

DESIGNING IN THE AGE OF NETWORK SOCIETY: THE ROLE OF TECHNOLOGY IN DESIGN PROCESSES AND KNOWLEDGE GENERATION

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1. What is the Internet? While it may seem like a simple question, defining the Internet isn't easy. Because unlike any other technology, the Internet can be whatever we make it. We can shape it. We can mold it. But most importantly, we can use it to connect people, communities, and countries around the world.

The Internet today is a widespread information infrastructure, the initial prototype of which is often called the National (or Global or Galactic) Information Infrastructure. Its history is complex and involves many aspects - technological, organizational, and community. And its influence reaches not only to the technical fields of computer communications but throughout society as we move toward increasing use of online tools to accomplish electronic commerce, information acquisition, and community operations. (Source: Leiner et al., www.internetsociety.org)

The Internet is a physical and yet the World Wide Web is a virtual network. Both are complex interacting systems; however, the World Wide Web is the Internet's offshoot (source: Barabási, 2001).

PROLOGUE

In recent decades the architect's desire to enjoy a complete control over an architectural project has been overshadowed by various innovations in engineering particularly the Internet (1). The forceful spatio-temporal fractions, or in David Harvey's (1989) words, "time-space compression," pose uncanny conditions in modern society – not to forget the work of the architect from a professional perspective. As a result, architects feel obligated to grasp the potential consequences as they constantly see this challenging era as an opportunity to strengthen their turnover time in architectural production at the office as well as in their actual production in a capitalist world of increasing competitiveness. For the body of practicing architects it is an obligation to learn, adapt and reflect as much and as soon as possible to match the pressuring effects of market relations in tune with professional tendencies. As a result, the most feasible and measurable tool seems to be the click of a mouse to hook up on the Internet, leading to new ways of interaction, and creating sets of relations with an unprecedented speed and mobility for the exchange of ideas as well as for the generation of knowledge for all partners at both ends.

This way of working is part and parcel of a new communication that utterly breaks down our notion of distance for it suggests a milieu of interaction among architects with new patterns of cognition: the distance grows and yet the time shortens and our capacity of information grows disproportionately, as claimed by Paul Virilio (2005). What is more important, however, is the fact that as part of this tormented development our classical faculties of cognition and such sensory capacities as seeing and hearing come to an end, and naturally we seek alternative faculties for processing for information into useful, relevant and enduring knowledge. It is a well-known fact, however, that the Internet is an essentially seductive medium whose effects are no longer secondary to human action but rather intrude into our faculties as it asserts its mode of generation of knowledge

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at full-force. However, it is not an either-or condition, but rather between the two extremes of choices there are endless different positions to uphold. If the architect's work is part of the said collective action, as the Internet seems to suggest, it is important to understand what changes the design process might undergo.

This interaction certainly has effects; however, it does not remain confined within the technical domain in which an architectural production is at stake professionally; rather, its consequences are more than expected as it carefully renders a common ground on which an architectural culture might silently evolve, and which in the end establishes the standards as well as the norms and the code of conduct by which the said mode of architectural production becomes a common notion, almost a mainstream architecture, that paradigmatically sets up our aesthetic values. As a result, a new set of roles and responsibilities for the architect is necessary to be able to cope with what supersedes our orthodoxies: by assessing such outcomes of advances in technology, the architect must know that the image bestowed us is now more than a set of information as it becomes an instrument of power that paves the way into a paradigm that has long been regulated by market relations and expectations (Frampton, 2005). It is exactly at this very moment that the architect's primary reflex becomes an important issue in order to understand in what ways we would proceed. We either go blindfold while carefully utilizing some of the faculties of technology into design processes to advance what we see, imagine and envision; or easily fall into a safe-haven in which the dominant mode of architectural production captures, monitors and even dictates the end-product, leaving a driftly milieu of profession. The latter choice seems to be the easiest way; it is therefore the architect's responsibility to seek possible ways to master such technological impetus creatively and render a larger conception of contemporary contextual property in which the orthodoxy of architecture might now interact with the said advanced technology. In short, this expected context should favour the anthropometric qualities and techniques of architecture, and should forward a peculiar mode in which the art of image and architecture blend together, not exclusively overriding the other – not to mention the classical texts of architectural theory as well as the long-forgotten social incentives that have been underrated for decades.

THE DESIGN PROCESS | REVISITING THE OLD FASHION MODES WITH TECHNOLOGY

Perhaps the most important question for an architect is an ontological one that specifically revolves around what architecture is or is not. It is, therefore, the design process itself, that calls for an in-depth inquiry; as far as the meaning of design and the faculties of design processes being considered, Augusto Rossari (2005, 4), writing about Franco Albini, explicitly argues that:

“Albini was also concerned that the students seemed to him not sufficiently motivated to design, which he considered the heart of the work of the architect. With enthusiasm, almost in a transfer of his experience, he urged them to ‘an obstinate vocation for the design [...] the only way [...] to express themselves in society, the only way to communicate with the world, the only way to achieve their personality.”

As briefly outlined above, the act of design requires the architect's total control over the processes, which in fact is in need of further projection

before the implementation of the final product. Yet, much has changed in recent decades in the mode of design because of the introduction of a vast amount of advanced technology, from hardware to software. Knowing that there has been a radical change in recent decades, the architect herself/himself was a good craftsman, even with a superb competence of making her/his own tools to build, in material and abstract levels. However, this is nothing but history and these capacities have largely vanished from the faculties of architects; tools have changed, the architect's role has been limited and most importantly the mode of production has altered immensely within the last century. Perhaps, it is more accurate to say that capital accumulation and/or distribution together with all the financial regulations on a global scale as well as the role of property owners/developers along with the state itself now come to define how and what to build, even in terms of layouts, programs, and planimetric codes. This makes the architect a cosmetic surgeon, who deliberately works on trivia such as beautifully seductive images just to attract a larger audience. On the other hand, the transition from the T-ruler to CAD systems was of significance as it altered vastly our cognitive world along with the standards in architectural production. However, everyone now agrees that this has been an empowering achievement in our visual faculties, architectural representation and public visibility in cultural terms. According to Rafael Moneo (2012, 77), this has been also a radical rupture, for it caused a severe damage in the graphical capacity of an architect:

"That the computer allows to think, and to represent, geometries that they no longer have reason to reduce the space in the plans, it is something that those who use computers know well and is at the service of a new architecture. If there is one thing that stimulates architects, something they eagerly pursue, it is to make use of all the resources offered by the computer. And this is why, causing rupture and fragmentation, they prefer and emphasize a continuity that allows rotations and twists, checked surfaces, stripes, etc. The invention now seems to gravitate around the use of the computer, the tool that allows the architect to explore new forms: the invention of language, starting not from the syntax, but the tool that allows the representation. [...] The computer, then, explains the twisted links, the unhoped surface, the continuity of the spaces that until now we called interior and exterior."

Then comes the transition of the interpretation of architectural design because the sign itself becomes a value *per se*, as represented in an enclosed architectonic property. Following Moneo's line of reasoning, one may argue here that it has already been handed over to the faculties of the computer – the architect is no longer the producer but rather a translator/conveyer/mediator agent in that process. Time has changed and a new level of awareness is required over the new instruments of representation in architecture; it is therefore our job to figure out what has been gained and/or lost within that painfully significant transition, that of the mode of communication as well as representation. This certainly was not an easy task as it created an unusual trajectory; for some it could be regarded as advancement and yet for others it is a complete retreat. However, in any case it requires a complete detour in our cognitive world as well as in our public perception to determine whether it falls into a specific *zeitgeist* or not. The prior task of an architect is therefore to understand the primary consequences of this immeasurable transition and to theoretically frame what it has become in the end. For instance, for Edith Cresson this could be regarded as part and parcel of what a Learning Society requires at a fundamental level as far as the architect's new identity is at stake

(unspecified, 1995). It is rather a complex analysis that involves our changing capacities for cognition toward the notion of “time” in various aspects. It is an analysis that positively requires the architect, her/his faculties, to be involved in design processing through which the architect herself/himself is a sole agent of all.

In addition to the mechanisms within which the architect works, this very agent must define in what way, how and to what capacity the design process must be devised in light of the new advancement in technology, once again from hardware to software, which enable endless possibilities at a challenging speed, and which has an infinite volume to manage the design process right from scratch. For the architect, it is essential to apprehend the magnitude of change that a person could ever be exposed to, in a way that she/he would cope with, master and regulate what makes the architectural process part of a total design act. It is exactly at this moment that the role and the proponent of an architect could be at stake with an irreversible risk from the sole perspective of the profession itself. This is a continuous rethinking process that entails new sets of professional achievement too, which varies recursively and yet interactively on the way to build up a knowledge, relevant and prominent in nature, from the framework of pure architectural epistemology. This is not a linear process and yet it repetitively contains cyclical positions. For instance, there are moments in which the end product responds to a given and/or envisioned context and yet at some particular points it becomes a passive backdrop of overall contextual properties. However, in any case, we know that it has changed as well and the architect must seek a more responsive architecture and a design process through which the context plays a larger role. As John S. Gero (2002, 91) confirms,

“...we can speak of a recursive process, ‘an interaction between doing and understanding’. This interaction between the designer and the environment determines the design process.”

The design process would allow each architect to build up personal trajectories with which the term context includes a complex layout of challenging and yet conflictual properties. We believe that the knowledge being produced becomes a solid domain in itself, an irregular and inhomogeneous nebula in nature, which is distant and yet multi-layered, a multi-interactive network that is to provide infinite possibilities of relations. Knowledge is therefore multi-faceted without excluding the most obscure trails, which become luminous signs that allow us to see, to interpret and then to think of even the most extreme limits not as inflexible boundaries, but as an opportunity to connect and create new paths of learning (2). According to Moneo (2012, 76) this has already been well-received by architects:

“In my opinion, architects are very conscious of the potential that the new communication and representation techniques enclose. And they want to, of course, integrate them into the process: the new forms are, in good measure, the answer to this need. So it could reach the desired tune with a world where communication and the volatile images of electronic screens prevail.”

This is not new and an already-known fact about the design process; the design processes favour alternative conditions through which the work of design would vary in nature. It certainly opens up more innovative processes with multiple choices; however, the architect must know that with advanced technology the architect has an increasing capacity for multiple tasks, which would not endanger but enhance our faculties for

2. The concept of path is derived from the difference that exists between a mythological labyrinth where you can exit following different methodologies (that of Theseus, the rule of the right / left) and a non-mythological labyrinth that has no way out. The latter are present in several stories by Jorge Luis Borges especially those collected in *Fictions* where there is the tale The Garden of Forking Paths and The Aleph both published in the 1940s.

possible, perhaps state-of-the-art, design processes that would allow multiplicity of choices. And yet, this is no doubt an easy task and thus it compels us toward a new awareness that could blend the contours of the orthodoxies of architecture with the impetus of technologically empowering canons.

THE WORK OF THE ARCHITECT

Inherent in history and in its philosophical backdrops, the architect in her/his relation with society has already realized that the profession proves to be a complex array of networks that entail a comprehensive quality. However, what architects tailor for themselves rather hinders a contested position in respect to the societal expectations because the work of the architect is primarily based upon her/his imaginary world, which, in the end, entails a personal dialogue. This dialogue creates a perception of reality and thus provides a supportive milieu in which other possible realities come to exist, in many forms, and qualities. According to Louis Kahn, (Bonaiti 2002, 136; 2002, 144),

“...it is only enough the presence of another person in order to feel creators. The meeting becomes an event. If you are in a small room with a person, you might say things not yet known”.

It is an important task, discovering the eminent faculties of an architect; it is, in many cases, the biggest personal achievement as the architect expands her/his faculties of further communication through sets of dialogues. It is therefore the final form of knowledge that compels the subject-uncover the knowledge and the object-architecture that is to be known at the same time and they are exactly part and parcel of the same domain. Knowledge, in fact, is the “vital” prerogative fundamental, according to the French sociologist and philosopher Edgar Morin (1989, 56), he states that

“the knowledge is so to say spread, multiple within the nature, even where no one has any sensory receptors, neither nervous system nor cognitive apparatus. Knowledge is included in every life.”

This is to say that it is an eminent part of our everyday life as well as the professional terms as clearly depicted by the Italian pedagogue Pier Giuseppe Rossi (2009, 57):

“if the cell had no knowledge, it may not recognize what is extraneous, as if it could not learn, could not build its own knowledge and, then, to know the extraneous.”

3. With this concept Castells explains what the media describe as the “information society. That reveals an utterly market-oriented business world, the development of a new economy since the 1980s. According to Castells its icons are Silicon Valley, Singapore and Finland. This structural transformation is what Castells calls for as “the informationalism” (a term used by Castells in his trilogy of books *The Information Age: Economy, Society and Culture (The Rise of the Network Society)* (1996), *The Power of Identity* (1997), and *End of Millennium* (1998)), which explains the fact that the decisive activities in all areas of human practices are based on information technology, organized (globally) in informational networks whose center is information processing, and have glaring differences between them in terms of institutional and consequently social bases, but which reach similar results in term of technological innovation, productivity growth and economic competitiveness. (source: Castells and Himanen, 2006)

Consequently, even the Modern woman/man, the subject-architect, must keep researching the achievement of a common act, based on a common ground, leading to a shared-knowledge that would compel a shared well-being, as it is accepted, to avoid unbalanced, uneven and unjust underlying structures. What is expected throughout this tiresome self’s journey is that the architect as a collective subject will learn to satisfy their basic needs, more than excessively overuse/overvalue and exploit what the human being’s fundamental needs are. This is exactly the process through which a peculiar social formation has come to exist and a desired societal structure finds a solid ground to emerge: this is the “Learning Society/Network Society”, that allows a common network of groups, even when they are at a distance in the material sense, generating ideas, solutions, new perspectives and innovations for the common will and good (3). This could be regarded as the nucleus of community, because the said process is concrete in its complex nature and it is never uni-directional nor mono-functional, but

4. Who kindly shows the way to a lost traveler, / Does as if he lit another's lamp from his own; / No less shines his lamp, when he has lit the other's one (translated by the author, source: Cicero, 2012).

as an interdependently well-connected network in itself, the sum is more complex and larger than its parts as it reveals a totality and yet an array of deviations that constantly change their trajectories in particular. This will certainly provide the society at large with a common will and desire to achieve a social bound that keeps us united, strong, and most of all matching the pace of unceasing dialogue among different fractions. As wisely put by Quintus Ennius, according to Marcus Tullius Cicero (2012, LIBER I, LI):

"Homo, qui erranti comiter monstrat viam, / Quasi lumen de suo lumine accendat, facit. / Nihilo minus ipsi lucet, cum illi accenderit" (4).

Compared to history, today's advanced technology offers more opportunities along with empowering shortcomings. It is therefore our task to comprehend of what modern society entails in terms of contemporary societal organization, and the division of labour, which requires complex establishments based on pseudo-scientific communities with norms and codes of conduct, as well as the excessive volume of individualism, which promotes a growing lack of capacity to unite at all levels. This is to say that this new social formation, as clearly discussed at length by Manuel Castells since the late 1970s, has colossal consequences on everyone's life, including the architects, as far as the objective of this critical essay is briefly regarded. The possible risk is this simple: even the architect's plainest desire for a collective body is now exposed to be succeeded by capitalist incentives in the name of collective consumption. This involves a contested professional milieu as a method to find a communicative language for all, which heavily relies on mutual understanding and will. The chosen common language, with all its syntactic and semantic rigours, might have countless mistakes; and yet, it is still worth fighting in order to achieve a total control over one's design by using the technology in a right way. Providing more rigorous methods with which such autonomous acts could now blend with the advanced technology will not only enhance our faculties of design but also entail a thorough analysis over the properties of any given context. The simple observation, a constant interaction with the surrounding stimuli, and the exchange of information via dialogue, if allowed, will certainly help the architect in recovering the already lost sense of place whilst giving a detour to a context-bound architecture once again, even under such immeasurable consequences of the hyper-technology-bound paradigm. It is imperative to equip the architect with renewed epistemic instruments for generating knowledge, as said before, which in the end are expected to create self-awareness at a greater scale in tune with the greatness of our professional as well as social problems. It is no coincidence that it is in fact the technology with its unprecedented speed in achieving and exchanging data that will allow precisely what the architect desires at the outset: functioning geometry, volumetric interplay, spatial articulation, well-balanced mass-configuration, programmatic affluence, and clear-cut, accurate tectonics are some of the qualities. The context-bound flow of information and the disciplined generative mechanisms for relevant knowledge will definitely avoid unnecessary information bombardment, in Virilio's (2005) own terms, as it will be more selective and precise in processing what is necessary for a pertinent design procedure in tune with our "first and second nature". According to Toyo Ito (2008,12,13):

"The new technology is not antagonistic to nature; rather, it is creating a new kind of nature. If nature, as we know it, can be considered real, this artificial nature could probably be called virtual. We contemporaries are provided with two types of body to correspond to these two types of nature. The real

body that is connected to the real world by means of flows that run inside, and the body joined to the virtual world by means of the flow of electrons.”

The architect seems paralyzed by the overarching complexity being revealed and thus wants to disengage herself/himself from the fixed jargons, rules, and mechanisms of the existing mode of production, a mainstream architecture of capitalism, which ultimately dictates only one eventual professional practice. It is sure that the said complexity needs to be understood so that the intricate life patterns could now offer an array of multiple directions to choose. The complexity divides the world into thousands of independent units; however, it is exactly the same complexity that provides infinite possibilities in unexpected ways in order to overcome the difficulties. This is the most concrete outcome of new technological advancements, as it rather suggests a dynamic network to compile, combine, and unite.

THE COLLECTIVE THOUGHT | COLLECTIVE BODY

The widespread accessibility of the Internet and the capacity to interact shows how possible ways to have shared knowledge and participation could best be achieved as the new impending element to build up new paths in knowledge generation. It is a new community that heavily relies on such advanced technologies. This is a much broader perspective than the first and even the second “Age of the Machine” and its “machine aesthetics” in Rayner Banham’s (1980, 56) own words:

“Therefore, the architect is expected if not forced to draw a new line of responsibility for the upcoming conditions.”

The global crises of the post-industrial society, which fosters a constant discontent and the lost of community scale incentives, which in the end utterly destroy the genuine places, can now be listed as some of the major problems that have been heavily posed by capitalism. It is now inevitable that the architect is exposed to false-priorities, all characterized by the seductive desire of the bourgeoisie, i.e., a commodity soon to be deserted for further consumption elsewhere under renewed brand names, images, star-names, and even false categories. Architecture is now equally as significant when listed under such big brands, on the way to become a mere commodity to be purchased and/or sold in the free market; this inevitably ends up in unequal, uneven, unjust and even unworthy class formations for the architect.

In time of difficulties or in professional crises such as these, one must then draw a larger theoretical framework to be able to make a comparative reading in history. According to Ludwig Mies van der Rohe (1960, 223-4):

“We are not at the end but at the beginning of an era. An era that will be led by a new spirit, which will be powered by new forces, new technologies, sociological and economic forces, and that will have new tools and new materials. For this reason we will have a new architecture. But the future is not generated automatically. Only if we do our job in the right way, do we create a solid base for the future. In all these years I have learned more and more that architecture is not a game of forms. I came to understand the close relationship between architecture and civilization. I learned that architecture must descend from the carrier and unstoppable forces of civilization, and that, in the best case, it can be an expression of the deeper structure of its time. The structure of civilization is not simple, being partly in the past, in part in the present and partly in the future. It is difficult to define and understand. Nothing of the past can, by its very nature, be changed. The

present has to be accepted and you should know it in depth. But the future is open. Open to creative thinking and action. This is the structure by which architecture emerges.”

It is necessary then to focus on both the processes through which a specific idea of architecture that meets the expectations of a community and the procedures by which the link between the imaginary expression of an architect with her/his act of doing architecturally come to existence. It should not be forgotten that every individual, in addition to the architect, is part and parcel of the said imaginative world; the architectural culture is not solely based on the individual talents that of the architect *per se*, but it is rather contingent upon societal imaginary processing, reflecting particular, histories, traditions and thus memories. The problem is then not the image or how that image is being shared but rather, its capacity for inter-communicability among multiple systems of a network, which carry shared values and so on. Let us take a particular community as an example: community does not work as individuality does and yet the elements of sense, experience and communication generate their own logic on historic biases, and create a network of mutual co-existence that enhances cooperation among its participants. This obviously repeats itself in successive generations, whilst activating a new circuit of further development within the society. Don Tapscott (2011, 107, 163, 171), who is into design processes, also argues that:

“The net generations are natural collaborators; they are part of a generation born to create relationships [...] They collaborate in online groups of chatting, playing video games in multiplayer mode, writing e-mails, exchanging files for school, work or just for fun. They condition each other through what I call the ‘networks of Net-fluence’ where they discuss about brands, companies, products and services. [...] The ‘networks of Net-fluence’ have their own social structure: the best friends, a wider circle of acquaintances and the entire world [...] I have called “networks of Net-fluence” the new communication networks and the links established through them.”

Perhaps this is a new era that signals a radical change; we are all aware that it will develop further in a short time if the said pattern becomes a common denominator. This is also a powerful social metaphor in need of auxiliary societal transformations with all the values and contradictions attached. This certainly doubles our burden of reading, understanding and complying as it pushes a new paradigm of academic methodologically framework in need of further articulation. This does not involve numerical, quantitative methods; rather, it is qualitative tools that we need in order to enhance the quality of life evenly and to increase the social capital globally. Architecture would then play a more subtle role to become fully-recognized as an important agent by the community; it requires a new set of procedural rules for action designing and of course a new definition for the architect, who is in a major role of building for communal/collective sharing, which in the end refuses the architectural artefact as an art work of singular, isolated volumetric and/or mass configuration as if it is a sculpture in itself. The architect must renew her/his own territorial faculties, founding a new pact with the surrounding social context within which she/he produces – the texture of everyday life, the neighbourhood, the community, the city. A work of architecture is only meaningful in full correspondence when the architect can improve her/his ability to comprehend a larger array of complexity that would lead to understanding the different worlds in which everyone is in now constant interaction. The human experience must be revisited; the secrecy of place in profane terms

5. Edge city: Term coined by the American journalist Joel Garreau, to describe the new parts of the city located in the urban core margins, and characterized by ease of access to the transport network. They are often located in close proximity to motorway junctions or airports and host different functions (residential, shopping malls, offices, light industries).

must be intact in design once again. Over the last twenty years, conversely, contemporary architecture came to limit these human capacities, giving more normative and yet experimental endeavours that favoured individual actions, tastes and expectations rather than the collective will and desire, which created a common dislike in the end. The said architecture is now almost useless, if not toxic; the original essence of community/place-based architecture is now being recovered and luckily translated into an exchange of electronic flow and space at large and the city, in particular, became contingent to meet the new development. The Spanish sociologist Manuel Castells (2010, 211, 215-6), who extensively works on such intricate relations between urban environment and the Internet, argues:

“The functional units in which people live include much larger populations, linked by rapid transport systems that shorten distances and provide the ability to be in an important point of the social and economic life without being in the vicinity of one of its centers. [...] But what does the Internet have to do with all this? [...] Wherever and however an important hub of this global network is formed, it expands and generates a new spatial form, the metropolitan region, characterized by the functional connection among activities spread over a wide area usually defined in terms of a market of the specific labor, market consumer goods and the media market (e.g. television). The metropolitan region is not only a very large urban area. It is also a distinctive spatial form, close to what a brilliant journalist Joel Garreau, reporting on new spatial developments in some of the largest American metropolitan areas (Garreau, 1991), had baptized Edge City (5) [...] These settlements confuse the traditional distinctions between city and countryside and among cities and suburbs.”

Unfortunately, the development of alternative forms of architectural design only symbolically follow the specificity of this new spatial fluidity, allowing the performance of action work in any place and time: a condition that has not escaped Rafael Moneo. According to him (Moneo, 2004, 72 :

“Left behind the fragmentary nature and the minimalism, even the formal radicalism of an architect like Koolhaas seems to give way to architecture fluctuating and appears unstable, malleable and shapeless. [...] This architecture has some common traits: it is an architecture floating, moving, which means the space is the same as a result, which does not consider the plant as matrix of the architecture, which does not stop in the face of structural excesses, that does not respond to the context, and that, in return, asserts the autonomy of images that do not seem to relate to others known or already seen. [...] On the other hand, in these architectures the notion of language does not appear, making us believe that at any time it is improvised and invented”).

The co-dependency of space and the Internet gives way to an almost hybrid world of symbolic representation, which commonly attracts even world-class architects. The material world and such virtual places function in an interdependent and yet complementary form, which furthers perpetual transformations, replacements, and cognitive adjustments. There is no doubt that such orthodoxies of good architecture, volumetric interplay, mass articulation, good scale and proportional refinement, programmatic complexity, and so on, are still in favour when measuring what good architecture is in classical terms; however, along with such professional issues, there is increasing pressure from the intellectual circles to take into account the expectations of the community and society at large, to fully comprehend what social and political circumstances dictate nowadays. This is exactly where the faculties of the Network Society plays a larger role in adjusting our cognitive world: not the object, the end product as

an architectural artefact, but its constant interaction with the nexus of social complexity that requires long-range communicative tools to reach deeper and the multi-dimensional meaning of society within which the artefact will reside. The new capacity of the virtual world would increase our ability to comprehend that complexity; what we need is to know how in fact that complexity ought to respond to societal needs, expectations and so on. Representation then becomes a serious issue; we either use those new techniques for better presentations or utilize them to increase our capacity for a relatively crystal-clear comprehension of all possible multi-dimensional relations. We believe that they are all embedded in a complex array of contemporary society in tune with global incentives – the prosperity of multiple relationships, the complex network of unceasing interaction, the autonomy of the external world, multi-functional embodiment of societal structures, and the layers of material and social contexts.

Specifically, the notion of the multiple character of architecture culture should be regarded as an opportunity to increase the social intricacy of architectural design, which would promote an all-inclusive imaginative network in relation to the larger wish to become more socially conforming. The design process then includes various levels of action expected to be more responsive to the external world: a design problem is not supposed to be completed with the already approved orthodoxies of design tools; rather, it is supposed to be open throughout the design processes through which the final result can vary as it progresses in each successive stage/phase under such newly discovered material and/or social impetus and incentives. In a similar fashion, according to Rossi (2009, 202) the design process must be in a persistent correspondence with the emerging elements:

“Actually, often the designer is faced with a complex problematic situation, made of incomplete, ambiguous, sometimes inconsistent knowledge, which must be interpreted and structured based on his/her experience; this activity of making sense precedes and informs any subsequent step in the identification and formulation of problems. This activity informs at the same time the path of the design and the process relating to the identity of the professional designer. To be in the learning society also has this meaning.”

Through the emergence of new experiences the designer normally builds up normative technique of analysis to control the process. However, although it is extremely important to proceed with the relevant methodologies, the end product is not predictable *a priori* for the construction site. It is, therefore, the process itself that is of significance and it is exactly at this moment that the technology becomes the most relevant agency with which the architect could increase her/his faculty of cognition as well as of monitoring the design process. The said virtual world is to become a crucial component of her/his competence, not only to provide an increased level of artistic performance, but also to experience in a way that has never been experienced before. That capacity is therefore an integral part between creative thinking and logical process, on whose premises the creation of a work of architecture is largely based. It is important that the process must be guided carefully, knowing that it is more complex when the process is distributed among the different sectors of architectural production. It is also a known fact that an immediate common understanding among the agencies is not that easy a task and requires an array of complexity in itself. The questions that of how to work and generate knowledge, and how the knowledge generated is to

6. This brief article is based on a previous work conducted in Finland during the author's doctoral years at University of Oulu, Department of Architecture. However, our intention is not to give a full account of what the dissertation is all about but rather share some of the insights of that original work to be able to exemplify the significant role of the Internet in design offices, which would lead to further discussions on the importance of advanced technologies in design methodologies and such knowledge generation procedures in contemporary architectural culture.

7. For the bibliography of the architecture firms who answered, please refer to **Table 3**.

8. Thirty-one architectural firms responded (**Table 2, Table 3**); others have declined or ignored the invitation. For reasons of space it is not possible to publish all the answers.

be disseminated among architectural agencies, from master-designer to craftsman, certainly requires additional administrative and bureaucratic divisions of labour; and yet more than that, it unquestionably calls for a new mind-set in our cognitive world, as the design process becomes open-ended and open-source that hinders such orthodoxies as beginning-to-end, linear-to-cyclic, small-to-large, less-complex-to-more complex, singular task-to-multiple task. We must accept that it is part and parcel of new social incentives in global tendencies, and thus our classical organizational structures must be revisited immediately.

All the reflections posed in this work find their unique context in an ongoing dynamics; the Internet does not allow having a critical distance, which is necessary to an analysis. The instability generated from this condition is not conditional, nor overcome by solitary action. This suggests a collective path whose actors are the architects of the said time; the discussion among ourselves is a necessity, which in turn becomes a tool of itself to clarify what the Internet has triggered so far in architecture culture and production.

HOW TO READ SUCH NEW TENDENCIES AND EPILOGUE AT LARGE (6)

In this respect, the upcoming discussion is about a brief overview of such incentives in more concrete terms. Our primary questions revolve around: how is it possible that the world of professional architectural practice as well as architecture culture at large could cope with what has been said above? For this reason, the study on which this brief article is based has sent a questionnaire to 250 architectural firms in the world (**Table 1**) to understand how those firms responded such emerging global demands professionally (7). The questionnaire, consisting of six questions, has been simplified in its structure, providing different sets of questions in order to receive as much information as possible. The six questions are:

1. Computer aided design (CAD) has changed the work in the studios of architects during the past three decades. Has the Internet also changed your communication with your colleagues and the ways to follow their work?
2. Which ways do you normally use; e-mail, blog, social media (Facebook, Twitter, etc.), or the home page of other studios?
3. The Internet has been used for gathering large amounts of information from users (crowd-sourcing), but could the global interaction between architects also be used for their design work?
4. In spite of the Internet communication, do you still prefer to keep the role of the designer as a mastermind in this interaction?
5. Do you feel that the Internet has changed your role as an architect, has it enhanced your international connections, or has it changed the roles of the designers in your studio?
6. Regarding the role of the history of architecture versus contemporary architecture, has the meaning of those terms changed? (8)

Developing the questions, it was necessary to build a set of criteria to analyze the relative answers. To do it so, it was essential to relate the subjective nature of the experience with the objective description of what to represent. Following this thought, the risk is always twofold: on the

1. Hitoshi Abe Architect
2. AFKS Architects
3. Agence Nicolas Michelin & Associés
4. Aitoaho&Viljanen Architects
5. Ala Architects
6. AllesWirdGut Architects
7. AMP ARQUITECTOS
8. APRT Architects
9. Aranguren-Gallegos Architects
10. Wiel Arets Architects
11. Arhitekti Büro
12. ARKITEKTUR.IS / architects Gisli Jón Kristinsson and Páll Tómasson
13. ARK-House Architects
14. Asymptote Architecture
15. Atelier 77 Architects
16. Atelier Lohrer Architects
17. Ateliers Lion Associés
18. AUER & SANDÁS architects
19. Auer Weber Architects
20. Avanto Architects
21. AV1 Architects (Butz, Dujmovic, Schanné, Urig)
22. Baneke, Van der Hoeven Architects
23. Bassam El Keily Architect
24. Baumschager and Eberle Architects
25. Bchoarchitects Associates
26. Bearth and Deplazes Architects
27. Aldrick Beckmann and Françoise N'Thépe Architects
28. Bedaux De Brouwer Architects
29. Stephane Beel Architects
30. Bergen+Parkkinen Architects
31. Titus Bernhard Architect
32. Andrew Bernheimer Architecture
33. Birger Sevaldson Architect
34. BKK-3 Architects
35. b&m Architects
36. Stefano Boeri Architect
37. Nuno Brandão Costa Architects
38. Alexander Brenner Architect
39. Klaus Theo Brenner Architect
40. Brooks+Scarpa Architects
41. Brunow & Maunula Architects
42. Brückner & Brückner Architects
43. Wendell Burnette Architects
44. Camenzind Grafensteiner Architects
45. Cannon Design
46. Victor Cañas Architect
47. Carmody-Groarke Architects
48. David Chipperfield Architects
49. Claesson Koivisto Rune Architects
50. Jo Coenen Architects
51. Francesco Colloff Architect
52. Simon Conder Associates
53. Coz Polidura Volante Architects
54. Massimo Curzi Architect
55. Paulo David Architect
56. Xavieer De Geyter Architect
57. Jared Della Valle Architect
58. Germán Del Sol Architect
59. Bernard Desmoulin Architect
60. DKV Architects
61. Luc Deleu-Top Office Architects Architect
62. Delugan Meissl Associated Architects
63. DKV Architects
64. Jacek Dominiczak Architect
65. Winka Dubbeldam Architect
66. Een Architects
67. Shuhei Endo Architect
68. Estúdio America
69. Terry Farrel and Partners
70. Carlos Ferrater Architect
71. Edouard François Architect
72. Eva Franke and Magnus Jakob Architects
73. Tony Fretton Architects
74. François Frey + Charles Pictet Architects
75. Gullichsen/Vormala Architects
76. Annette Gigon / Mike Guyer Architects
77. Nuno Grande Pedro Gadanho Architects
78. Gronlund - Nisunen Architects
79. Ernst Gruntuch Architects
80. Raimondo Guidacci Architect
81. Zaha Hadid Architects
82. Hannunkari-Mäkipaja Architects
83. Hariri&Hariri,
84. Seppo Häkli architects
85. Pierre Hebbelinck Architect
86. Heikkinen/Komonen Architects
87. Pekka Helin&Co Architects
88. Michael Hensel (Ocean north)
89. D. Herrmann + G. Bosch Architects
90. Herzog & De Meuron Architects
91. HMV Architects
92. Hollmén Reuter Sandman Architects
93. Gareth Hoskins Architects
94. Carl-Viggo Høimebakk AS Architect
95. Huttunen-Lipasti-Pakkanen Architects
96. Rafael Iglesia Architect
97. Toyo Ito Architects
98. Imma Jansana Architect
99. Jensen&Skodvin Architects
100. JKMM Architects
101. Alberto Kalach Architect
102. Kei'ichi Irie Architect + Power Unit Studio
103. Christian Kerez Architect
104. Axel Kilian Architect
105. Mathias Klots Architect
106. Jukka Koivula Architects
107. Ivan Kroupa Architects
108. Katsufumi Kubota Architect
109. Waro Kishi + K. Associates/Architects
110. Yrjö Kukkapuro Architect
111. Kengo Kuma and Associates Architects
112. KHR Architects
113. Kuovo&Partanen Architects
114. K2S Architects
115. Lan-Paris Architects
116. Lassila Hirsilampi Architects
117. Legorreta+Legorreta Architects
118. Francisco Leiva Ivorra / Grupo Aranea Architect
119. Hilde Léon Konrad Wohlhage/LÉON WOHLHAGE WERNIK Architects
120. Andreas Lichtblau and Susanna Wagner Architect
121. Livady Architects
122. LRO Architects
123. Lund+Slaotho Architects
124. Stefan Lindfors Architect
125. Liverani e Molteni Architects
126. Nuno Ribeiro Lopez Architect
127. Minna Lukander (Talli Architects) Architect
128. Make Architects / Ken Shuttleworth
129. Francisco Mangado Belouqui Architects
130. Nicola Marras Architect
131. Carlos Martinez Architects
132. Matrix Associates
133. Meskanen&Pursiainen Architects
134. METCALFE A&D
135. Jürgen Mayer H. Architects
136. McCullough Mulvin Architects,
137. Morales-Giles-Mariscal Architect
138. Morphosis Architects
139. Eric Owen Moss Architects
140. Farshid Moussavi Architect
141. MVDV Architects
142. n Architects
143. Johanne Nalbac, Gernot Nalbach Architects
144. Nippon Sekkei Architects
145. Neutelings Riedijk Architects
146. Niall McLaughlin Architects
147. Nieto Sobelano Architects
148. NL Architects
149. NO.MAD ARQUITECTOS S.L. Eduardo Arroyo Arquitecto
150. Enrique Norton -Ten Arquitectos
151. Nurmela-Raimoranta-Tasa Architects
152. O'DONNEL+ TUOMEY Architects
153. Anttinen Oiva Architects
154. Satoshi Okada Architects
155. Valerio Olgiati Architect
156. OMA Architects
157. Onix Architects
158. Open Source Design
159. Alfredo Payá Benedito Architect
160. Juhani Pallasmaa Architects
161. Park Associati
162. John Pawson Architect
163. Päivi Jääskeläinen (Helsinkistudio) Architect
164. PBEB Architects
165. Eva Pelconen Architect
166. Ulf Pfeil Dipl. Ing.
167. Luciano Pia Architect
168. Charles Pictet Architect
169. PIR II ARKITEKTKONTOR AS
170. PK ARKITEKTAR - Pálmur Kristmundsson
171. André Poiitiers Architect
172. POOK Architects
173. Pool Architekten
174. Christian Potgiesser architecturespossibles
175. Preston,Scott,Cohen INC
176. PRR Architects
177. Eric Raffy Architects
178. Kirsti Rantanen Mauri Korkka Architects
179. Sami Rintala Architect
180. Rocco Design Architects Ltd
181. Romera y Ruiz Architects
182. Michael Rotondi - Roto Architecture
183. Petri Rouhiainen Architect
184. Rueda Pizarro Architects
185. Antón García Abril Ruiz Architect / Ensemble Studio
186. Ría Ruokonen Architect (MAISEMA-ARKITEHDIT BYMAN & RUOKONEN OY)
187. Saara&Janne Repo Architects (ARKKIYYPIIT)
188. Sanaksenaho Architects
189. SANAA Architects
190. SARC/Antti-Matti Siikala Architects
191. Sarlin+Sopanen Architects
192. Saucier+Perrotte Architectes,
193. SCDA Architects
194. Diller Scofidio + Renfro Architects
195. M. Scogin and M. Elam Architects
196. SEARCH Architects
197. José Selgas and Lucía Cano Architects
198. Shigeru Ban Architects
199. Tuomo Siitonen Architects
200. SITE Architects
201. SMAQ Architects
202. Snøhetta Architects
203. Werner Sobek Architects
204. Jaakob Solla (Konkret Architects)
205. Sopanen&Sv Architects
206. Sotamaa Architects
207. SP10 STUDIO Architects
208. Marcelo Spina Architect / P-A-T-E-R-N-S
209. Adrian Streich Architects
210. Studio Granda Architects
211. Sutherland Hussey Architects
212. SUBARQUITECTURA Architects
213. Sutherland Hussey Architects
214. Caruso St. John Architects
215. Adrian Streich Architects
216. Takaharu+Yui Tezuka Architecture
217. TNA Architects
218. Jeremy Till Architect
219. TYIN legnestue Architects
220. Alexander Izannes Associates
221. UID Architects / Keisuke Maeda
222. UN Studio Architects
223. Cristián Undurraga - Undurraga Deves Architects
224. Valvomo Architects
225. Erick Van Egeraat Architects
226. Dick Van Gameren Architect
227. René Van Zuuk Architects
228. Anni Vartola Architect (ArkkitehtitoimistoVartola&Viljamaa)
229. Fernando Vasconcelos Architects
230. Verstas Architects
231. Tham Videgård Hansson Architects
232. Massimo Vignelli Architect
233. VIIVA Arkkitehtuuri Oy
234. Von Gerkan, Marg und Partner Architects,
235. Voon Wong Architects
236. John Wardle Architects
237. Makoto Sei Watanabe Architect / Architects' Office
238. Weiss/Manfredi Architects
239. Rob Wellington Quigley Architect
240. Marion Wicher-Scherübel Architect
241. Sarah Wigglesworth Architects
242. Tod Williams & Billie Tsien Architects
243. Wingårdh Arkitektkontor AB
244. WOHA Architects
245. Woodhead International BHD
246. Vera Yanovshchinsky Architects
247. Alejandro Zaera-Polo Architect
248. Carlos Zapata Architect
249. Cino Zucchi Architect
250. 3X Nielsen Architects

Table 1. 250 architecture firms contacted for the questionnaire.

one hand, to return an incomplete world leaving out everything that goes beyond its own experience, on the other hand to bind to invariant structures, although insensitive to fluctuations in the subject's perspective. A possible solution revolves around the understanding of the interaction between the observer and the data flow that he/she analyzes. This is a dynamic understanding because the observer, acquiring new data, expands his/her knowledge and therefore his/her experience, situating inside of what he/himself and/or she/herself attempts to represent. In these terms the conflict between subjective experience and external necessity leads to the search for plausible arguments able to find any valid justification. But, how scientific and how free will is that? In Plato's dialogue *Meno*, Socrates explaining the nature of knowledge distinguishes a thin line between real, justified knowledge and beliefs. In a point of the dialogue Socrates argues,

"[...] so what is my point? It's about true opinions. For true opinions are also a thing of beauty, as long as they stay with one, and all their consequences are good. But they're not prepared to stay with one for long. Instead they run away from the person's soul. As a result, they are not worth very much until someone ties them down by reasoning out the cause. And this, Meno, my friend, is recollection, as we have earlier agreed. When they've been tied down, they become, first of all, instances of knowledge, and secondly, settled. It's precisely for this reason that knowledge is something more precious than correct opinion, and it's being tied down that make knowledge different from correct opinion".

But how can the knowledge be distinguished from the correct opinion? Is that the difficulty encountered when he/she wants to justify facts and values that appear more objective and worthy of consideration? According to Stephen Gaukroger (2012, 62):

"[...] we have a shift from the idea that objectivity requires us to go beyond mere appearances and capture the underlying reality, to the idea that what we have to capture are precisely the appearances, because anything other than mere appearances goes beyond what we can objectively determine. In fact, the matter is not always quite as clear cut as it seems, since it may in some cases be possible to use one to generate the other".

What is possible to infer is the absence of a position which may be indicated as the only solution of an established problem. Therefore, a competent and informed position of those who have a thorough knowledge of the discussions on this particular topic will prevail. This does not mean that the choice is unique and unquestionable; it is rather the choice where the knowledge is regarded very different from the belief.

To consider the received data as the raw material to be refined, extracting concepts to be put in comparison with own thoughts and to develop them properly, correcting the trajectory, is the intended purpose. The elimination of arbitrary judgments in this procedure that makes it discretionary, is the difficulty that interposes itself. The proposed solution is a position of equilibrium between the competence and acquired knowledge and the received data. As far as it goes, it is less confrontational in the absence of absolute standards. According to Gaukroger (2012, 67):

"The idea of absolute objectivity is a misconception, encouraged by thinking of it as a view from nowhere. If there is no view from nowhere, there is no limiting case where, having progressively become more and more objective, a theory can finally attain absolute objectivity [...] What we are seeking to do in imposing standards of objectivity in our judgements in modern science is to identify and separate the informative and the uninformative, with a view to producing reliable results. Objectivity is more mundane than 'the search

for truth', it is in its very mundaneness, by contrast with the 'search for truth', that its value lies".

The criteria for analysis of the responses received (**Table 2, Table 3**) are derived from the abovementioned reflections. However first of all, there was a practical problem. A request sent to various architectural firms usually meets with a pragmatic difficulty; the lack of an email address in the searched websites. It is perhaps to protect the firm from a large amount of emails they might then receive on a daily basis. Similar studies are being declined due to the lack of time and in some cases they far exceed the time given. However, in our case we have received some significant information in return, which might be regarded as relevant and important in order to understand the role of the Internet in recent organizational patterns by which design offices operate. To make a general comment, despite the changing rhythm and timing in professional studios, it is noticeable that the Internet has not largely influenced nor drastically altered the overall structures – even though some of the implications are still worth mentioning and in need of further scholarly investigation. We are actually still at the verge of this overwhelming phenomenon and recent turn-overs will certainly realise a larger shift in our cognitive world: the speed of access to general information and databases is very much appreciated, but at the same time this option creates sends an unwelcome pressure in globalization.

Overall, the Internet has not changed the way to design but has offered the chance to do it at a distance from others. This is also obvious in one of the responses received (**Table 2, Table 3**) from the Finnish architect

Table 2. Pictures of projects designed by architectural firms that responded.



Juhani Pallasmaa, he argues: "The Internet has not changed my role as an architect at all. It has escalated my international connections, especially with students around the world to the point that it has turned almost unmanageable". On the other hand, according to the Austrian-Finnish duo, Berger + Parkkinen, at the Nordic Embassy Complex in Berlin: "It is already used. Nordic Embassies are an early example of data exchange between 7 Countries (Denmark, Iceland, Finland, Sweden, Norway, Germany and Austria) between architects, engineers and even clients." In a similar fashion, the Norwegians TYIN Architects assert:

"The Internet makes it easier to learn from other architects and projects. The networks also enable different architects and other professionals to work on projects all over the world. Being a studio that works in many regions far apart, the Internet is the only way of communication that works in an efficient manner. The biggest strength of the net for us is the possibility to gather teams from different regions. We pick and choose the team members based on their skill set and how this matches the project at hand." (Table 2, Table 3)

Nevertheless, this all explains how it is impossible to advance in cooperation at a distance, when the members do not know each other fully, and also how the face-to-face is always preferable in important stages of the design process. There is the reluctance of someone in sharing their knowledge with others, and the idea that the design is always a normative process. Some interesting responses were received from two Icelandic firms: they suggest that their special geographical location and relative isolation have greatly influenced their study of the medium and consequentially the stimulating reflections that have resulted. In

Table 3. The addresses of architectural firms that responded to the questionnaire.

http://www.arkvv.fi/ arkvv@arkvv.fi anni.vartola@arkvv.fi-anni.vartola@arkvv.fi	http://www.arkjoivula.fi/ jukka.koivula@ark.inet.fi	http://www.hannunkari-makipaja.com veikko.makipaja@hannunkari-makipaja.com	http://www.pesarkom tuomas.silvenoinen@pesarkom.com	http://www.helinco.fi/ tuomas.wichmann@helinco.fi
Helinski Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, "Yala" Housing Project Tuusula, Espoo, Finland, 1997 pages 90-93.	Rauma Finland Rakennustieto Helsinki, 2007 photographed by Jussi Tiainen, WOOD Architecture in Finland, Hiekkahovi Conference and holiday Facility, 2003 pages 104-117 pages 118-129	Helinski Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, Lahden Kirjakkaputo Housing, Lahti, Finland, 2000 pages 36-37.	Helinski Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, Centre for Orthodoxy and Nature, Romani, Finland, 2000 pages 28-31.	Helinski Finland Juväskylä airport terminal extension, Tikkakoski, Finland, 2003
www.arkrouhainen.fi petri.rouhainen@arkrouhainen.fi	http://www.kolumbus.fi/sanaksenaho/ ark@sanaksenaho.com	http://www.bm-ark.fi/ jussi.murola@bm-ark.fi	http://www.arkkityyppi.fi/home.html janne.repo@arkkityyppi.fi	http://www.hollmenreutersandman.com/ info@hollmenreutersandman.com<info@hollmenreutersandman.com
Espoo Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, Poutamäentie 10 housing blocks, Pajamäki, Helsinki, Finland, 2000 pages 28-31.	Helinski Finland St Henry's Ecumenical Art Chapel, Turku, Finland 2005 Abitare. Dicembre 2005. italia. pp. 134-137.	Helinski Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, Al Jufrah Administrative Building, Al Jufrah, Libya, 1992-2002 pages 96-99.	Kuopio Finland Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, "Mulum" flexible housing unit, Vöjjarvi, Finland, Competition 1st prize 1994 pages 92-95.	Helinski Finland Rakennustieto Helsinki, 2009 Mikko Kaikkonen, Milka Hannala, Meri Louekari Newly Drawn Emerging Finnish Architects, The Women's Centre, Rufisque, Senegal, 1996-2001 pages 34-35.
http://www.pallasmaa.fi/ office@pallasmaa.fi	http://www.berger-parkkinen.com/ info@berger-parkkinen.com<info@berger-parkkinen.com	http://www.ri-eg.com/ sami@ri-eg.com<sami@ri-eg.com	http://www.tyintegnestue.no/ post@tyinarchitects.com<post@tyinarchitects.com	www.birger-sevaldson.no Birger.Sevaldson@aho.no
Helinski Finland Korundi Art Museum Rovaniemi	Wien Austria/Helsinki Finland The Nordic Embassy Complex in Berlin-The Pan Nordic Building review Living Architecture n.17	Oslo Norway Domus 898, Element House Anyang Public Art Park - Anyang Seoul (Korea), Kåfjord Project, Ankerka-Sauna Long The River, The Mill Halkko River Southwest Finland, in the issue of December 2006, pages 14.	Trondheim Norway Library Of The Old Market, Hin Buri, Bangkok; Library Safe Haven, Bathroom Sliks Safe Haven, Thailand Casabella 795 Settembre 2010 pag. 36.	Oslo Norway Rakennustieto Helsinki, 2003 Roger Connah compiled by, 40/40 YOUNG - Architects from Finland, Ocean North The Finnish Embassy in Canberra pages 210-217.
http://www.topoffice.to/index.html urbanism@topoffice.to<urbanism@topoffice.to	http://paolodavidarquitecto.com/?width=1920&height=1080 pd.arq@mail.telepac.pt<pd.arq@mail.telepac.pt	www.leonwohlagewernik.de haberle@leonwohlagewernik.de	http://www.loweg Pfeil.de/buero_pfeil.html pfeil@loweg Pfeil.de<pfeil@loweg Pfeil.de>	http://designexplorer.net/index.html akilian@alum.mit.edu<akilian@alum.mit.edu>
B-2600 Antwerp-Berchem Belgium family house in Poortugaal Holland Domus n.811 gennaio 1999 pag. 36	Funchal, Madeira, Portugal Casa das Mudas, Centro de Artes da Calheta Madeira Portugal Casabella n.758 settembre 2007 pag 68	Berlin Germany Rheinisches Landesmuseum Bonn - BDA Preis 2004 November 1993 Competition for the World Trade Center Berlin Tiergarten November 1993 Casabella n.595 dicembre 1992 pag. 64	Stuttgart Germany Rheinisches Landesmuseum Bonn - BDA Preis 2004 Architektengruppe Stuttgart K. Lohrer und U. Pfeil Planungs- und Bauzeit: 1993 - 2002 Casabella n.727 novembre 2004 pag. 44	Museo Costantini Progetto del Concorso Internazionale 1997 Buenos Aires Argentina IX Biennale di Architettura di Venezia Catalogo Rosso pag 236
http://www.pottgiesser.fr/christian_pottgiesser_architecture/possibles/enter.html info@pottgiesser.fr	http://studiogranda.is/ <studiogranda@studiogranda.is> steve@studiogranda.is	http://www.pk.is/ pk@pk.is<pk@pk.is>	http://www.amparquitectos.com/ administration@amparquitectos.com<administration@amparquitectos.com>	http://www.vya.nl/ info@vya.nl<info@vya.nl>
Paris France maison L'vivénes, France Redaktion DETAIL, Wohnhaus bei Paris, House near Paris in :DETAIL 2011-12, Verlag für Internationale Architektur-Dokumentation, München, Deutschland, 2011 pp.1420-1423	Reykjavik Iceland Reykjavik City Hall Iceland Casabella n.603 Luglio/Agosto 1993 pag.	Reykjavik Iceland Architect: Pállar Kristmundsson The Icelandic Embassy Berlin, Germany 1999 Living Architecture n.17	Santa Cruz de Tenerife South Tenerife Convention Center 2005 VIII Biennale di Architettura di Venezia Catalogo giallo pag 308	Den Haag Holland Vera Yanovitchinsky architects Iburg blok 16a, Amsterdam Holland, 2001 Abitare n.417 maggio 2002 pag. 92
http://www.tezuka-arch.com/ tez@sepla.ocn.ne.jp<tez@sepla.ocn.ne.jp	http://www.okada-archi.com/ mail@okada-archi.com	http://www.raimondoguidacci.it/ raimondoguidacci@tin.it<raimondoguidacci@tin.it>	http://www.lucianoipia.it/ info@lucianoipia.it<info@lucianoipia.it	http://www.matrassociati.com/ info@matrassociati.com<info@matrassociati.com
Todoroki Setagaya Tokyo Japan Matsunoyama Natural Science Museum prefecture of Higata Japan 2003 Interni Ottobre 2004 pag. 39	Higashi Kunitachi Tokyo Japan House in Ogikubo Suginami Tokyo Japan 2005 Casabella n. 743 aprile 2006 pag. 58	Torino Italia Due case a Orsara di Puglia (Fg) Abitare n.460 aprile 2006 pag. 282	Torino Italia Scuola di Biotechnologie a Torino 2000-2006 Casabella n. 756 giugno 2007 pag. 58	Siracusa Italia Centro Servizi a Florida (Sr) Il Giornale dell'Architettura n. 54 settembre 2007 pag. 22
http://www.liverani-molteni.it/ita/home.asp enrico@liverani-molteni.it<enrico@liverani-molteni.it				
Milano Italia Casa ST a Barlassina (MI) 2000-2003 Industria delle costruzioni n.387 gennaio-febbraio 2006 pag. 96 Abitare n. 460 aprile 2006 pag. 258				

particularly Studio Granda highlight the barriers that go beyond the digital divide, the passing of which has, however, if not well managed, effected the disintegration of weaker cultures: “International communication is cheaper and more instant. Publication is super-easy but working abroad is as hard as ever. Language, customs, regulations, local ignorance, and the cost of working remotely (time difference, translation, local partners) are barriers that the Internet cannot overcome.”

In fact, few seem interested in this stage in bringing physical collaboration outside their office. The Internet is considered just an instrument, a medium that shortens the distance, allows to interact in real time with anyone, anywhere, also making phone use rare. This persistence of the Internet as an instrument is a new issue that certainly require some significant reflection. Before its advent, the most complex instrument built by mankind was the city, an artefact that remains largely under mankind’s control. The Internet is beyond the control of anyone, does not recognize political boundaries, and no one in either technological or legislative structures, and succeeds in keeping it under one hegemonic rule. Furthermore, its growth transcends our pure logic; it acts in effect as a living organism, as an entity, and despite being in the hands of human beings, they cannot regulate it or influence the essence of what a technology inherently captures. The discovery of the Internet was one of the most important changes in the history of humankind: the Hungarian physicist Albert-László Barabási (2003, 54) asks “how can systems as fundamentally different as the cell and the Internet have the same architecture and obey the same laws?” He also reflects that:

“Help along the way is provided by the rapidly developing theory of complex networks that, in the past few years, has made advances towards uncovering the organizing principles that govern the formation and evolution of various complex technological and social networks. This research is already making an impact on cell biology. It has led to the realization that the architectural features of molecular interaction networks within a cell are shared to a large degree by other complex systems, such as the Internet, computer chips and society. This unexpected universality indicates that similar laws may govern most complex networks in nature, which allows the expertise from large and well-mapped non-biological systems to be used to characterize the intricate interwoven relationships that govern cellular functions” (Barabási, 2004, 101).

However, this is not to suggest that the Internet is the promised land of freedom, because it is not necessarily what it seems to be. What can be traced in the first instance on the Internet is what the search engines would in fact let us discover – that does not necessarily mean that it is the only available information or the most useful. The logic that moves within the search engine is more elusive and complex than is seen, perhaps even for those who to manage. Moreover, a human being knows its self-destructive beginning of any excess of his/hers, even when it is called liberty. The doubts and puzzles that appear when everyone thinks of the Internet, are reflected by the French architect Christian Pottgiesser:

“...If there is a reality behind the world we can access with empirical senses, has this world necessarily changed with the arrival of the Internet and its uses? In other words, have architects been a mastermind before? Without doubt, the arrival of the Internet is a paradigmatic change. But has the meaning of all the previous paradigms changed? Perhaps things are more ambiguous... and can simultaneously coexist in non-coherent world?” (Table 2, Table 3)

It is possible only to see what appears as doubts, uncertainties and ambiguities as an elusive phenomenon, perhaps because it is not fully understandable. In terms of its relationship with history, one may pose specific considerations as well; for the Japanese Satoshi Okada, the answer is simple: "NO. Past is past. Contemporary is contemporary. It depends on our definition what is new and what is old. It is not the issue of a commutation society." On the other, for Christian Pottgiesser: "this is a very Italian question. Omnipresent history. Without her, nothing!" In principle, the history seems to disappear for Okada; however, the past is far away for the latter. As arguably put by the Finnish architect, Juhani Pallasmaa: "Tradition and history have gained added significance for me, and I am concerned with the loss of the sense of history among architects and students". Seemingly, in response to the French architect this is a strong polemic against everything that an Italian architect would stand for, a country that has been allowed to cage itself in its history instead of making it a resource. Yet, despite his answer, the image of the medieval town is evident in one of his projects; the town with towers is still alive in places like San Gimignano, in Italy – a reflection of how history is very strong, much more human. The image of the architect that emerges from these interviews is that of a professional with infinite scruples, looking doubtfully on the brink of the knowable. The massive change in the technological paradigm has occurred in facts, before theory: this has caused an historic rupture, which it is not known whether it can be left or mended. Awareness of it, on the other hand, can be a huge advantage because artistic-cultural and scientific expertise can play some complementary roles in the processes of radical and yet disruptive innovations. The advent of new technologies produces pioneering experiments; the scenarios that can be located, show a network flexible to needs that rapidly change, expanding, contracting and substituting one with another. The opportunity to connect and communicate can now produce an inter-operational paradigm supported by virtual models and simulations. Nevertheless, at this very moment, the quality that an architect seeks is not a well-shared responsibility; the contribution of each is essential but cannot be delegated.

Therefore, decentralization, or the possibility for some to make independent decisions in common projects is a rejected offer. The digital technology is an opportunity to master, but does not seem to have become a phenomenon totalizing of human action. Rather than thinking about processes that collect and analyse data and immediately return deductions to build realities that are gradually dematerializing, it is more interesting to turn towards the search for solutions in which technological innovations suggest new potentials for further interactions that can be also pursued without the use of the technology itself. These should be considered, as an enabling factor to facilitate tasks and free up time to work on issues deemed most important for oneself.

It is a path towards a much disciplined thought that would allow flexible learning experiences in various fields, to synthesize and integrate them creatively, so that they generate new questions and new answers with respect to close and distant individuals, both physically and culturally. All these capabilities must grow; even the education system must be transformed by adopting a holistic approach to be able to develop, in a dynamic way, human intelligence in different methods and in different competencies that are converging towards reciprocal roles for exchange or for synthesis. All the involved subjects, teachers and students, without artificially constructed barriers, must be able to work together pursuing

the construction of new methodologies of interaction and mediation that could enable everyone to develop a personal participation in any joint architectural project and beyond. However, as history shows, the consequences of ideas or inventions are often unpredictable and fraught with difficulties. In this regard, there is a famous remark by Isaac Asimov (1975, 22):

“how many people had predicted the invention of the automobile, but no one had ever posed the problem of parking”.

Therefore, concerning the internet and its relationship with architectural design, also with reference to those architects consulted with, it can be stated that it is condensed in the image contained in the final frame of the first part of Stanley Kubrick's *2001: A Space Odyssey, The Dawn of Man*: namely, the bone has been thrown into the air, but no one knows yet what it will become.

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AĞ TOPLUMU ÇAĞINDA TASARLAMAK: TASARLAMA SÜREÇLERİ VE BİLGİ ÜRETİMİNDE TEKNOLOJİNİN ROLÜ

Mimari tasarım, son yıllarda teknolojik yeniliklerin dayattığı ve buna paralel olarak özellikle İnternet'in etkisinin çok daha çabuk bir biçimde su yüzüne çıktığı, daha önce görülmemiş bir hızla kendisini test etmiştir. Ortaya çıkan değişimi doğru yorumlamak ise, bahsedilen durumun tasarım süreçleri üzerinde kurduğu baskı ve dayatmacı bu ataletin, yani teknolojiden doğan hızın, ayrı tutulmasını gerektirmektedir. Bilgi ve üretimde sonsuz sayıda yeni seçenekler oluşturma kabiliyeti, kolektif bir ortamın kurulmasına ön ayak olur; hiç kuşkusuz ki bu son dönem gayretleri ile ortaya çıkan ve Öğrenme Toplumu ve/ya Ağ Toplumu adını verdiğimiz, tamamen yeni ve keşfedilmemiş yolları göz önüne serer. Böyle bir durumda, mimar özne, günün koşullarının izin verdiği ölçüde ve mimarlığın profesyonel pratiğine uygun koşullarda kendisini açıkça ifade edebileceği iletişimsel araçlar aramalıdır. Ancak bu şekilde mimar, kendisini daha etkileşimli bir alanda yeniden konumlandırabilecek, bu şekilde toplumun beklentilerine koşut, katılımcı bir mimarlığa yol gösterecektir. Küresel kültürün İnternet tarafından çizilen esas unsurları arasında, katılımcılık, paylaşımcılık ve etkileşim ilk sıralarda sayılabilir. Bu çizilen çerçeve içinde mimarlık, bahsi geçen unsurların tüm insanlığın hizmetine açık olan bir satha dönüştürülmesine yardımcı olabilir ki, bu da kolektif düşüncenin yeni bir tasavvuru olarak kabul edilecektir. Burada mimara düşen en önemli görev, öznenin beklentilerinden ötede bir yerde, toplumun ve hatta tüm insanlığın erişimine açık yegâne bir mimari fikrin aktarılabilmesi için yeni bir sorumluluk alanı oluşturmaktır. Mimarlık, deneyimle ilintilidir; bu ilişki kendisini, neredeyse kutsal bir dünya üzerinden yansıtır. Fakat bu dünya, günümüz koşullarının oluşturduğu sürekli ve değişken, elektronik bilgi aktarımı ve onun oluşturduğu mekânsal örüntü ile ele geçirilmiş ve dönüştürülmüştür. Benzer şekilde, kent yaşamının en çok arzu edilen noktaları da bahsedilen akış ile iç içe geçmiş ve bunu tamamlar bir unsur haline gelmiştir. Burada mimar devrimsel bir rol üstlenmektedir: mimar, rekabetçi tasarım süreçlerindeki sonsuz imgelerin oluşturduğu bir dizi roller içerisinde yeni bilgi ve yetenekler edinmek ve nerede seçici davranmak gerektiğini ayırt edebilmek zorundadır. Bu çalışma, tüm bu bahsedilenler çerçevesinde, mimarın nasıl ve hangi ölçüde profesyonel bir duruş sergileyebileceğini tahayyül edebilmek ve buna bağlı bir zemin oluşturmak gayesiyle, Avrupa'daki bir dizi mimarlık firmasından aldığı değerlendirmelerle, özellikle İnternet'in, tasarım süreçlerini açık biçimde etkileyen nasıl bir bilgi üretim ve dağıtım aracı olduğu sorusu üzerine yoğunlaşmıştır. Şüphesiz ki, bahsedilen bilginin engin ölçülerdeki yüzer-gezer durumu, Ağ Toplumu özelinde bize ancak ve ancak çok yüzeysel bir paylaşım zemini oluşturmaktadır – bu şartlarda, kolektif düşüncenin nüvesini ve var olan eski tarzdaki yüz-yüze gerçekleşen iletişim kurma biçimini ortadan kaldıran ya da kısıtlayan tasarlama yetileri söz konusu olacaktır. Bu araştırma göstermiştir ki; sayısal teknoloji, tasarlama süreçlerinde bazı aksaklıkların giderilmesine ve hatta fırsata çevrilmesine olanak sağlamasına rağmen, farklı kültürel bağlamlarda yer alan bireyler arasındaki iletişimde eşitsiz ve açık biçimde tanımlanamayan bir denge kurmaktadır. Bu sebeptendir ki, sayısal teknolojiler, tasarım süreçleri içerisinde üzerinde soru işareti bulunan şüphe ve belirsizlikleri ortadan kaldırabilecek kesin bir olgu olarak tanımlanamaz.

DESIGNING IN THE AGE OF NETWORK SOCIETY: THE ROLE OF TECHNOLOGY IN DESIGN PROCESSES AND KNOWLEDGE GENERATION

Architectural design in recent decades has measured itself with an unprecedented speed imposed by technological innovation, from which the Internet has emerged at a greater pace. To interpret correctly the changes that have ensued, it is essential to rule out any technological impetus by which these new conditions can now dictate related assessments in design processes. The ability to achieve new knowledge and produce endless combinations seems to lead to a path based on a shared work; it is no coincidence that this era is called the Learning Society and/or Network Society, due to recent endeavours showing utterly new and unexplored paths. In a situation like this, the architect must seek new ways that would allow his/her communicative tools to be explicit in what the architecture wants to express professionally under the empowering conditions of the Learning/Network Society. That seems to be the only way to relocate the architect in a more interactive sphere that in the end would lead to a more communicative architecture in tune with the expectations of society. The main characteristics of a global culture, built via the Internet are participation, dissemination and interaction. Within the given scenario, architecture can help transform those features into a path accessible to all mankind; this could be regarded as a new contemplation of collective thought. The urgent task is therefore to draw a new responsibility for the architect by which a particular architectural idea crosses the expectations of the self, becoming more accessible to all. Architecture is all about experience, which in turn reflects an almost sacred world; yet this said world is now recovered and translated into a constant exchange among electronic flows, whose spatial properties are based on current conditions. As such the most desired urban life is also expected to take part in an interdependent and yet complementary milieu of urbanity in flux. There, the architect should play a major role: a challenging design process that would interplay completely with endless images in order to constantly reinvent their roles, acquire new knowledge and skills, to be able to distinguish what must be done selectively. To be able to reveal how and to what extent the architect could now pose a new professional reflection, this study is designed to receive such responses from an array of renowned architectural firms in Europe to fully understand how the internet as an instrument of knowledge generation, and thus dissemination, visibly affects the orthodoxies of design processes. It is proven that the vast scale of information flux available provide rather sketchy frameworks; therefore, it is almost impossible to find a solid base of departure that offers an opportunity to design at distance, replacing the old-fashion face-to-face generative procedures which in the end restrain some of the faculties of design processes such as collective thought. Crafting an ill-defined base and an unbalanced interaction between the role-players in different cultural contexts, the research shows that digital technology is certainly an opportunity to master some of the shortcomings of design processes; however, it is not a totalizing phenomenon as such issues as doubts, uncertainties, and ambiguities still largely remain on the drafting table.

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