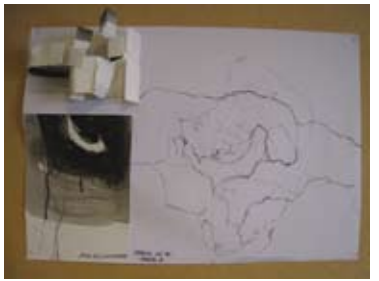
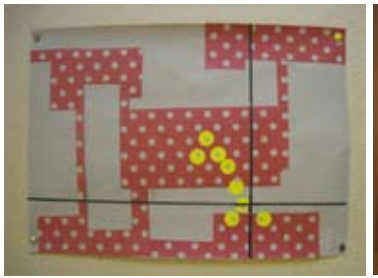
Visual thinking as bridge building – Testing a pedagogical concept, drawing some new insights

Reflections +9 (ISSN: 1784-7052)

Citation for the published paper:
Nilsson, F. ; Dunin-Woyseth, H. (2009) "Visual thinking as bridge building – Testing a pedagogical concept, drawing some new insights". Reflections +9 pp. 42-49.


(Ill. 1-2: Posters from Research Training Session 'Knowledge' 2007)




(Ill 3-6: Posters from Research Training Session 'Knowledge' 2008)

"Visual thinking as bridge building –
Testing a pedagogical concept, drawing some new insights"

Each pedagogical concept builds upon a more or less articulated "credo" of the teachers as to the subject matter to be taught and to their ideas of how best to teach this subject. We have since 2006 attempted to contribute to the building of a doctoral program at the Sint-Lucas School of Architecture. One of our responsibilities has been the annual Research Training Session (RTS) which focused on knowledge and its various landscapes as well as about how design and architectural knowledge could be positioned in these landscapes. (Dunin-Woyseth & Nilsson, 2006) While teaching at the RTS sessions we have tried to paint a broad picture of what have been the traditional ideas about academic knowledge, which is discipline-based, and of the so-called "post-academic science", which has been much discussed in the Philosophy of Science literature as well as in more broad forums of popular scientific publications and media programs the recent times. As these issues are very complex and abstract, we wished to build bridges between, on the one hand, the prospective PhD students' everyday life as teachers of architecture and the practitioners of this profession, and, on the other, the complex issues of various kinds of knowledge.

Our "credo" concerning this "bridging attempts" has been that while the academic knowledge is based on various argumentative modes of thinking, the most fruitful way architects think is through various associative modes. While most of argumentative thinking is being expressed verbally and in a textual way, the associative thinking moves on using most often visual ways of thought and argumentation. We decided that, having a strong time limit in mind (the whole RTS consisting of one evening, one whole day and a morning session), we should use most effectively the time asking our students to apply the mode of thinking they adopt each day, i.e. the associative way of approaching new information and structuring it into working concepts.

The core of our teaching has therefore been to request the students to present the "WHY?", "WHAT?" and "HOW?" of their ideas about a doctoral project in the forms of on the one hand a short written part, and on the other a poster illustrating their ideas graphically. The challenge in the last part was to use a minimum of textual information and to create images which would serve as a synthesis of their thinking about the matter. The students worked individually and then presented their work during a plenum session. At least two colleagues examined the posters, both presenting their impressions and asking the authors to supply them with elaboration on what they wished to express. Based on this questioning and answering part of the exercise, the authors of the individual posters developed their presentation for an inquiry in plenum. The posters were then added extra information, most often in form of small textual explanations. While in plenum, the posters in their edited form were

presented and discussed by the co-students and the teachers.
After each of our RTS we asked the students about their experiences from the exercise. It turned out that our pedagogical objectives, to help in "building bridges" between the abstract landscapes of various kind of knowledge and their own ideas as to their prospective doctoral work, to position this work in these knowledge landscapes, have been to a certain degree achieved. This positive feedback has encouraged us to study our pedagogical approach in more general terms of the relationship between argumentative and associative modes of thinking. We discussed how using this approach could help to develop more insight, based on one's own background and experience as well as on newly provided information; how using images and supply them with clarifying, catchword-like textual information, could work synergistically.

There is not many theoretical works by architectural and design pedagogues on this issue. One of such few works is certainly the doctoral dissertation "Knowledge through pictures: A study of how pictorial practice affects understanding in the field of study for students of natural and social science" ("Kunskap genom bilder. En studie i hur studenter inom natur- och samhällsvetenskapliga utbildningar fördjupar sin ämnesförståelse genom arbete med bilder" – in its original Swedish version) by a Swedish architectural scholar Ylva Dahlman. The thesis ascertains that creating a picture means turning imagination into a concrete object. This does not "illustrate" an idea, but a direction of imagination into an articulation other than verbal thoughts or ideas. This picture presents a moment in the ongoing process of imagination. The act of drawing "translates" hitherto unarticulated forms of experience into artifacts possible to reflect upon. This act of drawing provides for that seemingly incompatible categories of experience are being connected. Old and familiar categories are being overcome in it. It is maintained and argued for, that the range of imagination increases and, with more alternatives at hand the ability to formulate and solve problems is being enhanced. The author contends that the process of drawing entails that when the issues are accepted in a new articulation, knowledge has grown (Dahlman, 2004:5).

Images, visual thinking and aesthetic approaches are important in knowledge production and have been significant through the history of science, as well as in the interplay between art and science as it has been discussed by Martin Kemp in several books. (Kemp, 2000; 2006) Artful drawings, models and visual diagrams have often been used as tools for inquiries into the world, and to envisage and represent the ways nature works both in its "seeable" and unseen mechanisms.

But it is especially during the last decades that we have seen an increasing discussion on the importance of knowledge through design and computational modelling, which stresses the importance of information technology and communication in a research process increasingly complemented by visual simulation and dynamic imaging.

(Gibbons, 1994:44-45) Images and non-verbal communication are with the support of new technologies developing new languages and ways of conceptualisation and communication within science, advancing the most disciplinary considerations as well as making it possible to discuss complex phenomena with other disciplines, laymen and a general public.

Nigel Cross has argued that the ways of knowing and trained capacities characteristic for designers rest on the manipulation of non-verbal codes in the material culture, and that these codes or "object languages" facilitate the constructive thinking of the designer, in the same way as other, e.g. verbal or numerical codes, facilitate analytic, problem-focused ways of thought. "The concrete/iconic modes of cognition are particularly relevant in design, whereas the formal/symbolic modes are more relevant in the sciences." (Cross, 2007: 28) The particularly constructive, concrete thinking through different "artefacts" can be seen as using the objects of the design thinking as both modelling and communication devices.

Cross also argues that the description of new thoughts and ideas in design as "creative leaps" in which a novel concept emerges is somewhat misleading, and that this "leap" is more akin to "bridging" between problem space and solution space. (Cross, 2007) It can be seen as building a bridge, or associating to a new part of the possible solution space, in where one finds an appropriate or illuminating concept. Cross describes this recognition of a satisfactory concept as a perceptual act by the designer, that has analogies to a perceptual "puzzle" in which one suddenly sees new things. This crucial moment then relies not only on mental reasoning, but is a perceptual action using several faculties of our perception.

In all science, and especially in the post-academic science, the mixing of media and disciplines are important ways of finding new ideas and paths. John Ziman underlines that from a cognitive point of view, 'interdisciplinarity' is one of the major sources of mental creativity, and that original ideas are typically novel combinations of existing ideas. To 'make the connection', he writes, one has to cross the boundaries between supposedly distinct paradigms – that is, between distinct disciplines. (Ziman, 2000: 212) This sounds quite obvious, not at least to a designer, but using the possibilities to bridge between different mental spaces by using and creating images can still be stressed and developed within scientific research.

When the 10th biennial conference of ELIA (European League of Institutes of the Arts) was to be organized in late October 2008 by the Gothenburg University in cooperation with the School of Architecture at the Chalmers University of Technology, we were requested to contribute to one of the workshops, that was dedicated to the discipline of architecture. The invitation came from the chair of the workshop, the Pro-Rector of Chalmers, associate professor Lisbeth Birgersson, who had set the title

of the workshop to "The design of the design".
In preparation for the workshop we discussed together with professor Birgersson how to make the two hours, which was the time slot for the workshop, into an event promoting a new, better and broader understanding of various design teaching traditions in several European countries as represented by the participants of the workshop. We proposed to use the pedagogical concept we have used during the three RTS at the Sint-Lucas School of Architecture, and we all agreed to also "test" the findings of Ylva Dahlman who ascertains that the process of drawing entails that when the issues are accepted in a new articulation, knowledge has grown. We called the workshop "Various views on the design process".

As a factual input one of us was to introduce to the exercise through a brief lecture of 30 minutes. This lecture was to be followed by a combined individual and group-wise exercise around "drawing" a concept of teaching design at various European schools of architecture. The whole exercise should last no longer than 50 minutes. As the last component of the workshop a plenum discussion was proposed to be held for the last 40 minutes of the workshop.

We both elaborated on what the introductory lecture should build upon. We chose for structuring the lecture the set of competing conceptions of architectural knowledge as promoted by Alan Colquhoun. He maintained that the history of architectural knowledge has been constituted through two perspectives: the *a priori* of rationalism and the *a posteriori* of empiricism. He further stated that the history of architectural theory during the last two hundred years has been the history of conflict between these conceptions of architectural knowledge. Regarded from the a *priori* point of view, empirical knowledge is random, unfounded, and subject to contingency. Seen from the other point of view, a priori knowledge becomes unsure and dependent on authority (Colquhoun, 1981). The lecture was to shed light on how the main traditions of architectural teaching have been representative for these two conceptions.

The beginning of theoretical primacy in artistic education (and the architectural education can certainly be regarded as such) can be set as long back in history as to Leonardo da Vinci, who would have the young artist taken out of the workshop altogether in the first years of his education and exposed to the new principles of art (Gelernter, 1995:114). The aim was to separate art from handicraft and to teach the painter more knowledge than skill (Da Vinci, 1956:47; Pevsner, 1940:34). The great master meant that: "Those who fall in love with practice without science are like pilots who board a ship without rudder or compass, who are never certain where they are going. Practice ought always to be built on sound theory"(Da Vinci, 1956:48).

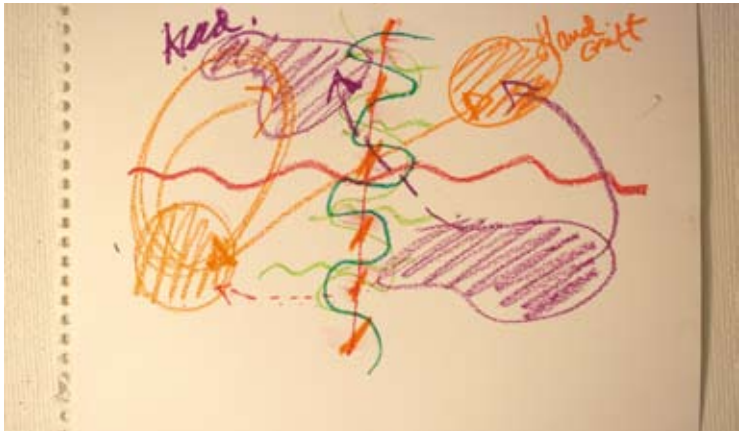
Ecole des Beaux Arts, established in Paris in 1671, was consistent with the educational theory of the times: establishing an educational program as opposed to a vocational training program (Salama, 1995:41). "Academic education places emphasis on the study of compositional theory and the traditional principles of formal design as the most important aspect of the architect's education. These principles are considered to be most satisfactory learned in schools or academies, where professors are well acquainted with the best design principles , as exemplified in great buildings of the past, or the historical manuscripts of architecture" (Salama, 1995:41).

The Bauhaus is regarded as a watershed in twentieth century architectural history with regard to the emergence of one dominating paradigm. The founding manifesto of 1919 opens with a call to find the source of art and design in the craft-related consideration of material and function (Gelernter, 1995). The bearing pedagogical idea was that the Bauhaus students should not be given any preconceived ideas about form. "Architects, sculptors, painters, we all must return to the crafts! For art is not a 'profession'. There is no essential difference between the artist and the craftsman. The artist is an exalted craftsman. In rare moments of inspiration, transcending the consciousness of his will, the grace of heaven may cause his work to blossom into art. But proficiency in a craft is essential to every artist. Therein lies the prime source of creative imagination" (Gelernter, 1995:239-240).

In the times to follow the closure of both the Bauhaus (1933) and the Ecole des Beaux Arts (1968) the majority of schools of architecture in the Western countries developed their curricula which in a way and to various degrees combined these two models of teaching architectural design, that of an *a priori* stance with regard to architectural knowledge, and that of *a posteriori*. The introductory lecture was to present certain examples of these combinations and some attempts to generate more pioneering approaches to design education, which were developed recently. It was to "conclude" with asking the workshop participants to visualize what tradition their own institution could be described of having as predominant in their own teaching of architectural design.

The exercise text requested to: "Visualize individually in a graphic picture the image of the design process that is guiding or taught at your school". For this part the individual participant had only 10 minutes. After that time they were requested to: "Present your images shortly and discuss in groups of 3-4 people what similarities and differences could be seen. Could they be connected to different concepts or traditions presented in the introductory lecture?" In the closing part of the workshop the participants were requested to "Choose one person in the group to shortly present the discussion to plenum. What differences / similarities did you see? What changes were discussed?"

The workshop followed the structure which was decided during our initial planning. The group work was afterwards described by one of the participants in this way:



Ill. 7: Drawing by Inger Lise Syversen, elaborated by the workshop group and presented to the audience by Sten Gromark and Syversen (both affiliated with the Chalmers University of Technology)

> "The workshop group consisted of five teachers and one student representing French, Swedish, and Dutch institutions, started out by elaborating on their 'institutional' ways of teaching architecture. After some introductory remarks an abstract but visual model of the two main approaches was developed: Either on a theory based design where the theory was taught *a priori* or on a design based theory where 'the design of the design' was the 'mother' of the knowledge.
>
> The conclusion based on the development of the models and the discussions following them were that none of the two traditional models were symptomatic for approach to the recent teaching in architecture. By 'dotting' out the vertical line between the two contradictory models a and b, a third model of explorative teaching was emerging, which is cross bordering and transdisciplinary both horizontally between Mode I and Mode II and also vertically puncturing the fixed boarder between the *a priori* and the *a posteriori* models." (Syversen, 2008)

In the citation above the informant has referred to the issues of new modes of and approaches to knowledge production, Mode 1 and Mode 2 as well as to transdisciplinarity, as introduced by Gibbons et al (1994). The metaphor of "bridging", as expressed by Cross and Ziman, can be traced, even if not mentioned by the informant, as a "tool" the group applied, while developing and communicating their cognitive movement from associative to argumentative mode of thinking.
During the concluding plenum session the group discussions were presented using the images as point of departure. Mostly the images were produced individually and used as means to communicate different perspectives – as was asked for in the assignment – but the group cited above also produced a new image collectively during their discussion. Their presentation turned out to be the richest and demonstrated several perspectives in a coherent picture.
The plenum session could not come to any conclusions concerning the different models of art and architectural education, which was not intended, but it was also hard to clearly relate to the different conceptual perspectives presented initially. From the work in the cited group a new concept emerged, "a third model of explorative teaching", which was bridging previous "borders". The workshop itself became an illustration of the potential of using images and visual thinking as devices for both modeling and communicating within a discussion or a problem finding situation.
The group that expanded the rules of the assignment and consciously were using the images as a dynamic tool during their discussion came farthest in formulating a collective conceptual view on the contradictory perspectives at stake. The visual thinking was here bridging between concepts and people in new ways.
Both the RTS sessions and the ELIA workshop have strengthened us in our view of the importance of developing more cognizant methods based on visual capacities within architectural research. These pedagogical experiences have also made us more aware of that images can play a lot of different roles in architectural research. Visual thinking can "build a lot of bridges", can make many connections while translating unarticulated experiences together with newly acquired information into concrete artifacts. These artifacts can be used in modeling and communicating, but also be reflected upon and discussed through impressions using a broader spectrum of our perceptual faculties and designerly intelligence.

Halina Dunin-Woyseth & Fredrik Nilsson

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