

Conference topics

Aspects of improving the artist's "own" awareness of his/her own practice and the knowledge it incorporates;

Aspects of insight, understanding and knowing in the work;

Discussion of the processes of making the work/design/music in the context of own and other practices;

Discovery/definition of values in the process of designing/making/doing/performing;

Implications of uncovering the aspects considered as tacit;

Exploration of the tension between the understanding and emotional experience of the work of art or design;

Forms and frames relevant to represent knowledge based on creative practice;

Investigation of the relation between the creative work and its description – interpretation – explanation;

Inwards and outwards communication in designing/music/arts.

CREATIVITY: CURES FOR CUES

Providing evocative situations to explore creative solutions for seemingly not matching phenomena.

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Abstract

The conference theme, 'knowing (by) designing', specifically addresses (the processes involved in getting) experiential knowledge from designer's actions. The knowledge gained by designing can be domain specific (regarding e.g. the characteristics of certain materials, tools and techniques) and it can be more fundamental knowledge about design methods, (group) processes, and ways to situate design actions.

In this paper I would like to discuss a number of educational assignments that specifically stimulate creative actions. The assignments belong to a cross-disciplinary teaching program aimed at design students within the engineering and architectural disciplines.

In this educational case the knowledge gained by designing is knowledge about designing. Knowledge about how you, as a designer (or student), can set the setting in which you are more likely to get ideas that could lead to creative insights: 'cures for cues'.

Keywords

Creativity; associations; situatedness; experiential knowledge; design.

Ideas

A personal note

The keywords appended to this paper could be mentioned as some of the relevant keywords for my whole academic career. More specifically I am attracted to themes like: 'learning by doing', 'the understanding of understanding', 'evocation from situations' and 'intentional serendipity'.

From a young age I detested learning facts in lists, such as capital cities in topography and 'Wortschatz 2000' (German idiom). On the other hand, I felt naturally attracted to *play* with blocks and to do composition experiments in e.g. photography. Even language became interesting to me if I studied it in an intuitive way with freedom to make (what others would call) 'mistakes'.

In the research group form-, media- and modelling studies at the Faculty of Architecture in Delft, and during several conferences on CAAD and Design (especially those in Bialystok (1997), Delft (1997) and Brussels (1999)), I learned e.g. that design media can be regarded as 'conversational partners', that there is a second order in observation, and that a contextual setting is a key influence that can be controlled.

Somehow those theories matched with my way of exploring the world.

My current ideas form a working theory; a framework of hypotheses that directs my further explorations. Below, I will try to further explain my assumptions in the form of statements. I am aware of the limited, maybe cryptic and dense nature of my writing, bypassing many considerations and mingling the sources of inspiration. It is a work in progress and some ideas insist to be thought over and over again.

Words with an asterisk are followed by a definition from the dictionary in my computer; other definitions and statements are by myself.

About cognition

Cognition * is the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses. *Re-cognition* * is identification of a thing or person from previous encounters or knowledge.

Experiential knowledge can be seen as a set of conclusions from recorded actions and their observed effects. The brain as a construction of experiential knowledge is built with a lot of redundancy, has many bypasses and is associative by nature. *Understanding* can be explored in a micro view, considering brain cells with synapses that construct associations. This biological informed view allows us to include *misunderstanding* as part of cognition. When misunderstanding occurs, a new synaptic link is constructed. Misunderstanding can also be seen as *new understanding*, which alters the local wiring of the brain and essentially creates a new view.

Logic is the opposite of misunderstanding. Logic is the self-affirming test of a rigid system, while creativity and misunderstanding imply change in an adaptable system.

Without experiential change, the brain becomes lazy. No new synaptic links are created and consequently no new ideas come up. The brain needs action and preferably *inter-action*. An active brain is curious for new cues or it ponders to find an acceptable association for a *restless cue*.

When I think about cognition and creativity, I prefer not to use the word '*information*'. Information is in-formation, it has a form or a 'format' whereas experiences come without a format. Experiences are free to be interpreted the way you want, with whatever filters, focus and framing you personally would like to apply.

About creativity

A cue * is a feature of something perceived that is used in the brain's interpretation of the perception. Perception * is the ability to see, hear, or become aware of something through the senses.

This paper's title "Creativity: cures for cues" indicates that creativity is solving a problem each time a new cue comes to the brain. Each new cue has to be associated (connected) by new synaptic links. My hypothesis is that '*strange cues*' demand for new associations, which are new constructs in the brain, leading to new understanding, that could be judged as misunderstanding, but potentially can become new experiential knowledge.

To stimulate creativity, the trick is to expose a brain to *the right strange cues*.

About situatedness

Situatedness is a term from cognitive psychology. It can be understood as knowledge that is structured, based on real places or real applications. Situated learning was indicated in fundamental psychology research (in a comparison of people and mice) and showed comparable results for 'occasion setting' and 'context dependence' in learning aspects (Dibbets, 2002).

Situatedness is described as 'where you are, when you do, what you do matters' (Gero, 1997-1998).

The phenomenon of situatedness is studied in Artificial Intelligence (AI) research, in order to supply knowledge to learning systems (Clancey, 1997).

Situatedness has become a key phenomenon for my ideas about creativity. By manipulating the situation, the situatedness can provide the right cues for creative ideas.

A designer, or a teacher of design students, can actively make choices to find / make / adapt a situation in order to get inspiration. Many different concepts of *situation setting* can be explored:

1. The context of a design task can be simulated by means of different types of representation (this can be e.g. the real situation, an urban context, a simulated context, in virtual reality, in diagrams, figures and graphs, in sounds and quotes, etc.),
2. Disturbing aspects can be left out by choosing a specific quiet work environment,
3. A work environment can be enriched by specific objects and references,
4. A game can be played in which associations can be directed to a specific field or realm,
5. The situation can be made evocative, e.g. by juxtaposition of different phenomena,
6. A model or prototype can be made in order to reflect on previous ideas in alternative representations,
7. A game can be played in which opposites are explored,
8. Move. Make a walk.

Exposing your brain to situations outside your comfort zone brings creativity.

A remarkable example of situation setting is called 'The Oblique Strategies'. "This deck of cards by Brian Eno and his friend Peter Schmidt (a British painter) presents a set of basic working principles which guided them through the kinds of moments of pressure - either working through a heavy painting session or watching the clock tick while you're running up a big buck studio bill. Both Schmidt and Eno realized that the pressures of time tended to steer them away from the ways of thinking they found most productive when the pressure was off. The Strategies were, then, a way to remind

themselves of those habits of thinking - to jog the mind.” (See: <http://www.rtqe.net/ObliqueStrategies/OSintro.html>)

Implementation

As an assistant professor I combine research and education. Often my research questions can be explored within the framework of my design studio education. It is a privilege to work with bright students from diverse designing disciplines. They demand and deserve good educational reasons behind exercises. In turn they keep on surprising with unexpected creative solutions. Together we try to grasp what is going on and we try to evaluate and pinpoint the conditions for creative design.

I try to test my assumptions regarding creativity by implementing the ideas in my lessons. In most cases the education combines a main design or analysis task with the chance to improve technical skills and some methodology to further enhance design skills with a focus on creative actions, appropriateness of choices and optimization.

Design education and course layout

Each year, now for the fourth time, we educate a mixed group of 40 students from different design related technical studies, such as Industrial Design Engineering, Aerospace Engineering and Architecture. These third year BSc students choose a ‘minor’ program, which means they have a half-year full-time curriculum to explore other studies; in this case they chose the minor on *Advanced Prototyping*. My colleagues and I developed the ‘Advanced Prototyping’ minor with the famous MIT course ‘How To Make (almost) Anything’ in mind. Our courses introduce students to a wide range of new computer aided and traditional production techniques.

In the first quarter, we refer to Thomas Edison and we educate *a laboratorial-methodological way of prototyping*. We also refer to Edison’s Menlo Park laboratories in which people from different backgrounds were mingled together (similar to our students with different backgrounds). One of the main exercises in the first quarter is called ‘LightStyle’ in which the students have to design and develop an industrial prototype for a lamp. Other group exercises make links to academic researchers and let the students develop instruments or test prototypes, such as 3D-interaction devices, sail simulators, augmented reality exhibitions etc.

The second quarter of the Advanced Prototyping course focuses on the students’ *personal touch* with a key reference to The Factory, the atelier by Andy Warhol. In this second quarter we have a large exercise in which the students develop a personal object, e.g. a bracelet. They do this in an iterative design loop with three chances to 3D-print their intermediate designs. The other exercise consists of a weekly turning ‘carrousel’ that consists of eight different exercises for eight groups of five students. One of the carrousel exercises, called ‘Objets Trouvés’, was presented in the Communicating (by) Design conference in 2009.

Lectures on design methodology and design creativity

Each of the above-mentioned exercises would not have enough educational impact if the educational goals and our observations were not explained to and discussed with the students. During the half-year course we hold reflective sessions with the students in order to find out how the exercises work and we explain the theories they are based on. In the first quarter we provide lectures about design methodology (covering subjects like: types of models and prototypes, stage gate decision processes, prototypes that can be regarded as technical hypotheses, cyclic/iterative nature of design, empirical knowledge, and ways to test prototypes), in the second quarter we lecture and study views on experiential knowledge, creativity and the conditions to allow creative insights during a design process.

The lecture on creative processes is introduced by looking at a YouTube film from a lecture on ‘how to be creative’ by John Cleese. After the film, the students are asked to re-mention the aspects of creativity and in small groups they implement the knowledge in small exercises.

Below is a shortlist of some of the important aspects ‘to be creative’, mentioned by John Cleese:

creativity is not a talent it is a way of operating

there is an open and a closed mode of functioning

closed: lots have to be done ; work ; impatience ; tension ; purposeful ; manic stressed...

open: relaxed contemplative humor playful curiosity for its own sake

sleeping on a problem: the idea of working, sleeping, finding the solution

next experience : wrote script: lost it : set down to rewrite it from memory : found original :

*compared : the copy was much better unconscious must have continued working on it
: why else would it be better : part of mind was helping being more creative...*

create an oasis in the middle of your crowded life:

boundaries of space

boundaries of time

avoid interruptions

give yourself a starting and finish time ... only then you can play

confidence : what if what if what if

fear of making a mistake

true play is experience what happens if

openness to anything that might happen

nothing is wrong

you are either playful or not

while you are being creative nothing is wrong and anything can be useful

laughter relaxes and makes playful and creative

giggle all you want

Assignments that specially focus on creativity

The one-week exercises in the carousel are specifically developed to provide many chances to explore aspects of creativity in different ways. The theme of 'objet trouvé' is introduced in a lecture and comes back in several ways. In one of the first weeks, the students are asked to bring objects with fascinating form and texture and they are asked to reinterpret their objects and make them into totally different new objects. Association within other contexts and transformation of scale and form are explored.

During another week we tempt the students to develop metaphors and comparisons in order to make ungraspable phenomena more understandable, imaginable and concrete. In a third exercise we introduce the theme 'skeuomorphism' (a design element of a product that imitates design elements that were functionally necessary in the original product design, but which have become ornamental in the new design [source: wikipedia]) and let them re-design interfaces and objects regarding their added skeuomorphic outlook. In each of these exercises one or more of the previous mentioned 'situation setting' strategies are applied. Also the strategies, mentioned by Cleese are actively used during the courses. In one occasion, in order to create a separation with boundaries of space and time, we move with a little brainstorm group to the abandoned attic right above the main entrance of our faculty building.

We, as teachers, participate in many ways and show (sometimes hilarious) examples of association to lower the filtering of what is a good and what is a bad idea during creative discussions. Constantly we remind our students about the strategies and implementations of theories that were previously presented in the lectures.

In creative group sessions we have two simple rules: do not filter your own ideas or negatively react on ideas brought by others, and separate the creative idea sessions from sessions in which the ideas are evaluated and implemented.

Conclusions

This is a work in progress. At the moment we have almost 200 alumni students from our Advanced Prototyping course. We keep in contact with these students. They give us mostly positive feedback, mainly regarding the nice time they had because they finally did things, they created things and found out that there was almost nothing they could not make. These students also keep on making things. Prototyping becomes a key aspect of their design efforts. The time they spend on CAD modelling is much more focused on physical fabrication and part of the prototyping process. Regarding creative processes we did not yet look for or find differences, but several of them won prizes in a concrete design competition and some of the LightStyle designs from our course were turned into little series for a design shop.

Creation, creativity, prototyping, fabrication and the knowledge of mechanisms and strategies for enlarging creativity are essential to students at art, design and engineering schools. We keep curious for new cures and cues!

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