly (Klinge et al., 1990; Knapas, 1990). Already from the 1880's onward separate institute buildings had been erected near the Senate Square. It was usual that in respect for the older edifices, especially Engel's, the new buildings had resemblance to the old ones, up to a point where all the

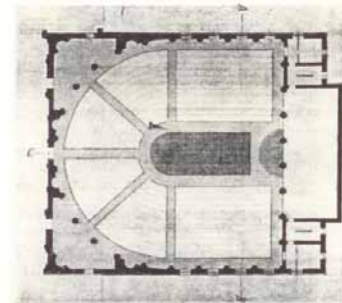
façades of a building could be different to match its neighbors (Lukkarinen, 1989). Extensions for the main building were planned, but more detailed plans were not drawn until 1919 by the architects' office Borg-Sirén-Åberg (Fig. 5). J. S. Sirén was the main architect for the plans (Merenmies, 1989).

In 1927 professor Armas Lindgren planned an extension for the great festival hall of the University Main Building (Fig. 6). He also drew a sketch of an extension to the entire main building.

The appointed architect of the University, Gunnar Stenius, made a combination of Sirén's and Lindgren's plans in 1928:



*Fig. 5. Plan for the extension of the Helsinki University Main Building 1919 by Borg-Sirén-Åberg (main architect: J. S. Sirén). Sources: Helsinki University Museum.*

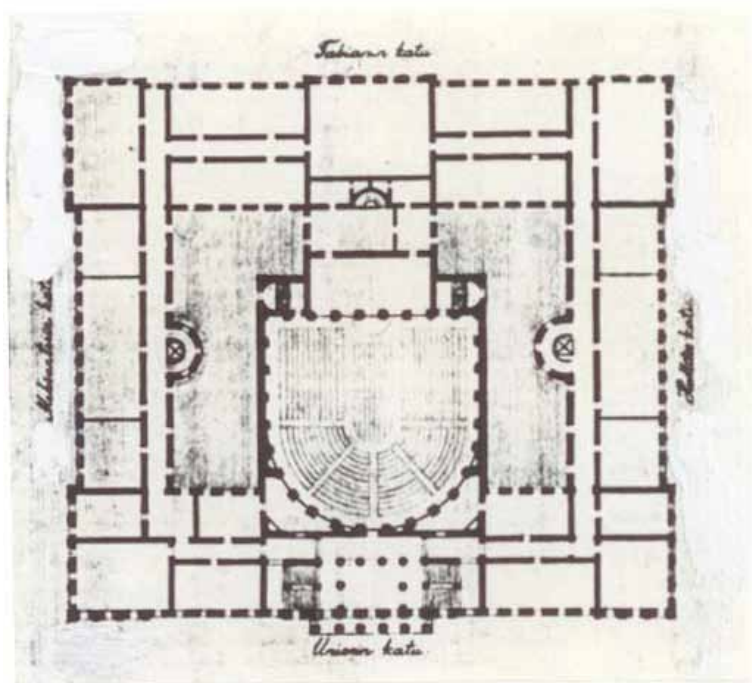


*Fig. 6. Armas Lindgren's plan for the extension of the University Main Building's festival hall, 1927. Sources: Helsinki University Museum.*



He used the floor plan of Sirén and the plan of the festival hall by Lindgren (Fig. 7) (Committee report No. 2/1920, Committee report No. 6/1928). He drew two more versions of this plan in 1929 and 1930. The drawings were mentioned in the Consistorium meetings 16.2.1927, 30.5.1928 and 24.9.1930.

Fig. 7. Gunnar Stenius' plan for the extension of the University Main Building 1928. Sources Helsinki University Museum.



### 3. THE COMPETITION

#### Special Characteristics of the Architectural Competition

The architectural competition (1931) for the extension of the Helsinki University main building was exceptional in many ways. First, in 1930, there were plans to build the extension of the main building according to Stenius' drawings, but this didn't happen. In 1931 the building committee of the University aimed to organize a competition on the façades of the main building extension, drawn by Stenius (Committee report No. 6/1928). The Executive Board of the Finnish Association of Architects discussed 13.1.1931 about the competition and sent representatives to meet the Rector of the University in order to request a competition for the whole extension of the main building. An open architectural competition was held in 1931. The jury of the competition had three members appointed by the University and two representing the Finnish Association of Architects (Arkkitehti 4/1931 supplement p. 24). The annex had been an important issue in the Consistorium meetings in the years 1927 – 1931.

The competition was organized because Engel's

architecture (Klinge et al., 1990) and the University had a special significance to the young republic of Finland. During the latter half of 1800's the University had educated many men who promoted the cultural heritage of Finns (Knapas & Kolbe 2010). After Finland became independent in 1917 the University helped in spreading education across Finland, and was one of the institutions that demonstrated that Finland was a civilized society (Klinge et al., 1990; Knapas & Kolbe 2010).

## The Competition Brief

A draft version of the competition brief, found in archives, instructed to use a closed block in the massing of the building (Minutes of the Consistorium meetings 24.9.1930, 13.3.1931). The required volume solution was similar to the one in Borg-Sirén-Åberg's or Stenius' annex designs. The final competition brief had fewer references to this requirement (Helsingin yliopiston rakennus- ja palkintolautakunnat 1931, 1, 2, 6).

The Finnish Association of Architects and the Finnish Architectural Review criticized the competition brief for having being influenced by the earlier, schematic designs (Minutes of the Executive Board of Finnish Association of Architects

11.6.1931.) Architects could ask questions about the brief from the competition committee via Finnish Architectural Review. One contestant asked if it could be acceptable to use another block structure than closed block. The committee accepted this provided all the rooms mentioned in the brief were included in the plan.<sup>2</sup> The brief had quite a detailed schedule of spaces. There were few requirements on the connections between the spaces. The most important connection was from the grand festival hall to the entrance hall by the Senate Square. This was necessary for the traditional academic processions between the church and the festival hall. The other connection mentioned was the supplementary own entrance from the street for the Chancellor of the University (Arkkitehti 12/1931). This reflects the high appreciation of the Chancellor and the estimation of the hierarchy of the University.

The Finnish Association of Architects criticized the idea to extend the festival hall or to use it as a foyer for the new large festival hall (Arkkitehti 6/1931 supplement p. 35).

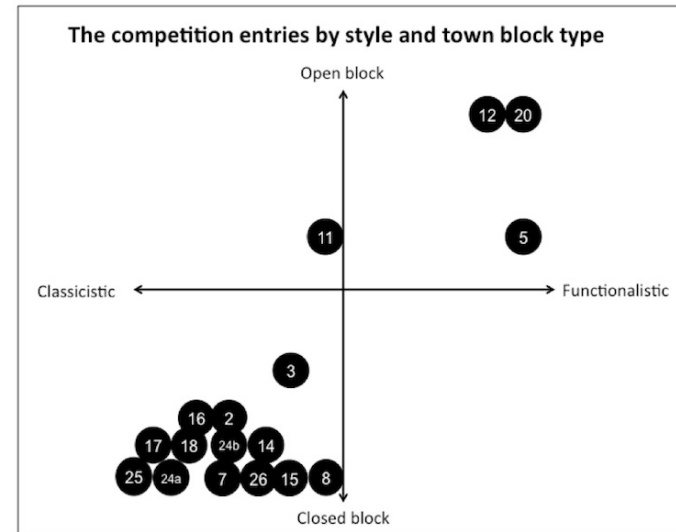
The central requirement of the design brief was to consider the old part of the main building as the stem building for the extension. The extension was to continue from the old part of the building (Helsingin Yliopiston rakennus- ja palkintolautakunnat 1931, 1, 2, 6; Arkkitehti 12/1931, 1/1932).

As for the solution for the block structure the competition program was less strict, but it could still be considered to limit the creativity of the competitors. On the other hand, the brief revealed what the University expected from the competition entries. The architects who followed the brief precisely, were the most successful in the competition. However, two of the three functionalist entries did relatively well, too: the 3rd prize and a purchase.

## The Competition Entries

The competition received 26 submissions, out of which 16 have enough material for an architectural analysis (Arkitekhti 12/1931, 1/1932; HS 26.11.1931; Hbl 26.11.1931, 27.11.1931). Surprisingly many, 14, real names behind the 26 pseudonyms are known. Many competitors didn't retrieve their entries from the University, probably because the decision on the commission took years to make. The original drawings are in Helsinki University Museum.

The early 1930's were a stylistically transitional period; alongside the Classicism of the 20's, Functionalism emerged. Classicism was still the dominant style. Only three of the 16 entries for the University main building annex competition



- Numbering of entries:  
 2. Eklund-Jääntti  
 3. "Helsingin yliopisto"  
 5. Aalto  
 7. Sirén  
 8. Borg  
 11. Enroth  
 12. Blomstedt  
 14. Löyskä-Paatelä  
 15. Jung-Jung  
 16. Lindén  
 17. Liljeqvist  
 18. Muroma-Borgsrtöm  
 20. Englund-Englund  
 24a. "In terminis"  
 24b. "In terminis"  
 25. "Largo"  
 26. Pernaja-Ypyä

Table 1. The competition entries by style and town block type. Most of the entries were classicistic with a closed block, only three entries were clearly functionalistic with semi-open block. Table by Eija Merenmies.

were clearly functionalistic. Thirteen entries were classicistic of various types, or pastiche Empire style. The functionalistic entries retained the semi-closed block structure. On one hand it suited the functionalistic principles, but on the other hand the open structure of the quarter was characteristic for Empire style as well. The classicist entries had usually a closed block. Even the pastiche entries, copying Engel's façades, had a closed quarter structure, which was characteristic for the Classicism of the 20's and which was even usual in the center

of Helsinki from the 1880's on (Table1).

No first prize was awarded. J. S. Sirén and the architects' bureau Jarl Eklund – Toivo Jäntti shared the second prize, both entries being classical in style. The third prize was awarded to Kaj and Dag Englund, whose entry was functionalistic in style, as was the entry of P. E. Blomstedt, which was purchased. Bertel Liljeqvist's classicist entry was also purchased. Alvar Aalto's functionalistic entry received no prize.

Several competition entries were published in the Finnish Architectural Review together with the complete critiques of the competition jury. The dissenting opinion of a jury member, Oiva Kallio, was also published. He had been chosen in the jury by the Finnish Association of Architects. He would have given a prize to P. E. Blomstedt, and would have ranked all the awarded entries equally. Kallio called for a sequel competition between the awarded entries. However, no sequel was organized. The most important part of the description of the entry of Blomstedt was published in the Finnish Architectural Review (Arkkitehti 12/1931, 1/1932; Korvenmaa 1992).

About the jury's work very little remains in the archives, nearly everything can be read in the critiques that were published in the Review (Arkkitehti 12/1931, 1/1932; Minutes of the competition 25.11.1931). From the critiques

some criteria can be deduced<sup>3</sup>, also some minor deviations from the requirements of the brief were treated leniently, no entry was disqualified.<sup>4</sup>

There was an ongoing fight about languages in the University, some wanted teaching only in Finnish, some in Swedish. The fight had diminished the status of Helsinki University. Åbo Akademi, a private university in Turku, had claimed to be the successor of the former Royal Academy that was moved from Turku to Helsinki in 1828. This increased the pressure on Helsinki University to emphasize its traditions that dated back to the year 1640. Helsinki University was the true successor of the Royal Academy in Turku. The jury members appointed by the University had probably the status of the University in mind when choosing entries to be awarded prizes.

### **The most interesting Competition Entries**

It was characteristic of the competition entries that the volumes followed the symmetry axis of Engel's part. The symmetry of the general plan of the block was manifested also in the functionalistic entries. Some asymmetry appeared in the façades in the functionalistic designs, also in a few classicistic proposals.

J. S. Sirén's entry "Ad Claritatem" (shared 2nd prize) had

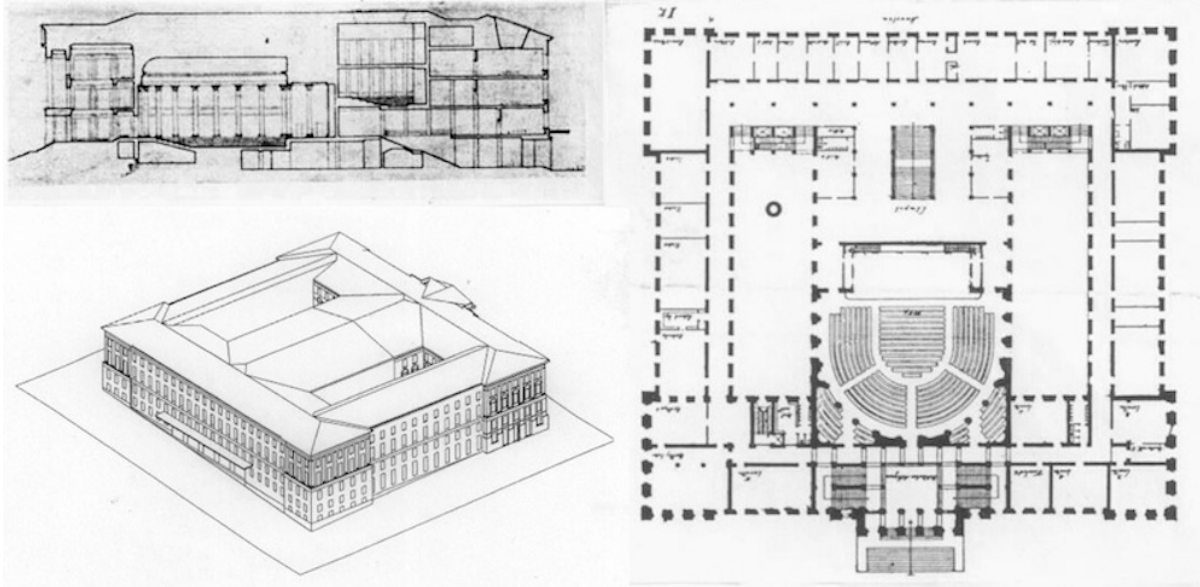


Fig. 8. J. S. Sirén's submission "Ad Claritatem" for the extension of the Main Building, 1931. Helsinki University Museum. The perspective drawing of Sirén's plans by Eija Merenmies.

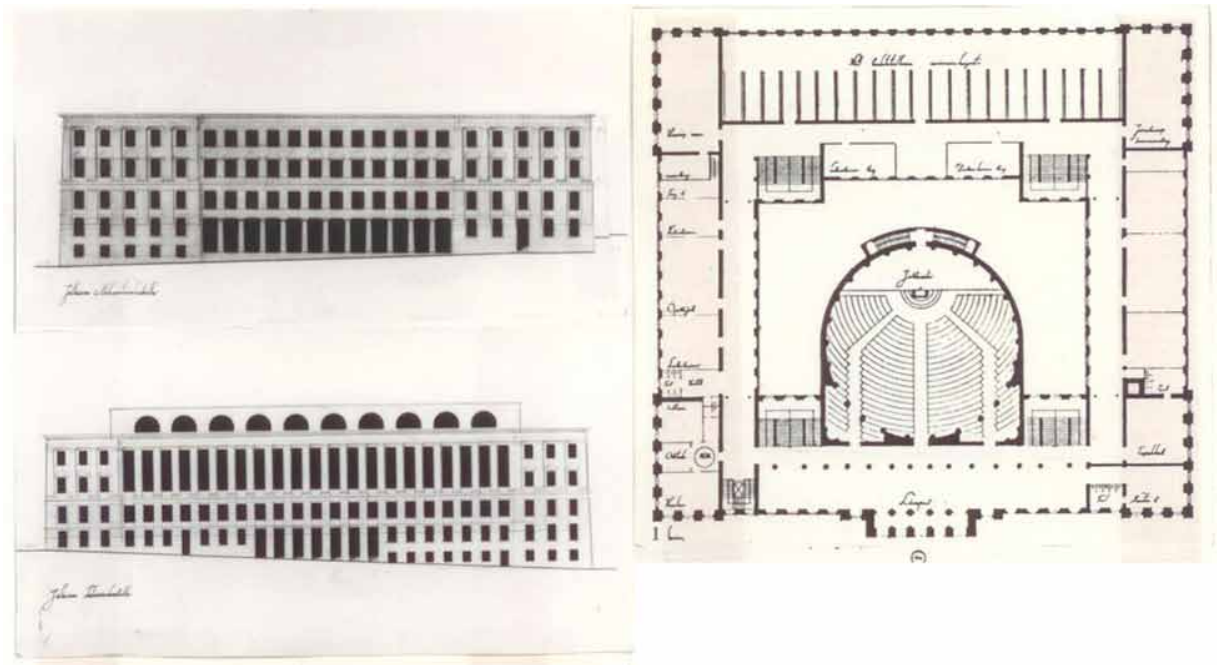


Fig. 9. Jarl Eklund-Toivo Jäntti, submission "AVLA" for the extension of the Main Building 1931. Sources: Helsinki University Museum

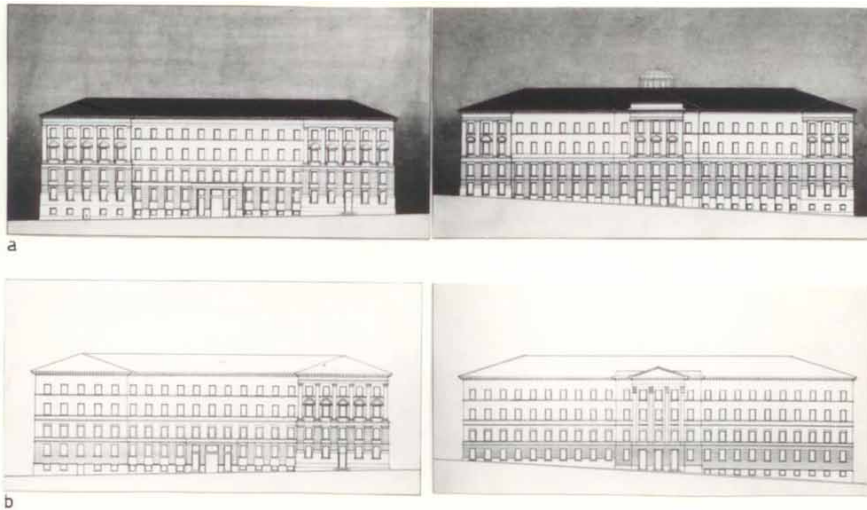


Fig. 10. Submission "In terminis" a and b.  
Sources: Helsinki University Museum.

a closed block with the same height as the original building (Fig. 8). The façades of the annex were of Classicism of the 20's. Sirén's design replicated Engel's façade motifs, but in a reduced, minimalistic manner. Sirén's entry had many alternative versions, especially of the festival hall. The interiors of Engel's building were almost in their original state in the version where the festival hall was unaltered and the annex had a new, large festival hall. One version of the annex had a monumental staircase in the central axis, rising from the

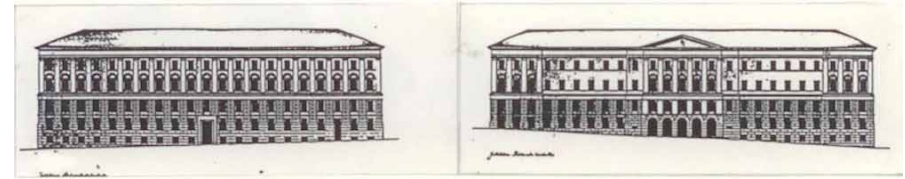


Fig. 11. Submission "Largo".  
Sources: Helsinki University Museum.

entrance hall to the foyer on the upper floor. The designs for the new large festival hall and the small festival hall were impressive representatives of the Classicism of the 20's.

Jarl Eklund's and Toivo Jäntti's entry "AVLA" was awarded a shared 2nd prize (Fig. 9). The entry was of Classicism of the 20's, but the façades had partly Engel's motifs in Empire style. The 20's style was apparent in the vertical shapes of the windows. The block structure of the entry was closed with some protruding segments. In the interior the biggest

difference to Sirén's entry was the demolishing of the space structure of Engel's section. A newspaper published a rumor claiming that Eklund-Jäntti's entry would have won because of its magnificence, but Sirén had done a better job in retaining Engel's part, so they shared the 2nd prize.

"In terminis" (Fig. 10) and "Largo" (Fig. 11) were not awarded any prize. Their architects remain unknown. Both entries had closed blocks. They present good examples of pastiche façades, using Engel's façade motifs, but with variation. "In terminis" had also a version with motifs in Classicism of the 20's.

Elsi Borg's competition entry was peculiar (Fig. 12). It didn't get any prize. It had a closed block with two narrow inner courts. The façades of the annex were clearly different from Engel's façade (Arkkitehti 12/1931, 1/1932). The extension was in minimalist classicism of the 20's or in Neo-Objectivity, almost functionalistic.<sup>5</sup> The festival hall was surprisingly strongly functionalistic, evidently because of the acoustics. The longitudinal section was an elliptic curve with a stepped profile. The festival hall reminded of the concert hall of Salle Pleyel in Paris, which was stylistically modernistic and had distinctly acoustic forms. Some other halls with acoustic curved forms were Gropius' Totaltheater, or le Corbusier's plan for Centrosoyus 1929. In the Soviet Union there were projects for theaters and clubs,

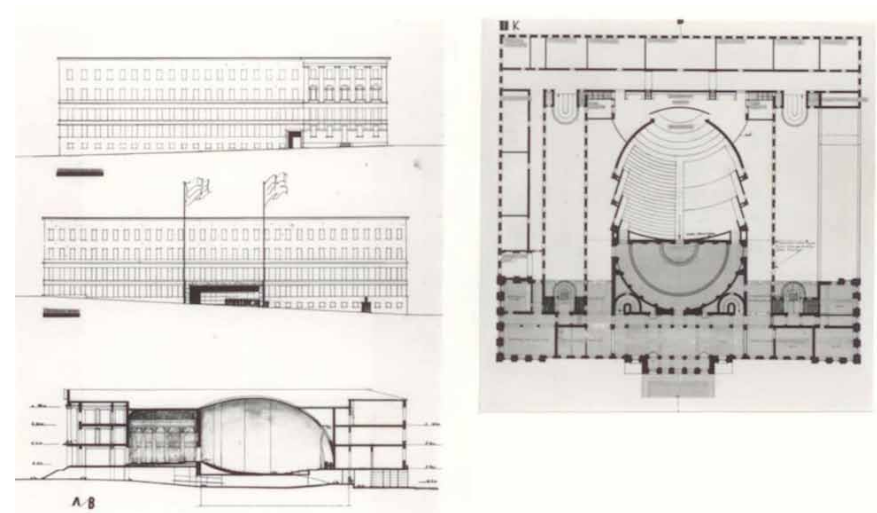
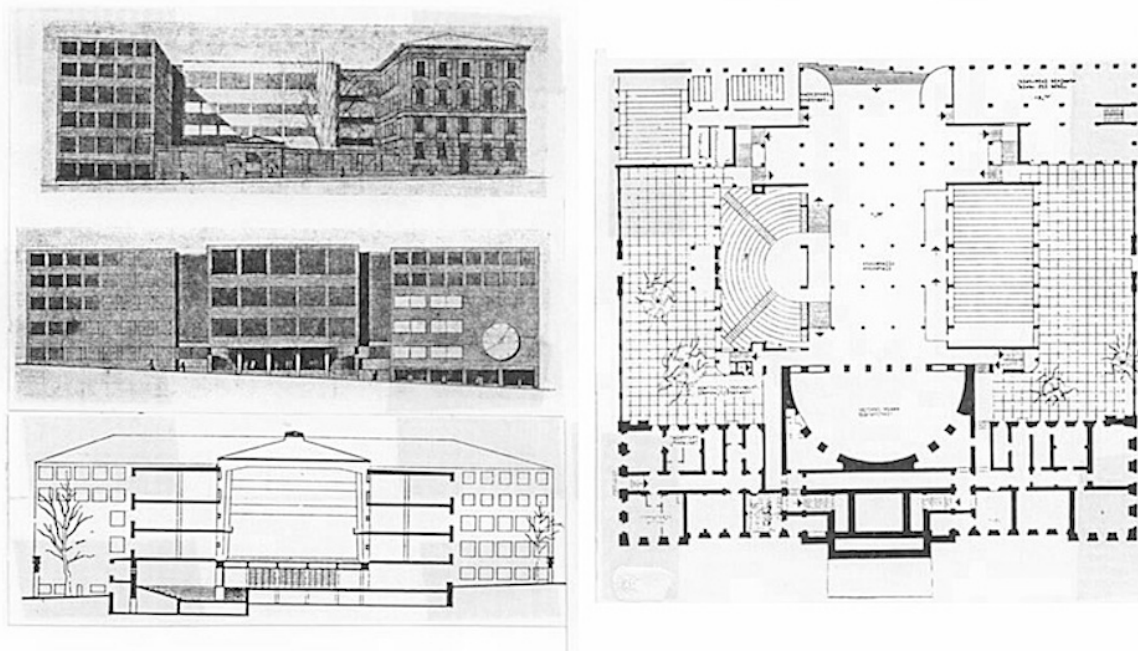


Fig.12. Elsi Borg's submission for the extension of the University Main Building 1931. Sources: Helsinki University Museum.

which had curved ellipse or circular forms, for instance the competition entry for a music theater in Harkov by the Vesnin brothers 1930–1931 (Manina et al., 1985).

There were several classicistic competition entries. Many continued the façades of Engel, and then there were multiple entries attributable to the Classicism of the 20's. If you use the classification by professor Riitta Nikula, all three types of 20's Classicism were present in the competition entries, as well as pastiches repeating the façade themes of Engel. A single design entry could include several style variations, and Engel's motifs as a supplement.





*Fig. 13. Kaj Englund-Dag Englund, submission "hy-hu" for the extension of the University Main Building 1931. Helsinki University Museum.*

Some classicistic entries used totally functionalist style for the large festival hall. Traditional and functionalistic styles were nevertheless living side by side during the period.

The third prize was awarded to "hy-hu" by Kaj and Dag Englund (Fig. 13). "Hy-hu" was designed according to functionalistic principles. The block layout was half-open, and the volumes were symmetrical. The extended building formed an H-shaped mass that had an equal height. Slanting ridged roofs appeared to be flat. The trees of the courtyard were reflections of the original University park court. The original outer walls and gates were preserved. The entry presentation

board had photos of the University's main building block in 1931. This was to prove how the design tried to preserve the original image of the city.

The façades were designed to look rigorous and elegant. The façades had well-controlled proportions, the overall impression was a harmonious and festive extension to Engel's building. The annex was attached to the Engel's part using a joint that extended the horizontal lines of Engel's building. In the extension the façades were not symmetrical. Instead, the window dimensions represented the function of the adjoining rooms. The portion of the solid walls compared to windows

became smaller when moving further from Engel's façade.

The new festival hall acted also as a three-story high central hall into which the corridors opened. The old festive hall was made into a lobby of the new hall. In the "hy-hu" entry there was a freely floating entrance hall, with some rectangular spaces adjoining it. The entrance hall brings into mind Michel Foucault's term heterotopia, which Demetri Porphyrios uses when he describes the free-formed spaces of Alvar Aalto's architecture (Porphyrios, 1978; Porphyrios, 1982; Helander, 1987).

P.E. Blomstedt's "ABC" was purchased (Fig. 14). His competition entry shared many of the basic traits of the design of the Englund. The mass was H-shaped. There were plants in the courtyard, the gate building of Engel was retained, and there was a low wall along the street. The Aleksanterinkatu façade had a joint near Engel's façade.

The Aleksanterinkatu façade had restful horizontal windows in a regular rhythm. The façade to Fabianinkatu was almost symmetrical. At the entrance to Fabianinkatu the roofline formed a wide ridge, as in the courtyard façade of Engel's building. In the minutes of the competition 25.11.1931

the jury originally stated, that the central bay of ABC's Fabianinkatu façade was ill-proportioned. Later this was crossed out, and it didn't appear in the final jury critiques

(*Arkkitehti* 12/1931, 1/1932).

Blomstedt was a strong supporter of a sequel competition for the University site, however it never realized. Blomstedt considered the open block structure and free rhythm essential to the overall master plan of the Senate Square. He emphasized the importance of the University site to the special quality of the Senate Square. He presented with perspective renderings how the original block structure of the main building made the scene of the Senate Square much more beautiful than a closed block that he said was a normative solution for surrounding city squares. He also mentioned that enclosing the block with copies of Engel's façades would not be a solution. Blomstedt reminded how the openness of Empire style block coincided with the ideals of functionalism. However, he did not consider that to be the primary reason to choose an open block for the main building site. In addition Blomstedt was critical of the unhealthy courtyards that were a result of the closed structure. A closed block also would have disintegrated the building along long corridors. Both of these claims were typical functionalistic critiques of traditional architecture.

The four-story high central hall of "ABC" that also served as the new festival hall would have been impressive (Heinonen, 1978). In his alternative proposal the old festival hall was kept in its original form.

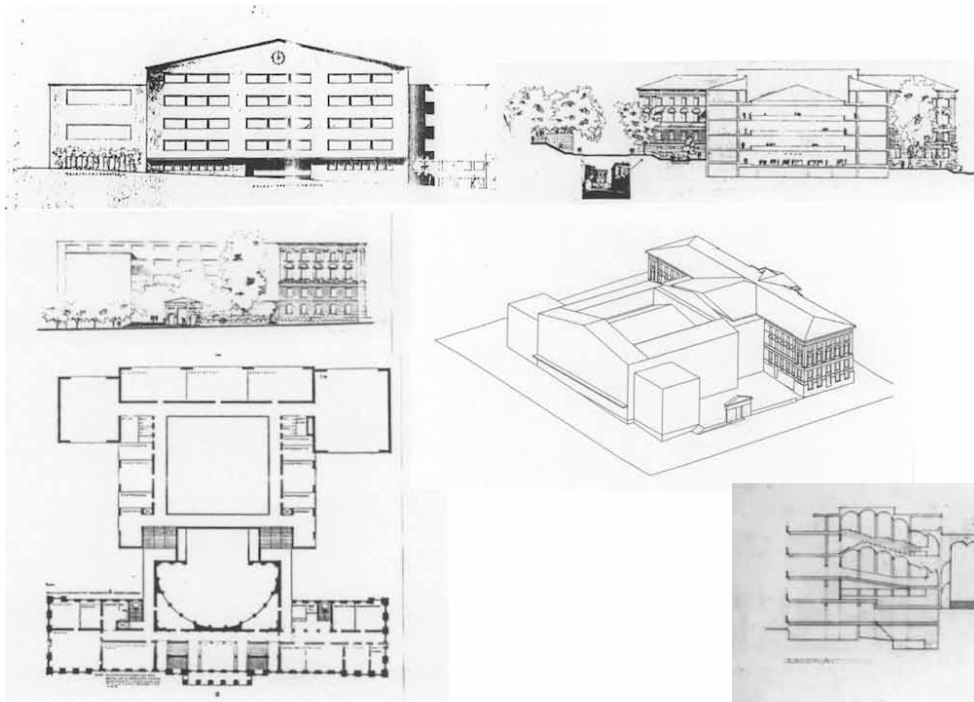


Fig. 14. P. E. Blomstedt's submission "ABC" for the extension of the Main Building, 1931. Helsinki University Museum. The perspective drawing of Blomstedt's plans by Eija Merenmies.

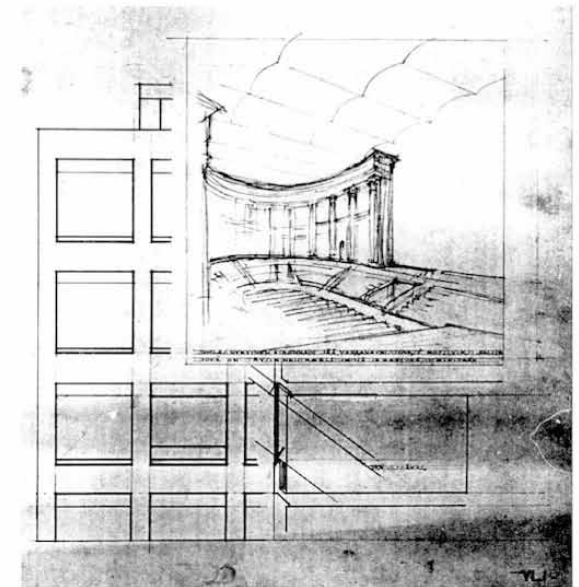
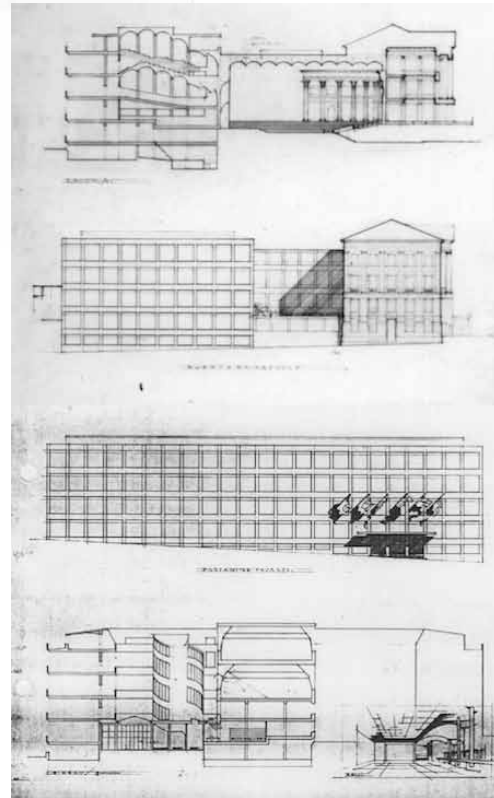


Fig. 15. Alvar Aalto's submission "Yli-" for the extension of the University Main Building 1931. Sources: Helsinki University Museum.

Alvar Aalto's entry "Yli-" was not awarded any prize (Fig. 15). His plan had a semi-open block, but on the street level the extension was more closed than the entries of the Englund or of Blomstedt. In the Aleksanterinkatu façade there was next to Engel's section a low wall-like part, which could remind of the original stone wall. Aalto placed the new high part of the façade next to Engel's part recessed from the street line, and along the pavement there was the wall-like low part, so the difference between old and new wouldn't have been conspicuous when seen from the street. The overall block solution had both the H-mass and two small inner courtyards.

Aalto's façades were functionalistic. The horizontal lines dominated, windows were large. The Fabianinkatu façade was asymmetric. Göran Schildt wrote that Aalto followed his uncompromising path and never would have drawn a pastiche. Aalto's façade for the annex had a repetitive pattern of square openings. We are used to seeing this type of façades in business buildings. Aalto had already sketched in 1929 for the competition of Pohjoismaiden Yhdyspankki a bank building, which was by Aleksanterinkatu, opposite to the University main building. In his sketches for the bank he had used the same kind of façade solution for the part near Fabianinkatu as he used later for the annex of the University main building. He had used this type of façade solution in many other sketches,

most of them business buildings (Schildt, 1985; Heinonen, 1978). So perhaps Aalto's University extension façade reminds of a business building both because we connect it in our minds to business architecture and because he really used this type of façade for commercial buildings. On the other hand in Gropius' Bauhaus building in Dessau there was vaguely this type of façade solution in one wall.

In Aalto's entry for the annex the interior plans were not symmetric. Aalto had come up with some imaginative solutions: the entrance hall and the staircase had sculptural concave surfaces in the ceiling. Rows of seats in the larger auditoriums formed uneven fan-like formations, in the same manner as in Aalto's competition entry for the Finnish Parliament house in 1924 (Schildt, 1982). The ceilings of the auditoriums had acoustic concave forms.

The large festival hall was unconventional. It was an enlargement of Engel's festival hall, but the old festival hall had been mostly erased. Engel's semi-circular colonnade remained as a fragment in the back of the enlarged hall, so the back of the auditorium was rounded. The enlarged hall was equally long as wide. The walls of the new part of the hall were totally flush. The ceiling of the hall had a series of identical semi-cylindrical vaults and in the center there was an area with a skylight. Same kind of repetitive barrel vaults could have been

seen in Aalto's Tehtaanpuisto church competition entry. The audience would have entered Aalto's festival hall from several doors near the center of the auditorium, which the competition jury criticized severely, saying it would have been unacceptable for an academic festival hall (Arkkitehti 12/1931, 1/1932). This is a clear demonstration of the importance the jury and the University gave to academic dignity and traditions. Probably the entrances would have reminded of doors to a sports auditorium.

The slab above the lecture room windows was beveled in order to get more daylight into the rooms. Aalto had used a similar inventive shape already in some earlier sketches, but these buildings hadn't been realized (Schildt, 1985). Much later in Aalto's buildings with beveled parts above the windows one can see how much this enlivens the façade. It would have added depth to Aalto's annex façade, so that it would have had nearly the same amount of emphasis as Engel's part.

## The Debate

Rewarded competition entries were published in the newspapers. Editorial staff commented on the entries. In the press there was a broad and lively debate about the competition

submissions. Architects, architecture critics and many others participated in the debate, among others Gustaf Strengell, Nils Erik Wickberg, Olof Stenius and Kaj Englund. Some newspaper editors, like Amos Andersson of Hufvudstadsbladet, were known to have strong opinions about building projects. They may have tried to steer the public opinion according to their own agenda.

There were many issues that fueled the debate. The first prize was not awarded, and two entries shared the 2<sup>nd</sup> prize. No mention about the commission was expressed. In his dissenting view Oiva Kallio presented the idea of a sequel competition and proposed a new way to award the prizes. Both the supporters of traditional styles and of functionalism had very strong but opposing opinions. There were two fighting sides in the debate: the supporters of a classicistic closed perimeter block and a functionalistic semi-open block.

Functionalism was gaining more support in Finland in 1931, though it was not yet the time for a real break-through. The actual victory of Functionalism over traditionalism happened only in the late 1930's in the architectural magazines.

Carl Ludvig Engel was widely admired in the 1930's. The Finnish Architectural Review had published an adoring article about Engel not long before the University annex competition. In 1931 the city center of Helsinki had no functionalistic

buildings. What explains part of the press debate was the fact that the location of the extension was in the vicinity of the Senate Square, Finland's architecturally most valued area with a high symbolic significance. To many contemporaries the idea of a functionalistic extension to the University main building was horrifying. They felt that a functionalistic extension would diminish the prestige of Engel's University building. Functionalism was considered a transient whim, a non-culture. Functionalistic façades were seen to be sketchy and prosaic.

But the supporters of Functionalism found a classicistic annex dishonest. They thought that Functionalism was enduring and as good as the Empire style. They were pleased by the way a functionalistic annex would be clearly distinguishable from Engel's part. Furthermore the openness in the block structure enabled the façades of the extension to be planned independently of the Empire style part (Hbl 26.11.1931, 27.11.1931; Hö1.12.1931; St.bl. 5.12.1931, 13.2.1932; Sv. Pr. 22.7.1932).

In 1931 there was a severe economic depression in Finland. Architects were yearning for commissions. In one particular debate article the writer expressed concern about the unemployment of building workers and therefore hoped for a rapid commencement of the building works.

The extension of the main building was the largest public

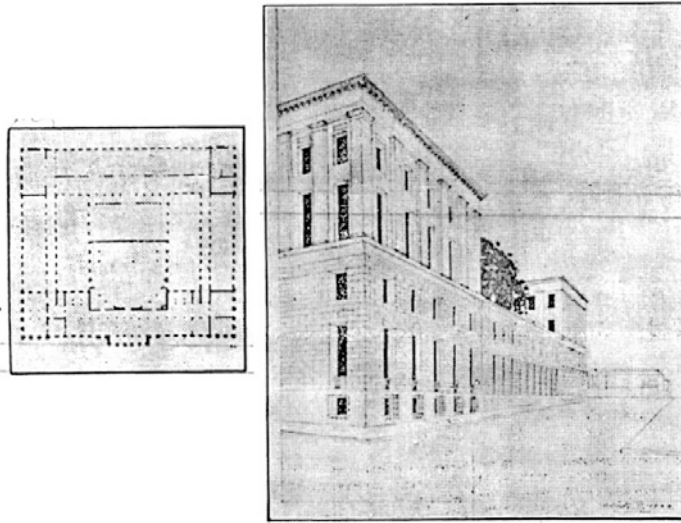
construction project of its time.

In the Finnish Association of Architects there were two camps: supporters of Traditionalism and supporters of Functionalism. Formerly, in connection to the competition for Tehtaanpuisto church in 1930, H. Ekelund and J. S. Sirén had argued about Functionalism and Classicism in the Association of Architects and in the Architectural Review. Maybe the debate about University main building extension was also an attempt to change the relative power inside the Finnish Association of Architects.

### **The Development of Sirén's Plans and the Commission**

Sirén's annex plans, developed in 1933, were published in newspapers (Fig. 16). Obviously the debate had influenced the plans. The massing of the building was altered; it mirrored the volumes of Engel's Senate building by the side of Aleksanterinkatu. The massing was possibly trying to preserve something of the original block structure. In Sirén's new plan the intermediary wings running parallel to Aleksanterinkatu and Yliopistonkatu were only two stories high. A tree could be seen over the low part in the perspective drawing. The façade

Fig. 16. J. S. Sirén's developed plan from 1933, floor plan and perspective drawing. *Helsingin Sanomat* 10.1.1934, p.4.



motifs were still of Classicism of the 20's. Many windows had narrow vertical forms (HS 10.1.1934; US 10.1.1934; Hbl 10.1.1934).

Some criticism appeared in the papers again. The supporters of Classicism found the high narrow windows unfit compared to the proportions of real classicist and Renaissance windows, they were criticized to resemble of backyard architecture. These types of remarks lead to a conclusion that only pure Neo-Classicism would have been acceptable. On the other hand the supporters of Functionalism criticized Sirén for using pilasters in the corner bays, because it made the line between the new part and the old part disappear.

They thought it was important to show that Engel's part was a historically completed entity (Hbl 31.1.1934, 14.2.1934, 28.2.1934; Hf.j. 10.11.1934; Knapas, 1990).

Sirén negotiated in 1934 with the University building committee and drew new plans. He received the commission. In the final drawings Sirén used façade motifs that were copied from Engel's part. The massing of the extension remained the same as in the plans of 1933 (Fig. 17). Sirén mentioned that the Senate building was the precedent for the massing solution of the annex (Fig. 18). The interiors of Sirén's annex represented Classicism of the 1920's. In the interiors there were imposing series of spaces, views from the corridors going round the inner courts with trees, and a smaller refined festivity hall with a foyer inspired by Pompeii. The extension and the restoration of Engel's part were completed in 1935–1940. The extended main building was published in 1941 in the Finnish Architectural review (University building committee's minutes 2.11.1933, 5.11.1933, Päärakennuksen muutostyöt 8.1.1934, Rakennusasiain arkisto; Arkkitehti 7–8/1941, 101–107). The extension by Sirén has not been presented in architectural magazines for many decades since the early 1940's, because in the modernistic spirit a pastiche was non-accepted.



*Fig. 17. C. L. Engel's original University building (1832) and J. S. Sirén's extension, realized 1935-1937. The original part facing the Senate Square and the annex facing Aleksanterinkatu. Photo ©Aarni Heiskanen, 2012.*

*Fig. 18. C. L. Engel's Senate building (1818-1828), the façades to the Senate Square and to Aleksanterinkatu. Photo ©Aarni Heiskanen, 2012.*





## 4. RESULTS AND ANALYSIS

The result of my research is that the University's main building by Engel influenced the extension designs at many levels.

In the 1931 extension competition both classicistic and functionalistic entries had a great appreciation of Engel's architecture as a starting point. This led, however, to quite divergent solutions in these two groups. (Table 2)

Clearly functionalistic competition entries had a half open town block structure and rigorous façades. The functionalists wanted to preserve the Empire style block layout, the surrounding street views, and the artistic wholeness of the

Senate Square. The half open structure was originated from Engel's combination of buildings, the courtyard, the wall and gates, but it was also a natural choice for a functionalistic building. The H mass of the functionalistic entries was derived from the consideration of the symmetry axis of Engel's part. The wall bordering the courtyard and planted sections softened the junction between old and new. The functionalistic façades utilized many techniques to create a balanced union with the original building. The functionalistic façades continued the height and lines of Engel's façade. There was a distinctive joint between old and new. Another solution that made the collision with Engel's building less conspicuous was using window area more lavishly in the parts that were furthest from Engel's part.

There was also a contradicting attitude towards Engel's façades among the functionalistic entries: a total denial to copy his façades or other classicistic motifs. By leaving all ornaments out the functionalists wanted to express that the extension came from a different time period altogether. Engel's part was complete and a historically completed entirety.

In the debate after the competition the opponents of Functionalism feared that a functionalistic extension would not be appropriate for Engel's architecture or the prestige of the University. They thought that Functionalism was a fad, uncultured, and that functionalistic façades were sketchy and

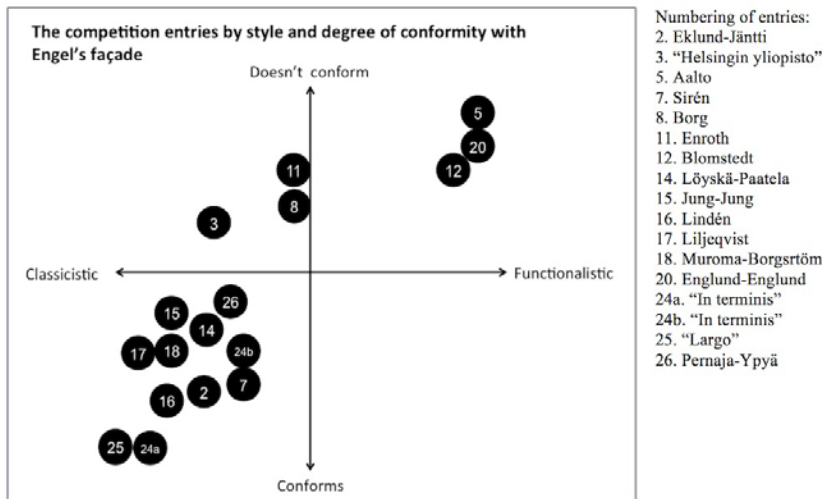


Table 2. The competition entries by style and degree of conformity with Engel's façade. Table by Eija Merenmies.

vulgar. They claimed that classicistic style was the only possible way to create sustainable architecture. There was also talk that the new façades should be in harmony and brotherhood with Engel's creation.

The classicistic entries used a closed town block and classicistic façades, in some cases creating actual Engel pastiches. Even if some architects had copied motifs from Engel, the contemporary town block style that was the idea of a large block of the 20's Classicism, was dominant, not the half-open block of Empire. The idea of a closed town block came directly from the competition program. The decision makers at the University wanted to maximize the floor area of the building site. On the other hand, a perimeter block had been present in the preliminary extension plans of the main building since 1919. Furthermore, this had been the way Helsinki downtown area had been built from the 1880's onwards.

Engel's direct influence can be seen in the façades of certain classicistic entries, as they were clearly pastiches. In some other proposals the rhythm of Engel's façades was repeated, but using simplified 20's classicistic motifs, leading to a continuation of Engel's part without a distinctive seam. This was the case with the highest ranked entry, J. S. Sirén's "Ad Claritatem." In most competition entries, new features

emerged in the architects' characteristic styles because of the influence of Engel's edifice. Usually the transition was towards a more traditional appearance, even into a pastiche.

The façades of Sirén's entry were of Classicism of the 20's. After developing the plans in cooperation with the University building committee Sirén reproduced Engel's motifs in the façades, which confirms the aspiration to blend with Engel's architecture.

The Engel pastiche of the final façades corresponded to the wish of the decision makers to keep the main building as a unitary wholeness and to emphasize the classical antiquity roots of the University. Classicism had also been connected to the high level of education of a nation (Kallio, 1998). Many archive sources reveal that there was a desire to keep the University above mundane life, and a classicistic design was supporting that idea. The strong right wing political movement at the University was in good congruence with favoring of Classicism (Knapas, 1990; Klinge et al., 1990).

Sirén drafted an extension that was reminiscent of the Senate building from the Aleksanterinkatu's side, but still made the old part distinguishable. The final design conformed to Engel's architecture abundantly.

## 5. DISCUSSION

The intent of my research is to establish how the significance of the institution of Helsinki University influenced the choice of style in the architectural competition for the extension of the main building. The connection between the significance of the University, Engel's architecture, and Classicism is an important find that comes through from the research material of the first half of the 1930's.

The common conception that Finnish architecture of the early 1930's was predominantly Functionalistic is losing ground. This research strengthens the view of the Finnish architecture of the time; Classicism was dominating and Functionalism was starting to gain a better position, but there were stylistic approaches that belonged in neither category. It is essential that all these were contemporary styles in those days (Helander, 2008; Niskanen, 2005; Niskanen, 2008; Henttonen, 1995; Hakala-Zilliacus, 2002).

The architectural analysis and literature research answer the question, how the original building by Engel influenced the competition entries for the extension. The reason for the pastiche classicist architecture of the executed annex lies in the national significance of the University, of Engel's architecture and of the Senate Square.

The University annex competition in 1931 forms a comprehensive view on how the styles were developing at the time in Finland.

Constructing a complementary building to a historic edifice requires making choices on how to respond to the old architecture. The University annex competition took place during an architectural transition period with multiple concurrent styles to choose from. Decision on the winning proposal was based foremost on traditions and values. University building committee reinforced the jury's decision and went even further by promoting a pastiche. Sirén's plan was a combination in accordance with the client's values and satisfied the functional needs of the University.

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### Abbreviations:

Hbl – Hufvudstadsbladet

Hfj. – Helsingfors Journalen

HS – Helsingin Sanomat

Hö – Hangö Tidningen – Hangon Lehti

St.bl. – Studentbladet

Sv. Pr. – Svenska Pressen

US – Uusi Suomi

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## NOTES

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- 2 The committee seemed to consider an open block structure to have too little space for all the rooms in the brief. *Arkkitehti* 8/1931, supplement pp. 44–45.
- 3 Rönn 2011, 108. Most of the criteria of modern competitions are present in the critics of the 1931 jury.
- 4 *Arkkitehti* 12/1931, 1/1932; Solla 1992, 272; Kazemian – Rönn – Svensson 2006, 21. Competition juries became lenient towards minor deviations from the brief after 1929 Hilding Ekelund had brought the subject into public discourse.
- 5 Nikula 1981, 72–88. Nikula's criteria of minimalist 20's Classicism. She remarks, that some researchers who concentrate on Functionalism have another name for minimalist 20's Classicism: Proto-Functionalism.



# COMPLEXITY AND CONTRADICTION



# URBAN PLANNING JOURNEYS: DIGITAL MEDIA AND PARTICIPATION, THE CASE OF MINAS GERAIS, BRAZIL

**Fabio Lima**

D.Sc. Architecture and Urbanism  
Federal University of Juiz de Fora  
Brazil

[fabio.lima@uff.edu.br](mailto:fabio.lima@uff.edu.br)

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## Abstract

Understanding the development process of cities in Brazil, particularly in Minas Gerais, is really challenging today. Before planning new urban expansions, we need to build consensus around interventions involving local people. The urban planning journeys is structured on systematic surveys used in previous studies related to architecture and urban planning, with discussions on the theme of memory and cultural heritage. In this sense, participation arises as essential to the approaches for planning, towards the reversal of a framework

within which many plans are not implemented. In this sense, there is a need to explore a development that considers social inclusion and income generation as defining guidelines arising from the specifics of each locality. Participatory planning, in this case, is studied with a background based on the importance of cultural heritage. Thus, guidelines are sought to promote qualified urban and rural development, considering communities' demands, allowing spatial distribution and environmental potential. The main research question is to comprehend that

theories of planning should be available to discuss a multitude of urban issues including social participation. The support of digital media can contribute to this process. The urban planning journeys that involves academic students and researchers in the Federal University of Juiz de Fora, Brazil, as a part of the research group *Urbanismo.mg*, has been promoted since 2006 with effective results in terms of projects and master plans to the cities. The research is supported by “Ministerio das Cidades”, “Ministerio da Cultura”, “Ministerio da Defesa”, CAPES, CNPq and FAPEMIG.

### Keywords

urban planning  
urban history  
participation  
cultural heritage.

## 1. INTRODUCTION

Each city is unique, both by its layout and its building sets, also by its gardens, trees and by the diversity of the people who live there. In this sense, the socio-cultural organization and the diversity of the territory, among others, distinguishes

one urban area from another. And this unique condition, consisting of cultural and social as well as political and economic values, is remarkable for community life as well the specific cultural references of cultural heritage itself. In this context, the preservation of cultural heritage, among others, stands as an important strategy that involves community and municipal administrations in regard to municipal planning. The emergence of thinking through future city planning seems to be essential. In this sense the urban proposals promoted by the research group called *Urbanismo.mg* at the Federal University of Juiz de Fora contribute to the regeneration of cities. The research project aims to understand the local issues of several municipalities such as Matias Barbosa and Simão Pereira and the regions which they belong to. In order to resolve local emergencies, *Urbanismo.mg* has developed and promoted urban proposals like master plans and restoration projects. Moreover, the group also provides workshops with communities on the themes mentioned. (Lima, 2010)

Nowadays the elaboration of master plans arises as a current process in Brazil. In this process participation is essential, considering the possibilities for democratic management of cities, according to Brazilian Federal law n° 10.257, “Estatuto da Cidade”, approved in 2001. (Brasil, 2001) Many difficulties arise when thinking about the future of cities. This conclusion



The municipalities have to be seen in relation with their territories and communities. Unfortunately, in many cases, urban development does not consider these basic elements that belong strongly to our cultural heritage. The focus is on the municipalities, in order to arrive at a comparative analysis of specific local and regional needs, aiming to reverse this unsustainable framework of transformations. In short, what is required is to enable the understanding of the needs of socio-cultural development from the point of view of future generations. Thus the requirement of encouraging participation needs a research platform that allows this participation in discussions of related issues, particularly the protection of memory and cultural heritage in the urban planning process. The intention here is to provide access to the communities' views on the theories of planning through a website and a network of social media. Through these we have the possibility to increase the participation and to disseminate results in terms of bank data, all of this structured online. The results are still incipient because it is not a common dynamic in the communities. However, the responses in terms of participation, even though rather weak, are shown to be productive. Therefore, the virtual page intends to promote and deepen the study quickly and interactively, and this emphasizes the need for the presence of a person or institution in the virtual

environment particularly in regard to the process of urban planning. Even with the difficulties of the participatory process, and with related processes, the social mobilization of the communities is important.

## 2. URBAN PLANNING JOURNEYS

The Urban Planning Journeys involves the understanding of the ongoing growth of cities, and takes into account the history of the city and its urban planning. This recurrence to the past is essential to comprehend proposals and the role of professionals in attendance. In this process, the demands are very diverse and the complexity of urban problems is unparalleled. What are expanded are the range of references and the awareness of regional specificities, coupled with the understanding of the cultural aspects of each place. Surveys and data already systematized in previous studies stand as benchmarks to be complemented. Such understanding involves studies and surveys about the past, in addition to readings taken in current days. The references to previous research involve different sources from both international and national literature which have expanded the range of benchmarks and the cast of related accomplishments and proposals. The more precise

and didactic approach, aiming at a better understanding of the mechanisms of community participation, allows to extend results already achieved toward municipal planning (Fig.2).

To achieve these goals workshops with communities were promoted to explain the importance of thinking about the possibilities of the development of the cities, particularly concerning the references of cultural heritage. The workshops discuss terms and concepts aiming at understanding the importance of preserving cultural heritage, and also the master plans' guidelines are widely discussed with citizens. The perspective that arises is a search for ways to reverse the degradation process that gradually interferes with local culture. With these discussions, we believe that we have the possibility of formulating participatory master plans and ensuring the active involvement of citizens in public affairs, in particular in issues of urban planning. In this sense, active participation in the process of master plans' formulation should be encouraged. The possibility of participation via the World Wide Web stands as an effective way to broaden discussion about urban problems. The aim is to contribute to the urban and rural development of towns and cities. Surveys and data already systematized in previous studies stand as benchmarks to be complemented. Such understanding involves studies and surveys about the past, in addition to readings taken in current days.

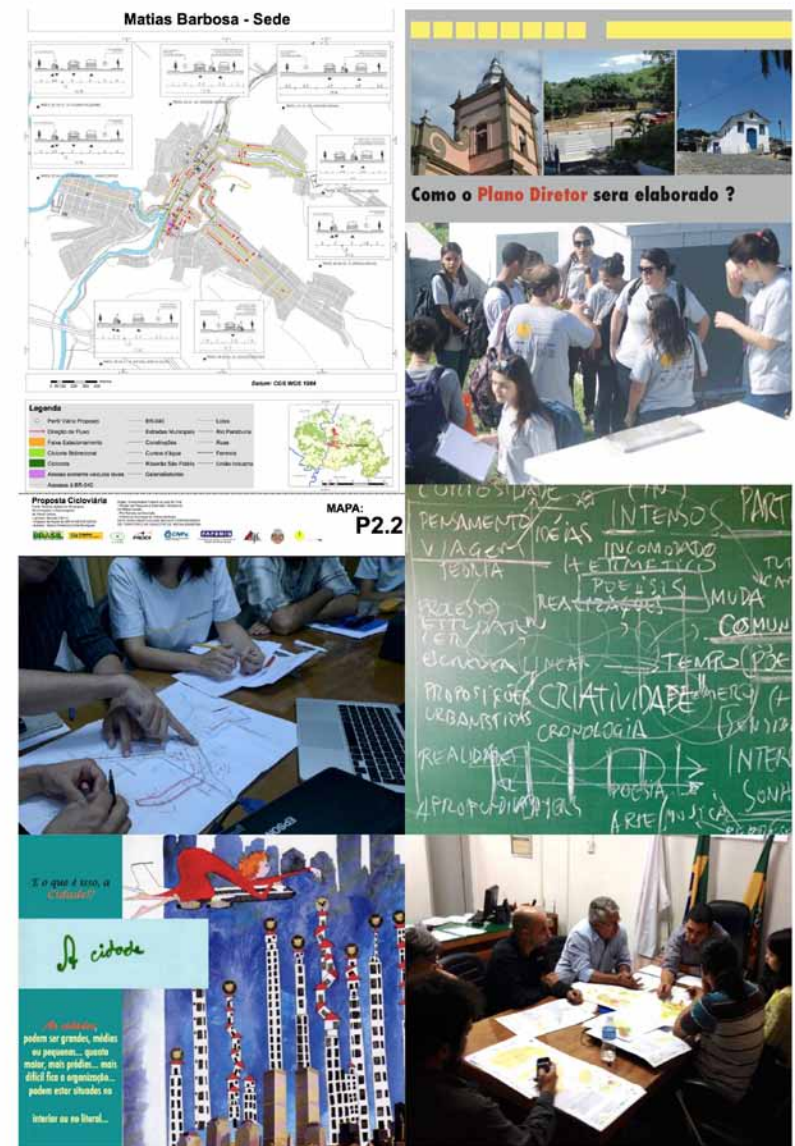


Fig. 2: Urban Planning Journeys, methodology, community meetings, approaches, maps and banners.

In Brazil, Villaça (1998) exposes the issue of urban segregation as a matter linked to the origin and development of cities. This segregation is materialized in the urban space into classes differentiated into more or less privileged sectors in terms of urban policies. Murillo Marx (1999) puts forward the question of thinking about what kind of a city can be envisioned depending on the sense of community and the implemented public policies. In terms related to memory highlight, the writings of Leme (1998), in Brazil, and the production of Calabi (1997) and Zucconi (1998), among others, in Italy can be mentioned. Leme (1998) discusses the origins of urbanism and urban planning in Brazil focusing on the proposals developed by the urbanists. Calabi (1997) discusses the process of the development of European cities, with particular attention on the moments of change, which reveal important aspects of urban transformations. Finally, Zucconi (1998) also focuses on historical processes related to the urban development of European cities. These studies highlight the importance of understanding where and when such transformations occurred. In this sense, the trajectories of the urbanists allow a specific vision for planners particularly focused on addressing the problems of the cities. This approach has been important to the understanding urban planning's history in Minas Gerais, which opens the possibility

for interventions in the present. At the same time, it allows the understanding of the complexity cities' development. In this way, the prospect of comparative analysis in relation to studies of IUAV, Italy, regarding the methodologies for investigating, extends the challenge with an approach on the biographies of planners. (Lima, 2012) Thus, the prospect of comparative analysis outlined here is so important in order for us to continue studies on the planners and on the history of the cities.

The results of participation in Brazil are still incipient. Until the 80's, the public policy communities were not included in the definition of guidelines for urban planning interventions. The planning proposals were prepared and even the public character of architectural interventions were designed in the framework of technical and political capabilities. Thus far, the communities have not been involved in the planning process as the state, federal and municipal spheres have been governed by a military administration. The process of democratic development during this period motivated by social struggles and mobilization caused a change in the strategies of public policy. With the Constitution of 1988, major articles focused on urban policies were created. Participation became a part of the discourse of urban development, particularly regarding the elaboration of master plans in the 1990s.

At present the capacity of mobilization through social

media stands as an important tool to be exploited for a city's renewal. Interactivity enables a real-time voice for communities for thinking about the future of the city. These tools can train the communities towards better global guidelines for urban development. For example, the provision of specific criteria for certain interventions might help to develop interventions such as the rehabilitation of industrial areas.

However, successful approaches have to be related to certain historical horizons and chronological perspectives. Likewise, it is essential to search for local characteristics, and accordingly, the themes that can be developed. We need to focus on the several phases that characterize the cities' growth. In particular, the phases should be thought considering both space and time. In fact, time has to be considered not only a source of change but also permanence. With reference to the history of cities, and in particular to the history of urbanism, each moment can be understood as a synthesis of converging timelines. However, sometimes specific horizons, which belong to a historical perspective, come from non-linear analysis. Accordingly, we are aware of our own limitations and difficulties. What is sought is a particular focus on certain processes such as the master plans of Matias Barbosa and Simão Pereira (Lima, 2012). Similarly, we do not intend to search for the beginning of historical urban processes, but the theoretical

framework behind them. The findings might be translated into a systematic set of data. On the other hand, the experiences from historical events, in particular the ending points might be useful to review in connection to local proposals for new urban development. Also, ongoing dynamics or changes that city growth creates should be considered without exploring the relationships between cause and effect. This approach considers background analysis as one of the main tools for the historical knowledge of cities (Calabi, 1997; Zucconi, 1998). Finally, it is important to mention that studies on the cities' growth and the planners, who are involved in the related planning process, cannot solve the current urban issues. Also, sometimes, what has been planned becomes only a reference because of the complexity of urban situations. However, this approach can help communities understand what has been thought and done for the cities.

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### **3. RESULTS OF DIGITAL MEDIA AND PARTICIPATION**

The challenges for the municipal management are numerous when we talk about planning, especially when it comes to thinking about development guidelines considering cultural



heritage together with participation. The difficulty in the planning process is to know exactly what the priorities are. However, the guidelines discussed with communities should also take into consideration aspects such as the environment, urban mobility, tourism, economy, and education among others issues. What distinguish the municipalities from each other are the places of sociability. In fact, the socio-cultural context gives a particular image to each city. Therefore, the importance of understanding cultural heritage at a local and regional level depends more on the citizens than on the technicians. The workshops of the journeys of urban planning mentioned have contributed to the strengthening of the sense of community.

In Minas Gerais the digital media provides an overview of the urban problems. Also, the themes discussed in the planning process have been included in a set of data that are continuously updated. The contents, such as the strategies and the positive results achieved from the social participation can be seen by the local population. Currently, the production of the core involves the community in certain aspects, and the site will serve as an important element to support the dissemination of results and to call for community participation. This disclosure is presented through articles, books, reports, virtual exhibitions, interviews in terms of video documentaries, among others. The urban planning journeys have developed, since 2006, several

workshops with communities, but the use of Digital Media was started in 2011. The main tangible results come from the interaction and participation in the master plans of Matias Barbosa and Simão Pereira, in Minas Gerais, Brazil.

#### **4. DISCUSSION OF DIGITAL MEDIA AND PARTICIPATION**

The participatory process in Minas Gerais has just had its beginning in the sense of the use of digital media. The expectation with this workshop is that the level of understanding on the urban planning theories will be reached that will allow the definition of new planning guidelines. It is worth to mention that municipalities should consider a different way to reverse the condition of unsustainable urbanization with guidelines for sustainable development. After initially facing the difficulty of participatory public management, the idea of participation becomes more common, direct involvement of citizens increases the sense of belonging to the land and enhances the legitimacy of public policies. This process also implies that it is crucial to rethink the process to ensure the happiness of future generations. The recurrence of the past as a historical process is essential, in terms both practical and theoretical,

as a basis to motivate urban policies in the present. However, the difficulties of mobilizing citizens necessitate efforts in different directions, with various means of disseminating the workshops as brochures, posters and also social media. The participatory process in city planning today expects that communities understand the meaning of theories applied to urban development, which was not usual in the past, and which need to be expanded. Such participation, enhanced with the use of digital media, allows for deeper discussion of issues related to the urban problems of everyday citizens.

The Municipal Planning Workshops is a program developed from 2006 to 2012 and continues today in different municipalities. The main research question is to comprehend that theories of planning should be available to discuss urban issues, to include social participation, and in this process the support of digital media becomes ample and more dynamic. The research is linked to the research group Urbanism in Brazil (<http://www.urbanismobr.org/novosite/index.php>). The website ([/www.ufjf.br/urbanismomg](http://www.ufjf.br/urbanismomg)) and Facebook group (<https://www.facebook.com/pages/urbanismomg>) help to gather and disseminate the information. This enables the participation of other agencies, organizations, institutions, researchers, students and communities.

Finally it is worth mentioning that the importance of

collective participation in the construction and consolidation of urban and rural development should be emphasized qualified with the preservation of cultural heritage. We understand that the urban qualification required is translated into the search for a sustainable, viable option for cities. We also believe that the conservation and preservation of cultural heritage is one of the ways to stimulate local culture and enhance the identity of each place. This helps both citizens and tourists to recognize local places characterized by the highest quality of public spaces and conservation of local and regional history. Thinking and proposing interventions and guidelines for cities concerning participation allows the development of a more comprehensive understanding of how to articulate the development of a territory. Researchers and graduate students involved are able to experience different realities as a laboratory. For communities involved in the process the understanding of the role of the University is enhanced. It also enables a better understanding of the diversity that is revealed in these places, as reflections of multiple historical horizons.

Fabio Jose Martins de Lima is an architect, professor and researcher at the Federal University of Juiz de Fora, residing the period from 2011 to 2012 on a technical stage at the University IUAV di Venezia. At present, he is coordinating the

activities of the research group “Urbanismo em Minas Gerais” in regard to cultural heritage. Since 1994 he has worked on issues related to the theory and history of cities with architectural and urban design emphasis. Since 2009 he has presented results and discussion on themes related to theories of urban planning and architecture in international events. He has also organized events and publications on this subject.

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# NOCTURNAL CITY – NIGHTLIFE AS AN URBAN DESIGN STRATEGY

**Teemu Metsälä**

Architect M.Sc. (Arch.) SAFA RIBA

[teemumetsala@gmail.com](mailto:teemumetsala@gmail.com)

## Abstract

This article assembles a variety of literature sources which are related, directly or indirectly, to the concepts of the nocturnal city and nightlife. The aim is to formulate a theoretical background for a new kind of urban design strategy, which is based on utilising the physical and social qualities of the urban environment only apparent at night. Robert Venturi's impression of the nocturnal cityscape of Las Vegas points directly to the primary character of the nocturnal city; *abstracted ambiguity*. The struggle between darkness and light transforms the urban environment from physical location into an inaccurate and simplified image, which provides a setting for nightlife and is open to interpretations.

Perhaps it is the sheer amount of ever changing factors and complexity of the subject, but all urban design theories seem to be a bit 'out of breath' and unfounded when projected against the sometimes uncontrolled pandemonium of the modern city. This could be one of the reasons why the contemporary architectural trends are fascinated with a variety of abstracted diagrams and statistics, which are becoming substantially more informative, sizeable and also quite persuasive in appearance due to the advanced and more powerful computer technology. At the same time, architects, urban planners and designers have become more and more skilled in presenting complex configurations via occasionally over-simplified and visually

comfortable diagrams, which enable the authorities to read the urban design processes better and make important decisions quickly and efficiently.

Could the understanding of the nocturnal city enable us to reinforce the urban design strategies? In order to find answers to this question, an exploration of urban modernity is necessary. Only by re-setting the relationship between the city and its habitants, and also between the city and its designers, the triviality of nightlife could be converted into an urban asset.

### Keywords

Nocturnal city  
 nightlife  
 consumer society  
 public realm  
 Venturi  
 Kolhaas  
 Tschumi  
 Pallasmaa

## 1. INTRODUCTION

Being in the modern city is about being constantly together with other individuals. Individual experiences, multiplicity and diversity make the concept of the city identical to everyone and therefore consumable to all. At night this abstraction of mass experience is augmented by the nocturnal appearance of the city, thus transforming the city temporarily into frenzied mass medium. As a result, the nocturnal city shapes a common psychological framework for all its inhabitants, who in return develop a multitude of nocturnal behavior types and attitudes that are different from the daytime manners and consumption rituals. According to Frisby (2001) at night people leave domestic environment and security to visit places which features something different from home: a freedom, a delight, an excitement in a consumable and safe form.

So nightlife as a commodity is primarily about experiencing this spatial and social freedom, as the leisure seekers are able to leave and enter at any time, moving from one place to another, programming their night as they go along. The nocturnal city and the mutations of the urban nightlife have been surprisingly discarded areas in the field of urban design theory. However, the investigation of the nocturnal city in the XIX and XX western metropolis opens a platform for

enquiries and assumptions that can redefine the understanding of public realm and also make way to fresh kind of thinking in architecture and urban design.

The first objective of this article is to acknowledge the nocturnal city's potential as an urban asset, define its appearance and significance and investigate how nightlife has developed into a substantial modern commodity in the XX century consumer society. Second objective is to elaborate how the consumer society operates, both physically and socially, within the post-industrial city at night. Third objective is briefly to consider if this nocturnal phenomenon could be integrated with an urban design strategy, such as the development of the cultural axis of the city. Due to the expansive nature of the topic, this study is based solely on reviewing various literature sources. The detailed, subsequently more pragmatic and case specific adaptation is a subject for a further research.

## 2. NOCTURNAL CITY AS AN URBAN ASSET

Since the beginning of Industrial Revolution the main challenge for contemporary metropolitan city has been about managing the constant change. In this process architecture and

urban design have become often the politically prejudiced '*tools of happiness*' in placing man in his social and built environment, as was the case with the rebuilding of European cities after the World War II. However, such idealistic views are based on idea of homogenous and stable society (Wagenaar, 2004). In this setting the nighttime and its leisured moments have been considered something secondary and additional to the balance between daytime, work and domestic life.

The stationary social setting has gradually changed throughout the past century, and the general urban policy has shifted towards using a mixture of traditional, contemporary and popular culture to promote the image of the city as forward looking, a dynamic location for investment and re-location as well as a tourist destination. Instead of relying on one single truth or paradigm, the XXI century urban designers and planners have been encouraged to look for answers from various sources, drawing conclusions from both history and present, and by creating parallels between philosophies, science and architecture (Verwijnen & Lehtovuori, 1999).

The XX century urban design theories have been trying to concentrate particularly on understanding and resolving the faults of the complex modern urban environment and urban population. The Modernist agenda provides, sometimes paradoxically, visually comfortable and idealistic

images of the simple and logical metropolis under control. For example, architect Le Corbusier's 'A Contemporary City for Three Million People', showcased at the 1922 Paris Salon d'Automne, discarded all traditional formulas of street spaces, re-introducing modern street as a fresh kind of organism, a sort of stretched-out workshop (Kostof, 1992). In this context nightlife, though modern by heart but outdated in appearance, may have been overlooked when the role of the street space and public realm was reset by the Modernist agenda. Subsequently nocturnal city became synonymous with the other faults, such as pollution, crime and social inequality, of the XIX century's misshapen urban environment and rapid expansion caused by the Industrial Revolution.

In order to utilize nocturnal city as an urban asset, it is necessary first to recognise nightlife in all its aspects at the heart of the modern city. This demands fresh knowledge, new styles of authority and innovative structures that can only emerge from an urban process capable of engaging in a strategic reflection, learning and imagination of the modern times. It would be superficial to suggest any immediate spatial conventions or architectural guidelines that would qualify as a coherent set of rules for nocturnal urban design. Instead of trying to imagine a particular space, place or design approach that would automatically become '*full of nightlife*', a nonspecific

approach is required. For example, architect and theorist Rem Koolhaas' unrestricted study of the XX century New York and its variety of architectural ambitions reveals a new kind of urban metropolis which is only limited by its own imagination:

'The Metropolis strives to reach a mythical point where the world is completely fabricated by man, so that it absolutely coincides with his desires...through this pervasiveness, its existence has become like the Nature it has replaced: taken for granted, almost invisible, certainly indescribable' (Koolhaas, 1978, p. 293).

This fragmented and obscured image of the modern city has always a nocturnal side, where people seem to successfully claim ownership of the public realm. Speculations can be drawn upon the hustle and also suspension taking place at night, with an aim to identify those nocturnal potentials residing in the social and physical qualities of the urban environment. A deeper understanding of nightlife could help to explain how the authentic spatial and urban concepts develop and sustain themselves in the face of mass production and modern consumerism.

### 3. DEFINITIONS OF NIGHTLIFE AND NOCTURNAL CITY

Modernity has fundamentally changed the way people live their lives, operate and associate through various consumption processes (Bauman, 1995). These consumption processes include also all the leisure activities, services and social interactions taking place at night. The rapid expansion of the European and American cities transformed some of the traditional cities into metropolises, and for the first time the city became as much as a place of play as a place of work. As a result, nightlife started to gain new kind of substance, which included leisure activities after the working hours, staying up late and not going home, enjoying the goods offered by the entertainment industry. Therefore contemporary nightlife can be considered as one of the key modern commodities and the nocturnal city plays an integral role in the wellbeing of the contemporary public realm.

The primary task for the public realm is to cater different individuals in equal manner. This simultaneously communal and individual nature of the public realm becomes more apparent at night. Nocturnal city is a physical manifestation of the partially imaginary aspect of the public realm that enables and supports nightlife. As public realm, street is not

only material location but also a place embodied with different connotations and symbols; street is a place of sharing, conflict and opportunity (Crouch, 1998). At night this more confrontational and symbolic side of the street becomes more noticeable, when different groups of people meet and mix in the nocturnal urban setting. As a result, the built environment feels more temporary, exciting and relaxed, especially in relation to the daytime authoring systems that still apply.

### 4. APPEARANCE OF THE NOCTURNAL CITY

Verifying the tangible connections between the nocturnal city and the built environment begins by unfolding the fundamental physical change of the streetscape when the night takes over. As night turns into a parallel occurrence to the daytime experience of the modern metropolis, the street is suddenly loaded with fresh aspects and meanings (Fig.1).

‘Dark enclosures, expand and unify the space by obscuring its physical limits. You are not in the bounded piazza but in the twinkling lights of the city at night’ (Venturi, R., Scott Brown, D. & Izenour, S, 1972, p. 50).





*Fig 1. The overwhelming media invasion of built environment at Times Square, New York. Photo by Teemu Metsälä.*

The above impression describes the nocturnal cityscape of Las Vegas and its gambling palaces and, unintentionally or not, points directly to the key aspect of the nocturnal city. I have decided to call this phenomenon *abstracted ambiguity*, where the contest between darkness and artificial light transforms the urban environment from clearly defined physical location into an inaccurate set of impressions.

Architect Robert Venturi elaborates on the connection of symbolism and commercialism in architecture, and courageously abandons the Modernist urge to re-think and re-design already existing environment. In his book 'Complexity and Contradiction in Architecture', Venturi (1977) embraces further the idea that the world is a confused place, and aspires for a new kind of design language which is no longer based on the morally puritanical Modern architecture. In addition to the ironic and often slickly noted declaration '*less is a bore*', his expression shift suggests a move from static concepts and values towards more liquid standards, which are similar to the indistinguishable and often fuzzy appearance of the nocturnal city.

This fuzziness is also acknowledged by a journalist and activist Jane Jacobs, who points out how the often limited views of different urban theories aim to fix something particular which is not necessarily broken:

'Why have cities not, long since, been identified, understood and treated as problems of organised complexity?' (Jacobs, 1962, p. 434).

Jacob's requests a wider approach to the city reminiscent of life sciences, where all aspects of urban environment would be taken into account. In her practical approach she gears more towards the complexity paradigm, where city structure is seen as kind of a life science where different challenges are interlinked and constantly overlapping each other. In relation to Jacob's holistic view of urbanity, nightlife could be understood to be more reminiscent of ambience; acting as another skin on urban environment, a kind of a scheduled stimulant without specific structural configurations. Coincidentally, both Venturi and Jacobs seem to oppose the rational urban design theories such as Garden City and Modernist Agenda, which aim to clean, re-arrange or even relocate the city from the disturbances of the Industrial Revolution.

## 5. SIGNIFICANCE OF NIGHTLIFE

The affluence of the nocturnal city is based on the collective experiencing of the abstracted ambiguity of the built

environment at night. This is when the cityscape genuinely seems more like an impression, like an image, like a work of art. “City is a picture made of numerous suggestions”, proclaims architect Nigel Coates, describing urban experience as ‘walking on the tightrope between vitality and apocalypse’ (Bouman & van Toorn, 1994, p. 108). Collective real images are constantly being mixed up with individual imaginary images, and the abstracted and imprecise ascension of nocturnal city simultaneously shapes also the perception of the contemporary daytime city.

As early as 1889, Austrian architect and historian Camillo Sitte proposed in his book ‘City Planning According to Artistic Principles’ that the city is reminiscent of ‘*work of art*’, and that the public spaces around the society should be the foremost theme of urban design (Fleming et al., 1991). Nocturnal city reintroduces the built environment as an alluring work of art, thus strengthening the authenticity of the public realm. The aspect of art has also been noted by architect Juhani Pallasmaa, who considers the city as the most significant and complex of all human artifacts.

‘Undoubtedly the most significant and complex of human artefacts, the city controls and entices, symbolizes and represents, express, and conceals’ (Pallasmaa, 1996, p. 142).

Architect Bernard Tschumi’s notion of architecture being perverse is based on the supposition that the real importance of architecture lays outside the functionality and even providing comfort.

‘The architecture of pleasure lies where concept and experience of space abruptly coincide, where architectural fragments collide and merge in delight, where the culture of architecture is endlessly deconstructed and rules are transgressed’ (Tschumi, 1977, p. 92).

Tschumi’s utopian concept provides a setting which cannot fully satisfy the individual and collective fantasies. Instead it triggers operations of seduction and the unconscious, becoming reflective for collective and individual desires. Public realm at night is caught in the spatial systems beyond its control, whilst simultaneously trying to make conductional, representational and architectural sense of its dilemmas.

Sitte’s, Pallasmaa’s and Tschumi’s thoughts suggest that maybe the true challenge for contemporary urban design and architecture does not lie in the perfection of abstracted and pure forms, but in the genuine ability to facilitate, sometimes revealing and sometimes hiding, the shifting authenticities of the modern artifacts, social settings and built environment.

Maybe not surprisingly, the first examples of the late XIX and early XX century large scale nocturnal architecture aimed for the mass experience were the amusement parks, where the new technologies, such as artificial lighting, were utilised in an unforeseen scale. For example, Luna Park in Coney Island, New York, changed its appearance rapidly and had a bizarre lighthouse structure called the Beacon Tower illuminated by over 100 000 electric lights (Kolhaas, 1978). Also in 1930, architect Gunnar Erik Asplund presented his pavilion plans for Stockholm Exhibition in a rather unorthodox way; the illustrations show how the environment operates at night (Pelaez et al., 2004). Accepting the nocturnal city as an all-encompassing work of art could help designers to understand how authentic spatial and social concepts can still thrive in the face of mass production and modern consumerism.

## 6. A CONSUMER SOCIETY AT NIGHT

Although nocturnal activities amongst people had taken place before Industrial Revolution, the modern nightlife really began to develop in conjunction with the birth of the industrial city. This urban phase began in the end of XVIII century England

with the invention of steam powered mills. A fundamental transformation in all areas of urban life followed:

‘Not all life is modern, but all modern life is city life’ (Bauman, 1995, p. 126).

British sociologist Zygmunt Bauman sums up the overwhelming and essential change that took place. Suddenly the static and cyclical feudal world disappeared in favour of vectors of artificiality, and the entire nature of what humanity had come to know as the authenticity was called into question by the invasion of technology and reproduction into everyday life. Before long modern technology was not only used to manufacture products and shape environments, but to re-produce cultural forms, ideas and rituals of civilization in and out of the city.

Subsequently mass demand for commodities extended also into the spatial conception of things, where increased scales and architectural forms were aimed to answer to the specific needs of consumer society (Vidler, 2000). For example, large shopping centres demonstrate how the consumption experience has become an escape from work and production, and how the consumption requires being located and housed elsewhere. Until recently, consumption has been seen

as the last stage of modern process, something that is a more a consequence than a basis for production of commodities. Somehow ironically, shopping has now become an integral part of any new urban development:

‘As much we may deny or refuse it, shopping has become one of the only means by which we experience public activity. It in many cases determines, sustains, and often defines the identity of an institution, or a city’ (Kolhaas, 2001, pp. 149).

By describing a series of technical innovations, such as escalators, that make a large scale shopping activities achievable, Kolhaas has come to a conclusion that shopping could be the final remaining form of public activity. These commercial environments and places, connected by escalators for shopping embody stimulating yet safe image in order to persuade the target audience to consume and buy products and services. This kind of passive consumption could be seen as an epitome of the so called ready-made-world.

Nightlife contests the idea of passive consumption by providing a relaxed time-frame and a setting for a consumption which is more than just the purchase of the physical objects, services or premeditated experiences. In nocturnal city the masses travel between the street spaces and leisured spaces in

relatively unsystematic sequences. The main motive of going out is about being enchanted by the specific atmosphere of the city and tapping into social play of communal networks, which are catered by new kind of spatial and technological configurations which may seem unexpected at first.

For example, in 1950’s the French expression ‘La Discotheque’ (deriving from the word bibliotheque) was first introduced by a French entrepreneur Regine Zylberberg, who could not afford to book a live band to play at her club in Paris. In order to avoid the immediate closing she came up with the idea of just playing popular records (Brewster & Broughton, 1999). The allure of the new enterprise was amplified further by smart propaganda, by not letting anyone actually in for the first weeks. Unintentionally, Zylberberg defined the principles of the modern nightclub and clubbing simply by replacing the use of jukebox and live band with coupled turntables. ‘La Discotheque’ demonstrated how the mechanically re-produced music carried the same virtues as the music of a live performance, thus necessitating the specific needs of the urban society in a genuine way.

## 7. LIVING IN THE NOCTURNAL CITY

Contemporary urban design regards the street space as a lively and contested public realm, a kind of positive force and democratic free asset to be utilised in every way possible to create a better environment. The main challenge for a modern public domain lies in the 'experienced time' of individuals; a process which creates multiple variations of polycentric urban areas (Hajer & Reijndrop, 2001). Street space contains potentials and values that can be both positive and negative, depending on the context and subtext.

However, the abstracted ambiguity of the nocturnal city transforms the street into more complex subject than just an aesthetic and spatial instrument, as it has an ability temporarily to diminish society's class distinctions. Due to the arrival of the streetlight, the XIX and XX century cities became a platform of luxury that was previously meant only for a limited social group. The old darkness and the new brightness merge to generate their own special atmosphere, in which light does not necessary win (Schlör, 1998). This sovereign look of nocturnal city is well recognised by an author and townscape consultant Gordon Cullen (1961), who presents an empiricist analysis of the visual impact on the urban surroundings. Incorporating street lightning thoroughly with

the fabric and character of the nocturnal city is necessary in order to conserve the immobile quality of the urban enclosures, and most importantly, to sustain the tension between light and darkness.

This dreamlike quality of the nocturnal city is also recognized by the Situationists, a group of social activists and artists who believed that the urban environment is ultimately an extension of man's own imaginings:

'Darkness and obscurity are banished by artificial lighting, and the seasons by air conditioning; night and summer are losing their charm and dawn is disappearing. The man of the cities thinks he has escaped from cosmic reality, but there is no corresponding expansion of his dream life. The reason is clear: dreams spring from reality and are realized in it' (Chtcheglov, 1953, p. 2).

The above notion describes the glamour of gambling palaces such as Las Vegas, in anticipation of the next step in the urban evolution, where everyone would live in his own 'personal cathedral'. Twenty years prior to Robert Venturi's analysis of Las Vegas and Rem Koolhaas' study of New York, author Chtcheglov imagines how the districts of the future city would correspond to the whole spectrum of diverse feelings

that one encounters by chance in everyday life. In his nightlife like vision of future, based on the visual impact of nocturnal Las Vegas, the individual emotional attachment of the urban environment has become the main design principle.

Nocturnal city signals this illusory discharge of the pursuit for public happiness, and nightlife is both a celebration and remembrance of this blissful urban utopia.

As a medium, the public domain contains many messages...interested in only one specific type: that embody promises for a better future, that point towards an ideal... 'Cities symbolize the pursuit of public happiness' (Wagenaar, 2004, p. 15).

According to author Cor Wagenaar, the private and commercial domains have challenged the qualities of public realm in the last decades, and there is a possibility that a consumer society has no need for such qualities any longer. Author Kostof Spiro (1992, p. 243) speaks also of the genuine loss of street culture, stating that "previously the street was the place where social classes and social uses mixed. It was the stage of solemn ceremony and improvised spectacle, of people-watching, of commerce and re-recreation". Until recently, streetscape has been society's collective chronicle, guardian of those strings of culture that make people able to behave on the streets regardless of their age, experience or social status.

The total loss of public domain could well be true, if the society lived only in the daytime environment. However, at night the enclosed and unforeseen frontier between the home and the street emerges; vice and deviance are lived privately at home, and public side and its virtues are paraded for all to see on the street. Extravagance or what cannot be developed and displayed in the domestic environment seeks a public forum and places. In these places newness is being exchanged, traded, displayed, and reduced to an adequate scale for both the society and authorities (Schlör, 1998). A successful nocturnal city is made of these off-shoots and varieties, which are only visible to those who know how and where to seek them.

## 8. WALKING IN THE DARK

At night the disposition of the street is transformed momentarily to serve a different kind of purpose, and therefore operating in the nocturnal city demands new kind of manners. The written records of the early nocturnal attitudes were formed in two metropolises, London and Paris. The obscured and fluid aspect of the nocturnal city is well documented in the romantic writings by poet William Blake (1789), who's poem 'London' particularly describes the gloom and doom

of the pre-industrial urban environments and social setting. Author Thomas De Quincey (1821) provided a prototype for the neurotic urban drifter allowing his own imagination to shape and direct the perception of the environment. In his novel 'Dr. Jekyll and Hyde', Robert Louis Stevenson (1886) painted a picture of an individual psychology imposing its embodiment upon the city, thus transforming the nocturnal environment into something outlandish and intimidating. But it was author Edgar Allan Poe, who best illustrated the uncanny characteristics of mass phenomenon and the nocturnal city:

'As the night deepened, so deepened to me the interest of the scene; not only did the general character of the crowd materially alter...but the rays of the gas lamps, feeble at first in their struggle with the dying day, had now length gained ascendancy, and threw over everything a fitful and garish lustre' (Poe, 1840, p.135).

Poe described the mysteries and ascension of the nocturnal city in his tale 'The Man of the Crowd', where the person responsible follows a suspicious character through the streets of London for no particular reason. Poe's gloomy speculations pointed towards the relationship between crime and nightlife,

but also to the uncertainty, surprise and suspended atmosphere of the nocturnal city.

Writer Walter Benjamin (1938) explored the strolling phenomenon in the glass covered streets, arcades, in the XX century Paris. Instead of being dynamic in nature, this public behaviour was more of a matter of observation, passive participation, and a kind of voyeurism or tourism. This kind of sensitive modelling of the urban dweller has become a general way of describing urban street behavior. Benjamin (1938, p. 19) states how 'the street becomes a dwelling for the flâneur; he is as much home among the facades of houses as a citizen is in his four walls'. Flâneur reflects the prevailing transformation in the existing class system of the western world, which was already in development towards today's consumer society. However, the character of flâneur is an imaginary one, residing in an idealistic city where everyone has a bit of a flâneur inside them (Coverley, 2006). Thus flâneur is a nostalgic figure, symbolising the beginnings of the modern city, but also the decline of the pre-industrial city.

In the 1950's the Situationists re-invented the flâneur into a more political activity called *drifting*, derived from author Thomas de Quincey's ramblings in London. Drifting was an opinionatedly toughened idea; with a bold new agenda claiming that also derived ghetto environments should be





*Fig 2. The public realm changes its appearance when the night falls at Union Square, New York. Photo by Teemu Metsälä.*

seen as an urban asset, instead of an urban ill. Paradoxically, wandering around the city, drifting without destination, not going to work or properly consuming was a waste of time in the temporal economy, in a society where time is money (Sadler, 1998). As a result drifting took on a double meaning: the active observation of present day urban structures and the development of future assumptions on these structures.

Individuals operating in the public realm are affected and absorbed by the overwhelming appearance of the nocturnal city and its components (Fig 2). Sufficient coping mechanisms, such as the ones described earlier, are required to operate comfortably in the public realm. People acquire special attitudes, which are like different states of being in a city at night,

connected directly to the physical and social qualities of the urban environment.

## 9. DISCUSSION: NIGHTLIFE AND CULTURAL AXIS OF THE CITY

This article has located the nightlife in the heart of the modern city, and illustrated the importance of the nocturnal city for the authenticity of public realm, which now exists against the face of mass production and modern consumerism. The nocturnal exposure a twofold life of privilege and despair lying deep in the city of the XIX century city still influence the understanding and arbitration of contemporary nightlife. Venturi's notion about Las Vegas at night highlights how the nocturnal city modifies temporarily the built environment for its habitants. The abstracted ambiguity renders the city into a collective dreamlike image, which is freer and also more open to interpretations than daytime environment. The nocturnal city has a profound impact on the individuals who in return develop attitudes in order to enjoy nightlife.

One possible way to employ nightlife as an urban asset, as part of the urban design strategies, could be to locate it within the cultural axis of the city. Recently contemporary

cities appear to be first and foremost about the cultural axis, as all economic, social, technological and educational strategies seem to be increasingly linked to the culture. Often the present potential of the city is valued more against the cultural variation and difference than the actual quality of the specific cultural activity. For example, in the recent years the 'European Capital of Culture' program has been an example of this sometimes frantic thrive for variety, which can, alongside with sustainable constructions and evolutionary cultural programs, result with a short lived festive season with a purpose made '*cultural performance*' in every street corner. This often raises a debate which tries to distinct good culture from bad culture, or high culture from low culture. As a result, the cultural aspect of urbanity is well recognised amongst public, media, politicians and decision makers.

'A cultural geography shifts the focus away from the analysis of the functionality of 'spaces' that are quasi-cultural to the space as a system of 'places' with specific meanings to specific groups' (Hajer and Reijndrop, 2001, p. 33).

For example, the celebrated renewal of city of Bilbao in Spain was based on the deep knowledge of city's existing infrastructure and central location in Europe, enabling a successful

transformation from industrial history towards the tourism and service economies. Inserting a magnificent piece of architecture, such as Guggenheim Bilbao Museum by the architect Frank Gehry, into an existing city is not an obvious practice, and must have basis on the local social and physical conditions. Interestingly, recent comparable regeneration processes have not been successful elsewhere. In 2004 a new Guggenheim museum scheme in Rio De Janeiro, Brazil, stalled politically, as the project failed to get general support with fears the development would exclude lower sectors of society (Landry, 2006).

Similar debate is taking place the moment in Helsinki, Finland, where an open architectural competition for a new Guggenheim museum has generated a wide ranging debate amongst politicians and the public.

Implementing the cultural axis on the magnitude of Guggenheim is not an automatic exercise, and the development of the city has to be founded also on the other elements of urbanity, including nightlife, on a wider basis. For example, London's Millenium Dome, which is now one of most recognisable new landmark buildings in United Kingdom, was initiated as a flagship project in order to regenerate a larger area called Greenwich Peninsula in the East London (Melvin & Gaventa, 2013). Designed by the architect Richard Rogers, the Dome housed an extensive exhibition about the third millennium.

Unfortunately, when it opened in 1999, the project failed to attract visitors and was forced to close down. However, the building itself was designed to be resilient with multiple uses in mind, including entertainment, sports and various nightlife activities. Since 2005 the Dome has successfully operated as an entertainment district with live music venues, attracting visitors across UK and also Europe.

For the cities that want to successfully manage the change and be innovative, aspects of nightlife cannot be not just a consequence but also a resource. Therefore the conventional perception of cultural axis should be constantly interrogated and re-valued against the pulsating urban fabric, which seems to come more accessible and perceptible at night. As mentioned earlier, La Discotheque in 1950's Paris initiated a global clubbing phenomenon that fundamentally changed the way people use their leisure hours at night (Brewster & Broughton, 1999). In the field of urban design and architecture, architect Nigel Coates has been first to recognize this uncanny relationship between nightlife and city. He defines a clubbing space something more than just a happy-go-lucky exercise in interior design:

'Clubs, places of nocturnal entertainment, have always been a social safety valve for turning transgressive forces loose – Ber-

lin in the 30's, Paris in the 50s, and now London and New York' (Coates, 1982, p. 4).

Cities that have a long-term commitment towards the redefined cultural axis of urban environment will emerge best equipped in a competitive world where information, knowledge and content creation will in some measure replace the supremacy of economy, and thus represent the keys of real urban progress and sustainable development.

The future of the nocturnal city and nightlife as part of the urban design strategies remains open. It is quite likely that nightlife will be employed to some extent, but it will remain as an obscure side note similar to the imaginary architecture celebrated by the Situationists, such as Constant Nieuwhuys' project New Babylon which struggled to create architecture for a society which did not exist yet (Ford, 2005). It is also possible that nightlife could emerge as one of the new trends in urban design, strengthening the resilience of the existing and future built environments. In order to achieve either of the outcomes, both public and private bodies will have to first acknowledge the very existence of the nocturnal city, and then assemble techniques to investigate and utilise both theoretical and practical aspects of nightlife.

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# MORPHOMETRIC STUDY OF THE URBAN FORM OF THE MEDINA OF GAFSA

**Souha Zriba**

PhD student

National School of Architecture and Urbanism

Tunis

[souha.zriba@hotmail.com](mailto:souha.zriba@hotmail.com)

**Abdelkader Ben Saci**

Arch, PhD, Professor

National School of Architecture of Grenoble

France

The usage of the digital modal in the analysis of the architectural forms

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## Abstract

The actual topic of research came from a deep interest of mine in the patrimonial importance and value of the architectural forms of the Medina of Gafsa. Besides, I have noticed that the architectural identity of the different components of the architectural space of the Medina have rarely been put under scrutiny. In fact, so far, the Medinas have only been studied in the light of some known approaches, mainly the historic,

patrimonial, socio-semiotic and geographic ones. These latter ones presented the Medina superficially in the sense that they did not focus on its forms which appear to me to have several geometric irregularities that Euclidean geometry (symmetry, scaling, moving) cannot unveil.

This paper suggests a deeper understanding and new knowledge of the produced forms based on the morphometric

study of the form of the Medina of Gafsa. Indeed, Morphometry identifies the logics of morphological conformation of the significant structure of the historical plan and the explicative conformation of sectors. It also gives account of an intelligible classification of the studied forms and a meaningful organization.

### **Keywords**

Morphometry  
conformation  
form  
frequency analysis  
energy descriptor

## **1. INTRODUCTION**

This paper presents a characterizing approach, The Geometrically-complex Forms. It is interested in the morphology of the Medina of Gafsa in the South of Tunisia.

The term Medina means City in Arabic and is actually used more when talking about ancient Arabic cities. The Medina is characterized by a compact irregular structure. The Medina of Gafsa does not share the same monumental

aspect as the Medinas of Tunis, Kairouan and Bizert but it does testify of a long urban history of its own.

Medinas are commonly studied essentially through the historical, geographic, socio-semiotic and morphological approaches.

The historical approach explains the profound history of transitions, the status changes and splits that happened during the production of a Medina. It speaks about the history of a Medina to enable a better understanding of its genesis and evolution (Sebag, 1998). It also explains the past of the Medinas through texts, recorded stories and archived files. The key moments in the history of these Medinas are considered as generating elements with an overriding role in the evolution of the patrimonialisation process (Youssef, 2013).

The patrimonial approach aims at the valorisation of the safeguarding of the historical department of the Medina Patrimoine (Ferchichi, 2013). The historical approach allows us to demonstrate the identical signs of the Medina including the components of its social history and all the other characterizing elements. It is essentially also interested in the history of urban evolution of Gafsa's Medina during the Ottoman Empire. It is a morphological and aesthetical study of the Medina's architecture and monuments (Lassouad, 2007).

The socio-semiotic approach is interested in the



interrelation between the social and spatial routine of the past and its impact on space. It focuses on these details to better understand the evolution of acts and rituals, costumes and traditions (Mezghani, 2002). The social and cultural context of the Medinas paves way for other studies that are more into the resident's imaginal cognition (Ben Moussa, 2013).

The geographic approach highlights the characteristics of the physical environment. It shows the physical context of the region of Gafsa as well as its rich wildlife (Castany, 1955). It is interested in the study of geometrically-complex hydro-climatic system. It also focuses on the understanding of the connections that bind the environment to the development of Gafsa.

The different studies on the Medinas in general and Gafsa in particular did not present Medina morphology as a central object of study but rather studied its history, geography and sociology.

Morphologic analysis allows us to understand the logic behind geometrically-complex structures. These are not the result of an anarchic subdivision of the urban fabric (Zaabar, 2005). The fractal analysis of urban structures studies the urban forms on a different scale and broadens our knowledge of structures with irregular morphology. Fractal analysis asserts the hypothesis which states that there are similarities within

the same structures on different scales. Besides, fractals that study urban forms are characterized by a property of internal similitude (Frankhauser, 1997). In the case study of the Medina of Kairouan for instance, it shows that the structure abides to a fractal organization (Aissa, 2012). Nevertheless, the description of the Medina structure is reduced to a fractal dimension.

The Medina of Gafsa does not reproduce the classical model of a Medina that has an auto-centred urban formation surrounding big Mosques and souks. It shows two districts separated by Kilani Metoui's street<sup>1</sup>.

Each one of the districts responds to a different morphology. The Southern district<sup>2</sup> presents an urban radial winding structure that revolves around the water sources, and not the Mosque, as a centre. The northern<sup>3</sup>, later formed, district has a more orthogonal tendency with only one principal road<sup>4</sup> that crosses it sideways<sup>5</sup>.

Nevertheless, the Medina of Gafsa does not present a simple geometric appearance. It is composed of geometrically-complex forms with irregularities that cannot be characterized by the classical morphology. The structure of the Medina of Gafsa is worth being studied following an objective method that surpasses simple immediate perception and abstracts sensitive observation.

Hence the necessity of complementary research which is the very object of this paper. We suggest the morphometric approach (Ben Saci, 2000) to study the urban form of the Medina of Gafsa. It is a numerical analysis of forms that has already given interesting findings in the case study of the Medina of Tunis. The morphometric analysis opened the door to new architectural knowledge of the Medina structure (Zaabar, 2005).

In this paper, it's a matter of understanding, characterizing and defining the variations of the spatial forms using a digital tool of measurement.

## 2. MATERIAL AND METHODS

The intra-mural plan of the Medina of Gafsa is a unique two dimensional document that is part of a precise graphic representation of the Medina's urban structure (Barbero et al., 1994). Once the plan is scanned, it serves as a support for the constitution of a database. We have recorded it under the DWG vectorial format. Finally, we have started its codification at the level of the grey parts. The white colour stands for built entities and the black colour stands for urban void.

### 2.1. Morphological strata of the urban form

In the field of architecture, this term was developed essentially thanks to the work of Ben Saci (2000) who defines it as “*the measurement operation of the spatial form.*” Morphometry makes it possible to study the properties of the urban form and its numerical characterization. A mathematical representation of the form can provide us with new information about the form and allows us to “*outpass the direct perception and to give more freedom to the geometric determinism seekers.*”

Frequency analysis is the followed method to characterize the urban form of Gafsa. Not only does it give account of the spatial decomposition logic behind the urban form but it also allows us to describe the form in the frequency domain, which gives access to a new meaning for the forms. The frequency model describes the form and gives us more information about its structure. (Fig.1).

The frequency decomposition of the form through successive morphological strata is done using a *Fourier transform* operation. Every morphological stratum gives information about the urban form of Gafsa. This helps to unveil its properties by studying the different morphological strata.

The tool that makes the frequency analysis possible is morphological software (Fig. 2). Once the plan imported into



Figure 1: The plan of the medina of Gafsa

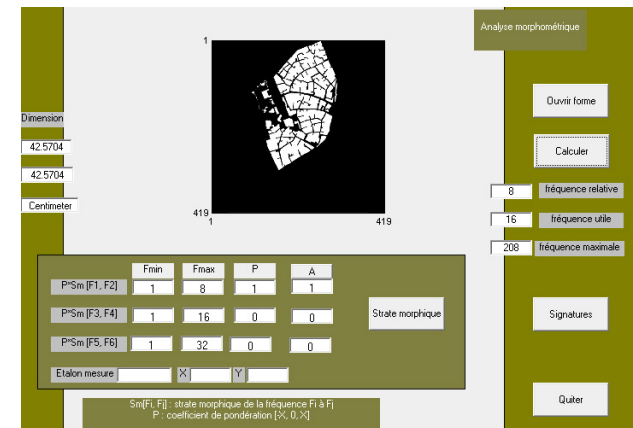
“Morphique” (The software used for this analysis: see Fig. 3), we start calculating the Medina’s representative frequencies of its form. “Morphique” displays morphological strata imbedded within frequency bands. Every morphological stratum contains morphological information that increases according to the frequency band. The information extends from the low frequencies of the topological level through the transitional level (medium frequencies) to the high frequencies of the figurative level. The frequency analysis of the Medina provides two significant values; relative frequency, which is the minimal frequency that gives us details about the urban form at the topological level. And the subservient frequency i.e. the medium frequency from the topological meaning to the figurative meaning of the form.

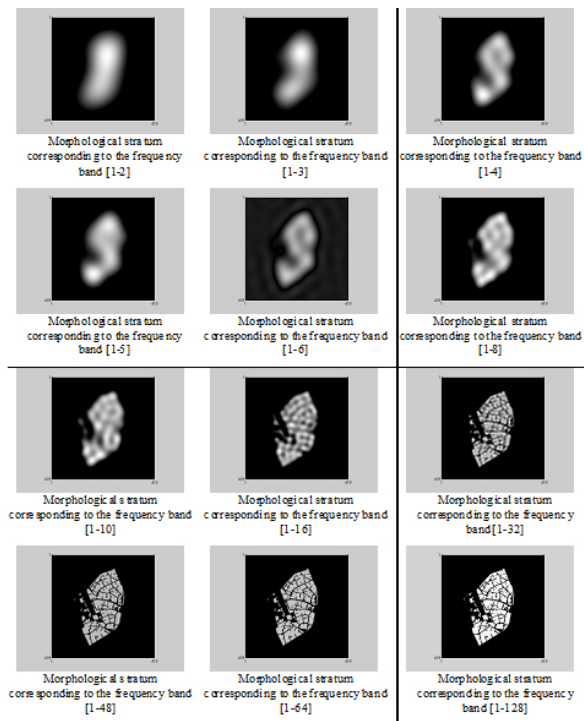
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Figure 2: Codification of the urban form

Figure 3: The Morphological software Interface





*Table 1: Results of the frequency analysis of the urban form of Gafsa, example of morphological strata tested through all the 128 frequencies areas.*

The high frequencies describe the form in its most detailed outline, and beyond the frequency number 16 we no longer notice any considerable change (Table 1).

It would be more interesting to focus only on the topological and transitional levels. These two levels of topological and transitional meanings plainly depict the properties of the form in a sufficient way. The morphological strata display the distribution of morphological information.

## 2.2. Energy descriptor of the Medina of Gafsa

It would be interesting to objectively select the most significant strata based on energy description of Gafsa's form. "The energy description consists in measuring the energy input of the frequency studies so as to define the quantity of information for each elementary morphological stratum" (Zaabar, 2005). The energy descriptor contains morphological information related to each of the different areas of the significant frequencies. It gives information to us on the distribution of the energy of the form and gives account of its morphological structure. The descriptor displays on the ordinal axis, the variation of the significant morphological information. On the other hand, the frequency calibration is presented on the axis of abscissa. They give information about some significant morphological strata. This selection depends on the amount of data and the variety of the morphological strata highlighted through all the pictures at the descriptor level (Fig. 4 and Table 2). The peak of information translates a certain variety within the structure of the Medina centre. Therefore, the remaining morphological strata are those which give the most important amount of morphological data. Morgex software displays the energy descriptor.

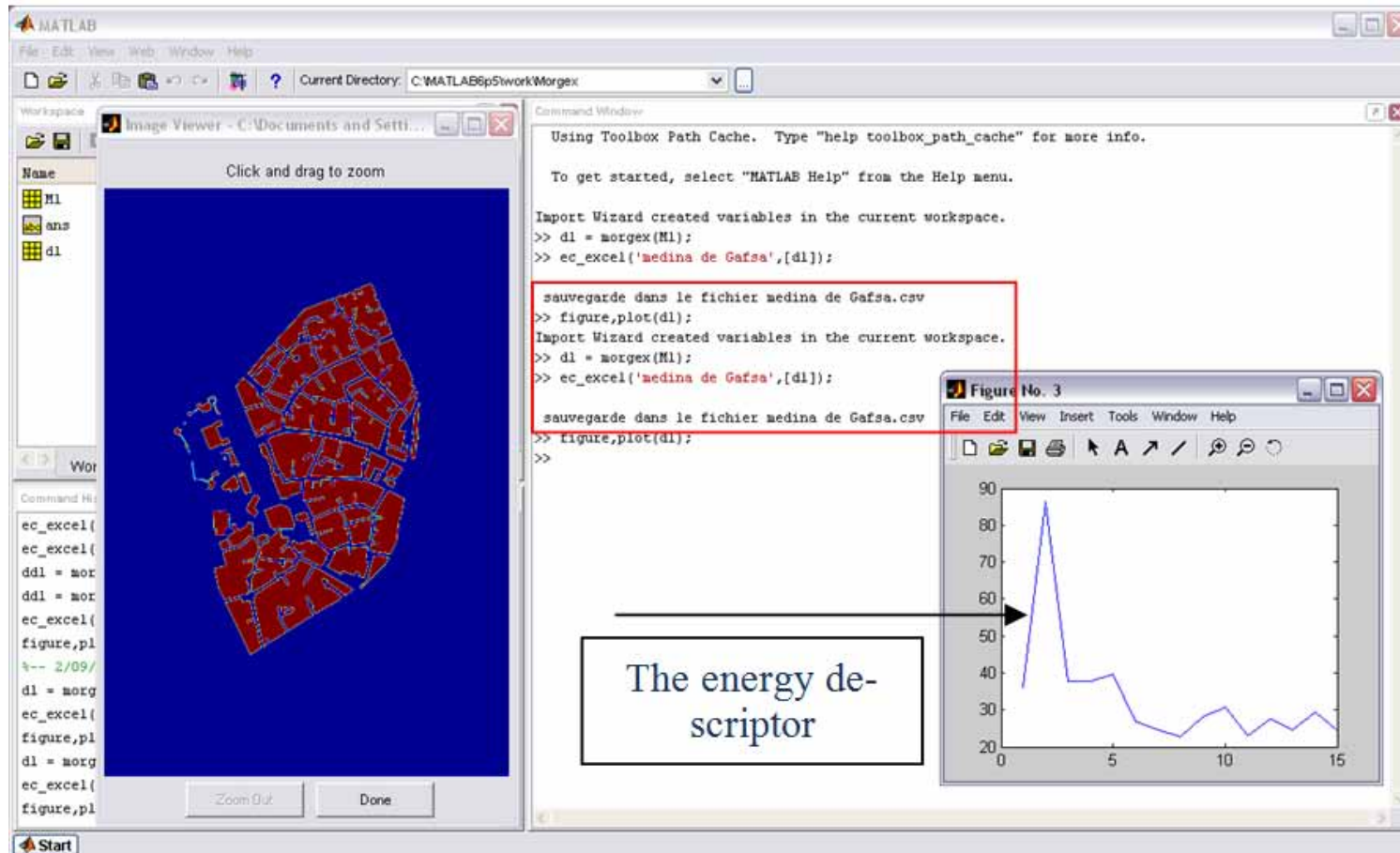


Figure 4: Calculation of the energy description of the urban form based on Morgex

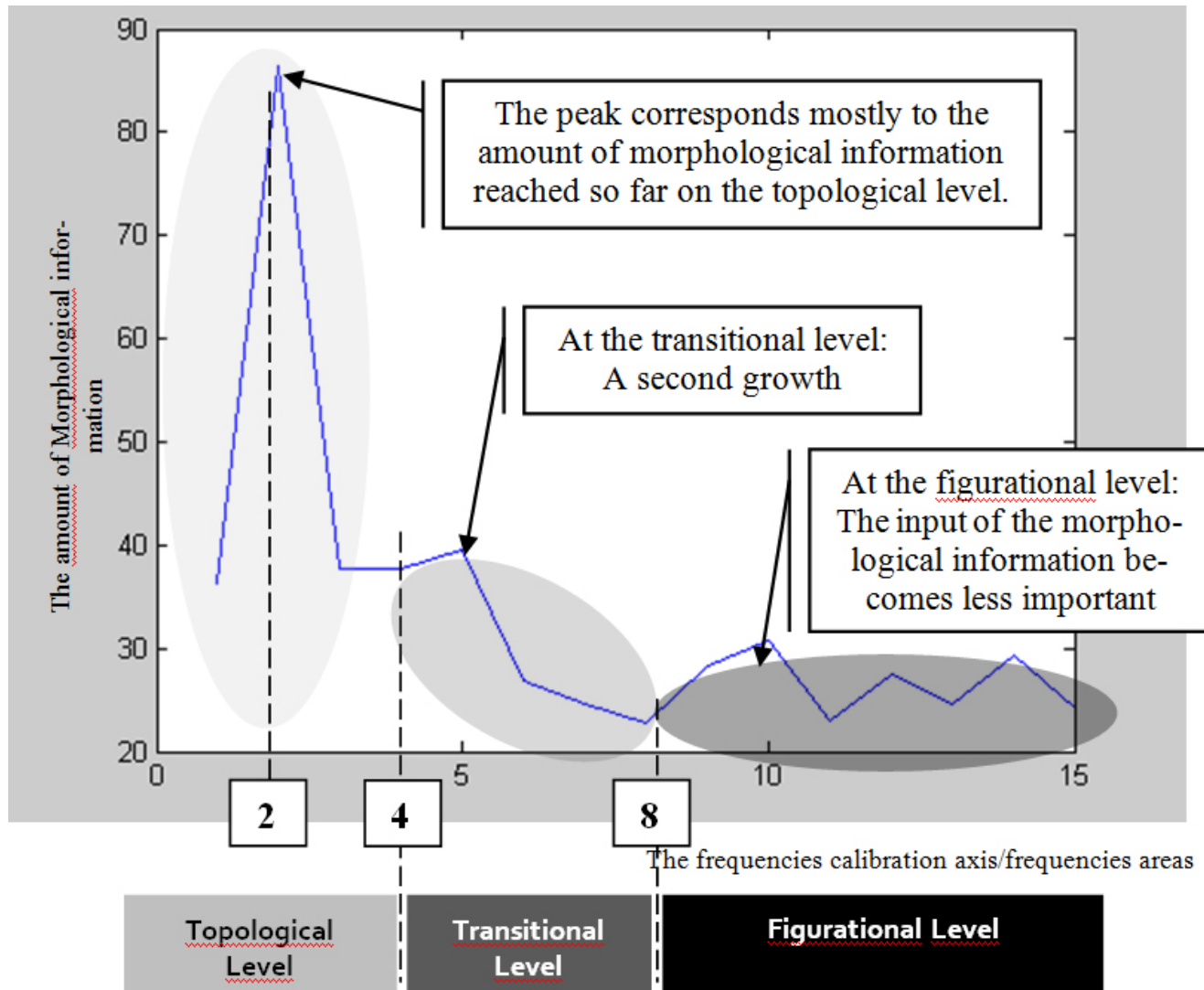


Table 2: The energy descriptor of the Medina form of Gafsa

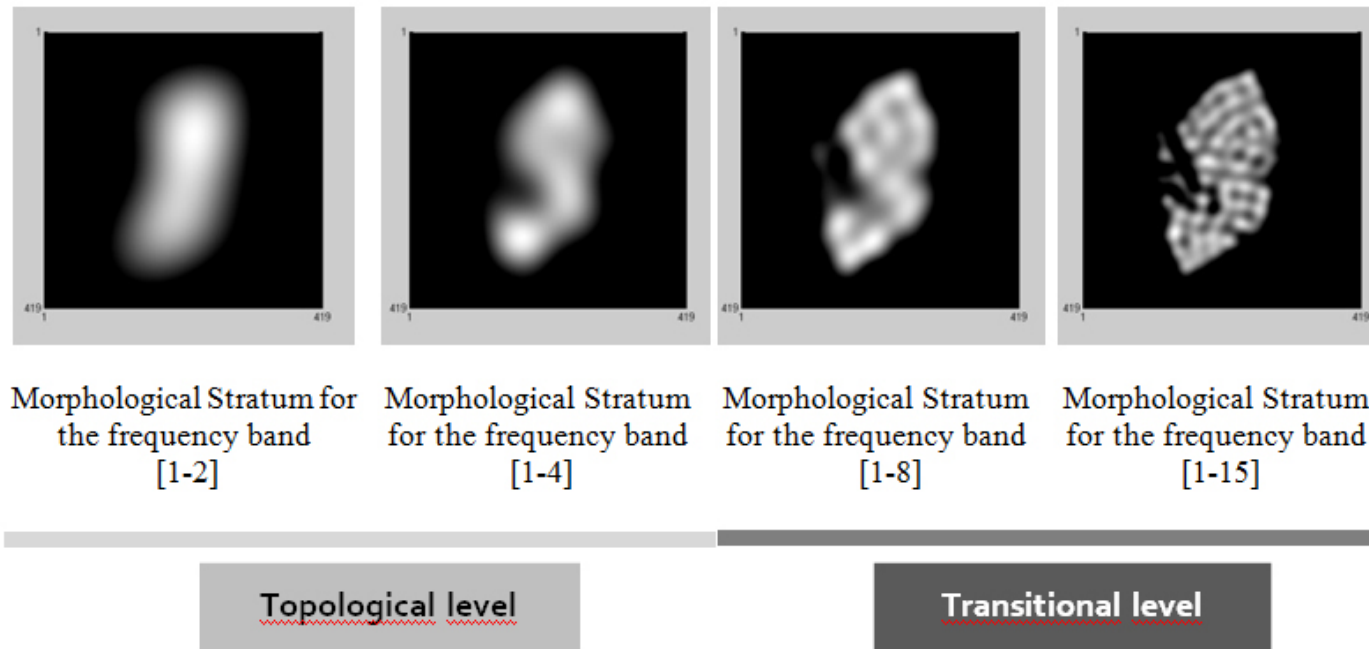



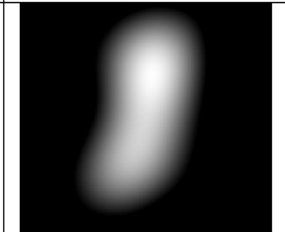
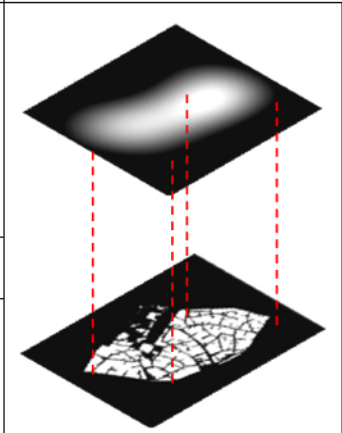
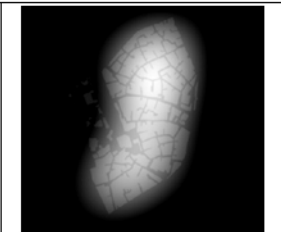
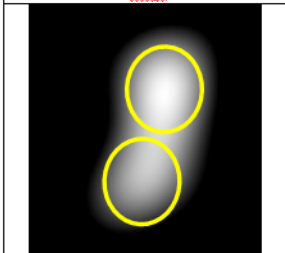
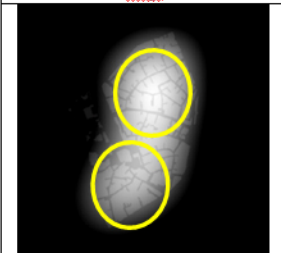
Figure 5: Results of the frequency analysis of the Medina of Gafsa

The energy descriptor of the Medina of Gafsa helped us find out a better objectification for the frequency band selection. We have restrained our process to the topological and transitional levels. These best inform us on the morphological logic of production and the structure of the urban form.

The descriptors that provide us with a peak of information are the ones corresponding with the frequencies areas [1-2], [1-4], [1-8] and [1-16] (Fig.5). The interpretation of the confrontation between the energy descriptor and the

5 morphologically significant strata, reveal to us that Gafsa's embryo does show up on the first primary topological level but the summary look of its periphery shows up later. Afterward, the more we dig into the frequencies [1-8], the more details we get about the curve as it displays the internal form of the urban structure. The urban structure with its different pathways becomes clearer. This is the beginning of the transitional level.

Table 3: Analysis of the morphological stratum [1-2] and its corresponding morphological hierarchy

Medina of Gafsa	Morphological stratum [1-2]	Stratomorphic Superposition with the Medina	
			
	<p data-bbox="1087 459 1327 515">Morphological hierarchy</p> 		<p data-bbox="1710 459 1951 515">Morphological hierarchy</p> 

### 3. RESULTS

We suggest superposing the morphological strata all through the plan of the Medina of Gafsa to unveil its hidden content.

In order to understand the logic of the frequency decomposition of the Medina of Gafsa, we have analysed the strata and extracted its corresponding morphological hierarchy. The form of the Medina shows up as a white entity in a black void. The first stratum [1,2] demonstrates two circumscribed centres through two distinct circular forms. The progression of the form allows us to identify two principal entities; this division cannot be arbitrary (Table 3).

The superposition of the retained morphological stratum with the Medina's form explains the underlying logic of this composition. In fact, it reveals two centres. The upper one corresponds to the *Jaouifi Gafsa* whose centre is called *la Hara*. The second centre corresponds to *Guebli Gafsa* which is the district with Roman water pools at the centre. The two entities correspond to two focal points of the urban composition which can clearly be distinguished at the low frequencies.

The more we dig into the frequencies, the clearer the structure gets. At the topological level, the morphological



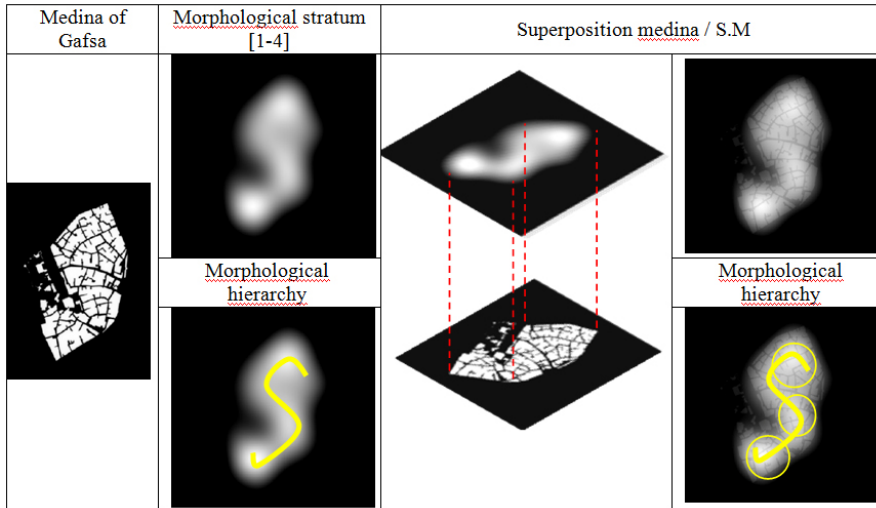


Table 4: The analysis of the morphological stratum [1-4] and its corresponding morphological hierarchy

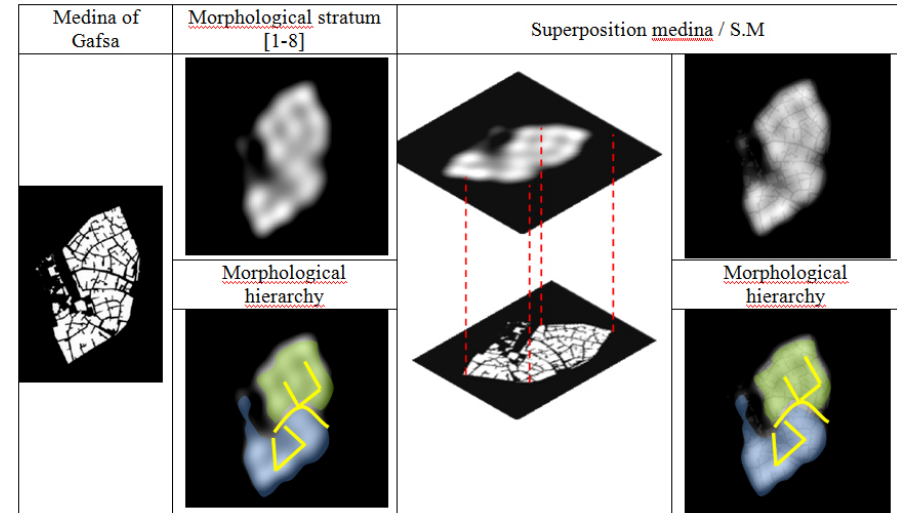


Table 5: Analysis of the morphological stratum [1-8] and the corresponding morphological hierarchy

superposition [1,4] of the stratum and of the structure, reveal to us the genesis of the medina according to an S shaped curve (Table 4). The frequency analysis allowed us to draw the big main line of the Medina. The shape of the Medina's form appears in a clearer and cleaner way. The frequency analysis highlights the existence of 3 distinct poles. The first entity is located in the north and the third one is located in the south of the Medina structure. As for the second entity, it occupies a middle position between the other two.

The morphological stratum [1-8] marks the beginning of the transitional level. The superposition with the primary form reinforces the carving of the urban structure according to the service axles of the streets (Table 5). These latter correspond to the black surfaces within the Medina. The frequency analysis reveals the directional axles structuring the urban structure of the Medina.

The frequency band [1-16] sets the void between the areas filled by built entities. The frequency analysis displays



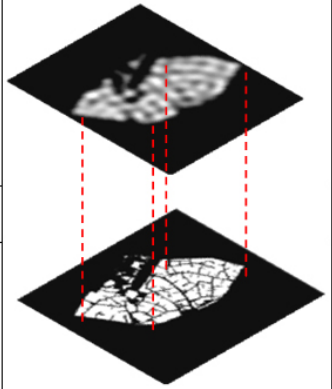

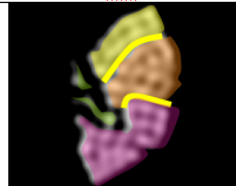
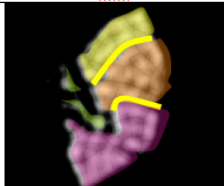
Medina of Gafsa	Morphological stratum [1-16]	Superposition medina / S.M	
			
	<p data-bbox="495 456 729 504">Morphological hierarchy</p> 		<p data-bbox="1081 456 1304 504">Morphological hierarchy</p> 

Table 6: The analysis of the morphological stratum [1-16] and the corresponding morphological hierarchy

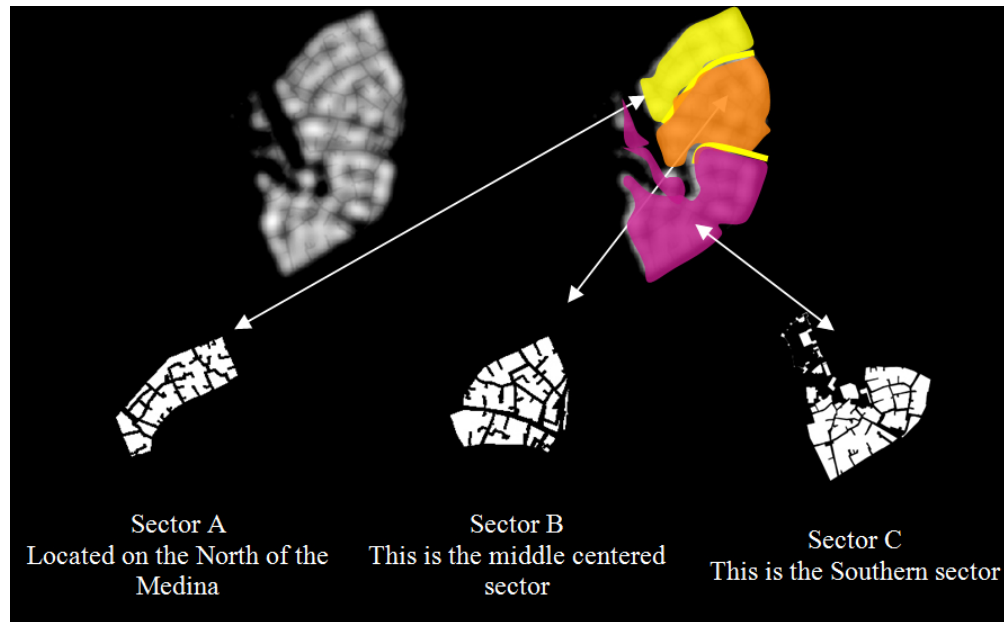


Figure 6: The frequency analysis into the three sectors of Medina of Gafsa.

the division of the medina into 3 sectors. These are separated by the main roads (Table 6).

At the transitional level, the morphological strata display the directional axes structuring the Medina (roads, impasses and plots).<sup>6</sup>

#### 4. DISCUSSION

The morphological characterizations together with the socio-cultural aspects show that the urban structure is very much influenced by the geographical aspect.

This morphometric study allows us to extract the principles of the structures of Gafsa's sectors. In fact, the conformation of the urban structure highlights the morphological hierarchy of the principle axes of the Medina thus contributing to defining its urban form.

#### 5. CONCLUSIONS

The historical research asserts that the Medina of Gafsa is composed of two sectors, that of the north and that of the south. This morphometric analysis, however, shows us that

the Medina of Gafsa is composed of 3 sectors.

The Southern sector shelters the Roman water pools in its centre. The second middle centre shelters the Jewish district called *Hara*. Whereas the Northern sector is centred in the middle of the new City. We can thus come to the conclusion that Sector C is the oldest. Sector B came after whereas Sector A is a relatively brand new entity. The frequency analysis gave us new information about the Medina of Gafsa. In fact, it revealed a deeper understanding and an explanation to the logic of the morphic conformation of the Medina of Gafsa and its structure.

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Figure 7: Summary of the results of the frequency analysis and the extrinsic aspects of the Medina of Gafsa



The reading of the morphological hierarchy became possible thanks to the efficient input of the frequency analysis of the urban form of the Medina of Gafsa. The morphological strata offered us spatial meaning that gives account of the form and its structure.

The conformation of the urban form of the Medina of Gafsa is absolutely meaningful. It gives account of the history, memories and the productive patterns of the Medina. The frequency analysis reveals to us the genesis of the Medina of Gafsa. In fact, the study of the form of the Medina's structure shows us that this latter is carrying in itself historical development details of the Medina of Gafsa. This study is dependent on urban development and social topographic situations.

*The genesis and history of this Medina is also omnipresent in the conformation of its formed lines.*

The present paper sheds light on the morphometric model input and its efficiency in the field of geometrically-complex forms analysis. It allows us to reveal the hidden structure of the Medina and constitutes a measurement tool to the urban form. It also helps us reach findings that give account of the analysed spatial form in an objective way.

This paper opens new horizons and perspectives for the characterization of each of the Medina's sectors. The morphometric analysis is able to tell us about the underlying logic

behind its significant structures all through the historical, geographic and morphologic spans.

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## ENDNOTES

- 1 Anciently called « Souk Et-Tooma » (Souk of wool yarns).
- 2 Called Guebli-Gafsa, takes its name from the source called Oued el Kebir or Oued el Bey.
- 3 Jouafi Gafsa also called Houmet bab el jbel.
- 4 The street of Sidi Ahmed Shili.
- 5 Starting from the the route of Kairouan, nowadays Taieb El Mhiri avenue ; to reach the Kasbah.
- 6 The revealed sub-entities of the frequency entity find their justification in the functional and geographic organization of the Medina of Gafsa.



# DESIGN AND RESEARCH

# REDESIGNING THE RELOCATABLE: MULTIDISCIPLINARY SOLUTIONS FOR A WICKED PROBLEM

**Clare Newton**

Associate Professor

Faculty of Architecture,

Building and Planning

University of Melbourne

Melbourne, Victoria, Australia

[c.newton@unimelb.edu.au](mailto:c.newton@unimelb.edu.au)

**Sarah Backhouse**

Research Associate

Faculty of Architecture,

Building and Planning

University of Melbourne

Melbourne, Victoria, Australia,

CEO for PrefabAUS.

## Abstract

For decades Australia's relocatable classrooms have been considered as inferior when compared with permanent classrooms in terms of indoor environment quality, aesthetic appeal and flexibility. With three years of funding from the Australian Research Council Linkage Project, we have sought to capitalise on tipping points occurring across design, education and manufacturing in order to redefine and redesign relocatable classrooms across Australia. To continue building new learning environments based on what was designed yesterday,

without taking advantage of new possibilities, wastes scarce funding resources.

The relocatable classroom remains a learning environment that many people consider as second rate. Relocatable classrooms do not get the same design attention as permanent buildings because they are perceived as 'temporary'. Fundamental questions arise. How temporary are they? Does this justify a less than optimum learning setting? In order for these classrooms to become agile and high performance places for

teaching and learning they need to be considered from an inclusive, multidisciplinary base rather than the current silos of practice

Our research aim has been to encourage a step change by bringing together conversations across discipline boundaries. One of our strategies was to incorporate an Ideas Competition into the research process as a way to encourage conversations between educators, designers, government procurement teams and manufacturers. This has been more difficult than expected as we speak different epistemological languages and see the world through different lenses. The paper tracks some of the obstacles and strategies for carrying out a multidisciplinary research process.

**Keywords:** Design Research, Multidisciplinary Research, Relocatable Classrooms, Crowd Sourcing.

## 1. INTRODUCTION

The case study at the heart of this paper is a three-year Australian Research Council Linkage Project which has sought to redefine and redesign relocatable learning spaces within Australian schools. 'Relocatables' within Australia accommodate

up to thirty percent of government school students in some states and yet they are not given the same design attention as the permanent buildings. The lack of design quality has been largely overlooked because these spaces are viewed as temporary. Our objectives for the research were:

- to capture, into a competition design brief, the multiple contexts influencing the design and procurement of the relocatable classroom,
- to bring the relocatable classroom back into the sight of users and providers of education facilities and
- to use a competition brief as way of crowd-sourcing and gearing best practice knowledge about prefabricated school infrastructure into the design professions.

We were aware of tipping points occurring across a range of disciplines and were interested to develop confluent solutions. Our key question was whether we might leverage tipping points in 21<sup>st</sup> century learning, sustainability, prefabrication and mass customisation to redefine the relocatable classrooms as agile, inspiring, high performance and delightful settings in which to teach and learn. More importantly, can we use



a multidisciplinary research process to highlight problems with this building type in groups of stakeholders who see no problem?

To fully address all the factors that contribute to successful learning spaces – and apply this thinking to the ubiquitous relocatable classroom – the multidisciplinary research team's expertise spanned architecture, pedagogy, sustainability, landscape design, information technology, parametric design, project management and facilities management. Research partners brought vital industry knowledge, and the collaboration with six education departments from around Australia made the research and its possible outcomes real and tangible.

In undertaking the research process we found that the issues we were addressing as researchers had parallel issues within the research problem itself. Forming a functional multidisciplinary partnership within a university context is surprisingly difficult as universities are powerful places of exclusion. The most esteemed academics are generally the most specialised. Just as university faculties operate as largely independent silos, classrooms often operate in a similar way with students moving from one subject silo to another, regulated by bells at fifty-minute intervals. This is at odds with constructivist ideas about authentic learning using real world scenarios.

As education shifts to be more student-centred learning in a digitally rich environment there are spatial issues to be considered. Space supports people coming together formally or informally around specific problems. An important early strategy was for the research team to gather within the one open plan space making the informal sharing of knowledge more accessible. It is understood that communities of practice are aligned with depth of discipline knowledge but there is also recognition that the edge can be a powerful zone of innovation and questioning when multidisciplinary teams collaborate (Wenger, 1998).

There is a growing cohort within academia, schools and organisations who might be best understood as *subversive boundary riders*. Yet while boundary riders are recognised for repairing of fences, our subversive boundary riders are breaking the fences between disciplines. Interdisciplinary bridge building is needed as well as disciplinary fence breaking. The role of the subversive boundary rider is high risk because recognition can be problematic. In academia, the established discourses, journals, conferences, academics and grant referees are understandably situated at the heart of discipline specific knowledge.

Working across discipline boundaries has been surprisingly difficult. We each bring distinct research methodologies

and they do not always sit comfortably alongside each other. Some of our research team worked within a critical social context using qualitative tools such as ethnographic research methods. Others in the research team employed a science-oriented gathering of data in order to track patterns and evaluate processes. There was a constant querying of approach and we developed an iterative research dance moving in parallel before coming back together as a team and vice versa. In this sense, we tended to be a multidisciplinary team of researchers rather than interdisciplinary or transdisciplinary.

Government and corporate bodies are increasingly encouraging, indeed requiring, multidisciplinary collaboration as a pathway to new knowledge and new partnerships between academia and the community. The Australian Research Council (ARC) is one such government body that actively places multidisciplinary research at the heart of a number of its research funding structures. ARC Linkage Projects require not only a multidisciplinary collaboration between academic knowledge bases, but also an active participation of Industry Partners who potentially lie outside and across a gamut of disciplinary and commercial interests. Initiating and navigating such research is useful for dealing with 'wicked problems' (Rittel & Webber, 1973).

This paper focuses on an ARC Linkage Project entitled

*Future Proofing Schools* which sought to address a real world challenge, *the relocatable classroom*. We also explore related experiences from activities in our teaching and learning which highlight some of the obstacles and opportunities of working across and between disciplines. These stories are relevant for other researchers who are embarking on similar journeys and who are seeking to have an impact on design practice through multidisciplinary research.

Researchers can fall into the trap of just seeing the *blank spots* through the lenses used within their discipline area. Other disciplines can help us see our *blind spots* (Wagner, 1993). In considering the design of physical learning spaces in schools, we argue that research conversations and methodologies are richer if experts from a range of discipline areas are involved. When questioned, the core reason given for not including expertise beyond the discipline is that the important issues are within the discipline.

As we undertake our research alongside our colleagues from different disciplines we find ourselves tripping over language. The terminology within each of our disciplines appears as jargon to outsiders who miss the nuanced meaning shared within a cognate group.

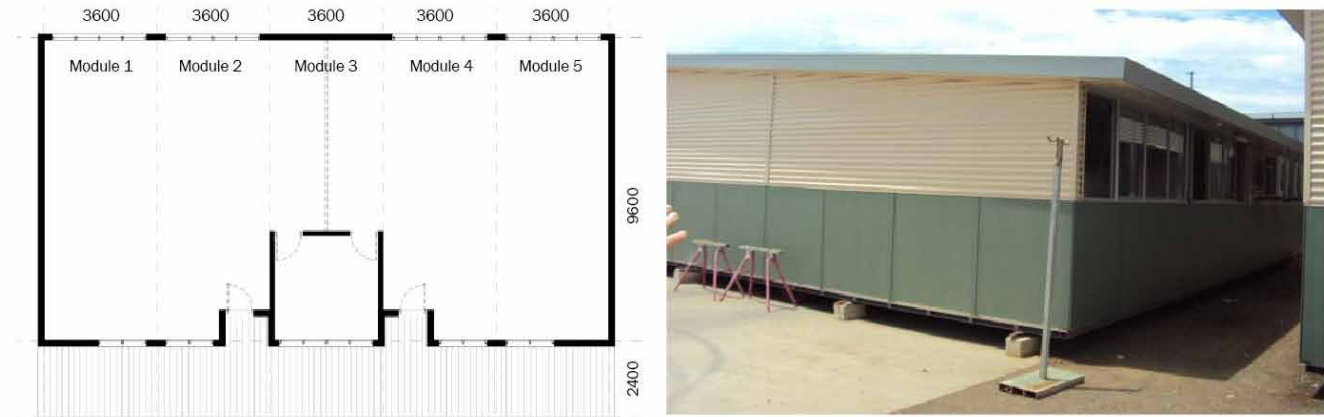


Figure 1. Typical Mod 5 Plan and Photograph.  
Source: The FPS Research Team

## 2. THE RESEARCH FIELD AND METHODS SELECTED: USING A CASE-STUDY APPROACH

Just as different terminology across disciplines can be a stumbling block, we can find different terms being used within a single discipline to refer to the same thing, creating confusion. Our research focused on relocatable classrooms which are standard, generic classroom products that are built by manufacturers to government specifications (Figure 1). They are known by different names depending upon the country, state, or manufacturer of origin. During our research, some of the names we have come across to describe these classrooms are:

relocatables, portables, transportables, prefabs, demountables, Mod5s, brown boxes, wobbly boxes and terrapins.

Relocatables are a planned response to support changing student populations resulting from immigration and shifting demographics; they provide a rapid response in emergencies such as fires and floods; and they are useful in remote communities where labour and materials are scarce. As such, they are important components of education infrastructure in the UK, the USA and Australia, yet for a variety of reasons these classrooms are often second rate environments for learning and inhabitation. For decades relocatable classrooms have been recognised as having less desirable indoor environment quality, low aesthetic appeal, temporary quality, and lack of

adaptability but there has been little interest in improving them as they are considered only temporary. In contrast there has been a growing interest in the design of permanent school spaces to accommodate changing pedagogical trends and rich information technologies (Dumont, Istance & Benavides, 2010).

The movement towards student-centred constructivist approaches to schooling has its roots in 20th century educational theorists such as Dewey (1966), Friere (1970), Vygotsky (1986) and Gardner (1993). Dewey and Friere each emphasised the need to focus on student initiative in order for education to be relevant. Friere argued that education should be based on the experiences of the learner rather than be guided by the dominant culture. Vygotsky explored learning as a language-based collaboration. The concept of 'authentic learning' was used by Neumann and colleagues to advocate learning that is produced, rather than reproduced knowledge. Other writers discuss the advantages of learning being related to profound questions requiring multi-disciplinary thinking rather than being limited within subject silos such as mathematics or English. The digital revolution has been a tipping point that escalated the movement towards student-centred learning and new 21st century learning spaces.

A critical question that impacts every facet of the

procurement of relocatable classrooms is: *are they temporary or not?* The notion of temporary versus permanent is central to the sense of worth and value that policy makers, client groups, designers and school communities attribute to these buildings. It therefore becomes the core driver in determining budget allocations; prefabrication systems; site placement, integration and landscape connections; visual appearance, design and quality; the refinement of the prefabricated classroom product over time; and a school's sense of ownership of the buildings.

The notion of temporary is relative. Relocatable classrooms may be located at a school for five or six years which from a student or parent perspective may be the entire time that the student spends at that school. Hence to students or parents, they are effectively permanent buildings. The reality is that these buildings don't get moved around as much as might be expected, and history has shown that many temporary buildings end up finding a permanent home at a school. We need to stop thinking that 'temporary' is a reason for lesser quality.

Another core issue is that of *transferability* (Figure 2). Many of the problems with today's relocatables stem from the challenges faced by a generic, mass produced product that is pre-designed to move multiple times to a variety of

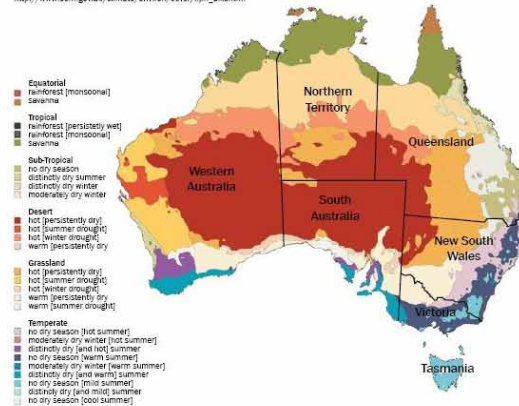
Figure 2. Extract from Competition Brief  
Source: The FPS Research Team

Relocatable classrooms require a high degree of transferability:  
>from one climate zone to another;  
>to a wide variety of physical and cultural contexts; and  
>to support a wide range of teaching and learning styles.

Context

Climate Zones

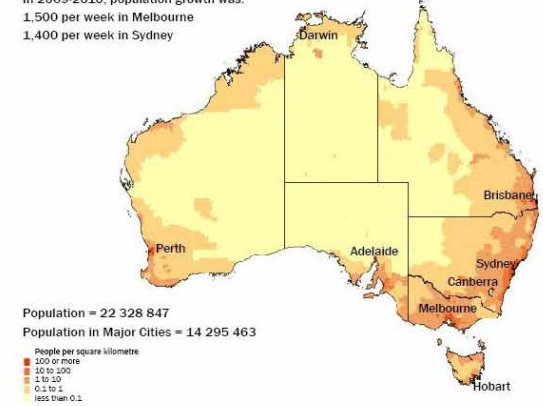
Map adapted from the Australian Bureau of Meteorology  
Köppen Climate Classification System  
[http://www.bom.gov.au/climate/en/iroh/other/kppn\\_all.shtml](http://www.bom.gov.au/climate/en/iroh/other/kppn_all.shtml)



Population Density + Major cities

Map and figures from the Australian Bureau of Statistics, figures from June 2010  
<http://www.abs.gov.au>

In 2009-2010, population growth was:  
1,500 per week in Melbourne  
1,400 per week in Sydney



different contexts over a 30 – 50 year life span. However they are not specifically customised for any of these contexts, and are generally a ‘one size fits all’ response. For the relocatable classroom to become truly agile and appropriate in the future, the design of the product will need to address how it can adapt from one climate zone to another; to a wide variety of physical and cultural contexts; and to support a wide range of teaching and learning styles.

Encouraging architects and building designers to embrace the potential offered by emergent digital fabrication

technologies, and the inherent opportunities for mass customisation, will be an important key to unlocking the ability of our buildings to be more agile and adapt over time.

Within many new permanent buildings for Australian schools and buildings delivered as part of the Australian Government’s *Building the Education Revolution* investment (Newton & Gan, 2012), we see a shift away from classrooms into more fluid environments of large and small, interconnected learning spaces. There are some permanent prefabricated learning spaces in Australia that accommodate these new

ways of learning. This level of innovation is not yet seen in relocatable classrooms which are generally individual, rectangular spaces without fluid interconnections with other learning spaces.

This case study reveals gaps between disciplines. With some notable exceptions, issues to do with space are largely absent from educational discourse (Fisher, 2002) while terminology used within education is foreign to many designers. Designers are likely to have limited understanding of the impact of changing technology and new thinking on pedagogy while facility planners may focus on life-cycle costing and management rather than pedagogy or space. Manufacturers and builders understand construction yet most will have little or no training in design and aesthetics. Architects are passionate about creating customised, crafted jewels of architecture for their clients. Building manufacturers are in the business of mass production, and their business model requires a level of volume and repetition. Infrastructure managers in government departments are working within the confines of government policy and funding models, and frequently come from a project management or engineering background. The difficulty is that universities, education departments, schools and design professionals and construction sectors do not easily support conversations across discipline boundaries.

This selection of issues reveals that addressing problems within an *apparently simple building type is in fact a complex conundrum*. The key to unlocking such a conundrum requires a creation of links across and between disciplines in which conversations and conclusions occur at the interstices. Yet, as with many real world wicked problems, we find that the various protagonists have infrequent opportunities to meet or collaborate with each other. In order to leverage the previously identified tipping points so they become agents in *step change* rather than *incremental change*, we need to create opportunities for the cross-section of stakeholders to investigate the problems that cannot be fully addressed within the confines of our own disciplines (Cutler, 2009).

The research involved a complex web of stakeholders (Figure 3), creating a number of new relationships which the team needed to negotiate and nurture rapidly. Based upon the team's experience of previous multidisciplinary research, an early decision was taken to dedicate two Research Associates for the duration of the project. In addition to research activities, they had clear roles to identify and nurture new relationships within the wide spectrum of possible research participants.

Early in setting up the research, the team became aware of the varying degrees of 'buy-in' from stakeholders. Initially, certain stakeholders felt the need for change was urgent, while

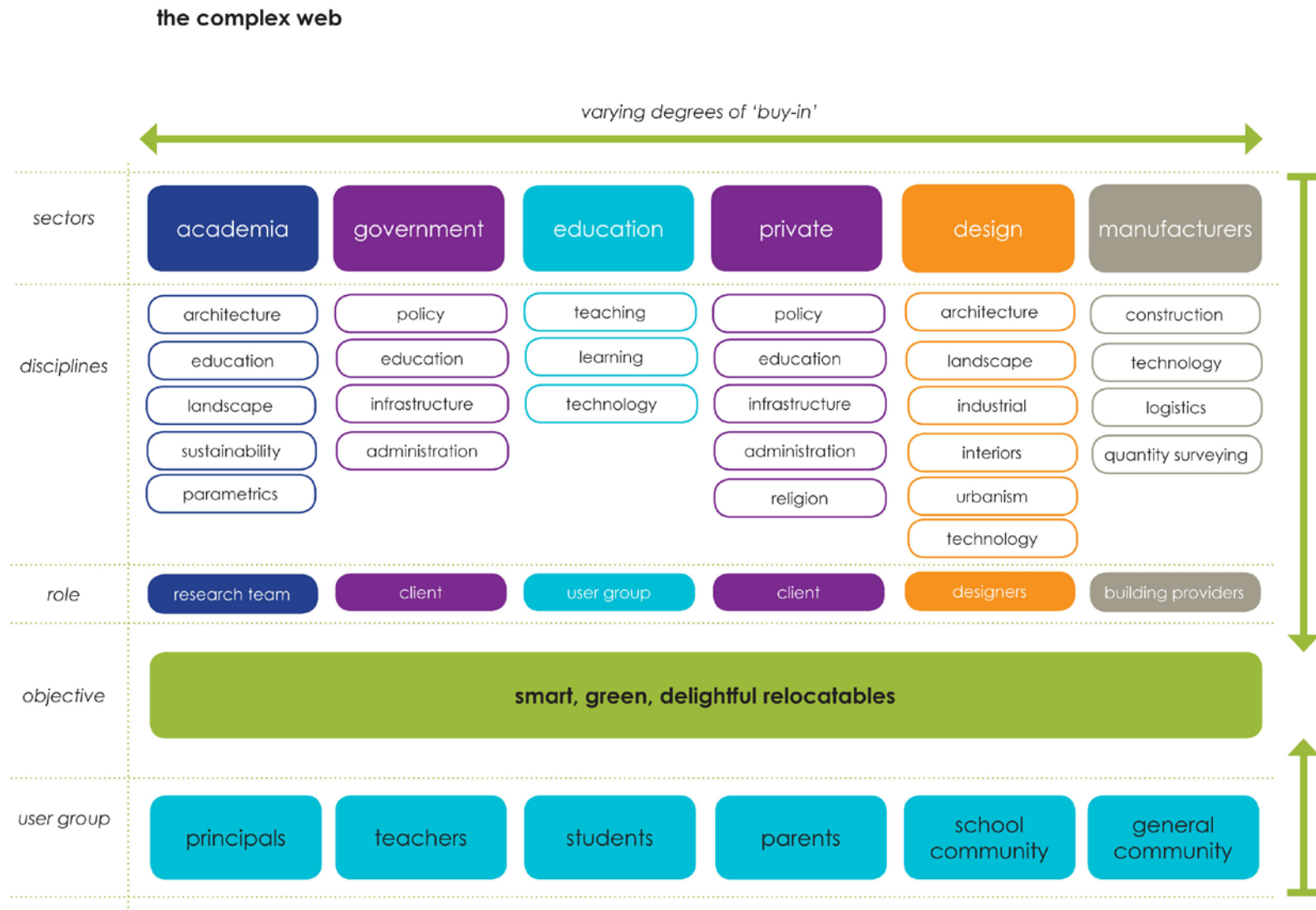


Figure 3. The Complex Web of Stakeholders.  
Source: The FPS Research Team

others did not perceive a need for change, as highlighted by the following anecdotes coming from six different people commenting on generic relocatable classrooms:

**Prefabrication expert:** *Relocatables... At their best they can be described as cheap and cheerful – but they look cheap and often aren't too cheerful. Unless we get some proper design thought applied to the problem, then prefabrication will remain synonymous with mediocrity.*

**A parent:** *How can the government say it values education? There are some wonderful prefab housing projects we see in magazines – why can't the relocatables look like that? Why must they look and feel like factory sheds?*

**Architect:** *In developing the master plan for this school, it was especially important that we could hide all the ugly relocatables at the back of the site, out of view.*

**Education infrastructure manager:** *We cannot deny the stigma that is attached to them. We need to work towards systems that mean that relocatables don't look like relocatables...*

**Generic relocatable manufacturer:** *The single biggest challenge*

*for us is that of preconceptions. Our product has improved greatly but the perceptions have not... Our new products lead the way in green technology...*

**University academic:** *I went to school in relocatables, my children went to school in relocatables – it didn't do us any harm...*

These anecdotes come from a range of people who each bring their own framework of knowledge. Each comment is true for the speaker and yet as a group of comments they reveal contradictions. The frustrated expert is seeking to increase the uptake of prefabrication yet believes that the many benefits it brings are masked by negative associations. A parent laments the utilitarian building where her 6 year old is experiencing school for the first time, and knows that other sectors are developing more interesting prefabricated buildings. The architect boasts that she managed to hide all the relocatable classrooms at the back of the site, even though this means those young students are further away from the school's main toilet block. An infrastructure manager knows the relocatables need improvement, but is constrained by established procurement protocols and funding models. The manufacturer is proud of the build quality of his product yet doesn't appreciate that it could look and function so much better. Finally, a successful



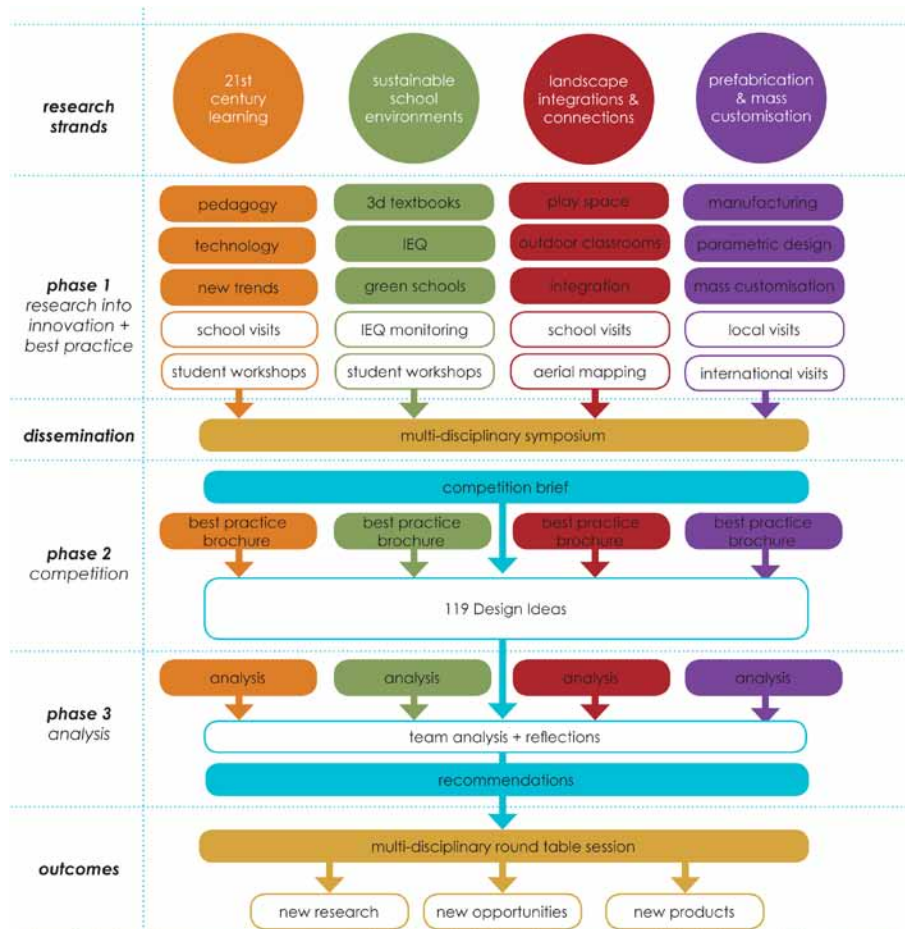


Figure 4. A three phase research process. Source: The FPS Research Team

academic from a supportive, nurturing and financially secure background is unaware of how relocatable classrooms might be perceived by communities of social, economic and educational disadvantage.

How do we accommodate or unravel these separate truths into a more coherent and richer analysis regarding relocatable learning spaces? Multi and cross-disciplinary conversations are needed so that we can find common ground.

*“We are not students of some subject matter, but students of problems. And problems may cut right across the borders of any subject matter or discipline.”*

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This observation by Karl Popper (1968) reflects the multi-disciplinary research experiences of both authors. Perhaps it is timely for communities and organisations to invest in some subversive boundary riders commissioned to build bridges and break fences.

### 3. THE RESEARCH MILESTONES AND RESULTS

It was essential to create an inclusive research framework

that would bring together the manifold voices and perspectives of the various stakeholders while avoiding situations of conflict and tensions. The process needed to provide safe and trusting contexts for our wide range of stakeholders to express their viewpoints with honesty. A three phase research process (Figure 4) allowed for moments of disciplinary focus, multidisciplinary collaboration, and forums for key stakeholders to meet, share and review findings to map a way towards the future. It also included speculative responses by over one hundred designers in the form of a Design Competition embedded within the research process.

Phase 1 allowed opinions to be shared and data collected within the familiarity of discipline strands. Team members visited schools across Australia to understand best practice in learning environment design and educational challenges. Focus groups, workshops and involved many age groups, contexts and cultures ranging from primary to tertiary level education, suburban communities with large representations of new migrants to remote, indigenous homeland communities. Other team members travelled nationally and internationally to understand emerging best practice in prefabrication, during which conversations with manufacturers, architects and client groups highlighted opportunities, constraints and inspirational new ideas. An ecologist and landscape architect investigated

the opportunities presented by continual reframing of the relocatable classroom's relationship with the landscape. Sustainability experts monitored the indoor environmental quality of relocatable classrooms across Australia.

Yet these activities were largely discipline based in their nature. In order to create moments for true multidisciplinary collaboration, the research required orchestrated moments when the discordant voices of the various stakeholders came together. Three primary events – *the symposium*, *the competition* and *the round table session* – presented key opportunities for the research investigators to leverage an increasing body of multi-disciplinary knowledge and take on the role of subversive boundary riders.

A carefully crafted multidisciplinary symposium provided an important moment for ideological shifts. During previous research projects, the team had gained a reputation for creating unique events conceived as conversations that brought together educators and building designers to discuss learning spaces. Building upon these successes, we designed an event that invited delegates to share honest viewpoints on various aspects of the relocatable classroom. Educators, architects, government education departments and researchers attended the event.

Authenticity was crucial. One speaker was the principal

from a remote community school in Australia's outback who shared stories of her day to day challenges in creating a nurturing learning community in a context where distance and culture could be divisive. These stories were told with humour and respect, and the audience were transfixed. The audience also noted the red dirt of the outback that was still ingrained in the soles of the principal's shoes, having arrived in the city only the night before. Another speaker, an academic in the architecture discipline, shared research and student work with the audience as he explained the potential of impact of parametric design on the future built environment. These presentations were followed by vibrant discussions in a series of smaller working group sessions when delegates collaborated and discussed the key themes.

Delegates later visited the factory of a prefabricated building manufacturer. The diverse group included architects, architecture students, educators, facilities managers, as well as the bus driver who preferred to join the tour rather than linger outside the bus. If any delegate had harboured negative preconceptions of the potentially high quality of prefabricated building prior to the visit then they all left as converts, including the bus driver who clutched the sales brochure tightly in his hand. On the trip back, he excitedly told us that he might have found the solution for his rural block of land.

The purpose of this symposium was not to solve the problem. Its purpose was to introduce the various stakeholders, many meeting for the first time, and provide them with new lenses with which to view common issues. This format of *authentic conversations* and experiences can foster a new awareness of differing viewpoints and opportunities outside of our day-to-day disciplinary context.

Embedding a design ideas competition within a research process is unusual, yet we considered it as a pivotal element of our research methodology. Design is an invaluable strategy for working through wicked problems that are so complex that they defy definition. Through design, complex ideas can be tested within scenario settings in order to explore different futures. In funding a design ideas competition within a design research project, the ARC was allowing us to invite a broad base of design practitioners to become active research participants.

In developing the brief for the *Future Proofing Schools Design Ideas Competition*, the research team was aware that the problem of the relocatable classroom was too complex to be resolved in a one-stage competition format. For example, detailed responses to issues of temporality and transferability could only be touched upon within the time frame. Instead, we were inviting entrants to think 'otherwise', and therefore

encourage and inspire government education department, manufacturers and educators to do the same. Although we had encouraged entrants to form multidisciplinary teams, we found that these were formed largely from within the disciplines of the design professions.

At the conclusion of the competition, an on-line gallery, exhibition and exhibition brochure were tangible means of sharing 119 new ideas for the future. We shared and celebrated the competition entries with the wide range of stakeholders, in the hope that seeing an inspired and delightful version of a building type they knew well would shift both their aspirations and expectations. The research team analysed the key themes, quick wins and gaps of the competition responses and these findings were documented in our publication *The Phase 3 Research Reflections*. It was at this point, when ideas were on the table and key opportunities for the future had been identified, that educators and manufacturers started to engage in the conversation about relocatable classrooms of the future.

Six months later, a round table session was a final collaborative research event that brought together the various stakeholders of the three-year research project, allowing us to assess and understand new knowledge bases, where viewpoints may have shifted, where they remained the same, and

plan future steps. This final event was conceived as a reflective session, and the body of knowledge developed during the research provided a springing point for a series of speculations. It involved forecasting an aspirational future then backcasting to understand the possible route to achieving that future.

The event was attended by educators, architects, government education departments, researchers and prefabricated building manufacturers. With the research team's new appreciation of connections and potential collaborations, we acted as 'matchmakers'. We planned strategic seating combinations to generate fruitful connections, making sure that there was a balanced mix of perspectives at each table.

Prefabricated building manufacturers had been under-represented in the previous activities so the research team made a conscious effort to create an agenda that made their attendance worthwhile. A focus on networking with key players in major client groups was enough to achieve a ten-fold increase in their attendance when compared to the first event. Following the event, numerous manufacturers who had heard of how useful it had been for their peers expressed regretting their non-attendance.

A number of important outcomes are emerging from the round table session, building on these new conversations. Architects and manufacturers who met at the event are now

discussing potential collaborations to develop new, design-led products for the future. Another emerging outcome is a multidisciplinary group working towards the formation of a peak body for Australia's prefabrication industry, something that we observed in other countries during our research. This peak body will act as an innovation and collaboration hub between manufacturers, designers and client groups, further building upon these new relationships. Such step-change would not be possible without crossing and breaking boundaries between disciplines.

#### **4. DISCUSSION: REFLECTIONS ON MULTIDISCIPLINARY THINKING**

Reflections by academics on interdisciplinary research were published in a recent document titled '*Interdisciplinarity in Research*' (Bolitho & McDonnell, 2010). Academics emphasised the importance of their own founding disciplines and tended to seek interdisciplinarity when 'this would get them the best results'. One researcher highlighted that his best papers are all within his discipline. Another said that he would not present at a conference outside his cognate field even though these other fields influenced his research. The same document quotes cautionary notes which state that it is not clear the degree to which academic and research organisations and journals are prepared to change to support interdisciplinary work.

*All researchers referred repeatedly to issues with the University's faculty structure and excellence-based rationale, and all highlighted that the problem of publishing is acute. The pressure of the ERA is unremitting and interdisciplinary work tends not to be associated with the highest impact journals" (p5).*

Even though there is increasing recognition that innovative research often occurs at the boundaries between disciplines

(Leonard-Barton, 1995; Carlile, 2004), conflicting and powerful forces work against these interdisciplinary endeavours.

Discipline approaches are relatively new in our history. Weingart (2010) suggests that disciplines as we understand them first arose in around 1800. As disciplines became established they developed specialised languages in which the audience was other members of their own discipline. “*The essence of discipline formation and evolution is self-referential communication.*” (Weingart, 2010, p 8) Communities of scholars generated a division between specialists and laypersons. Access of specialised knowledge was available through ‘popularisation’ which gradually as a separate activity not intended to contribute to new knowledge but to mediate scientific knowledge to the educated public. The difficulty of this structure is that knowledge held within academia runs the risk of being self-referential and remote from industry in terms of problem setting and outcome communication.

Ann Balsamo in 2006 introduced the term ‘epistemological humility’ as a necessary position for interdisciplinarity to succeed (Jasanoff, 2010). Successful collaboration begins with the position that one’s own definition of important knowledge may not be the only definition. But humility alone is not enough. Collaboration requires both patience and respect for other disciplines including those that seem frustratingly

antithetical to our own ways of thinking.

In a previous paper one of the authors made the analogy of the interdisciplinary researcher as a subversive boundary rider (Newton, 2010). In Australian folklore culture they have played two distinctive but relevant roles. Historically we know them as solitary horse riders living lightly in remote and lonely locations. Their task is ensuring the long wire fences around stations are in kept in good repair to ensure livestock stay in and vermin stay out. Today the term ‘boundary rider’ is used in Australian football for the commentators who work from the sidelines during the game. These boundary riders are focused on communication. They have access to players and coaching or medical staff on the interchange bench in order to be able to give a more detailed commentary of the game and any injury concerns.

Researchers working across discipline boundaries can be conceptually understood as subversive boundary riders. As subversive boundaries riders, their role is to open up the fences rather than repair. They play a role in bringing together knowledge and people from across disciplines, supporting the development of unexpected collaborations and helping repair misunderstandings. They may take a pragmatic bricolage (or tinkering) approach to research. The traditional boundary rider carries little baggage.

The subversive boundary rider who stays close to the fence lines of research disciplines chooses the high risk life of not quite belonging. Within academia, a dilemma exists for such a person. They risk losing a home base where *discipline knowledge depth* has clearer peer recognition processes than the *boundary rider's knowledge breadth*.

Perhaps our new subversive boundary rider has to travel lightly with an adaptable suite of tools and lenses, and a willingness to learn different epistemological languages. At times the role of the subversive boundary rider is simply the carrying of messages from one group to another in order to develop a more holistic view of the question to do with whether space can support or hinder learning communities. Like the football boundary rider, there may also be a third role which is to act as a commentator from the sidelines.

## 5. CONCLUSIONS

Bringing the design of relocatable classroom back into the sight-line of consumers and education facility providers was undertaken as a multidisciplinary research project over three years involving academics and industry stakeholders. We set out to bring about a step change in the design of relocatable

classrooms and used a design competition as the focus. The solution cannot be achieved by any one discipline but we used the design discipline as a means of visualising alternative futures, synthesising knowledge from tipping points in disciplines such as education, sustainability, design, manufacturing and infrastructure procurement. With the results of the competition as a backdrop, we then brought together the key stakeholders into a venue to jointly forecast a possible future followed by a process of backcasting. Backcasting is a useful strategy to translate ambitious step changes into manageable incremental changes.

In order to navigate the unknown, we found that it is essential to approach each issue with the wide-eyed openness of a child who is eager to grow and to learn, to simply ask 'why'. This allowed us to constantly question assumptions made within individual epistemological frameworks. The breadth and depth of knowledge we now hold at the conclusion of the research project has brought clarity for both researchers and industry stakeholders.

Communication, collaborations and conversations have been at the heart of the process and the research has initiated and informed new networks and authentic collaborations. Organisational change and committed leadership is needed within universities if effective collaborative environments are

to be supported. The power of the physical environment to establish venues for new teams to co-exist and collaborate should not be underestimated. Equally, interpersonal and intrapersonal skills play a critical role in supporting collaboration. It is suggested that there is scope for communities and organisations to consider the potential of subversive boundary riders with the necessary passion to infiltrate and negotiate boundary territories. This is where new knowledge is born.

## ACKNOWLEDGEMENTS

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# HUMAN ORIENTED LIVING ENVIRONMENT



# USER-CENTRED LIGHTING DESIGN PROCESS

**-about the collaboration between  
architects, interior and lighting designers  
within the lighting design process**

**Monica Säter**

Post-doc Researcher

Department of Architecture

Chalmers University of Technology

[monica.sater@telia.com](mailto:monica.sater@telia.com)

## Abstract

This paper is concerned the user-centred lighting design process and the need of collaboration between the architect, the interior designer and the lighting designer, when working with the process. The user-centred lighting design process have when used, the possibility to fulfill light-related goals concerned visual comfort and light-related public health. A literature review was performed based on articles about man and light. The literature review was combined with research in the lighting design process performed within a Thesis project in Lighting Science at Department of Architecture at Chalmers University of Technology in Gothenburg, Sweden.

In the project was common knowledge in lighting design written down and three types of lighting design processes were described. The first was a general and visual approach to lighting design. The process is performed with computer calculation only and not related to daylight, the user's senses or the colours of the surfaces in the space. The second process is a basic lighting design process of four steps. The steps are concerned the space, the user and the design of daylight and the complementary electric lighting, done in contact with the space and the users senses. The third process that was described was the user-centred lighting design process. The

process is similar to the basic lighting design process but the user's needs psychologically, physiologically and visually are met with an extended care in all four steps of the design process. It is concluded that the user-centred lighting design process, when performed in a professional way, lead when used to a higher fulfillment of goals according to visual comfort and to a positive impact for light-related health, when compared to when the two other types of lighting design processes are used. A cooperation between the architect, the interior designer and the lighting designer make sure that knowledge about the space, the user's need of light, lighting analysis, lighting design and knowledge about lighting technique is present in the lighting design process

### **Key words**

User-centred lighting design process

Cooperation within the lighting design process

## **1. INTRODUCTION**

Daylight is fundamental for life of humans, animals and plants as well. The light and dark cycle in nature moves the human body from the deepest sleep to high levels of alertness, every 24 hours. However, the human 24 hour rhythm is not exact and by that we need to stay close to daylight at the place where we lives, in order to get entrained to the rhythm of daylight in nature. Long lasting disturbances in the diurnal rhythm, may lead to disease (Brainard & Hanifin, 2005). A co-work of the architect, the interior designer and the lighting designer is needed, to create a high support for the individual user psychologically, physiologically and visually (PPV) through daylight and a complementary electric lighting, when staying in the indoor environment. Lighting design is a handicraft that when used in a proper way, supports the user PPV, and reinforces the architecture and the interior design in a comfortable and pleasant way. After year 2000 and the findings of ipRGC is knowledge about man and light increasing rapidly. New findings can be used in the design of lighting applications that improve the support PPV, for the user. Lighting design is often referred to as mysterious and difficult to understand. For the lighting designer, it is a handicraft and a basic process

that easily can be described, evaluated and related to goals set out in society.

A literature survey was performed in the Thesis project (Säter, 2012), with the purpose to collect information about man and light, from different topics that can be seen around the lighting design process (LPD). In the same time was the lighting design process analyzed and described as a process of four basic steps. Three types of processes were identified, the first one was the computer calculated lighting design process, the second the basic lighting design and the third, the user-centred lighting design process.

Not only daylight but also the architectural light, is after year 2000, found related to human basic health and need by that, to be designed, close to the individual user's needs psychologically, physiologically and visually (Brainard & Hanifin, 2005).

Goals set out for lighting design about visual comfort and light-related health, is important to fulfill, in order to design light in a way, that have a positive effect on the user. In order to do so, in a fruitful way, the four steps of lighting design need to be performed as a handicraft and in cooperation with the architect, interior designer and lighting designer, and be based on knowledge from the medical field, physiology and photobiology as well, as from design and technology. Since

lighting is of high importance for humans, it is necessary to get a high fulfillment of goals set out for the design of the practical application, by the use of a well functioning method for lighting design. This is beneficial for the user and for society as well.

### 1.1. Theoretical framework

Despite 200 years of research concerning the human eye, was the physiological system that connects daylight (and the architectural light) to the human system that gives action potentials to the brain, not known until after 2000 (Berson et al., 2001). In the retina in the eye are 1–2 % of the cells ganglion cells and only some % of them are light sensitive. Already 1928 were Keeler (1928) and two coworkers at Harvard Medical School on the track to find out the existence of a third type of photosensitive cell in the retina of a mouse. They wrote an article about the work that they performed, but their findings were questioned. Hollwich, a German ophthalmologist, found the effects of light entering the eye. He saw that it resulted in hormonal release among his patients and wrote extensively about the system 1940–1980. He named it the energetic portion and the other part of the system (the human visual sight), he called the visual portion (Hollwich & Dieckhues,

1980). It was not until David Berson (2001) managed to take pictures of the connections between the cells and the human brain, that the findings were accepted. The system that Berson was able to show opens up for a mapping of the support of humans psychologically and physiologically from photon flows (electromagnetic radiation).

During this time, between 1928 to 2000, has methods for lighting design, measurement techniques and the technical part of the lighting application, been developed towards visual support of the user, by the use of daylight and complementary electric lighting based on the use of the Vlambda curve. Despite the breakthrough in knowledge about the importance of daylight and the architectural light for humans and to stay close to the rhythms of daylight for the individual user, still an solely visual and general approach to the user can be seen, as the most frequent method for lighting design. This visual approach needs to be completed with a support psychologically and physiologically and visually as well, from daylight and from the complementary electrical lighting.

## 1.2. Aim and research question

The aim with the project was to combine new knowledge

about man and light, found in literature written after 2000, with common knowledge in lighting design. It was also to describe three types of lighting design processes, and to show in what way the architect, the interior designer and the lighting designer can cooperate, with the ambition to perform all four steps of the lighting design process in a professional way. By working together, they will get a high fulfillment of goals set out on lighting design, according to visual comfort and light-related public health.

Why and in what way should daylight and the complementary electrical lighting be designed for the indoor environment, in order to fulfill, light-related goals set out for visual comfort and light-related public- health?

## 2. METHODS AND THEORETICAL FRAMEWORK

The methods used in the Thesis project is a literature survey about man and light based on articles written after 2000, due to the discovery of melanopsin and ipRGC at that time. The articles were selected among topics that can be seen related to the lighting design process, as medicine, physiology and photobiology, and written with a connection to the basic

system (iPRGc) that connect daylight and the complementary lighting to the human photoreceptors in the eye.

Selected articles written before 2000 are added to the survey, chosen from the same theoretical areas as articles written after year 2000. The articles selected can be seen as forerunners for the development after year 2000.

Within the Thesis project was the interaction between man, light, colour and space described as well as the lighting design process. As a complement was common knowledge in lighting design written down. These three perspectives on lighting design were put together and was the foundation for the development of three lighting design processes. Additionally to the literature review was research conducted in the general lighting design process. In the research was the process of four steps described that is developed and used in every project for 12 years at Jonkoping University at the Department of Lighting Science.

### 3. RESULTS

#### 3.1. Man and light

Light and lighting design concerns all humans, night and day, throughout life and is essential for human health (Holwich & Dieckhues, 1980). Ulla Edell-Gustafsson and Anna Christina Ek (Edell-Gustafsson & Ek, 1992) mention the importance of sleep, circadian rhythm and lifestyles seen from the perspective of the health theory by Pörn. Here society and the individual's relation to the environment are discussed. According to Pörn, health and diseases are not only medical problems but also depending on physiological, biomedical and psychological factors in the individual's environment.

‘The holistic theory according to Pörn is an anthropological bias as regards the concept of health. It is a health concept not based on illness and thus differs from the traditional medical perspective. It describes an individual's equilibrium that is between goal achievement and goals.’ (Pörn, 1988, p 137–40).

‘Light is fundamental to life and have biological effects. The knowledge about daylight and human diurnal rhythm increases. Through the diurnal rhythm, light has an impact



on almost all tissues in the body.’ (Hanifin & Brainard, 2007, p 87–94).

These light-induced changes subsequently evoke broader physiological responses within the organism (Brainard & Hanifin, 2005)

Steven M. Pauley (2004) writes in the *Journal of Medical Hypotheses* about lighting for the human circadian clock and about recent research that indicates that lighting has become a public health issue. Pauley imply that the use of artificial light has an effect not only on humans but on animals, plants and the ecosystem as well. Pauley points out important goals for a biologically friendly lighting and formulates a goal for a physiological well-functioning indoor lighting.

Anna Wirtz-Justice and Fournier argue that the design of architecture needs to take into consideration the biological effect that light have on different sectors of the population, for instance the elderly (Wirtz-Justice & Fournier, 2010).

The interaction with photon streams, that gives action potentials to the brain, is a part of the unconscious, hormonal message system within the body, described by Jens Hannibal. (Hannibal et al., 2002).

“The interplay of photons with the nervous system often dominates our waking consciousness” (Brainard & Hanifin, 2005, p 314–325).’

The research of Anna Wirtz-Justice and George Brainard concerns light for the support of diurnal rhythm (Wirtz-Justice & Fournier 2010; Brainard & Hanifin, 2005). They claim that lighting design and photobiology have the possibility to improve well-being and quality of life.

### 3.2. Daylight and the complementary lighting

A space that is designed with a visual comfortable daylight as ambient light, support in a good way the diurnal rhythm of the user, and by that the basic health of the workers. If this is done for all workplaces in Europe this will have a positive impact on public-health in Europe (Roenneberg et al., 2007) and might decrease sleep disturbances.

Ambient light, based on daylight and a daylight mimicking complementary electric lighting and designed in contact with the light at the site where the subject lives, and is done in contact with the user’s senses, will provide the subject with a healthy light, psychologically (Hanifin & Brainard, 2007).

A task lighting that is glare free and has a wide range in levels of light will support the users in a good way visually (Säter, 2012).

### 3.3. Daylight and diurnal rhythm

The theoretical background for the identification of a lighting design that is done in contact with the subjects physiologically can be found in the work of Rutger Wever. He worked with subjects that stayed in light and room settings for 28–90 days. In the bunker in Andechs were the first extensive human experiments in temporal isolation carried out. Rutger Wever is the precursor for research in mapping out the human response to light related to diurnal rhythm. Rutger Wever writes about autonomous rhythms being psychological and physiological.

“The physiological rhythms are remarkably regular. The psychological rhythms however, the relevance of the rhythmicities mainly is based on the sharply decreased night values; the plateaus during daytime would hardly constitute reliable rhythms’ (Wever, 1979, p. 25).

### 3.4. Daylight and the complementary lighting in the space

Daylight and a daylight mimicking complementary electrical lighting, designed in contact with the light at the site where the subject lives, will provide the subject with a healthy light

physiologically (Pechacek, Andersen & Lockley, 2008). A complementary electric lighting that is designed to fit the visual needs of the user and related to the actual transmission, absorption and reflection in the room, according to colour and surfaces, will be perceived as visually comfortable. When the complementary electric lighting is designed to meet the actual transmission, absorption and reflection of the colours and surfaces in the space, in a way that gives well functioning visual contrasts, the room will be perceived as visually comfortable (Liljefors, 1999).

### 3.5. User centred lighting design.

Light for the indoor environment is a matter of research in interaction design and affordance. ‘Research in design that used to be a matter of form seems to in an increasingly extent be about the user and her experiences.’ (Redström, 2006).

In the study was by research, the lighting design process, investigated. The four steps of the process were described. The basic lighting design process can be used to get a high fulfillment for a pleasant space, a good support for the user in general, psychologically, physiologically and visually, and for a restricted use of energy for lighting purposes. But the lighting

design process can also be designed, in a way that focuses on the optimization of a specific goal, evaluated as important. The chosen specific goal can be a beautiful and a pleasant space, support for the elderly, support for visually impaired, for the experience of visual comfort or for a positive impact on public health. At the same time contradictory goals can be seen. Energy efficiency is one example of an important goal that needs to be balanced together with other goals set out on lighting design.

### **3.6. Cooperation within the building process between the architect, the interior designer and the lighting designer.**

The building process is unclear when it comes to handle the lighting design process. Obstacles for the use of the four steps of the LDP can be seen within the building process (Pertola, 2012). The work that needs to be done within the four steps puts high demands on the educational background of those who are involved into the project. There is a need for analyzing the space, investigating the daylight and to evaluate if glare will be a problem. The user's preferences for light need to be investigated. How to synchronize daylight and the complementary electric lighting, in a visual comfortable way, needs to be evaluated.

If no one within the project group has knowledge in how to evaluate daylight, if no one can evaluate if glare will be a problem in the space, are capable of evaluating the user's needs of light or how to synchronize daylight and the complementary electric lighting, this will have a negative impact on the project. All four parts of the lighting design process need to be performed in a professional way. If the architect, interior designer and the lighting designer, cooperate, the educational background needed for a professional work with step 1, 2, 3 and 4 in the LDP will be present in the work with the process. In the fourth part of the lighting design process need the lighting designer cooperate with the electric consultant in order to design the practical lighting application based on information from step 1, 2 and 3.

The computer calculated lighting design process uses only the fourth step in the LDP when planning the application.

- 1). Step one is not performed.
- 2). Step two is not performed.
- 3). Step three is not performed.
- 4). Step 4 is performed without information about the space or the user.

### 3.7 The basic lighting design process

The basic lighting design process can be described with four basic steps. The space, the human, the design and the technique.

1). The first step is about the space. In the first step is the space analyzed and so is the daylight and the complementary electric lighting, present in the space. Colours and surface materials are described and investigated, if visually comfortable, or not. It is investigated where to put shadings, luminaries and the technical system for the complementary electric lighting.

2). Step number two is about the user's needs. The step is concerned the design of the ambient light, that should be designed in an ergonomic and visually comfortable way, for the user. It is evaluated, if the combination of daylight and colour in the space is comfortable visually for the user. It is investigated, if the synchronization of daylight and the complementary electric lighting is well- functioning. The task lighting is designed towards the known or the unknown users needs. The span for levels of light is tested towards the extreme levels of ambient light.

3). The third step is about the design of daylight and the complementary electrical lighting. Daylight and the complementary lighting are synchronized to each other, during the year.

4). The last step, step four is the design of the practical application. First is the shading of daylight designed. Then the technique needed for the complementary electric lighting application is chosen and the scheme for maintenance developed.

### 3.8 The user centred lighting design process

In the user-centred lighting design process is the user shown an extended care throughout the whole design process.

1). The first step is about the space. In the first step, is the space analyzed and so is the daylight and the complementary electric lighting, present in the space. Colours and surface materials, are described, and investigated if visually comfortable or not. It is investigated where to put shadings, luminaries and the technical system for the complementary electric lighting.

2). Step number two is about the user's needs. It is about the design of the ambient light, that should be, designed in an ergonomic and visually comfortable way. It is evaluated if the combination of daylight and colour in the space is experienced as comfortable visually, for the user. It is investigated if the synchronization of daylight and the complementary electric

lighting is well- functioning. The task lighting is designed towards the known or the unknown users needs. The span for levels of light is tested towards the extreme levels of ambient light.

2+). Added to the user- centred lighting design process, compared to the basic process, is the investigation of the user's needs and the design of a support from daylight and the electric complementary lighting in an optimized way to get close to the known or unknown user 's needs. The task lighting is designed to give a broad span of levels of light that supports the user's visual performance in the best way. The space is seen from the user 's perspective, in order to build in support for health from daylight, in a visually comfortable way. Daylight and the electric complementary lighting are synchronized to each other to support the user in the best way psychologically, physiologically and visually. The ambient light is tested out, if giving a safe visual orientation, for the normal sighted user. If the user is visually impaired, the ambient light and the task lighting are designed towards the actual need of the user.

3). Step number three is about the design of the daylight and the complementary electric lighting and the synchronization of the two photon flows during the year (daylight and the complementary electric lighting).

3+). Added to the user-centred lighting design process,

compared to the basic process, is the design done in a way that gives visual comfort and support for the diurnal rhythm, through suppress of melatonin in the morning and increased melatonin in afternoon.

4). The last step is the design of the practical application. First is the design of the shadings performed. The second choice is all technique needed for the complementary electric lighting application. At last is the scheme for maintenance performed.

4+). Added to the user-centred lighting design process, compared to the basic process, is a carefully designed ambient light designed with the ambition to contribute to a pleasant environment and a visual comfortable daylight and complementary electric lighting. Designed also to give a task lighting that have a wide range of levels of light that supports the user's visual performance in the best way.

If the four steps of the user-centred lighting design process are used, the practical application will be done in a way that is connected to the space, to daylight in the space, to colours on the wall and to the user's need of a psychological, physiological and visual support. If the four steps of the user-centred lighting design process are used, the practical application will be done in a way that is connected to the space, to daylight in the space, to colours on the wall and to the user's need of

a psychological, physiological and visual support. In all parts of the process will the user get an extended care.

Despite the advantages of using the LDP or the UCLDP, is the most frequently used method for lighting design, the computer calculated lighting design process (CCLDP) that uses only step four in the lighting design process.

When the use of the computer calculated lighting design process (CCLDP) is related to the fulfillment of goals for visual comfort and light-related public health, it is found in the literature review that it is not possible to support the user psychologically, physiologically or visually, with the use of a static level of light on one pre-designed level of light, since humans need to live in the rhythm of daylight. The use of the basic LDP and the UCLDP, have opposite to the computer calculated lighting design process, a possibility to support the user in a better way psychologically, physiologically and visually. When the three processes are compared to each other, the user-centred lighting design process has the best possibilities, to support the user in a good way.

### **3.9. A professional performance of the LDP step 1–4**

To be able to in a professional way perform the lighting design process in all four steps, the cooperation of the architect, interior designer and lighting designer is needed. The educational background imprint the way the cooperation can be performed.

1). Lighting design process Step 1. The architect, the interior designer and the lighting designer makes the analysis of the space, daylight, colours of the surfaces and the complementary lighting.

2). Lighting design process Step 2. The lighting designer works with the design of the support of the user. The architect and the interior designer overlook the lighting designers work within step 2.

3). Lighting design process Step 3. The lighting designer works with the design of the daylight and the complementary lighting. The architect and the interior designer overlook the lighting designers work with the design of the daylight and the complementary electric lighting within step 3.

4). Lighting design process Step 4. The lighting designer works with the practical application. The electrical consultant works together with the lighting designer.

## 4. DISCUSSION

### 4.1. The literature review

The method used in the Thesis is a literature review about man and light that is combined with research in common knowledge in lighting design and the development of descriptions of lighting design processes. The literature review can be extended in number of articles and in details and embrace more complexity in the chosen topics. The research about the processes is based on the daily work at the lighting design Department at Jonkoping University. It is collected as a stable pattern of a constantly repeated well functioning process in the work with lighting design for 12 years.

### 4.2. The value of lighting design

The theoretical development of lighting science is only in the beginning. Lighting design is of great value for mankind and has a great potential for designing applications that gives support for humans, psychologically, physiologically and visually, as well (Säter, 2012). In the same way can lighting

design through lighting applications, improve health and growth among animals and plants, in the indoor environment. If lighting design is performed in cooperation with the architect, the interior designer and the lighting designer, the lighting application will in a better way support the user and the risk for disturbances, when using complementary electric lighting, will be decreased. Lighting design is important and connected to almost all human activities.

The use of a template for lighting design, do not use daylight and a complementary electric lighting to its full extent and do not synchronize the two photon flows together, as ambient light, in a well functioning way. The template doesn't give the user the ideal visual support. Negative effect can be fatigue, less productivity by the employee, disturbances of the diurnal rhythm and by that sleep disturbance that might lead to absence due to illness. The results in this study are based on findings about man and light related to medicine, physiology and photobiology. The theoretical material is combined with common knowledge in lighting design and was written down. There is a great need of implementation of new knowledge about man and light, into the lighting design process. The work in the study is done on a basic level and need to be developed further. From the medical field better practice is requested. This will hopefully change the use of a template of lighting

design, into the use of all four steps in the LDP and towards cooperation between architect, interior designer and the lighting designer, and by that to have a possibility to contribute to a more human oriented, healthy and energy efficient indoor environment. This opens up for the use of the environment as a tool for health, described by Pörn in his holistic health theory (Pörn,1988). The tool for health here is daylight, the lighting design process and the lighting application.

## 5. CONCLUSIONS

It can be concluded that when knowledge about melanopsin and ipRGC, is a part of the lighting design process, physiological knowledge about man and light, imprint the way the light is designed.

When architects, interior and lighting designers cooperate in the lighting design process, knowledge about the space, the, user, lighting analysis, design and lighting technique, is present.

A recommendation of best practice for lighting design can be formulated in the following way: use all four steps of the lighting design process. The process should be performed in a professional way in cooperation between the architect,

the interior designer and the lighting designer, by this the fulfillment of goals for the design will be higher (Säter 2012).

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# THE LIST OF PUBLICATIONS

FORMAKADEMISK,  
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Jonas E Andersson, architect SAR/MSA, Ph D  
Danish Building Research Institute Aalborg University,  
Copenhagen, Denmark  
Affiliated with the Royal Institute of Technology, KTH,  
Stockholm, Sweden, [jonas.andersson@arch.kth.se](mailto:jonas.andersson@arch.kth.se)

Magnus Rönn, Associate professor, School of Architecture  
and the Built Environment  
The Royal Institute of Technology, Stockholm, Sweden,  
[magnus.ronn@arch.kth.se](mailto:magnus.ronn@arch.kth.se)

Leif Östman, Architect (PhD), principal lecturer, Department  
of Construction Engineering at Novia, University of Applied  
Sciences, [leif.Ostman@novia.fi](mailto:leif.Ostman@novia.fi)

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Zheng Liang, Ph.D. candidate

Department of Real Estate, Planning and Geoinformatics, YTK Land Use Planning and Urban Studies Group, School of Engineering, Aalto University, Finland, [zheng.liang@aalto.fi](mailto:zheng.liang@aalto.fi)

Raine Mäntysalo Professor, Ph.D.

Department of Real Estate, Planning and Geoinformatics, YTK Land Use Planning and Urban Studies Group, School of Engineering, Aalto University, Finland, [raine.mantysalo@aalto.fi](mailto:raine.mantysalo@aalto.fi)

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Loïse Lenne, Architect, teaching Assistant at ENSA V&T, PhD Candidate, Laboratory: OCS (Observatory for the suburban condition), University Paris-Est, École doctorale VTT (City, Mobility, Territory), [loise.lenne@univ-paris-est.fr](mailto:loise.lenne@univ-paris-est.fr)

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Angelos Psilopoulos. Architect, Adjunct Lecturer, Faculty of Fine Arts and Design, Department of Interior Architecture, Decoration and Design, Technological Educational Institute of Athens, [angpsi@yahoo.com](mailto:angpsi@yahoo.com).

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Clare Newton, Associate Professor in Learning Environments Faculty of Architecture, Building and Planning, University of Melbourne, Victoria, Australia, [c.newton@unimelb.edu.au](mailto:c.newton@unimelb.edu.au)

Sarah Backhouse, Research Associate, The Faculty of Architecture, Building and Planning, University of Melbourne, Victoria, Australia, CEO for PrefabAUS, [saraheb@unimelb.edu.au](mailto:saraheb@unimelb.edu.au)

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Jonas E Andersson, architect SAR/MSA, Ph D Danish Building Research Institute Aalborg University, Copenhagen, Denmark  
Affiliated with the Royal Institute of Technology, KTH, Stockholm, Sweden, [jonas.andersson@arch.kth.se](mailto:jonas.andersson@arch.kth.se)

Magnus Rönn, Associate professor, School of Architecture and the Built Environment

The Royal Institute of Technology, Stockholm, Sweden, [magnus.ronn@arch.kth.se](mailto:magnus.ronn@arch.kth.se)

Leif Östman, Architect (PhD), principal lecturer, Department of Construction Engineering at Nova, University of Applied Sciences, [leif.Ostman@novia.fi](mailto:leif.Ostman@novia.fi)

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Leif Östman, Architect (PhD), principal lecturer, Department of Construction Engineering at Nova, University of Applied Sciences, [leif.Ostman@novia.fi](mailto:leif.Ostman@novia.fi)

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Carlo Menon, Barlett School of Architecture, London, UK, [carlommm@gmail.com](mailto:carlommm@gmail.com)

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Magnus Rönn, Associate professor, School of Architecture and the Built Environment

The Royal Institute of Technology, Stockholm, Sweden, [magnus.ronn@arch.kth.se](mailto:magnus.ronn@arch.kth.se)

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Pedro Guilherme, Architect, FA-UTL, M.Eng., FCT-UC, PhD Student, FA-UTL, CHAIACHAIA, Centre for Art

History and Artistic Research), Évora University, [pg.sspg@gmail.com](mailto:pg.sspg@gmail.com), [www.chaia.uevora.pt/en](http://www.chaia.uevora.pt/en).

João Rocha, Arch, Ph.D, CIDEHUS, Centro Interdisciplinar de História, Culturas e Sociedades, Évora University, [rjoao@alum.mit.edu](mailto:rjoao@alum.mit.edu).

### Experience of prequalification in Swedish competitions for new housing for the elderly

Magnus Rönn, Associate professor, The School of Architecture and the Built Environment

The Royal Institute of Technology, Stockholm, Sweden, [magnus.ronn@arch.kth.se](mailto:magnus.ronn@arch.kth.se)

## The competition generation

### Young professionals emerging in the architectural scene of Switzerland through the process framework of housing competitions – a case study

Antigoni Katsakou, Architect, PhD (Independent Scholar), [antikatsakou@yahoo.gr](mailto:antikatsakou@yahoo.gr).

**Architecture for the ‘silvering’ generation in Sweden –Architecture competitions as innovators for the elderly**

Jonas E Andersson, architect SAR/MSA, Ph D  
Danish Building Research Institute Aalborg University,  
Copenhagen, Denmark  
Affiliated with the Royal Institute of Technology, KTH,  
Stockholm, Sweden  
[jonas.andersson@arch.kth.se](mailto:jonas.andersson@arch.kth.se)

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Toni Österlund, M.Sc. Architect, researcher, University of  
Oulu, Finland, [toni.osterlund@oulu.fi](mailto:toni.osterlund@oulu.fi)

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Gareth Griffiths, Architect, Tek Lis., Lecturer, School of  
Architecture, Tampere University of Technology, [elliott@kolumbus.fi](mailto:elliott@kolumbus.fi).

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Michael Jasper, Associate Professor, Architecture Faculty of  
Arts & Design, [Michael.Jasper@canberra.edu.au](mailto:Michael.Jasper@canberra.edu.au)

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Sari Tähtinen, Architect, Post-doctoral Researcher, Department of Real Estate, Planning and Geoinformatics (YTK),  
Aalto-university, [sari.tahtinen@aalto.fi](mailto:sari.tahtinen@aalto.fi)

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