

The Virtual Campus: A new place for (lifelong) learning?

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In the early spring of 2001 a collection of German universities founded a virtual faculty of architecture, which was named „Liquid Campus“. Current thinking about future forms of education in the field of architecture combined with over 4 years of experience with net-based design studios, led to questions about the future of existing universities, their buildings and their use. This problem was put to 43 students in the form of a design exercise to create a place for a virtual university. In the current situation, in which the administration of knowledge is more and more located on the internet, and even the so-called meeting places themselves can be virtualised through the help of video-conference-software, the exercise was to design a virtual campus in the framework and to carry out this design work in a simulation of distributed practice. Initial criticism of the project came from the students in that exemplary working methods were not described, but left for the students to discover on their own. The creation of a concept for the Liquid Campus meant that the participants had to imagine working in a world without the face to face contacts that form the basis (at present) of personal interaction. Additionally, the assignment to create or design possible links between the real and the virtual was not an easy task for students who normally design and plan real physical buildings. Even the tutors had difficulties in producing focused constructive criticism about a virtual campus; in effect the virtualisation of the university leads to a distinctive blurring of its boundaries. The project was conducted using the pedagogical framework of the [netzentwurf.de](http://www.netzentwurf.de); a relatively well established Internet based communication platform. This means that the studio was organised in the „traditional“ structure consisting of an initial 3 day workshop, a face to face midterm review, and a collective final review, held 3,5 months later in the Museum of Communication in Frankfurt am Main, Germany. In teams of 3 (with each student from a different university and a tutor located at a fourth) the students worked over the Internet to produce collaborative design solutions. The groups ended up with designs that spanned a range of solutions between real and virtual architecture. Examples of the student’s work (which is all available online) as well as their working

methods are described. It must be said that the energy invested in the studio by the organisers of the virtual campus (as well as the students who took part) was considerably higher than in normal design studios and the paper seeks to look critically at the effort in relation to the outcomes achieved. The range and depth of the student's work was surprising to many in the project, especially considering the initial hurdles (both social and technological) that had to overcome. The self-referential nature of the theme, the method and the working environment encouraged the students to take a more philosophical approach to the design problem. The paper explores the implications of the student's conclusions on the nature of the university in general and draws conclusions specific to architectural education and the role of architecture in this process.

Keywords. *Virtual Design Studio; Virtual Universities; CSCW.*

The Liquid Campus: foundation, organisation and rules

Six German universities met together in the fall of 2000 to map out and plan a joint net-based design studio for the summer semester 2001. These were the University of Karlsruhe, the Brandenburg Technical University in Cottbus, the Bauhaus University in Weimar, the University of Siegen, the Aachen University of Technology and the University of Kaiserslautern. The results of previous Virtual Design Studios in the framework of the www.netzentwurf.de laid the groundwork as well as they helped to establish an experiment called Liquid Campus.

Further development of the netzentwurf concept saw the introduction of parallel studios where students from different Universities carried out design studios simultaneously. This was attempted at the local, regional and international level. [Elger, Russell 2000] However, the lack of communication among the second-generation participants clearly exposed a deficit in the communication pedagogy. Other experience in teaching co-operative practices through seminars and the like also met with lacklustre results. It became clear that co-operation is better trained than taught. In reviewing the first three years' work, the organisers sought to alleviate these deficiencies through clearly structured net-based co-operation in a design studio

setting. Thus was born the seeds of the Liquid Campus.

The results of the summer 2000 pointed toward completely dispersed student groups. The relatively high number of schools also allowed the groups to be distributed among the schools. A team size of three members was chosen. Additionally, the main tutor for each group was located at a fourth university so as not to favour one of the team members with direct communication. This arrangement allowed the members to truly test the viability of the netzentwurf concept in extending the design studio setting to the Internet. Another aspect of the netzentwurf concept that has proven necessary is a kick-off workshop. Attempts to initiate group work across the Internet have met with almost no success, whatsoever without initial personal contact among the team members being established.

The netzentwurf platform provides a place for informal discussions as well as information regarding competencies, timetables and links to the student work itself; the students must document their work and present it using HTML. The platform served as a central meeting place where further discussion could be then directed. Aspects of the platform such as a logbook went unused whereas others such as an informal chat function were essential to the success of the semester's work. The platform also serves as central repository of

the student's work. In the four years the netzentwurf, over 700 students have taken part in over 20 projects. The platform is open and free so as to allow a wide public audience.

The students used most every type of communication available including normal telephones and occasionally meeting together for a day. Highway restaurants tend to be available at "half-way" points and thus were used by some of the teams as an ideal meeting point. Each group tended to develop their own way of working and communication. Word files, scans, CAD files and the like were traded between discussions on chat forums, videoconferences and instant messenger systems. The tutors regularly used the iVisit videoconference software as a communication medium and although it lacks a whiteboard feature, its price and multi-platform capability were convincing.

The initial workshop

Previous semesters where no initial workshop took place (the students "met" only through email, chats and video conferences) showed low levels of communication and little collaborative work. With this experience, the Liquid Campus also started with a three-day workshop where all students and tutors were present. The workshop involved short group exercises to collectively analyse the design task. In the case of the liquid campus, the 43 students were initially divided into 6 groups for a one-day brainstorming session about various contextual issues of the design assignment. The analysis was then presented to the whole group at the end of the day. A second day involved touring the site of the project and holding group discussion sessions. The third day was effectively oriented around creating the three person groups (one of the groups consisted of four persons). The rules of group building were made known (3 students from different universities with a tutor from a fourth) and the students were left to make their own groupings and then to find a tutor. The differences in student populations among the schools (between 3 and 9 stu-

dents came from each university) precluded certain combinations and also led to imbalances in the teaching loads. Nonetheless, within 90 minutes, the groups were set. These groups then met for half a day with their tutors in order to work out logistical issues such as on which day of the week they would meet. This half-day also allowed the students and tutors to develop a feel for one other. The workshop introduced the students to the design problem, but really served to mitigate the social engineering aspects of the entire group.

Working Online

The members all dispersed to their respective universities where the real work began. The tutors agreed that each local tutor was to provide technical and if need be moral support. The design criticism, however, was to be carried out only over the Internet. The groups all used the netzentwurf platform as a collective "place" to meet. [Russell 2001] That said, is not easy to truly test the effectiveness of Internet based collaboration when the participants are living in relatively close proximity to one another.

The groups were all given basic courses in Internet communication and presentation techniques. The goal was to provide technical (and moral) support locally while encouraging the design criticism to originate with the remotely situated tutor. The Netzentwurf platform is outfitted with a primitive chat function, which proved to be perhaps the most reliable, if not somewhat slower, communication channel. The authors sought to emphasise a cross platform videoconference software named iVisit (<http://www.िवisit.com>). The advantages of iVisit (versions are available for Apple Macintosh as well as Microsoft Windows operating systems) and its relatively compact size made it rather attractive to a community of students and teachers with a heterogeneous pool of computers and systems. iVisit also proved to give a relatively high throughput of video and audio. However, unlike simpler communication channels

such as chat or icq (I-Seek-You), iVisit used a set of three exotic computer “ports”. This proved fatal for the program when it came up against the various firewalls at the different universities. The Microsoft videoconference counterpart named “NetMeeting” proved unusable for similar reasons (it uses five exotic ports) as well as its availability as only a purely Windows version.

How to design the virtual?

The tutors put the challenge to the students, that even a “virtual university” would need some kind of physical infrastructure. By choosing this design topic, the students were met with an overlap of design theme and design methodology. Furthermore, the Netzentwurf platform served as a prototype as to how a virtual community could be organised. It has to be noted that not all of the tutors involved in the project were fully prepared to provide criticism and commentary on the design

and development of a “virtual” architecture. The differing expertise among the tutors reflected, however, the varied range of solutions that the students presented.

The obvious self-referential nature of the assignment, the working methods and the entire Liquid Campus project allowed the students additional insight into the problems of creating a virtual university through their own experiences. At the same time, the multi-layered aspect of the theme allowed many to personalise the problem and thus take a more philosophical approach to the problem. Indeed, questions as to the nature of the virtual university led to questions about the university itself and its role in the society in general. While these questions proved in the end entirely fruitful, it was hard for some students to leave the realm of the general and to start to provide possible design solutions. It is interesting to note that although a site for a potential building for the virtual university



Figure 1. Review on the Internet



Figure 2, *Infoscape* by Roszgotterer, Hendrik and Tomsett

was provided, all 12 groups chose solve the problem in other ways and in other places.

The design solutions ranged from the purely virtual where no “architecture” was needed to those that relied heavily on built space to create the virtual university campus. The student’s solutions reflected the original hypothesis and their own experiences in terms of creating interpersonal relationships. The chance to meet physically played a dominant role in almost all of the solutions, as well as the statement, that the virtual university could not just be an electronic image of the real university. It was in common that even in the future there will be a real existing university with buildings and people, probably enriched by a virtual part

“Virtual university means a collection of knowledge, growing in relation to supply and demand, developing in different directions. It could not be influenced only central, but is arising and growing naturally” was the very clear statement of the Designers of the “Infoscape”, Jutta Roszgotterer, Daniel Hendrik and Jane Tomsett.

Many of the ideas were developed in the expectation of a super-evolution in the storage of scientific knowledge. Everybody was thinking about dynamic and colourful interfaces, available for the future student, much more intelligent and better looking than the present teacher. For many of the students the university of tomorrow will be just a stock exchange of data, a market place of knowledge.

Intelligent-modules at infrastructural relevant places like airports and train-stations have been designed as well as handheld-tools or intelligent rucksacks which can unfold in 2 minutes to a perfect digital-media studio with internet access.

In general nearly all of the students expected an advantage of being no longer dependent on local settings in the future. They are convinced that the possibility of a completely independent definition of their targets will cause an improvement in relation to the existing structures

Final review

All 12 groups remained together for the entire semester in contrast to the experiences of the previous year. Difficulties encountered in some groups were mostly personal in nature, however none of these hindered the critical discussions. To be sure, not all solutions were spectacular, but it must be noted and credited that all of the groups worked with higher than normal levels of effort to complete their solutions in addition to the weight of communicating over the Internet. A larger problem lay with the tutors. It became apparent relatively early in the semester that not all of the tutors were well prepared to criticise work about a “virtual” building. This led to some frustration on the part of the students. The open nature of the netzentwurf concept allowed the students who wanted to, to seek criticism elsewhere. This did not absolve them of their responsi-

Figure 3, Final Review of the Liquid Campus in Frankfurt am Main, Germany



bility to discuss their work with the designated tutor, but allowed them to broaden the scope of responses to their work. While this is obvious to any practitioner, it was helpful to the students to have this formalised as part of the *netzentwurf* platform.

43 students finished the project in their original groups. A final review was held in Frankfurt am Main in the Museum für Kommunikation, (<http://www.museumsstiftung.de/frankfurt>) over two days. There, each group got the chance to present their design solutions in a more traditional environment with a review by the tutors, fellow students and guests. The students presented their web sites and explained their methodology during these sessions. The special character of the “Museum für Kommunikation” served to remind the group of the differences between virtual and real architecture. As well, its neutral position to the entire group and the public nature of the sessions helped to heighten the impact of the final reviews.

Conclusion

In conclusion and retrospect, the project can be considered a success. Post-project questionnaires showed an overwhelming positive response from the students. The importance of the physical meetings was verified as was the suspicion that for all members, the amount of effort and time needed for the project exceeded any local design studios carried out to date. Furthermore, the costs of trav-

elling and communicating were not trivial, especially for the students. Nonetheless, over two thirds indicated they would repeat the studio, which speaks for the quality of the students as much as for the value of the project.

From the standpoint of the tutors, it is clear that there is a great need to help train future practitioners in communication and co-operation. However, it must be clear for all participants that a project such as the Liquid Campus should not be undertaken without careful consideration. It requires a much larger outlay of time, money and energy than standard studios. This is true for both the tutors and the students. Nonetheless, the results of the project show how rewarding the extra outlay can be. The work can be seen in the “finished projects” section on the “*Netzentwurf*”-platform.

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