

BOUNDARY DEBATES

Extensions from Analog to Digital Spaces

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Abstract: Our research focuses on the evaluation of digital space and its prospective use as a functional space for future architectural planning tasks. Through the existence of digital technologies the authors consider that architects will have to expose themselves to new - planning tasks, which are not comparable to traditional architectural duties. This requires us to rethink architectural terms and their meaning in digital space. It demands us to extend the borders within which we think, work and design. The paper presents exemplary projects that demonstrate the applicability and added value of these mergers as an extension of solid architectural buildings. Focus is laid onto digital architecture that either extends its analog counterpart by providing functionality that does not exist in the "real" world or which doesn't have an analog counterpart at all. The paper aims at the definition of new tasks for architects to be developed. It describes methods and strategies architects have to be aware of to be capable to offer an extended field of activity. Finally it presents exemplary projects which show the possible added value clients could gain from buildings to be established as mergers of analog and digital spaces.

1. Introduction

Without doubt our society faces developments in information technology that might dramatically change the way we live. By now, unforeseen effects of these tendencies affect political, social and cultural issues. Latest developments force us to extend our understanding of "how things work", "what things are" and of "how we redefine them" to meet the demands of the future. Amongst other disciplines architecture always seemed to be located on the border between art and science. It is no wonder that the profession hesitates in coping with technologies that arose within the past few years with the spread of the internet. Even if the net seems to be full of architectural metaphors the influence of architects onto its shape has rather been dispensable.

Nonetheless the definition of digital spaces and consequently their creation - implying essential, yet evermore complex methods of orientation - requires knowledge congruent to those evident in architectural practice (Donath and Loemker, 1999). Based on the results of a research project with graduate students at Bauhaus Universitaet Weimar this paper examines the utilization of digital space as a space for real architectural projects. Complementary to metaphors used to describe digital spaces, the focus is laid onto the creation of usable architectural spaces within digital environments, whereas it was of particular interest to explore if digital architecture would be suitable to exist as an extension or substitution of a real physical space. According to the discussions we tried to initiate, the research project was called design studio "digital_space" - 'boundary debates'.

2. Theoretical Context

Being occupied with digital media the terms analog and digital, real and virtual as well as naturalness and artificiality play an important, superordinated, even though oftentimes transfigured role. Whereas the terms analog and digital are not difficult to comprehend in such a way that analog means something you can actually touch and digital means something that consists of two different electronic conditions, our understanding and interpretation of the terms real and virtual is totally different. Contrary to our neutral conception of the terms analog and digital our interpretation of real and virtual is often similar to right and false, the natural and the artificial, something that is counterfeit. These circumstances are founded in history, where artificial items were copied from natural items to imitate or improve their qualities. Within living memory human beings produce artificial materials that play an important role in everyday life. Whilst these items were initially made to improve or replace existing items, we are nowadays confronted with a development, that makes the production of items possible whose natural equivalent does not exist. That way, we fall back on materials today that do not imitate anymore but whose qualities lead to a self-contained value. The hierarchy of substances and the valence of the systems begin to dissolve. Almost everything, even the living, can be plastified. (Geier, 1999)

to that, artificiality is a symptom of technical progress. Whilst we are thinking about the artificial, we believe in our intuitive imagination of what should be natural. It counts as genuine and original and it is sometimes brought into the game as a desirable alternative. (Geier, 1999) During the design studio "digital_space" the instructors were often confronted with this point-of-view, which obviously dominated thinking and acting of the participating students. It turned out that naturalness, the accustomed, and the touchable, emerged in most designs submitted. In this sense "natural" and "artificial" are possibly the

most influential terms in relation to our understanding of how things are or how things should be. In 1755 Jean-Jacques Rousseau wrote in "A Dissertation On the Origin and Foundation of the Inequality of Mankind":

"It is not a trivial venture to distinguish what in the current nature of human beings is natural and what is artificial and to perfectly recognize a condition that doesn't exist anymore, that may not have existed at all, that will probably never exist and of which it is necessary to define accurate terms to judge upon our current situation."

Jean-Jacques Rousseau (1712-1778)

Within this sense we tried to make students understand that whilst talking about artificiality we are usually oriented towards its opposite. It makes no sense to use the word "artificiality" in an absolute sense. Only in conjunction with our understanding of the 'natural' and the term 'nature' it becomes significant. It is remarkable that temporal as well as systematic primacy is adjudged to "nature" as well as to "the natural". The "artificial" is something secondary, it was added to something that existed before and it is worse than what existed before, it covers or replaces something natural. People trying to get the essential element of something, talk about its nature: the nature of humans, the nature of knowledge, the nature of language, the nature of nature. If people are sure about something, they like to say: "naturally, that's the way it is.". Aristotle already favored this linguistic usage, which influences us till today.

This phraseology related to nature, by means of which 'nature' and 'the natural' is adjudged a temporal priority was always myth. It invoked a situation which has actually never existed for human beings and aimed at something untouched, which could merely have the appearance of the natural. It ignored, that nature was always a cultivated, molded and constructed world of living and that conceptions of the natural in the historic process of civilization took manifold shape. The natural, that goes without saying, is always historic. (Geier, 1999) Thus, digital worlds could be prioritized in comparison to analog worlds if the digital world has properties that are better suited to fulfil the specific need of the user or client. In this sense the digital world would just be a subsequent stage of nature.

It is not about time for manichaeic thinking, where the natural is authentic, good and genuine and the artificial is masking, bad and false. So does it still make sense to draw the line between the natural and the artificial? Humans understanding the reality of the artificial and the virtuality of the real do not have to believe in unsullied naturalness; humans constructing artificial models of reality do not necessarily have to lose sight of modeled reality.

Coming back to one of the intrinsic questions in the design of digital spaces, i.e. whether the development of digital worlds is purely imitation of the real analog world or if digital worlds will be revealed to architects and their clients

the way that we can talk about a self-contained value, an independent syntax of digital architecture, we wanted to explore if unprejudiced students would take themselves the freedom to design architecture detached from most physical constraints. One of the questions to be answered was if built architecture in the real physical world will be extended by a component whose intrinsic particularities are not based on imitation but on its immanent qualities?

3. Methodology

Within the framework of the design studio 'digital_space' 28 graduate students participated in lectures about technological, social, cultural, economical, spatial and psychological aspects of digital environments. Additionally, students were trained in various programs, administrable in the creation of digital environments. Altogether 9 students canceled the design studio which lasted 18 weeks. Each student had the opportunity to continuously contact lecturers by email or in person. Personal discussions and consultations with lecturers were on a very intense level.

3.1 THESIS

We set up a thesis stating that in cyberspace we can perform functions that are not possible in solid architectural typologies. These functions were called 'extensions'. It was most important for us to make clear that these extensions should provide functionality that either replace and improve or extend existing architectural typologies. The main goal would have been to create functional digital architectural typologies that have no equivalent in solid architecture, whereas functional incorporates social, spatial, aesthetic or economical factors. Furthermore we defined that digital space that could incorporate or house digital architecture exists in any item working in digital. Thus possible extensions designed by students would not have been limited to the regular computer screen. As long as these items were driven by processing units, they were suitable for being integrated into digital architecture. No limitations concerning their size, shape or location applied. The aim was to merge physically solid and digital architectural spaces to develop a fruitful direction for new architectural scenarios providing broader functionality.

3.2 TASK

Students had to create a prototypical extension (digital architecture) to a solid architectural typology. This extension might have been a digital stand-alone prototype or a merger of solid and digital architectural spaces. It was the students task to decide upon the usage of the extension. No defaults were made to not discourage students from trying to be innovative.

3.3 PREPARATION

The “Pattern Language” (Donath, 2001) was chosen as a reference due to the fact that it is an architectural theory that allows even laymen to design functioning architectural and urban spaces. Previous semesters at Bauhaus Universitaet evaluated if simple conditions as they were described in depth by Christopher Alexander would have analogies or antagonisms in digital space. As a result of these explorations students figured out that most attributes existed, but that their digital counterparts might have alternative characteristics. A description of regularities that apply within real and virtual architectural spaces was developed describing qualities of solid and digital architecture. The similarities found during the evaluation were provided as an aid for students to find entry into solutions to be realized in digital space, thus querying the realization of physical spaces and services (Anders, 1998).

Even if it was obvious that there is scope for development of digital spaces that affect physical spaces e.g. by outplacing services to cyberspaces or by displacing the material structure of a building by information systems, we were pretty sure that students would have difficulties in developing appropriate tasks and solutions. To avoid frustration at the very beginning of the design studio we asked students from time to time to write short reports about different tasks we issued. By this means we wanted to assure that lecturers and students were talking about the same things. At the very beginning of the course we realized that a third of the students were thinking in terms of visualization and animation techniques of existing physical architecture whilst talking about digital architectural representations. Teachers tried to clear these misunderstandings in personal consultations with students.

3.4 MOTIVATION

One reason for developing a design studio alike was the actual working situation in Germany. An up to date survey of ‘ifo institute for promotion of the economy’ implies that since 1995 the amount of building projects in Germany decreased 10 per cent. Additionally the average building costs – which are the basis for assessment of the architects’ fee – also decreased 10 per cent. Within the same period the amount of architects sharing the shrinking market increased 13 per cent. The employment situation of architects in Germany will deteriorate further on. It is absolutely certain that architects have to engage in new working scenarios to be able to autonomously refine their core competence.

4. Case Study

During the design studio 'digital-space' students developed and designed 19 different projects. In a first overall impression of these projects, it seems that about a third of those are capable of being integrated into superordinated proposals. In so far we realized structures and hierarchies in analog/digital merged spaces that allow classification in the sense of usual architectural and urban planning.

4.1 PROJECTS

One of the most essential, yet superordinated projects is called "the tangible city". The tangible city is a conglomerate merger of the existing analog and a proposed digital city. As a matter of course planning authorities administer the analog classification of our cities, not being aware of the fact that an additional digital classification would offer possibilities that could lead to an enrichment of existing structures. Concepts for digital urban planning are not new and during discussions with students we often referred to projects already initiated. However, one has to determine that most projects do not consequently follow a fruitful and innovative combination of analog and digital urban planning strategies. Even though it could be determined that more and more economical processes are shifted into digital domains, symbiosis are small. Realization and conversion of networked cities is truly deplorable. The underlying concept of the students proposal is as trivial as evident. The main goal is to strengthen the existing economical structure of the city. By means of this it should be made sure that all measures taken would serve the inhabitants of the particular city. Top priority of this objective target creates an essential platform for common activities of all parties involved.

"The tangible city" consists of a digital three-dimensional model of the respective city. Against many expectations the model represents a direct copy of physical reality. The distinctive feature of the tangible city is that the user or inhabitant is able to generate so called "virtual marketplaces". This means that in reliance on his analyzed specific behavior in the digital and the analog city a spatial situation would be created within which he would find the digital representations of services and shops significant for himself. This "virtual marketplace" to be created differs from user to user and differs from time to time for each specific user. Its underlying structure is based on a comprehensive database which could be managed and maintained by a central service or planning authority. The virtual marketplace is accessible by regular input/output devices like laptops or personal computers but should be connected to any digital i/o-system capable to support wireless communication techniques, i.e. blue tooth technology. Wireless networks would assure a dynamic system in a state of perpetual evolution. Virtual and physical spaces

would be connected and could be accessed and driven with the aid of organizers, cellular phones or stationary devices to be implemented into the physical city structure. There is good reason to believe that municipalities would invest into a system alike due to the fact that tax revenue might increase because of sales within the analog / digital city environment. Following the increasing digitalization of our cities and households many expect the contrary development to happen. The tangible city yet, initiated and driven by mergers of municipalities and residential tradesmen could serve as an adjusting instrument. As made clear earlier, most concepts of the tangible city are not new, most technology exists, the infrastructure could be developed – the symbiosis however is unique and not yet realized. Networking nowadays digital technology – from commodities to households to communication resources like the internet – would lead to an enormous enrichment of interaction within the cities. In contrary posture to those preaching impoverishment of our cities due to information technology, the tangible city would provide a network of digital and analog connections that would extend but not displace regular urban planning.

As mentioned earlier the students proposals could be categorized in superordinated, subordinated as well as mediating projects. One of the primary superordinated projects dealt with the digital city as the constituent part within the digital world. Most subordinated projects were suited for integration into this city and students found common features so that consolidated planning actions evolved. The priority assignment of mediating projects, was to guarantee communication and data-transfer. Projects alike included Control-Rooms or Docking-Stations which could be accessed through the use of specific I/O devices. One of the most popular, but nonetheless novel projects was a library extension. The interesting factor was that the solution provided by the student consisted of an existing physical library, a physical extension that had to be build and accessorially a digital extension, thus combining traditional and recent concepts within one physical building.

5. Discussion

Even if many hopes were associated with the “boundary debates project”, we have to admit that not all possibilities given in digital space were taken advantage of by students, integrated into a design course. Furthermore in discussion with third parties we often realized that general conditions in digital space, might they be as optimal as possible compared to those in analog spaces – were rarely and mostly made no use of. In this sense the results might be taken as sobering, in another sense they tend to prove the thesis and the expectation that for the time being the architect prefers the naturalness of analog space to the artificiality of digital space. Conceptual worlds as well as

orientation in multidimensional digital environments do not reveal without complying experiences and remain locked for most architects and users. The reasons for this are multiplicative. Still, the computer has not lost its status as an evocative object and still it is not able to fulfil hopes and longings humans transfer into it. We could gather from discourses with our students that in many cases computers fulfil contrary conceptions, that is to say that computers and digital environments will not be able to meet the demands clients will make to architects and architecture within the future. The results gained from the course cannot be generalized. However, in terms of a philosophy that bridges today's men and women with tomorrow's technology (ETH, 2000) we feel absolutely certain that occupation with digital technology will lead the architect into the right direction that is assured of a good future. The outline of the profession will change, classic activities and abilities will stand back behind those, we would neither associate to the architectural profession nor to any other profession existing today. Rapid progress of digital technology will lead to a different definition of what we would indicate as architecture. (Kurzweil, 1999) Within this decade digital and analog spaces will exist on a level of equal weight and will permanently be used as a matter of course. If these spaces will imply form and function of spaces we are acquainted with today is questionable, or rather unambiguously to negate. Free of doubt we will face multidimensional architectural shapes that could be accessed from wherever you are at whatever time and whose nature differ from what we are familiar with, because of their intrinsic building material – information. To design and maintain dynamic buildings made of information and to relieve its user in navigating through these buildings, will be a task for a new professional species. It is undecided why we as architects should close our mind already in the forefield of an evolution that has just begun, whose outcome is still wide open, but whose beginnings are undoubtedly promising. The professional future of university students is highly questionable, the quality and content of education is often anachronistic, the potential of young people is not utilized and even sometimes misdirected. The examination of tomorrow's technologies is inevitable for teachers and students. Architects already lost many duties that originally belonged to their profession and to their role as master-builders. We should have learned our lesson from the past, otherwise the consequences would be more far-reaching than ever before. There is room for hope that academia will detect the sign of the times and that it sets the course for future development architecture is in dire need of. The question doesn't arise if architects will be displaced from the position of mere supporters, but if we would want to point the way ahead for others. In this case, new and innovative concepts in education are required, which extend the borders of the existing, which question reality and lead the profession into a direction, whose initial we contingently missed already.

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