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Designing Time: A Laboratory for Time Based Design.

Birger Sevaldson
Oslo School of Architecture

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Closer monitoring of situations will uncover opportunities for innovation.
Charles Burnette.

'Designing Time' is an experimental design studio at the Oslo School of Architecture, where the students are engaged in time-based issues. The studio serves as a laboratory to invent, develop and test strategies and techniques relevant to time-based design.

Working with time helps to move focus from object to relations between entities and how these relations unfold. The time-based approach leads towards understanding action and performance and life-cycles. It involves working with time based structures, intensities, rhythms and repetitions. It connects to user experience thinking and it helps the students to develop their capacity of abstraction.

The 'Designing Time' studio is mostly operating on a structural level, avoiding semantics, metaphors and symbols. This is a way of breaking our preconceptions of how things really work. We do have schematic conceptions about processes in a similar way as we have schematic conceptions of objects. The schemata are simplified symbols which help us to operate efficiently. But to really understand things these preconceptions have to be broken. Breaking the preconceptions through careful observations helps to bring forward creative responses.

In the first phase of the project several observation and analysing techniques are invented and developed. Even monitoring oneself will reveal new unexpected experience. In the studios a student's observation of him cooking a bag of instant noodles became a classic case. He discovered that there are a minimum of seven to ten containers involved in the seemingly simple operations. The schematic preconception of this process is so strong that normally people do not believe this statement before we start to count: The cabinet where the noodles are kept, the plastic bag with noodles, the bags of herbs, the drawer for the spoon, the spoon, the cabinet for the pot, the pot, the cabinet for the bowl, the bowl, the sink for washing up, the soap dispenser... Mapping the relation over time between the objects reveals a complex pattern.

During and after monitoring the students analyse the material. There is an emphasis on finding distinct phenomena and to recognise patterns. Relations are rendered as patterns more than e.g. bubble diagrams. The students have to invent and develop visual analyses for their cases. For registration digital video is central, but also manual drawing techniques from comics or story boarding are used together with diagrammatic drawing and counting. For visual analyses the students can use filters like blurring, sharpening, contrasting and colour separation in *Photoshop* and *After Effects*. For time analyses they can use video editing tools or other software with time lines (e.g. *Flash*). They find time based patterns through manipulation analyses like time collapsing, stretching, reversing, scratching and sampling.

The analyses produces an output which is more or less diagrammatic. Sources for inspiration are scientific visualisation, Edward Tufte and Marey, but also generative diagramming as seen in architecture of 90s.

The analyses of the material produces new categories and finds phenomena from the patterns. In a sense a new theory about the observed real life processes is developed. This relates closely to grounded theory.

The cases span from the scale of small objects, domestic spaces, public spaces, to urban scale spaces. On bases of the monitoring process and the analyses the students have the task to do an intervention that softly modulates or describes the observed event. Understanding the patterns of relations should make it possible to softly modify them or to express them through a media of own choice.

Designing Time
An Laboratory for Time Based Design

Abstract

Designing Time is an experimental design studio at the Oslo School of Architecture, where the students are engaged in time based issues. The studio serves as a laboratory to invent, develop and test strategies and techniques relevant to time based design. Working with time helps students to develop the ability to investigate relations and systems and to understand these through time based analyses and abstraction. Working with time starts from observations of real life phenomena The observations ultimately lead to discovery of opportunities for interventions and in some cases innovation. The essay goes through several concepts and cases of time based design.

Introduction

This paper describes and discusses the experience from a studio course taught at the Oslo School of Architecture over a period of three years (2000 to 2002). The participating students where third and fourth year Industrial Design Students. The studio is concerned with time-based design. (Sevaldson 2000; Sevaldson 2001)

The studio project has several learning goals. Many of the learning goals draw on the earlier experiments and systematisation described in the essay "Ways of Working. (Sevaldson 2004)
The learning goals were:
-Working with time helps to move focus from object to relations between entities and how these relations unfold and form into complex systems of interactions.

-The time-based approach leads towards understanding action, performance and life-cycles. It involves working with time-based structures like intensities, rhythms and repetitions. One central issue is timing. Music and film pieces are analysed to understand how other professions consciously work with timing. These rehearsals are specially useful for all user experience related design tasks like interface / interaction design and event based design.

- Developing creative processes: In everyday life we react in situations according to preconceptions of these situation. As long as a situation is fairly familiar we do not act from schemes built on experience. We forget how the world really works because we know how it works (schematically) These schemata help us to be efficient, but they also prevent us from being observant and innovative. The preconsepted schemata

can be modified or even broken through intensive observation of how the world really works, which can result in creative responses.

-Learning generative design: The *Designing Time - studio* is mostly operating on a structural level, avoiding semantics, metaphors and symbols. Design work is basically understood as a way of responding and influencing processes. There is no design brief or problem to solve in the initial phases. The monitoring and analyses of the chosen events lead to innovation, in most cases not in the sense of targeting a problem and producing a solution but more as a soft intervention that modifies a situation.

Designing Time

In Designing time the students develop their own design methods and techniques. The aim is not to teach design methods as such, but to implement an altered perspective on design which nurtures new ways of thinking. The student is confronted with an open ended situation where very few guidelines and limitations, except a generic framework, are given.

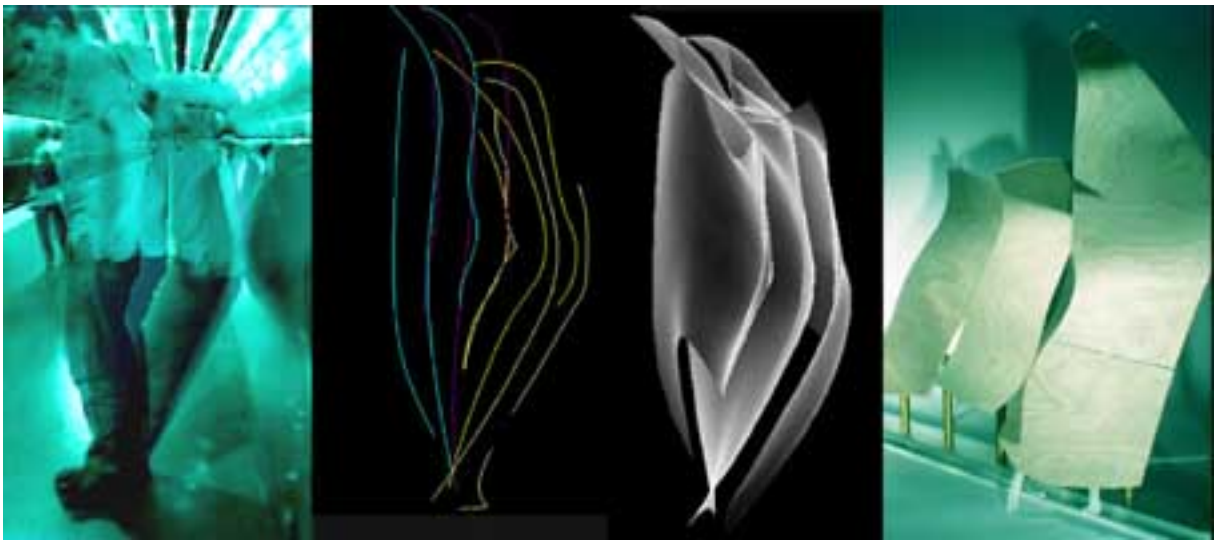
Method and Project Structure

No particular methods are given. Instead a framework of actions is provided. The three major elements in the framework are:
-observation
-analyses
-intervention
The framework avoids preconceptions of problem areas and inventions to solve them. This ideology challenges both the conception of the designer as a problem solver and as a stylist.

From the observation the project is developed smoothly towards a process method which is individual and varies according to the nature of the project. This approach learns the student how to develop their own design process and challenges on one side any preset standard design methodology, on the other side the idea that we are better off without any method at all.

The three main elements are not strictly phased with one exception. The students are not allowed to jump to solutions derived form quick association. This resistance forces students who are brought up in a problem solving tradition into a generative design process where they have to respond to observations and analyses.

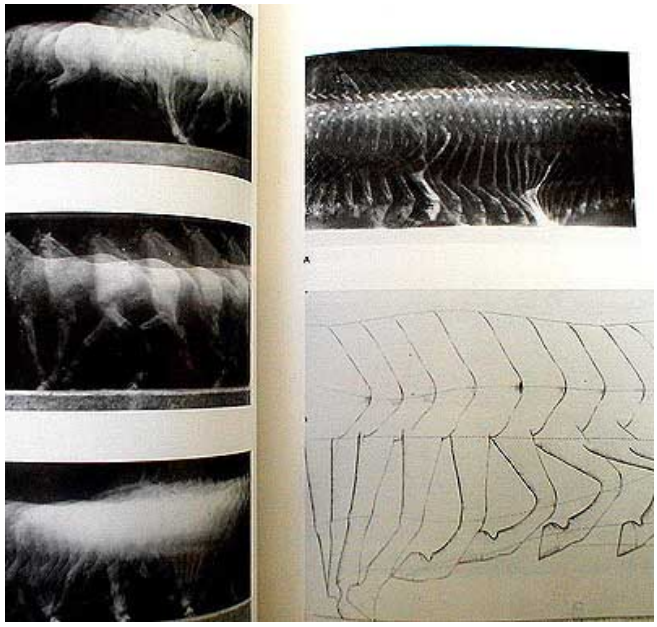
The area of interest is chosen by each student from personal interests and preferences. The students start with collecting information through observations. The collected material is translated into series of structural or diagrammatical models. These models help to clarify the nature of the observations and create a smooth transition towards an output that would modify the setting.



A smooth process moving from observation of the body-related use of a train station waiting area towards a furniture for waiting. (Jens Pettersen and Lars Bjerke)

The projects develops along several paths:

- The observation of movement as such in the continuation of Mareys experiments. (Braun 1992)
- The observation of singular objects performance with emphasis on the relations to adjacent entities over time during the unfolding of a process.
- The observation of complex situation with emphasis on the discovery and analyses of patterns in the interaction between entities and environments.



Etienne-Jules Marey the pioneer of movement.
The example shows a study of the movement of a horse

The means include:
Registration techniques:

Sketching, storyboarding, video, still photos

Analyses:

Visual analyses through sketching, systematisation, pattern recognition, text, codification and categorisation. These issues have been treated earlier in an earlier essay. (Sevaldson 2001)

Simulation:

Reconstruction of simulation models in studio settings or animation software packages

Abstraction:

Diagramming of time based processes. Diagramming is any technique to reinforce the display of certain features of an observation on the cost of others.

The results derived form these studies include:

Time based installations and visual material, digital and physical models.

Invention of devices to monitor activities.

Soft interventions on sites.

Observation

The observations frequently lead to more or less exiting discoveries. Even monitoring one-self will reveal new unexpected experience. In the studios a students observation of him self cooking a bag of instant noodles became a classic case. He discovered that there are a minimum of seven to ten containers involved in the seemingly simple operations. The schematic preconception of this process is so strong that normally people do not believe this statement before we start to count: The cabinet where the noodles are kept, the plastic bag with noodles, the bags of herbs, the drawer for the spoon, the spoon, the cabinet for the pot, the pot, the cabinet for the bowl, the bowl, the sink for washing up, the soap dispenser..... Mapping the relation over time between the objects reveals a complex pattern.

In other cases the discoveries are less staggering but never the less equally important, like developing a deep knowledge of the pattern of occupation of public spaces.

Since Mareys experiments the invention of digital graphical tools have changed the conditions dramatically and opened up new possibilities. Despite these possibilities there have not been many similar experiments as those Marey did. The course intends to utilise the computer in the analyses of movement. The computer is especially useful to investigate phenomena that are difficult to observe because of the time scale (either too quick or too slow changes) With the computer the time scale can be manipulated to reveal patterns and phenomena otherwise hard to discover.. The computer is also well suited to graphically enhance and change the registered material too make certain issues more perceivable.

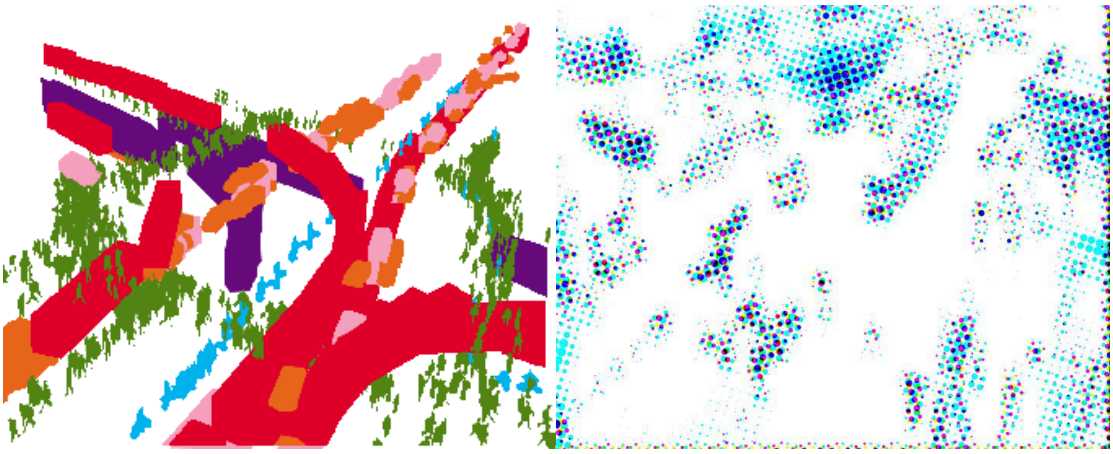
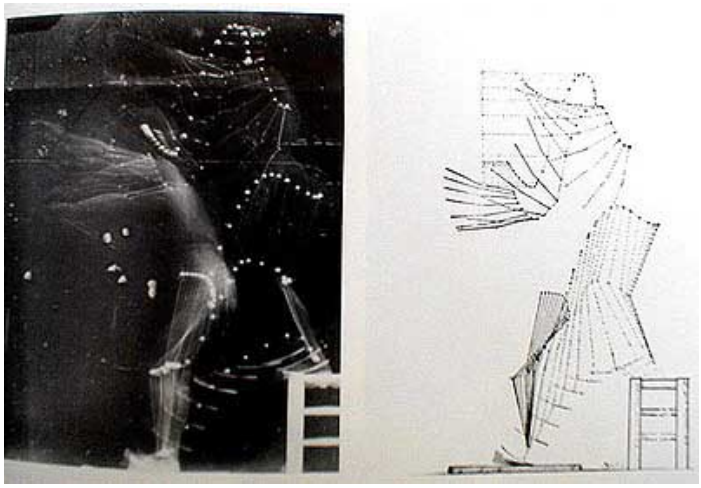


Fig 1 A small public square in front of the Oslo City Shopping Mall. Careful observation established categories and patterns of use. These patterns seemed to be quite complex including several types of pedestrian behaviours and waiting behaviours, like waiting for social reasons or for transportation. Also these patterns and their relations changed during a 24 hr cycle. The complex material was only possible to investigate through diagrammatical visualisation and visual analyses.(Ambjørn Viking)

Reinforcing and "cursoring"

Marey invented several techniques that made it easy to investigate fast movements in detail. In the observation of a human model jumping off a stool he used white cursor points to make it possible to follow the movement. The model is dressed in black and the room has a black background to make the white cursors more visible.



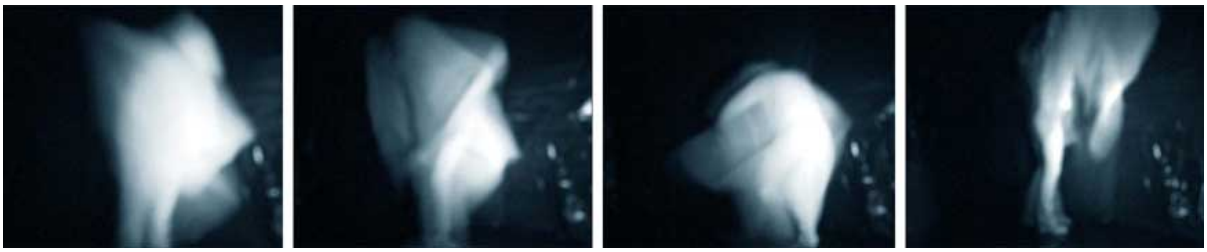
Marrey used cursors in staged settings in experimental studios to clarify and emphasise the nature of the observed movements. (ibid)

In the shown example Marey introduces diagramming techniques both before and after the captured moment. Before capturing he prepares the stage set, the dark background and dress, visually removing elements that are of less interest, and the white points emphasizing elements that are of interest. After the shot he analyses and clarifies through diagrammatic drawing where he also relates the cursor points

by connecting them with lines and establishing the spatial relation between the points at all moments.

These lines depict abstract structural relations because they do not exist in another form than as a mental construction; the product of an analyses. Never the less they are real in the sense that they are exact and reconstructable features of the real world.

In the Designing Time projects the students developed similar reinforcement techniques, that where partly based on staging and partly on the use of computer graphics. Dynamic event envelopes where created through the use of textiles, disguising the body and displaying numerous potential envelopes for movement and design.



Staged experiments with textile, light setting, time-manipulation of the DV-CAM and digital processing in Photoshop or After Effects. (Anne Lise Bergem, Heidi Devik Ekstrøm, Hanne Marte Holmøy, Heidi Susanne Leren)

This marks a principal shift from the experiments of Marey. While he was observing the nature of movement as exactly as possible and in the sense of the scientific experiment that can be repeated, the observations in our studios were concerned about variation and patterns in these variations. From observing the patterns one achieved an over all picture of the rhythms and the nature of the events. It makes it also possible to move away from Mareys schematic or fragmented experiments and work with real life movements or intuitive responses in more complex and variable events.
These techniques were not consciously derived from Marey but the link and relation to his work became obvious and was investigated in depth later.

Self-monitoring.

Video collects raw data very quickly but it leaves a great amount of work for later. Some of the considerations done in the video suite after filming can be taken on site which reduces the amount of work in the editing software later. But other media like traditional drawing techniques, might demand an even more intense on-site analyses, which in certain settings is an advantage.

Despite the digital techniques that were available, traditional drawing techniques were regarded very useful. Indeed the different techniques supplement each other. Comics-related techniques and storyboarding are well suited for self-monitoring and

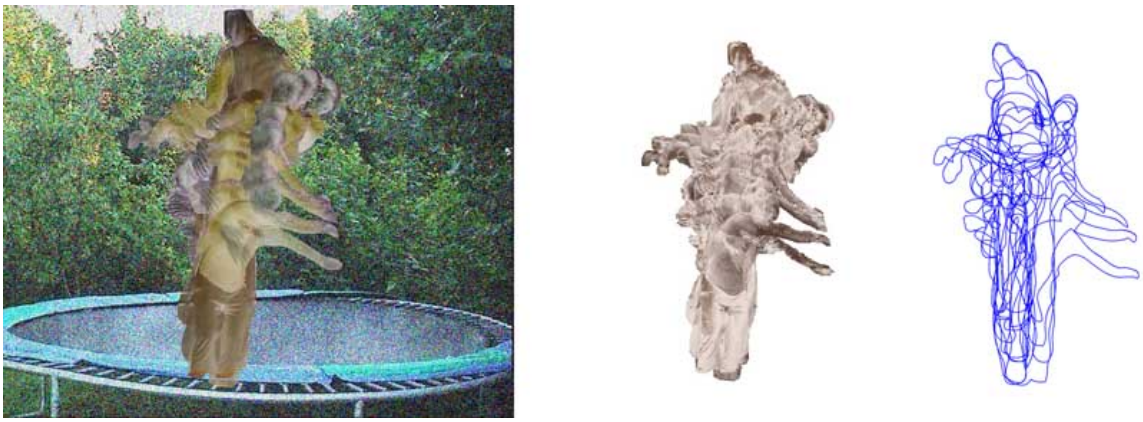
monitoring of objects. A brilliant reference is Scott mcClouds book Understanding Comics. (McCloud 1994)

Self-monitoring has frequently been discussed by e.g. Donald Schön (Schön 1982) and also criticised for the bias interrupting the creative work flow through observation. In our case we were investigating typical every day events from real life which were considered to be quite "automated", like brushing teeth or cooking a cup of tea. The observed event is off course influenced by the introduction of such real time observations (registration and reflection in action and even drawing in action!) But in these cases, where robust everyday activities instead of fragile creative processes, were observed the bias was an advantage. The techniques deliberately changed the mental stage of the performer/observer to create a new level of awareness.

Using comics-related techniques to monitoring the use of an object. (sketch by student Ambjørn Viking)

Analyses

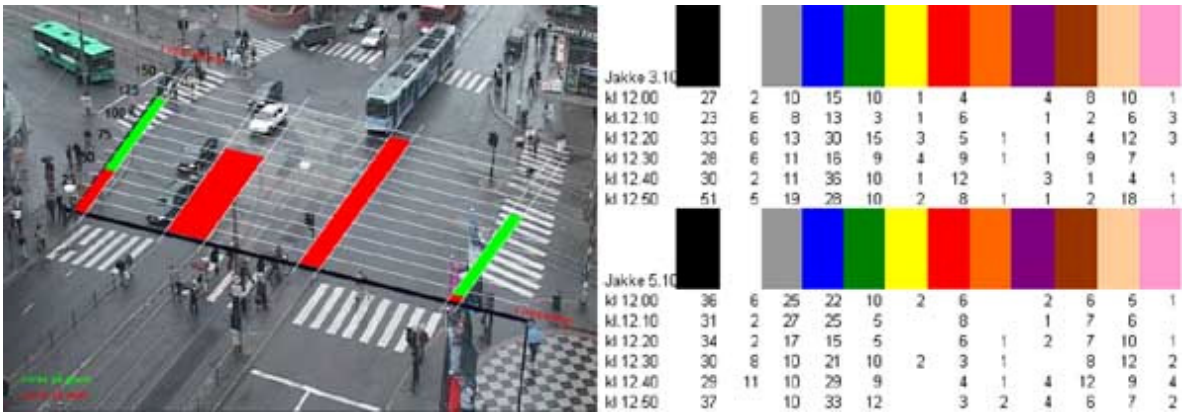
During and after monitoring the students analyse the material. There is an emphasis on finding distinct phenomena and to recognise patterns. The students have to invent and develop visual analyses for their cases. They can use digital filters like blurring, sharpening, contrasting and colour separation in Photoshop and After Effects. For time analyses they can use video editing tools or other software with time lines (e.g. Maya or Flash) They find time based patterns through manipulation analyses like time collapsing, stretching, reversing.



Visual analyses of movements on a trampoline. From Photoshop to flash.

Diagrams and theory

The analyses produces an output which is more or less diagrammatic. Sources for inspiration are scientific visualisation, Edward Tufte (Tufte 1983), but also generative diagramming as seen in architecture of nineties e.g. Peter Eisenmann. (Eisenman 1999) The diagrams produces the bases for the categorising of phenomena. Categorising of found phenomena helps to evolve theories about the observed real life processes. This relates to e.g. grounded theory described by e.g. Glaser and Strauss (Glaser and Strauss 1967)



Diagramming real world: All kind of data was captured with no regard to potential use. This technique highlights issues about the real world that normally would have been unexplored.
To the left diagram of waiting time superimposed on site. To the right the registration of the colours of pedestrians jacket during one hour.

Interventions and inventions

On bases of the monitoring process and the analyses the students have the task to do an intervention that softly modulates or describes the observed event. Understanding the patterns of relations should make it possible to softly modify them or to express them through a media of own choice. Examples are: Video installation in cafe environment, complex shelter in public square, sculpture of a snowboard jump, advanced kitchen timer, flexible territorial furniture, soft modulated waiting area and furniture-lee wall-dockside-sculpture.

What could be taken as a sculptural art piece is a modulation of a dockside to provide a richness and variation of spatial possibilities to the public. The installation is derived from patterns of usage at the site. (Are Nielsen and Lina Aker)

Cases

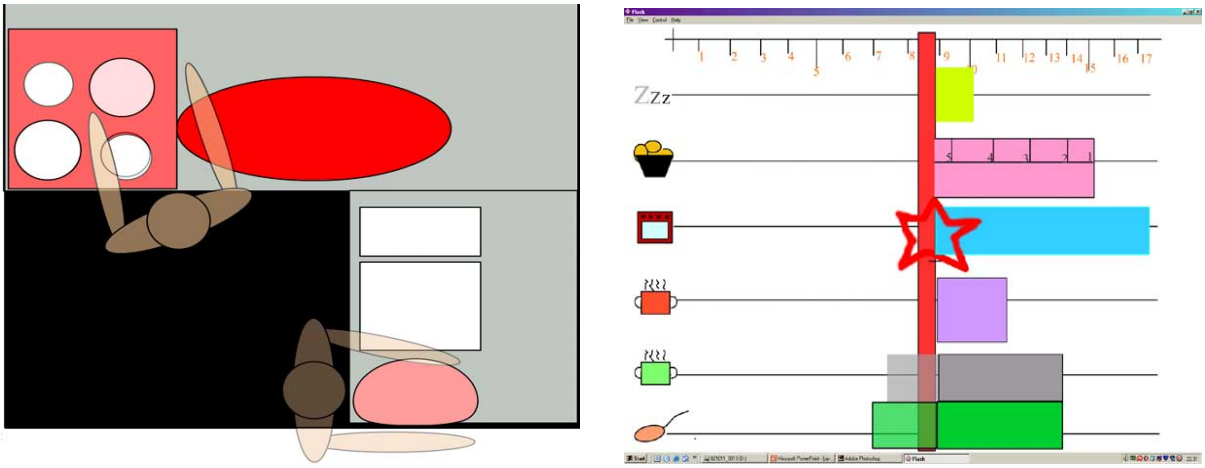
Case 1: Dinner in 60 minutes. An invention derived from diagramming.

In this case the student Mari Honne Enge started with several observation rehearsals amongst others the pattern of movements of hands of a group of people cooperating on solving a puzzle. This starting point triggered the students interested in short-time events with a high degree of relational complexity.

To the left: Video monitoring of a cooperation task.
To the right:: still image collage depicting the complexity of preparing a meal.

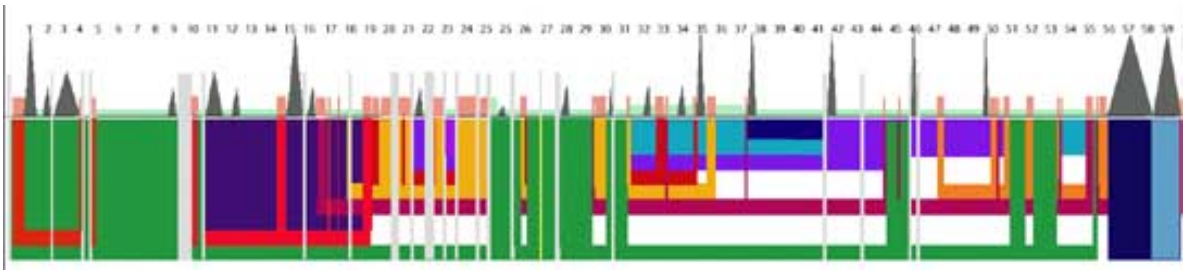
The observations where moved to the students own everyday situation in her kitchen investigating the high degree of complexity in the relations between human, objects and furniture pieces during cooking a dinner meal. This complexity was captured with stills, video, sketching and diagramming.

The next step of analyses included a stylised digital simulation produced in flash. This simulation helped to clarify the sequencing of the tasks.



To the left: Screen capture of the flash simulation of the use of the kitchen. To the rigth: Flash prototype of the timer captured in the moment when the alarm for starting the stove is triggered

An accurate timeline based diagram was produced to get an overview of the process. The timeline diagram directly inspired and informed the invention of a new timer for complex parallel time based processes. The timer was simulated in Flash.

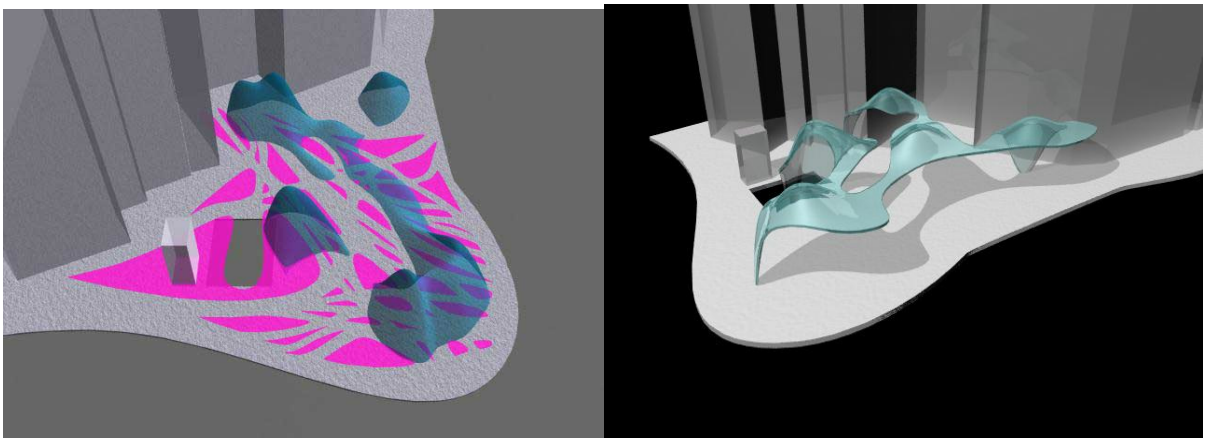


A timeline based diagram maps the complex activity over a time span.

In this project the diagramming of the events turned out to be very useful and did feed directly into a solution. The timer is in itself a dynamic real time diagram designed to help timing any complex task. In this case it was used to get all the cooking processes timed right so that e.g. the fish does not get cold before the potatoes are cooked.

Case 2: Form derived from movement patterns.

Some students worked in a very direct way where they used the shape of movements as design input. In this sample by Ambjørn Viking, a square outside a shopping centre in downtown Oslo was observed. In the analyses all kind of diagramming techniques where applied . (see also figure above.) The diagrams slowly developed the understanding of the patterns of use and also an understanding of how to intervene.



To the left: Pattern recognition: Diagram of activities outside a shopping centre in Oslo, showing the still areas least influenced by pedestrian paths (pink) and the most intense crowding areas (blue).
To the right: Suggested intervention that softly modulates the crowding behaviour.
(Ambjørn Viking)

An intervention should grow out from the visual analyses and hence from the real life events on the site. Therefore the intervention did not intent to reorganise the site entirely but rather softly modulated the attraction forces on the site. This was done very simply by providing a shelter that had a form that was in engagement with the existing patterns of use. The shelter provided varying attraction forces according to daytime, year or weather conditions. It did not force the patterns into new forms but offered new qualities and richness and a new reading of the site.

Case 3 Café Table Installation. Modifying social space.

In this project the starting point was the life on cafes in a township in Oslo. The student Silvia Lesoil frequented several cafes and applied a long range of laborious observation methods. Amongst them where hand drawing and even video which was difficult to organise in an indoor public space. The analyses soon focused on the social space that the cafe in large and the café table on a smaller scale offered. The student started to analyse territorial occupation and interaction between the guests on the scale of the whole café and on the table surface.

Based on the observations the student developed a concept for a video installation that would play with and diffuse or reinforce these issues visually in a cafe setting.

The installation transmitted video between tables projecting the actions from one table onto another.

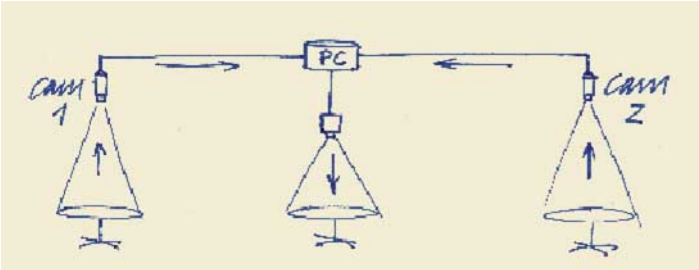
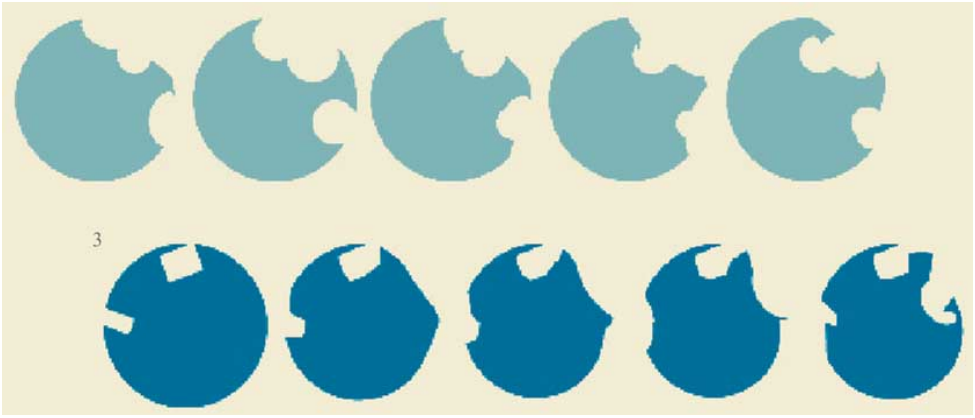


Diagram of the video installation system.

These projections created a shared experience between the tables. The real life projections frequently shifted with a stylised flash animation that showed a diagrammatical visualisation of recorded territorial occupation of café-tables. In that way the installation both questions the café as territory but also the territorial interference within the group around a table. The installation was running in two weeks in the cantina of the Oslo School of Architecture.

Video registration and visual analyses of cafe table.



Stylised animation of territorial occupation of table based on real life observations.

Discussion and conclusion

Problems, challenges and achievements:
The teaching concept was on one hand very successful and it achieved most of its teaching goals.

On the other hand the concept is very demanding to teach. It is very hard for the students (at AHO) who are not trained in abstract thinking to shift their mind and to learn to abstract. It is also very tuff to stay away from problems and solutions and ideas in the start. They mostly do not understand the value of observation in the start and some never get it. Many students lack a general curiosity of the world that to my mind is crucial for the designer. This has to be taught specifically.

The learning curve has been too steep and the expectations to the students a little too high in the beginning. There has not been any thorough survey amongst the students, but more random communication and questions to collect feedback. All of the students who achieved very successful or partially successful results appreciated the level of challenge and the innovative learning experience and all of them agreed that the way of working produced unique and for them unpresedented output. This is to me the major achievement of the studio.

The issues addressed in the studio are important for the designers of the future. The future role of the designer seems to be a less problem oriented or object oriented role. It will be concerned with the dynamics of real local places along a wide range of scales. It will be more open to real life issues without simplifying them and it will be more open to user involvement.

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