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Video in User-Centered Design
Botin, Lars; Poulsen, Søren Bolvig; Poulsen, Søren Bolvig

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In the Era of Innovation

What constitutes an innovation is complex. The complexity is partly found in the various types of innovations – technical, social, user-driven, employer driven, organisational, cluster driven etc. From these different types of innovation it can be argued that an innovation can both be tangible as well as intangible, e.g. a service. As long as it is something brought into being and implemented into a given context, Chayutsahakij frames this point nicely:

"While a new idea is a thought about something new or unique, and making that idea real is an invention, innovation is an invention that has a socioeconomic effect; innovation changes the way people live." (Chayutsahakij, 2003)

We can learn three constituting points from this. Firstly, an innovation requires a “newness”, which links back to one of the early innovation writers, Joseph Schumpeter. Schumpeter defines the activity as “simply the doing of new things or the doing of things that are already being done in a new way” (Schumpeter 1947: 223-24). Secondly, which was also implicit in Schumpeter’s ‘doing’, it is the bringing into existence – the often ‘fluffy’ ideas should be made real, invented and brought into being. Lastly, the invention should be made available in some sense e.g. to pursue through buying it. This phase of implementation in people’s lives is crucial for the invention to become an innovation as much ‘new’ can be thought of and much of this can be brought into being, while only few inventions will have a socioeconomic effect and change the way people live, as Chayutsahakij frames it.

There are many actions to take and much to plan for when implementing a new product into the market or into a working context. However, it is now well-recognised that successful adaption of a product by the people to use it requires that the grounding idea and how it is brought into being builds on a firm understanding of the people, together with their context and culture. In this article the challenge is central, as user centred methods with video will be introduced and exemplified. This also means that the article will not be concerned with the latter design phases and the implementation, but merely focus on the development of user centred concepts by application of video in the fuzzy front-end of the design process. Returning to the discussion on innovation and the role of the user - “[k]ey to innovative design is an understanding of the user” (Chayutsahakij 2003: 3). This type of innovation is referred to as “social innovation as it springs from social needs, rather than from technology and according to Drucker (1985), social innovations may have an even higher impact than scientific or technological innovation” (Darsø, 2001). Focusing on user needs, and thereby on social innovation have, for some time, been a desired approach in order to increase the innovation potential of new products. This has led to an increased amount of methods.

Navigate in and choosing from the large span of methods can be a difficult assignment for both young user centred
design practitioners as well as the more experienced ones. Sanders ‘Say, Do, Make model’ can be used as a tool for guidance. The model can support the selection of user centred design approach by splitting the model into three interconnected models.

What to focus on and how to address it varies from project to project and therefore it requires in situ judgement; in one project you might know the type of need that you wish to address, then focusing on the level of ‘Levels of needs’ (explicit, observable, tacit or latent) is a reasonable approach. In other projects awareness to e.g. the use of a certain existing product is perceived as central, wherefore looking at ‘Ways we can learn from people’ is a suitable approach. In other projects, restrictions could be made in the user contact, which encourages a certain focus on the choice between ‘What people say, do and make’ – maybe it is only possible to interview or maybe that is not an option when e.g. designing for disabled children with no communication skills.

The model is separated into the three above-mentioned sub-models and it can be supportive in choice of user centred approach. With Sander’s model, a methodological approach can be chosen in relation to the needs of the user, connection to the user and the professional competences that one carries as designer.

Sander’s model does not show how a given user centred design activity should be carried out. Chayutsahakij has developed a model or semantic scale (Chayutsahakij et al., 2003), which can support the planning of user centred design activities.

1) Design support (pre-design, during design, post-design) is concerned with when in the process a given research or design activity is carried out
2) Research direction (generative, evaluative) is about the very aim of the given activity. Is the activity carried out to evaluate something specific, like the usability of software, or is the approach generative and thereby concerned with e.g. creating new insights or ideas?
3) Research structure (open-ended, prepared) is concerned with the focus of the given activity – it can be carefully prepared to suit a certain goal and therefore narrow in its focus, or it can be open-ended allowing the situation at hand to affect and guide the activity.

4) Analytic perspective (conceptual-procedural) is about the applied perspective – is the activity occupied with detailed mapping of procedures as for instance flow maps or is the activity more conceptual targeted to understand or develop something at a conceptual level.

5) Degree of generalisation (cultural, social, individual) is important to take into consideration before conducting the activity. In order to obtain relevant information from a given activity one must consider if individual, social or cultural information is significant to the further development of the project.

6) Mode of collection (immerse, observe, listen, participate) is concerned with how the activity will be carried through. Should one immerse into the given context or should one be restrained and observe the context with some distance? Should one start a dialogue() and listen to what the users say or participate with them in their doings?

7) Media of delivery (experience, tactile, visual, and verbal) to colleagues or others of relevance to the project should not be taken into consideration after the given activity is conducted, but it should be a conscious choice in the planning of the activity. The choice should be made in relation to the subject of interest, time and resources available, among other issues.

From unfolding the semantic scale as a model for planning user centred design activities, it becomes clear that practicing user centred design requires conscious decision making and an overview where one is able to see how a choice has impact on other decisions. The semantic scale does not favour one approach to another, it is in that sense neutral.

**Inherent ‘user centredness’ in design**

Focusing on users, the receivers of the given product have been a natural part of the design practice since its very beginning. Henry Dreyfuss is often referred to as the father of industrial design and he had a long career with beautiful work. His approach to design was indeed user concerned:

"We bear in mind that the object being worked on is going to be ridden in, sat upon, looked at, talked into, activated, operated, or in some other way used by people individually or en masse. When the point of contact between the product and the people becomes a point of fiction, then the industrial designer has failed. On the other hand, if people are made safer, more comfortable, more eager to purchase, more efficient – or just plain happier – by contact with the product, then the designer has succeeded."(Dreyfuss 1955, book cover)

During his carrier, Dreyfuss showed broadness in his approach to gain knowledge about users. From the very beginning he had an anthropometric human factor approach constituted with averaged sized people named ‘Joe’ and ‘Josephine’, but in his later years he took on a more ‘holistic’ approach as he also tried to embrace user’s desires, believes and feelings. Dreyfuss once went to stand behind the counter in a store to catch reactions to a new, medium-priced clock we had designed. My first customer was a woman, and I showed her our model and a competitive clock of the same price. I watched her weigh a clock in each hand. I was confident of her choice, for we and our client’s engineers had labored long and hard to make our clock light, believing lightness was an expression of its excellence. I had a sinking feeling as she bought the heavier clock. But it brought home the lesson that to some people weight can be a sign of quality, also that the designer must appreciate that some things demand weight and some lightness, and he must determine when each is a virtue”(Dreyfuss, 1955: 39)
Going into the field as Dreyfuss did in the above example, the context of purchase is an approach, which continues to gain more footing in the practice of design. As the field study approach is getting more integrated it is also moving away from the ad hoc approach. This formalisation of designers’ curiosity has been inspired and informed by the anthropological discipline. From the anthropological discipline, designers have gained theoretical insight, methodological approaches and practical tools, which are useful in the study of users, their behaviours, context and culture.

Naturally, there are significant differences between the traditional anthropological approach and how anthropology has inspired method development within design. Traditionally, anthropology is a descriptive discipline in which the ambition is a written ‘thick description’ of a certain phenomenon – as e.g. the culture at a work place. “The problem in this is that the instances – descriptions of work – do no “speak” to design” (Crabtree, 2001: 218). This means that the traditional outcome of an anthropological work, an anthropologic account, is difficult to apply to design work. Design is a practice in which active use of the senses is crucial. Therefore, inspiration in the more visual-oriented practices within anthropology (video observation) has been explored.

Video observation
Since its first introduction the use of video has been subject for theoretical discussions within anthropology. This discussion is beyond the scope of this article. Instead the term, video observation will be unfolded to elevate our understanding.

Video observation is a construed term, where both words of the term derive from Latin as is the case with a lot of terms from Greek and Latin integrated into our contemporary languages. Their original meaning has to some extent been hidden or forgotten. In the following, the etymological meaning of the term will be discussed, because it is important in order to understand how the method for video observation that we have used has been developed.

Video (I see) derives from the Latin term ‘videre’ and is as such literally connected to the mechanics of the eye. We are talking about a sensorial capacity, which has had the interest of Western science and technology for centuries. Glasses, binoculars, microscopes, X-rays, cameras, television, contact lenses, video recorders etc. are all devices meant for enhancing the physical capacities of our eyes and in many cases necessary in order to gain any knowledge or insight at all.

Investigating the world and reality through technologies that are connected to the eye (and in some cases the ear) is as such well-rooted in Western science. From some of the above-mentioned technologies, like microscopes, X-rays, and, in contemporary society, fixed surveillance cameras, we mean to draw certain and totally reliable knowledge.

Observo (I observe) is in its etymological root characterised by a certain distance and passivity in confronting the surroundings. An almost antonymous relation between the two words in the construed term of video observation exists. On one hand, we have the living and investigating eye enhanced by technology and on the other an objective, distanced and immobile stance in time and space. Seen in this specific perspective, it is as such rather problematic to talk about video-observation, because the latter concept of the construed term leaves out the notion of body, entanglement and dynamics.

It is emblematic that the actual dynamic and active part of the term is related to the technique (video), where as the passive and reactive part (observo) is related to the processes of the human/s involved in the video-observation. Through the term we are objectifying both the observed and the observers.
The ethnographers Margaret Mead and Gregory Bateson employed a camera (an 8 mm handheld camera) in their fieldwork in the 1930s and 1940s, documenting primarily the lives, rituals and ceremonies of tribes of indigenous peoples in different parts of the world. What actually came out of the documentaries produced by Mead and Bateson, seen from a methodological point of view, has been characterized by the American sociologist Idit Harel in the following categories, where she identifies three different kinds of use of the camera within ethnographic studies:

- **Holistic Interview.** The interview is video taped in order to register the various signals of the communication in the context.

- **Quiet Observer.** The camera is placed on a tripod and registers in a long sequence.

- **Personal Notebook.** Mobile camera that functions as an interpretative and personal view on the situation.

(Harel 1991)

In traditional ethnographic and sociological research there has been a certain preference for the first two methods, because they are less entangled with the topic field and hence “observing” (objective and distanced) in a scientific way the occurrences and events of the situation. The Personal Notebook has been reserved for the documentary genre in multimedia, like television, where the storytelling quality of this kind of ‘observation’ adhered to the media often has an immediate and direct impact on the viewer. From the very beginning of ethnographical research, The Personal Notebook received a fairly unfriendly reception, because it was considered too personal and subjective in the choice of angles, filters, cutting and meaning production.

In its various forms, video observation has spread from ethnography and anthropology to the field of sociology, where it supplements already existing methods in research upon human behaviour in society, both in formal institutions and informal organisations and everyday life settings.

The investigations made by Jordan and Henderson (1994) and Buur, Binder and Brandt (2001) are fairly recent examples of this dependence on established methods like interview and questionnaire in the use of video observation in research and education. Here the obvious connections to ethno-methodology and user centred interaction are visible within the context of design practice.

Buur, Binder and Brandt investigated on the work procedures on a power plant in southern Sweden and followed a single worker (an engineer) during his daily work at the plant. During the video takes, which were 1:1 in time, the observer would often interact orally with the observed and produce a kind of parallel interview which of course was recorded on the videotape. Buur, Binder and Brandt looped the edits with the observed in order to get a coherent and mutual picture of the work of the engineer. The approach seen in Buur, Binder and Brandt served as inspiration for the case to be unfolded in the following.

**Case I:**

**Video Observation of Introduction of a Trial Electronic Health Record (EHR)**
In the summer of 2003 a working group within the institutional framework of V-CHI (Virtual Computing in Health Informatics) was founded in order to evaluate and assess a forthcoming implementation and use of a trial EHR. The video takes were made on two occasions, because material was needed to cover the situation before and after the implementation of a trial model of EHR. The first take took place in December 2003 and the second take took place in June 2004. The first take was produced under guidance of the counsellor and the employment of the professional scout, whereas the second take was produced according to the gradual evolvement of a phenomenological and interactive approach that was outlined and developed during the spring of 2004. The first take was to a high degree applying to the scheme produced in advance and the following sample concerning the set-up for a take should indicate how video observers (operators) were guided through the day.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
<th>Place</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity in the secretary room and adjoining rooms.</td>
<td>7.00-13.30</td>
<td>Secretary room</td>
<td>NN</td>
</tr>
<tr>
<td>Shift night/day</td>
<td>7.00-7.10</td>
<td>Red and green group rooms</td>
<td>NN/NN</td>
</tr>
<tr>
<td>Assembly in the nurse groups</td>
<td>7.10-7.15</td>
<td>Red and green group rooms</td>
<td>NN/NN</td>
</tr>
<tr>
<td>Ad hoc</td>
<td>7.15-8.00</td>
<td>Ward M2</td>
<td>NN</td>
</tr>
<tr>
<td>Medication</td>
<td>7.15-8.00</td>
<td>Medicine locker</td>
<td>NN</td>
</tr>
<tr>
<td>Conference (red group)</td>
<td>8.30-8.50</td>
<td>Red group room</td>
<td>NN</td>
</tr>
<tr>
<td>Nurse (green group)</td>
<td>8.30-8.50</td>
<td>Ward M2</td>
<td>NN</td>
</tr>
<tr>
<td>Team conference</td>
<td>8.50-9.15</td>
<td>Conference room</td>
<td>NN/NN</td>
</tr>
<tr>
<td>Ward rounds</td>
<td>9.15-12.00</td>
<td>Ward M2</td>
<td>NN/NN</td>
</tr>
<tr>
<td>Nurses (red/green groups)</td>
<td>9.15-12.00</td>
<td>Ward M2</td>
<td>NN/NN</td>
</tr>
<tr>
<td>Termination and planning of next days activities (red/green group)</td>
<td>12.50-13.30</td>
<td>Red and green group room</td>
<td>NN/NN</td>
</tr>
</tbody>
</table>

Table 1: Scheme of time, places and operators concerning the take at M2 Aarhus Hospital, February 2004 (Botin, 2004).

As can be seen in table 1, the video observation begins at 7.00 AM and ends at 1.30 PM, because the medical wards at a hospital (in DK) are ‘active’ in this specific period. Before and after, the system enters into some kind of rest period, which of course is highly dependent on the patients and their needs and capacities. The investigation had a focus on dynamics, communication and interaction, which is why follow the practices and routines during hours of peak activity were followed.

Looking at the various activities, time, location and employment of operators it is clear that one operator is located in the ward secretary’s room throughout the whole period. The ward secretary’s room is the focal point of the ward as such, because here all the current and visible documents are gathered (paper journals). Also, we have the main computer, and the ward secretary is normally aware of the whereabouts of staff and patients. Without the scout, this knowledge would not have been apparent and at hand from the beginning, and valuable time and material would have been lost.

The other two operators are on a constant move within the borders of the ward. They move from nurses’ group rooms, through corridors, into conference rooms, medicine lockers and patient rooms.
In this particular setup, which was made on the 1st take at a ward at Aarhus Hospital (DK), there are some changes concerning the role of the scout and activities and places. There is less focus on the doctor and formal spaces and rooms of the ward, and to a higher degree more focus on the whole temporal and situational condition of the scene. Furthermore, operators are set free and encouraged to wander about doing ad hoc observations and sometimes breakaway from the ward round and follow e.g. nurses (9.15-12.00) or pursue events they find interesting.

Figure 3: Doctor and nurse by bedside (Botin, 2004). The patient is not registered in the recordings. Focus is kept on staff and their handling of technology. In this scene, the body direction of the doctor is evident and undisturbed by the paper journal in her lap.

Analysis of Video Material from Video Observations
In this specific case, there was a ‘before’ and ‘after’ session, and as the crew consisted of three operators and the time schedule was six and a half hour, the observation resulted in approximately 15 hours of raw video material. We had a pause of 50 minutes at lunch, in order to give the observed field a rest from observation, and furthermore breaks occur when changing label tapes and discs. It is these 15 hours of material that constitutes the foundation of the following exercises of cutting, briefing and showing, but in the immediate 1st brief made by the crew the material is to some extent inactive and the memory of the crew activated.

At the first take at Amager Hospital, the brief was held in a location at the hospital, computers and projectors were at hand if needed in order to confirm any remembrances and experiences of the day. The Post-It note method was used as described in the overall methodological framework for video observation.

The three observers produced 15-20 notes each (there are no limits of numbers), but experience has shown that this is approximately the amount of notes produced at similar sessions. From the notes each observer was to pick the 5 notes that he/she found most vivid and important in remembering, and subsequently tell to the others about the content of the five notes. The chosen notes were placed on a blackboard and gradually a pattern was showing, as items, issues and events where categorised and classified. The analytical categorisation and classification is necessary when trying to deal with and understand patterns, and furthermore it is integrated in the method of the whole study and in the
analysis of artwork. In this specific case, the classification and categorisation are based upon the experiences and remembrances of the involved operators in order to get a general and meaningful picture of the observation. The Post-It notes on the blackboard give an initial picture of reality; and the following exercises in the method are highly concerned with combining and creating paths between the notes in question.

Examples of remarks on Post-It notes that made it to the end:

*Paper journal has disappeared. Nurse is looking for the journal. Secretary thinks that the doctor took the journal to a conference. Secretary finds the journal lying on a table and looks for the nurse. Great relief in the voice and body language of the nurse*

*New assistant doctor (foreigner) uses a lot of time reading, looking and searching in a paper journal, at least for an hour. She has obvious problems of getting around in the journal. A nurse is writing the discharging papers of a patient, and it takes a long time. A lot of writing. Shows a sequence that demonstrates the amount of writing.*

In the first case, a singular event with a strong narrative point is illustrated. There is a beginning, middle and an end. There is doubt, suspense and relief; and furthermore it is highly appropriate concerning the charge of showing the problem-standings concerning paper-journals. They tend to get lost. The case has a general value.

The second example is a number of notes focusing on time-consumption: the time of writing and of deciphering what has been written by others. Whereas the actors are main figures in the first example, and focus should have been placed on their actions and reactions in order to get the picture and the story, it is necessary to be more careful concerning the actors in the second case. The newcomer and the nurse might be exposed in their slowness and intellectual capacity, and the material would be impossible to use in documenting the amount of time implied on reading and writing handwritten documents. So in cutting the sequence that demonstrates the inappropriate use of time, emphasis is placed on the tools and not the actors.

The cutter one of the crew members, has a map that he/she can activate in the editing room because of his/her presence throughout the whole process. The crew also has a map from the scouting session upon which they can act. The connections and bonds between the various phases in the method are crucial in order to keep focus on the trajectory of the path, and in order to be able to retrace steps and actions along the path.

The map of the brief was following, which made the editing quick. A considerable amount of material was gazed through at a high speed. In this part of the cutting, our concern was not telling a story or producing a “movie”, but describing the iconic examples (the sequence of the secretary and the nurse and the time consumed in writing). The exercise of combining and creating paths is not implied in the 1st cutting, because the paths ought to be found or constructed by the actors in interaction: crew, chargers and the observed. The 1st cutting resulted in a 45 minutes, rather chaotic bricolage of sequences and images, meant for showing for a restricted group of persons, as described above.

At the presentation we explained how we have proceeded and what is present on the temporary selection of issues, items and events. The chaotic character of the 1st cut necessitates such an explanation if the receivers will not and cannot relate to or understand the intermediate product. They have to understand that this is material for negotiation and discussion, and that they are not watching a documentary with a storyline like the ones they see on TV.
At this session, the head nurse of the ward, a doctor (one of the main figures of the take) and a ward nurse (another main figure of the take), plus the crew (5) were present. The session was filmed and the registration was actually used to eliminate a couple of scenes in the following cutting, furthermore, this part of the exercise is meant for identifying the subjects and objects that are involved. We ask who and what is that person acting/doing in this particular scene? What are that piece of technique and the importance of the object in everyday practice? The person filmed might be a temporary substitute or the object a rarely used item, and such information is relevant in order to grasp the essence of everyday practice at the ward.

The briefing, which turned out to be rather close to the presentation, isolated some scenes to be irrelevant or unintentionally exposing the staff, and discussions led to a focus on the handling of technologies rather than interpersonal interaction and communication. This particular point is where the major problems and interesting images were showing. ( )

In the 2nd cutting of the first take, there was a specific focus on the handling of technology, and in this case also on the paper journal. At this stage, we had the narrative of the whole story, which meant that in the following take, brief and cut of the situation after the implementation of the EHR we would look for traces and remains of the paper-journal, procedures concerning the journal and how the EHR affected and produced new procedures and habits. We would look for similarities and differences, so to a certain extent the narrative/story-line of the investigation was laid out during the initial part of the plot, which means that the procedures concerning the 2nd part were stable and generally concurred upon.

The presentation and the brief were positive, however, because the observed field and the decision-makers recognised both everyday life of the scenes and saw the original ambitions being fulfilled. The further development of the method and of the case has certainly considered the critique of the counsellor and the scout, which means that their initial part of the process has sharpened the “tool” or technique of video observation.

The procedures did not alter as the observation of the situation after implementation of a trial model was made. The observations were made three months after introducing the system in order to give actors and organisation time to get acquainted with the technology, and just a week after the take the project was shut down. I.e. it would have been impossible to have a 2nd take in vivo and if necessary it should have been taken in vitro. The observation became a singular case study due to the fact that the ward on Aarhus Hospital closed down the project before the trial period of three months was completed, and is as such not valuable as material for comparison, neither in the optic of the project nor in this more restricted optic of information technology interaction.

The following chapter will describe and discuss the findings of the research envisioned in this particular perspective concerning the relationship between body and technology.

Findings: Body and Technology in the Hospital System.

As mentioned, there is material covering a morning session before the introduction of a trial EHR and material that covers a morning session after the introduction of a trial EHR. The figures presented in the two sessions are more or less the same, with the exception of the ward nurse. A comparison can actually be made between the two sessions concerning time, space, technology and attitude and behaviour of the actors in play.

In the session before introduction of the , it is quite apparent that everybody has fairly routine-like attitudes towards the various common spaces in which they find themselves. There is a certain flow of communication and interaction, which mainly deals with papers and documents that circulates around the paper journal. The doctor has a daily practice of ripping paper into halves at the morning conference,
because she obviously likes that format (A5) and it probably means that the paper is easier to fit into her pocket. At the morning conference there is a certain kind of movement and interaction as the conference moves on, because everybody has a say and a role concerning the procedures of each patient. The therapist knows about procedures for rehab for the individual patient, and she informs everybody else in the room, whilst the doctor nods her head. And in the end, a unanimous decision will be made and registered on the whiteboard concerning further procedure.

It was quite evident during the take that things and bodies were moved in time and space as the conference moved on, and there was a lot of talking going on. The morning conference finishes at 8.50 AM sharp, because at this point the doctor normally has her morning break and drinks her coffee and eats some bread, in order to be ready to prepare more thoroughly for the ward round. As she considers the various amounts and kinds of medicine that each patient should be given she pauses and looks at a picture on the wall. She talks to the camera saying that in the future she will probably not be given the chance to think whilst writing, because it will be a matter of filling in boxes and changing a pair of digits. She is a bit frightened about this, but ends up saying that the time spared on this behalf will provide more time to the patient and probably she will find other ways and procedures for thinking whilst acting.

The ward round is a 2 ¼ hour session that covers the visitation of 25 patients, which means that there is approximately 6 minutes in average for each patient. When everything is in place, concerning the paper journal before entering into the room there is very little time consumed in the handling of the papers and the journal, as doctor, nurse and patient are interacting and communicating for a relatively short period of time. It was the experience at the ward round before the trial EHR that the doctor would place the paper journal on the foot of the bed and move towards the patient and asks how she/he was doing. During the conversation the doctor would eventually pick up the journal and explain the more precise and quantitative aspects of the ongoing care and treatment. The bodily directedness of the doctor and the nurse was obviously interrelational, as they interacted with the patient and amongst themselves.

The last sequence deals with a visitation where the doctor and the nurse are totally engaged with the computer and hardly pay any attention to the patient. The wagon is rolled into the room and the doctor sits down in front of the computer. She is placed in a perpendicular angle to the patient lying in bed, very similar to the position she had before introduction of the new technology. But whereas the –paper journal was placed in the bed and only consulted a few times during visitation, then the slightly different position in the new set-up makes it so that the doctor is looking away from the patient and that the directedness of her body is turned towards the wagon and the computer. The doctor talks to the patient, but rarely looks at the patient, because she is busy typing and filling in columns and rows in the EHR. All the attention of the doctor is directed towards the virtual patient on the screen and she interacts with this patient; which of course is a representation of the patient, but only a partial and virtual replica of what/who is lying in bed. The nurse is bending over the shoulder of the doctor and never engages with the patient as she mutely and with hands folded on her back follows the occurrences on the screen. The example evokes the experiences of the Canadian philosopher and sociologist A.W. Frank as he fell ill and was treated in the Canadian health care system: "Real diagnostic work takes place away from the patient; bedside is secondary to screen side. For diagnostic and even treatment purposes, the image on the screen becomes the ‘true’ patient, of which the bedridden body is an imperfect replica, less worthy of attention. In the screen simulations our initial certainty of the real (the body) becomes lost in hyper-real images that are better than the real body" (Frank, 1991:83),
Figure 4: Conceptual sketch of how clinical actors are caught by the digital setting of the ward round (Botin, 2007). The patient is lying in bed on the left side, whereas the doctor and nurse are concentrating on the laptop on the right side. This was of course not the physical outline of neither subjects, objects nor space, but an interpretation 'in situ' of what was actually going on.

During the 1st and 2nd takes, it was observed that the staff of the ward was highly empathetic to patients, relatives and colleagues, which means that this absorption and negligence could only be ascribed to the technology and not to changes in their personalities. We feel assured that these findings would not have become apparent if the actors were asked to reflect upon this in questionnaires and interviews, and at the same time it is even unsure if the images shown to the staff made them reflect upon this. The force of the pictures is quite striking in this regard and the video observation looking into the directedness of bodies in time and space in order to gain knowledge concerning interaction and communication has shown potentials and qualities that complements and supplements other methods for observation.

**Video Used for the Act of Design**

In the hospital case described previously, the used method, video observation, originated from anthropology and it is inspired from the tradition, despite the favour for Personal Notebook approach. As illustrated, video from field studies provides a great resource of empirical material on users’ ways of working, social interaction, verbal as well as non-verbal communication for collaboration. Video is a powerful media for collaboratively agreeing on the problem at hand and how to see this. The anthropological field can be depicted as an approach towards understanding the world as it is, while design is a generative field aiming at understanding the world as it can become. Challenging common perceptions can be addressed with the methods inspired from anthropology, but reframing the perception and imagining innovative alternatives can be difficult to apply in these methods. Therefore the methods earlier described cannot stand alone, but should be supported by other more generative methods.

Typically, the phases after research dominated phase (i.e. video observation) are analysis and synthesis dominated phases. These are concerned with understanding the problem and generating ideas, developing these and turning them into first concepts and then actual products ready for
implementation. As Rittel has told us, wicked problems, which designers often work with, are understood as they are solved and solved as they are understood (Rittel, 1972: 394). Exploration of the problem at hand continues in the following phases along the actual product development.

Within design there a solid base of methods for the purpose of generating ideas exists, e.g. brainstorming, forced relation, sketching, model making etc. Methods like these are concerned with thinking out side of the box and breaking with conventional thinking. Combining an anthropological approach (understanding the world as it is) with the traditional brainstorming techniques (understanding the world as it can become) of the design practice can lead to situations, where the knowledge gained in anthropological analysis is to some degree lost when shifting to the more generative activities. Cutting to the essence of this problem is the mindset behind the activities. The human centred mindset applied in the anthropological inspired activities can be difficult to apply in the generative activities as these tend to be more occupied with what can be done, meaning applying a more technological mindset. This is the risk when practicing the “Video Brainstorming” method. It is suggested to go through the three phases:

“Step 1: Create ideas in an ordinary brainstorming fashion and list them on a flip sheet.
Step 2: Choose the most interesting ideas. The participants should go through the entire list of ideas before they cast their votes for the best ones.
Step 3: Act out the most promising ideas in an improvised way while recording them on video” (Ylirisku, 2007, p. 148).

Here the ideas come first – as something thought of, afterwards the ideas are experienced through the acting out. Roughly said this means that the ideas are not based on the human mindset, as through the bodily engagement this is involved merely as a means of illustrating the idea. Thought and body is separated. Instead this should be weaved together in the same activity. It is our experience that video brought into the generative activities as a sketching media and not just documentation media can help to maintain a human centred mindset in the idea generation. This will be exemplified through a student workshop case – the Ludinno Workshop.

Case II
Ludinno – Sketching with Video

The case is a workshop by the name Ludinno Workshop, which was held in Aalborg, Denmark, in September 2008. On a research level the exploratory workshop aimed at identifying and developing methods for user-driven innovation, and on the educational level the workshop aimed at teaching students a user-centred design methodology as well as participation in interdisciplinary collaboration. The workshop was founded by the Nordic Innovation Centre.

The Ludinno workshop was conducted over three and a half week involving students from various disciplines (industrial design, interactive media, experience design and physiotherapy) with a common interest in practicing with a human mindset. Mostly local companies had presented a case for the students to work with varying; from a project service for active addicts to support integration into the labour market to interaction design for controlling televisions and again to create involving museum environments.

During the project, field studies and several workshops between students and companies where facilitated before entering the third week of idea generation through video sketching.
How Video Supports Ideation in the Phase of Synthesis

Video sketching literally means sketching with video. In the workshop students were asked to use the video instead of pen and paper in their development of ideas. The students were taught different techniques, but not required to use certain of those, this was left optional due to the great variety in the cases addressed by the students.

One of the video sketching techniques used by the students was ‘Puppet scenarios’ (Ylirisku, 1997: 155). Here students worked with Lego figures as a mean to generate, test and discuss their ideas – and through the figures, the students facilitated generative “What if” discussions. With the use of figures, as a designer one looks upon the situations as they unfold on the basis of the ideas. These situations were recorded and manipulated with for instance Adobe After Effects as seen in the illustration above. This visualisation proved to be a valuable tool for discussion designers in between and between designers and their collaborative partners from the different companies.

Figure 5: Puppet scenario. The puppet scenario illustrates a transport information service for blind people.

While some of the students used puppet scenarios as a method others placed themselves in front of the camera and acting their ideas. Here, the method Bodystorm (Burns, 1994) was inspirational.

“Briefly stated, the method [bodystorm] is as follows: Before a bodystorming session, a preliminary observation and documentation is conducted [this was done through Video Card Game (Buur 2000)]. From the documents, interesting phenomena are selected and edited into easily readable design questions (see Fig. 2). A design question represents the phenomenon as a problem in the events, experiences, and/or practices of users. Participants go to a representative environment, e.g. if studying shopping malls, designers will go to a representative shopping mall. One design question at a time is given to participants. The attempt to solve the problem occurs in a place where the phenomena (or parts of them) are directly observable. This is in direct contrast to what we call here ‘traditional’ brainstorming, which is conducted in office environment unrepresentative of the studied environment. In some cases, to encourage further re-enactment, participants in a bodysession are not just passive observers but are asked to act out the activities. Generated ideas are recorded on-site and later discussed and elaborated in groups” (Oulasvirta, 2002: 126).

In the workshop, a group of students was working on new television interaction styles. The students arranged a living room setting in the study and used these facilities for idea generation, testing and evaluation. Here the students e.g. explored the social experience of watching television together, and how this “social-ness” was affected when two persons or more were watching two (or more) different
transmissions on the same screen. Another idea they explored was creating a ‘lenticular’ or ‘hologram’ where two people could observe two different transmissions simultaneously on the same screen. The students also addressed the direct interaction between the viewer and the television. Here they found that pressing buttons was a poor interaction style and instead they set out to explore new interaction styles that respected the advanced motor-skill of people.

Figure 6: Video Sketching. Students investigating the social-ness of watching television together and exploring new interaction styles for television

In the concrete example the students were recording their acting out of concepts in the physical setting on video. Afterwards the video was manipulated with television transmissions to match the actions taking in the setting. This acting out approach to video sketching allows designers to enter into reflective dialogue (Schön, 1992) with the problem at hand. By actively and bodily involving themselves in the bodystorming they bring their embodied knowledge into play. Gedenryd addresses the phenomena from a psychological perspective as he argues:

“When action makes use of some piece of knowing, it is at the same time a test of that knowing…. This dual purpose of action deviates from the ordinary, common sense view where action is associated with only one function, which is to produce a certain result…. Use & test, and the dual purposes, are not separate components that mix and together become inquiry. Rather, they are different types of effect of the same single action or activity, facets which become visible by taking different perspectives or points of view.” (Gedenryd, 1998: 85)

By bodystorming and recording the activities the students could enter the reflective dialogue where they brought their perception and knowledge into the actions, while challenging and testing these perceptions and the knowledge simultaneously. Through this activity, reframing their perception of a problematic situation motivated a generative approach allowing ideas that would alter the situation towards a desired one. Video sketching is an empathic approach to generating ideas and forming concepts; therefore it is a truly user-centred design method.

How Video Supports Concept Communication

When developing concepts, products and services it is common to communicate the state of the project (progression) and give indications of ideas or show representations of the matured concepts to stakeholders and sometimes even to the managing board. Communication can be difficult especially when communicating fluffy ideas and concepts in which the value emerge over time as e.g. the
experience often does when interacting with products. Blueprints and technical drawings might tell us how it will function on a technical level. It is however more difficult to communicate emotional, social and cultural aspects of the given concept. Unfolding these questions as how the given concept is experienced in use? And how the concept suits the given culture? And eventually how thereby the concept becomes valuable to people and thereby is liable to change the way they live and have a social economic effect, which means holding a potential to become an innovation.

It is of significant importance to consider concept communication for stakeholders to fully understand the concepts in relation to the emotional, social and cultural aspects. Here, verbal presentation supported by acting out and drama has shown to be a constructive approach. This type of concept presentation works because it allows the audience of stakeholders to experience the concept and thereby it is easier for them to relate to the dimensions of concept. Other presentation techniques hold the same qualities, e.g. interactive prototypes and to some degree mock-ups. The problem with these presentation techniques is that they often are bound to place and time and is therefore an in-situ experience. This means that only the experience can be brought from there to be referred to when discussing the concept with for instance other stakeholders. On this basis and with the learnings from Video Sketching on idea communication a script for concept communication on video was developed and given to the students involved in the Ludinno workshop.

The script for the concept communication proposed an overall structure of firstly, a framing of the problem or opportunity addressed with video material from the anthropological study, secondly small sequences from the video sketching and lastly the final concept. It was required from the students that the Video concept presentations should be able to ‘stand alone’ and thereby be shared among people of relevance to the project in such a manner that the message got through and lead to action.

Knowing something always leads to action. One would expect that knowledge in the end will lead to action, but it is not always so. Types of knowledge are not specified, explicated, institutionalized and for this reason remain ‘invisible’ in the organization. This does not mean that actions and routines are not performed in accordance to this tacit/blind knowledge, but it is rarely (if ever) accounted for or developed upon dealing with the organisation. Video observation and analysis are interactive technologies that could intermediate knowledge and action in order to make this relation become visible and audible. The moment the ‘evidence’ is to be seen and heard, then actions based on creative and tacit knowledge can be verified and validated upon.

Conclusions
Through this article, it has been exemplified and discussed how video can support design, and especially user-centred design, activities in the earlier, fuzzy and challenging phases. Focus has been on the qualities of video in video observation, analysis as well as a media for idea generation and concept communication.

*Only* film or video can record the realism of time and motion or the psychological reality of varieties of interpersonal relations ... In anthropology film or video is not only the complete way of recording choreography, but also the most direct way of analyzing communication, dance, or ceremony, where so
many elements are in motion together. In this situation human memory and notebook recordings become wholly inadequate and highly impressionistic. The special value of film lies in their ability to record nuances of process, emotion, and other subtleties of behavior and communication…”

(Collier & Collier, 1999: 144)

Video has been used on a number of occasions and in various settings in analysing work and design procedures in the Danish hospital and educational system. The videos recorded in the hospital focussed on the situation at the work-place before and after the implementation of a trial electronic health record and showed indisputable qualities for what concerns measurable issues like time and space. It was registered how procedures were influenced by the new technology and that the consumption of time in interacting with the new technology was considerably higher than estimated.

Video has, as such, qualities in registering quantitative aspects of work-procedures and we think that these quantitative aspects have been ignored in considering the potentials of video. The major reason for this ignorance should probably be found in the reluctance and suspicion that the media evokes in relation the matters like supervision and registration.

We have concluded that video has a much higher impact on the receiver than written conclusions made on behalf of questionnaires and interviews. The edited recordings are met with immediate reactions on both a reflective and emotional level. And it is the latter mode and content of reaction, which is the most interesting in this type of video recording. The emotions that are transferred from the situations through the media to the audience have to be elaborated and accounted for as video has been implied as a research tool.

On many occasions the personal and emotional part of the video registrations have been dealt with in a rather clumsy and to our best opinion inappropriate way. Often we witness how actors are blurred or their eyes are disguised with a black bar, or other similar interventions made in order to create a distance and anonymity of the registrations. In doing this, An important and vital quality of video has been lost and we are left with the mere quantitative potentials of the video. The blurred, barred and anonymous character in the recordings blocks our capacity for empathy and understanding through reading of facial expressions and we are left with the actor’s body as a machine that covers chronological time and Euclidian space.

The case on Ludinno showed that idea generation in design sketching is a quality that video in many ways is capable of promoting and supporting, and video enframes the body and bodily communication as more than axiomatic and mechanic.

Video in research and design is a hybrid technology, a chimera that builds on both quantification and qualification. We think that the hybridity of the technology should be taken seriously and that the potentials for measuring and for capture of emphatic social interaction (thick description) should be aligned and accounted for as the tool is implied in analysis and design.

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