BETWEEN THE ARCHITECTURAL AND THE MEDIAL

Educating 21st century media-architects

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Abstract. The latter half of the 20th century and the beginning of the 21st century have seen significant change in the definition of the terms ‘architecture’ and ‘architect’. Three fundamental factors affecting these changes have been the continual remoulding of global societal structures, the increasing importance of the reciprocal relationship between media and architecture and the growth of digital technologies in all areas of modern living. Through the rapid proliferation of new technologies, the extension of architecture into virtual spaces and the utilization of media as a tool for shaping experience, the lines between architecture and media have become blurred and new definitions of architectural and medial space have been defined. The use of the word medial in this paper means the relation of architecture to traditional and digital media. This paper describes how the Bauhaus University Weimar has responded to these developments. The paper gives an overview of the interdisciplinary 'MediaArchitecture' post-graduate master's programme as a collaboration between the Bauhaus' Faculty of Architecture and Faculty of Media and describes selected coursework and research projects.

1. Bauhaus and media

1.1. THE BAUHAUS’ HERITAGE

The roots of the University can be found in the 'Staatliches Bauhaus Weimar', founded in 1919 by Walter Gropius, which revolutionised architecture, art and design in the 20th Century and continues its influence
Part 2

to this day. Gropius significantly reformed artistic and educational principles and, alongside his fellow colleagues at The Bauhaus, sought a new way to combine the disciplines of art and crafts in a new age of technology. Departing from traditional academic teaching methods, The Bauhaus scholars taught art and design through workshops, developing creative design abilities alongside craft skills. This combination was ultimately to culminate in design approaches which used an array of new technologies, media and materials to produce novel forms of art, design and fabrication/production. This new approach was expounded by the university slogan “Art and Technology, a new Unity”.

Figure 1. virtual light volume

Figure 2. Light-Space Modulator – László Moholy-Nagy 1930

László Moholy-Nagy was perhaps one of the Bauhaus master artists who worked most closely with the artificial potential of “new” media such as photography, film and light projection (Figure 1).

While at the Bauhaus, Moholy's teaching in a diverse range of art fields - including painting, sculpture, photography, photomontage and metalwork - had a profound influence on many of his students. Simultaneously he experimented with new and unusual production processes in his own work, such as the exposure of photographic paper over-layed with objects to create what he called Fotogramms, an exploration of the flux and motion of the photographically captured objects (Figure 3).

The 'Light-Space Modulator' (light requisite for an electrical stage) realised by Moholy-Nagy (1922-30), was the first ever kinematic sculpture, a new connection between art, technology and material (Figure 2). Within this piece the static principles of the art work were exchanged for dynamic motion. Moholy-Nagy himself described this kinetic sculpture, this Gesamtkunstwerk composed of colour, light, and movement, which appears as a synthesis of his artistic ideas, as an apparatus for the demonstration of the effects of light and movement. Central to the piece is its revolving metallic sculpture, which acts as a catalyst for directed light sources to
synthesize artificial projected structures, architectures of light and shadow which represent virtual paths of motion in space-time. In 1930, Moholy-Nagy captured the movement and light effects from his apparatus in the film 'Light play black-white-grey' (Figure 4). The title of his book 'Vision in Motion' (1947) is a synonym for simultaneity and space-time; a means to comprehend the new dimensions of vision he was exploring.

Figure 3. Fotogramm – Lázló Moholy-Nagy 1922-25

Figure 4. still from 'black-white-grey' – Lázló Moholy-Nagy 1930

1.2. THE BAUHAUS TODAY

After reactionary conservatism drove the Bauhaus out of Weimar to Dessau in 1925, the school in Weimar continued to operate and survived a succession of political regimes under changing leadership and teaching methods. Its 1954 incarnation as the Hochschule für Architektur und Bauwesen (School of Architecture and Building) continued until 1996 when it was renamed the Bauhaus-University Weimar. Apart from the traditional reference to the founding school, the name signifies a commitment to contemporary forward-looking education and is connected with a new interpretation of the Bauhaus idea. This can be summed up as the application of architecture, art & design, media and engineering for creating new unities between art and technology in an age defined by rapid shifts in culture, science and society.
2. The MediaArchitecture Program

2.1 EXPLORING NEW FRONTIERS IN A NEW CENTURY

In the winter semester of 2005/2006, Bauhaus-University Weimar created the MediaArchitecture post-graduate interdisciplinary master’s program. The first program of its kind in Europe, it lasts four semesters and leads toward a Master of Science (M.Sc.) degree qualification.

The MediaArchitecture program is perhaps the area of the modern Bauhaus that most closely follows in the footsteps of the historical Bauhaus in seeking to achieve “Art and Technology, a new Unity”, whilst also pushing forward into topics of 21st century design practice.

The study program is a reaction to the continuing structural changes in society and the increasing importance of the reciprocal relationship between media and architecture. It offers not only a broad range of studies in this relatively new field, but also an inter-faculty learning experience, with professors of the faculty of architecture and the faculty of media working together within the MediaArchitecture program to provide a diverse range of teaching skills and academic insight. The core aim of the study program is to open up the growing cross-section between architectonic and medial fields for study and research, whilst also reacting to the ever higher demand for highly-qualified university graduates in the interdisciplinary area between media and architecture (Figure 5 and 6). Since 2005 there have been 7 alumni of the master's course in MediaArchitecture. They are now working in various fields, including: architectural design, public relations, academic research and theatre production and costume design. The interdisciplinary education they have undertaken has made these alumni more attractive candidates for employment in these fields. More details of

Figure 5. 'Portal temporal' – Jing Zhao, Dario Navarro Sandoval and Cichon Philipp

Figure 6. 'Picasso goes digital’ – Alexander Baumann
the program see are in the link: www.uni-weimar.de/mediaarchitecture/english.

2.2. OUR FIELDS OF RESEARCH

The MediaArchitecture program is engaged in numerous fields of scientific and technological investigation into the space between media and architecture. Our curriculum includes special tuition on a range of relevant fields, including; theory and history of modern architecture, building design, presentation methodology, computer-supported cooperative work, history and theory of cultural techniques, interface design, computer science in architecture, design of medial environments and experimental television. A key question however that comes into all of our areas of teaching within the program is one of how architecture is re-defined and evolved by 21st century mediatised society? With the Bauhaus' exceptional history of experimentation in crossing-over fields of media and architecture, we are uniquely placed to tackle this question and to explore its outcomes.

The first important point we must acknowledge in this discussion is that architecture and architectural space are themselves a medium of communication. Like other representation and communication media such as language and books or images and film, architectural space can store, process and present information, make symbolic references and simulate realities. From the investigative perspective, one must recognise that architecture has always possessed these qualities, but that it is only recently through deeper investigation of media's and inter-dependencies that these characteristics have become more explicitly acknowledged and understood. These attributes make architecture's integration within and alongside media even more complex, as multiple layers of meaning rapidly become assembled on top of one another. In the architectural world this could be described as the creation of hypersurface, in the medial we might describe it as a form of rhizome, a collision of pluralised meanings.

In the present context, digital and electronic media present a challenge for architectural space by further drawing attention to this pluralisation and to architecture's manifold functions in modern society. Media facades and the creation of virtual and simulated architectures raise further questions about architecture's role in the age of electronic media and initiate a complex dialogue between medial and architectonic space. This simultaneously pushes societal interpretation of and interaction with architecture more and more into the hyperreal, as the function of architecture is absorbed into and becomes part of the 'augmented reality' of contemporary inter-networked social space.

This pluralism can however also be defined in more simple terms by the way in which even relatively non-complex media contribute to the process...
of architecture’s renewal, transformation and continual re-interpretation. Glass, light, concrete and any other material used in the construction of architectural space can be subject to analysis and interpretation beyond their physicality, for example in the case of the window as view, image and mirror; glass buildings as panorama or simply space as a choreography of user perception. This results in architecture becoming continually subject to and integrated within 'imagined' realities and in this sense always acting simultaneously as perception machine, physical technique and semiotic tool. The additional effects of electronic and digital media then, in allowing the interaction and expansion of physical space into virtual space and vice versa (e.g. in the form of vectorial spaces, architecturally integrated media spaces, immersion spaces etc.) is to create new spatial and social cognitive schemata, new unities of media that form complex 'mixed realities' and lead to hybrid spaces and environments complete with their own accompanying range of diverse and novel interface tools.

From the experiments and influence of Moholy Nagy and the original Bauhaus luminaries, integrating amongst many other things photography, film and projected volumes of light to depict and explore virtual and artificial architectures, to contemporary experiments in the use of digital technology for form generation and visualisation, the history of media and architecture as integrated dynamic medium, though still in its infancy, is already a century long, and it is with recognition of this that the MediaArchitecture program and its research projects have been initiated.

3. Research - Selected Projects

3.1. FACULTY INITIATED RESEARCH PROJECTS

3.1.1. Digital museum Ossmannstedt

Within the restoration project of the Wielandgut Ossmannstedt, a digital museum was created and integrated as part of the building's new exhibition. Using digital media technologies, the building's history is explored and brought to life for visitors without interfering with their experience of the building or negatively affecting its authentic aura. Visitors are given portable information devices (PDA’s) which offer personalised information depending on their input and movement in the exhibition space. Special hot spots are situated in different places in the museum to deliver specific information subject to the interests of the visitor. As well as giving visitor's access to information on location at the museum, the PDA's allow users to record and take home a copy of the text, audio and video they have accumulated during their visit as a CD-ROM.
This project was realised with the support of the Weimarer Klassik and is co-financed by the EU-project, 'Hermes' (Heritage and New Media for Sustainable Regional Development).
Project leader: Professorship Interface Design.

3.1.2. Mediacity
The research goal of the Mediacity project is to develop and improve knowledge bases for the interweaving and extension of inter-networked communication technologies and other electronic media into urban space. Mediacity intends to achieve a transfer of experiences and theoretical knowledge on implementing information and media technologies in an urban environment.

The project investigates how the spaces of the city and its social settings are created, experienced and practised through the use and presence of new media. This research takes the position that new media enables different settings, practices and behaviours to occur in urban space. These media create opportunities for diverse forms of connections between people and spaces and enable and create flows; of information, of communication and of knowledge. The Mediacity conference, which will take place again in 2009, focuses on three key areas (Figure 7):

- Knowledge based economy and society for cities within countries in transition
- The use of new media in the practice of architecture, urban planning and land use
- The necessary political and social framework to ensure the socially balanced embedding of these technologies

Project leader: Professorship Sociology of Globalisation, Professorship Interface Design
3.2. STUDENT RESEARCH PROJECTS

The project 'Raster space' was produced under the professorship of History and Theory of Cultural Techniques in the winter semester of 05/06. The window of the MediaArchitecture studio in the Bauhaus University's Van de Velde building was temporarily changed into a media facade. Looking from outside, shifting images of real working spaces were seen undergoing transformations in the different raster elements of the window. This created a mixture of virtual space and physical space that constituted a form of virtual reality and fluid space transformation (Figure 8 and 9).

![Figure 8. 'Undissected raster space' – Jens Weber and Andreas Wolter](image1)

![Figure 9. 'Dissected raster space' – Jens Weber and Andreas Wolter](image2)

The project 'Ambiguous Transparency' was produced under the professorship of History and Theory of Cultural Techniques and the professorship of Presentation Methodology. This project is based on Gilles Deleuze’s “fold” metaphor from his book 'Le pli - Leibniz et le baroque' (1988). The intent of the piece was to reconsider the definition of transparency in light of this metaphor by using three glass-surfaces set up in front of the student's studio workshop as projection surfaces. The projections were designed to play with the onlooker's perception and experience of different levels of transparency with an added degree of randomness arising from the way in which the installation was subject to the ambient conditions surrounding it (Figure 10 and 11).
Figure 10. Transparency curtain wall day – Yusuke Takeda

Figure 11. Transparency curtain wall night – Yusuke Takeda

Light Stage is a contemporary interpretation of the design of the Bauhaus stage constructed using a matrix of lights installed in the entrance hall of the Bauhaus University's Henry van de Velde building. When someone or something appears on stage under a spotlight, for instance in a play, we automatically turn our attention to the space lit up in that moment. The shaft of light of the spotlight both illuminates and forms an imagined 'real' space in which the stage performance takes place.

The primary purpose of this project was to create such a 'real' space. The project was produced under the professorship of Building Design and the professorship of Interface Design (Figure 12).

Figure 12. Light stage – Yusuke Takeda

The 'virtual interactive curtain' project was produced under the professorship of Building Design and the professorship of Interface Design. Focusing on the entrance hall of the main building of the Bauhaus-University Weimar, it uses subtle, interactive video projections to create a synthesis of media and architectural space in the historical context of the building and a connection between virtual and physical spaces. The primary intention of this was to accentuate the sculptural effect of the building and to restore the neutrality of the space (Figure 13 and 14).
The Projections are generated in real-time using graphics algorithms and are responsive to human behaviour in the hall, e.g. movement patterns. This reactive information is then compiled and compared to architectural details as part of the graphics generation process. The installation explores the effect of different forms (roundness, edges, sharp angles etc.), compositional aspects and human interactions on design. The installation emphasizes architectural characteristics – with spatial details and their interplay becoming tangible – whilst also creating a dialogue between architecture and different social contexts. To achieve this effect cutting edge projection technology was used and modified to include dimmable lamps, controllable optical focus, moving head technology and an extended DLP colour wheel.
world locations. In achieving this, 'CSCW-Media space' created both a virtual shared information space and interaction paradigms for tackling group work on shared tasks (Figure 15 and 16).

'IOn' was produced under the professorships of Building Design, Computer Science in Architecture and Interface Design. It is an interactive virtual environment that uses the sounds and movement of users as input parameters for generating virtual cities (Figure 17).

The movements of visitors are tracked with a video camera and motion-tracking-system. Acoustic signals are recorded using a microphone. The data is then saved in a database and sent to 3D-visualisation software (Quest 3D) to generate an abstract, architectural shape (Figure 18). The design and location of the visual shape in virtual space reacts to sonic information (volume, frequency) and the position of the visitor. The installation creates a medial illustration as metaphor for shifting urban structures.

The virtual museum project 'Bauhaus loop 09' was produced under the professorship of Presentation Methodology in winter semester 07/08. The computer installation is the virtual extension of The Bauhaus' 90th anniversary exhibition (Figure 19). The exhibition showcases various digital student projects in a virtual space. The interactive interface for moving through the virtual exhibition was situated in the MediaArchitecture-lab of the Van de Velde building at the Bauhaus University. The project used a technique of overlaying physical and virtual spaces to develop an immersive and navigatable topology. Visitors were invited to walk through the virtual space in order to explore informational text, images, 3D models and video content.
The project 'Float', a gallery / exhibition space housed in Second Life, was produced as part of the 'Virtual World' course. The Float 'building' is a virtual exhibition hall and art gallery designed as a 'real virtual' architecture, that is to say that it was designed to make use of the fact that in virtual space no consideration needs to be given to real world physics. This opens up new architectural possibilities outside of the normal structural and constructional restrictions of real-world physical environments. The structure is 2 storeys high with an underwater hall and a sum total usable area of approx. 10,625 square meters, making it an ideal size for a medium-large exhibition in Second Life (Figure 20).

4. Back to the Future

Through a combination of practice and research the original Bauhaus contributed significantly to the development of many design fields and helped pave the way for many of the 20th century's most diverse experiments into inter-disciplinary art and design. As we enter 2009, 90 years after the founding of the original Bauhaus, the modern Bauhaus is replicating this tradition and in the process defining and exploring new fields of multi-modal collaboration. Where our predecessors strove to combine the new
technologies, media and society of their time; we, their successors, are attempting to do the same but in a new and faster paced age.

The fluctuations and amalgamation of media and architecture reflect perfectly the dichotomies of our modern age, as architectures become thrust into artificial realms. Therefore, virtual media becomes integrated into the physical, with each process that is both in conflict with and an inevitable synergetic outcome of the other. Propelled forward by fast paced movements in science, design, technology and theory, architecture becomes like other disciplines a form which has to have links to artificial and medial space or risk simply of being co-opted by it. Meanwhile media content, as a manifestation of technology, similarly has to build up relationship to physical and architectural space. The only question remains to be answered of this process is that: what will the effect be on the urban space of the cities and virtual social spaces of the future? This question will probably be still posed (albeit with new parameters) within another 90 year period.

References


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