

DESIGNING FOR INQUISITIVE USERS: A PRAGMATIST PERSPECTIVE ON USERS IN EXPERIENCE-ORIENTED INTERACTION DESIGN.

BY PETER DALSGAARD
INSTITUTE OF INFORMATION AND MEDIA STUDIES, UNIVERSITY OF AARHUS
AARHUS, DENMARK
TEL: +45 89429285
DALSGAARD@CAVI.DK

Design Inquiries 2007 Stockholm www.nordes.org

1

This paper presents a perspective on users of experience-oriented interactive systems based on a pragmatist foundation. The perspective is characterized by the interrelated aspects of experience, inquiry, and conflict. The consequences of this perspective for understanding users in the design of experience-oriented interactive systems are discussed on the basis of case-studies of two Nordic experience-oriented installations. The contribution of this paper is a critical reconceptualization of users as inquisitive co-creators of interactive experiences, and reflections on consequential design implications.

INTRODUCTION AND BACKGROUND

The ways in which interaction designers conceptualize the users of their future products have wide-ranging consequences for the design processes they engage in and the systems or installations that result from these processes. These consequences concern how to learn

about users and the use domain, how to engage users in the design process, how to establish specifications and requirements, how to structure user interfaces as well as underlying structures, and how to present interactive systems to users. In this paper I will present a perspective on users based on a pragmatist foundation inspired by the work of Dewey (Dewey 1969-1991). This perspective considers users as inquisitive and competent actors, capable of exploring and experimenting with interactive systems in the course of their experience of them. The primary motivation for bringing forth this perspective is the emerging interest in experience-oriented dimensions of interactive systems, which prompts an increased understanding of how users experience, make sense of, and explore interactive installations. In interactive systems design, methods and techniques based on cognitivist understandings of users' capabilities (eg. Miller 1956; Card, Moran & Newell 1983) which initially dominated the field have been challenged from a number of positions, not least from Scandinavian approaches to interaction design. One source of inspiration for exploring the pragmatist perspective is Gedenryd's thorough critique and debunking of the cognitivist perspective underlying these theories (Gedenryd 1998). Gedenryd argues that an understanding of the potential of human actors should not be reduced to "the study of human mental

imperfection”– rather, human potential is characterised by the fact that we constantly interact with and exploit our bodies and the situations we are in to complement and enhance our intramental (ie. mental cognitive) capabilities. Competent actors will “go out of their way to avoid intramental thinking” (Gedenryd 1998) and employ so-called *situating strategies* in which the full range of the situation – actors’ minds and bodies, co-present actors, physical surroundings etc. - is explored and exploited to meet desired ends. Gedenryd’s work raises many questions for interactive systems design, of which this paper will address one: what does it mean for designers of interactive installations to conceptualize users as inquisitive and capable actors? It is not the objective of this paper to engage in a discussion of the relevance of the above-mentioned cognitivist approaches, but rather to suggest that in some design cases, especially in experience-oriented design situations, it can be fruitful to reconceptualize users as capable of much more than intramental computation and interested in much more than straightforward and easily recognizable interactive encounters.

The position put forward in the paper is one that encourages conflict, challenges, and risks in experience-oriented installations, prompting users to adopt an inquisitive approach and actively engage the installations. The rationale for designing challenging installations is that users’ inquisitive engagement may bring about more fulfilling experiences. This position somewhat echoes Rogers’ (Rogers 2006) recent proposal to move “from a mindset that wants to make the environment smart and proactive to one that enables people, themselves, to be smarter and proactive in their everyday and working practices” (Rogers 2006 p. 418).

Based on the work of Dewey, I first present a pragmatist perspective on conceptualizing proactive and inquisitive users based on the interrelated aspects of *experience*, *inquiry*, and *conflict*. This perspective is then explored and discussed through two case studies of experience-oriented interactive systems, leading to considerations about future work.

A PRAGMATIST PERSPECTIVE ON USERS

The pragmatist perspective put forward here is primarily inspired by the work of John Dewey. Pragmatism, a movement consisting of related though not fully congruent theories, was established by Charles Sanders Peirce, William James, and Dewey

(who incidentally all objected to the label pragmatism) and is so labelled due to the assertion that the meaning and “truth” of ideas is to be determined on the basis of their practical implications. The scope of this paper only allows for a cursory treatment of a few pragmatist concepts, as the collected works of Dewey alone are comprised of no less than 37 volumes on issues including education, art, experience, democracy and more. The three interrelated aspects that I put forward are thus presented due to their relevance to the matter at hand, namely the understanding of users of experience-oriented installations as inquisitive co-creators of experience.

FIRST ASPECT: EXPERIENCE

When speaking of experience-oriented applications, it is pertinent to first establish an understanding of the meaning of experience. Dewey makes a clear distinction between *experience* and having *an experience* (Dewey 1934, Dewey 1938). Experience is a continuous and ubiquitous aspect of human existence, a flow that binds together all situations we encounter. This continuity means that “every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after.” (Dewey 1938 p35) When speaking of experience-oriented interactive installations, the concept of *having an experience* is perhaps more to the point. These are specific, discrete experiences that may have an aesthetic quality – making them so-called aesthetic experiences - when past experiences and present circumstances converge in a way that creates an immediate sense of meaning and fulfillment; or they may be problematic experiences that require inquiry and action if they are to be overcome and transformed. These two ways of having experiences may be confluent in that the overcoming of problematic experiences may prompt aesthetic ones. The concept of pragmatist aesthetic experience has recently been the subject of several contributions to the field of technology design and studies, including (McCarthy & Wright 2004; Petersen et al 2004). Central to experience is interaction, understood as the ongoing interrelations between the experiencer and his/her circumstances: the flow of experience incessantly influences the experiencer, who may in turn interact with the circumstances in order to pursue certain experiences. When trying to establish an understanding of users of interactive systems, the concept of experience has several implications: The continuity of experience means that designers have to think about the integration of their installation not just into the flow of physico-spatial surroundings, but also into the flow of users’ experience, to the extent that this is possible. The potential of

invoking aesthetic experiences for users prompts explorations into what may constitute such experiences, and how they may be brought about through the flow of interaction. The concept of problematic experiences further prompts explorations into whether such situations may be desirable, given that they may ultimately lead to aesthetic experiences, and how they may be designed.

SECOND ASPECT: INQUIRY

Inquiry is a certain mode of human experience prompted by encounters with problematic situations. The notion of a *situation*, in Dewey's terms, is holistic and systemic since "we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a 'situation'." (Dewey, LW12:72) Situations are problematic when habitual responses do not lead to desired ends. In such cases, we try to reconstruct the situation to allow for us to achieve the desired ends through simultaneous thought experiments with and articulations of what it is that makes the situation problematic. We then hypothesize about the potential consequences of reconstructions before we try them out in action, if we deem them adequate. This process is often one of iteration in that we imagine and/or try out a number possible ways of reconstructing the situation, all the while re-evaluating the way the situation talks back to us in our interaction with it. The resolution of a problematic situation may involve the transformation of the inquirer, the circumstances, or both (which together comprise the situation). As with experience, interaction is an important component of inquiry in the reciprocal relation between inquirer and circumstances. This process is likely familiar to some interaction designers through Donald Schön's work on situational back-talk and design as reflexive practice (Schön 1983), which is heavily inspired by Deweyan pragmatism. In terms of designing experience-oriented interactive installations, the concept of inquiry posits users as capable of adopting an inquisitive mindset when confronted with extraordinary situations and capable of employing situating strategies (Gedenryd 1998) in order to navigate them.

THIRD ASPECT: CONFLICT

Conflict is what prompts an inquisitive attitude, drives our engagement with situations, and leads us to learn:

"Conflict is the gadfly of thought. It stirs us to observation and memory. It instigates to invention. It shocks us out of sheep-like passivity, and sets us at noting and contriving. Not that it always effects this result; but conflict is a sine qua non of reflection and ingenuity." (Dewey, MW14:207)

Conflict is not positive and fruitful in all situations, and it may be detrimental to future experience and cut off intended courses if not resolved; however, it is a necessary catalyst for bringing about genuinely new types of experiences through inquiry. In order for a conflict to be perceived as such, there must be something at risk; to quote author Douglas Coupland: "Adventure without risk is Disneyland." (Coupland 1991).

Conflict is not always a preferable property of interactive systems, eg. in designing for the workplace it may be detrimental to the use of the system. For the design of experience-oriented interactive installations, however, conflict is a critical and somewhat ignored aspect that can be at odds with traditional methods and techniques that strive for ideals of transparency, usability, and user-friendliness. Integrating the concept of conflict in interactive systems design implies exploring ways of challenging users in ways that may ultimately hinder them in successfully using the systems, lest there be nothing at risk and thus no real conflict.

In order to explore interrelations between these three concepts and their implications for understanding users in the design process, I will introduce two case studies of Nordic experience-oriented installations, namely *Balder's Funeral Pyre* and *Silence and Whispers*.

FIRST CASE: BALDERS FUNERAL PYRE

Balder's Funeral Pyre is an installation at 7th Heaven, a center for children's literature. It is co-created by the author at the Center for Advanced Visualization and Interaction (CAVI), at the University of Aarhus. The objective of 7th Heaven is to pique visiting children's interest in literature by introducing them to various Nordic story universes in playful and engaging ways, but without retelling stories word by word. This strategy is specifically aimed at making children further explore the stories themselves after visiting the center. The story of Balder comes from Norse mythology, in which the death of the god Balder marks a dramatic narrative event: Balder is killed by the deceitful half-god Loki, and this spells the beginning of the end of the mythological world, culminating in the apocalyptic Ragnarok that lays waste to the heavens and the earth. At his funeral, Balder's body is placed upon a ship that is ignited and set off to sea.



Figure 1: Design discussions around Balder's Funeral Pyre

The Balder's Funeral Pyre installation is a 7 meter long and 1.5 meter wide corridor, in which one of the sides is rear projection of fire. The fire is digitally produced using a particle system with images of fire, which together with pressure sensors in the floor enable interaction with the fire. When no one is in the corridor, the flames simmer near the floor, but when someone enters the corridor, a fire shoots up at their location. As the person proceeds down the corridor, the growing fire appears to envelop them. The software controlling the interaction has built-in delays, to prevent the awareness that the person experiencing this is in direct control of the fire.

SECOND CASE: SILENCE AND WHISPERS

Silence and Whispers is a conceptual installation created by four PhD students, including the author, at the Nordes 2006 Summer School in Helsinki. The installation was designed on Suomenlinna, a series of interconnected islands in the Helsinki harbour entrance. Suomenlinna served as a fortress and detention camp from 1748 until the end of World War I, but it is now inhabited, and many Helsinki residents come to the islands to relax and get away from the city.

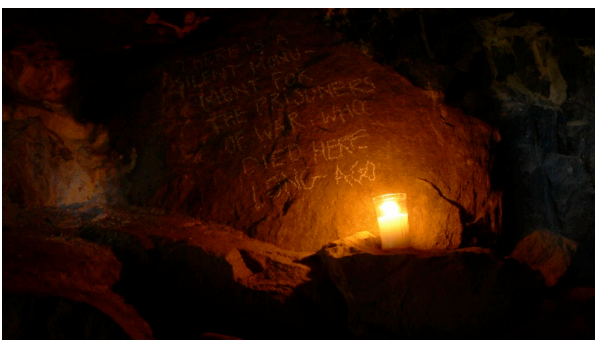


Figure 2: Stories written in chalk in the Silence and Whispers cave

The Silence and Whispers installation collects and

conveys stories from the subconsciousness of Suomenlinna. Near King's Gate on the southern island, Gustavssvärd, whispers emanate from a dark cave. As visitors step inside the cave, they hear audio fragments of sinister stories and legends from Suomenlinna. These stories, collected from resident islanders, tell of events and myths not presented in the official documents. In addition to the audio fragments, stories and rumours are written in chalk on the cave walls. Some of these stories are similar to the audio fragments. The further you move into the darkness of the cave, the more sinister the stories. In order to view the gloomiest stories, visitors can light matches to reveal them in short glimpses. Pieces of chalk are left in the cave, and visitors can write down their own stories. In this way, the installation will evolve and expand over time as old stories are erased or washed away and new ones are added to the cave walls.

DISCUSSION: THE PRAGMATIST PERSPECTIVE ON USERS EXPLORED THROUGH THE CASES

In the following, I will discuss how the interrelations between experience, inquiry, and conflict played out in the design of Balder's Funeral Pyre and Silence and Whispers. I will discuss each case individually, followed by reflections on the further implications of the pragmatist perspective on inquisitive users.

During the initial concept development phases of Balder's Funeral Pyre, we (the designers at CAVI) in collaboration with 7th Heaven formulated three core experiential values to be conveyed by the installation: *Solemn mood*, *Deliberate slowness* and *Room for reflection*. These values emerged during joint design sessions, including initial brainstorming sessions and inspiration card workshops (Madsen & Dalsgård 2006). The values address the aspect of experience in a way that emphasizes the interaction between users and installation seen as a situated whole: Through deliberate slowness in the interface and by providing room (both physically and mentally by the placement of the installation in the 7th Heaven center), users hopefully feel the solemn weight of Balder's story and wish to stand and reflect upon it – and hopefully revisit the story later and continue the experience of Norse mythology. These considerations turned into practical implications for design in the light of the aspects of inquiry and conflict.

We sought simplicity in the visual expression, opting for a black display with fiery imagery, supplemented by audio tracks of bonfire mixed with sounds of creaking wood and waves crashing onto a ship. A more complex

visualization, with dissolving imagery from Norse mythology, was discussed and discarded, since it would not leave enough room for reflection. Several prototypes were tested with children as subjects. Among these was a version that was initially more popular than the one we eventually settled on. The popular version had very drastic fiery explosions that responded immediately to children's movements and interaction and very much encouraged playful interaction from the children who would run down the corridor, playing and hooting; this version was recognizable to the children as something out of a computer game or an action movie, according to their responses. Thus, opting for a quieter and ultimately more demanding version that only revealed itself through a longer duration of engagement and inquiry (which interaction-wise was done by introducing delays and visualizing slowly emerging fires around users) turned out to pose more of a conflict to the children, in that they experienced it as something new, somewhat frightening and definitely extraordinary. The decision to implement this version however meant that not all children would experience the same things – some were too frightened and hurried through the corridor, others were too impatient and moved along before the installation revealed itself to them.

The Silence and Whispers installation was developed much more rapidly than Balder's Funeral Pyre since it was a design experiment rather than a finished product, and the use of interactive systems in the installation is restricted to playing back pre-recorded audio narratives. Given more time, we would have liked to present visitors with ways of verbally narrating their own stories as parts of ongoing audio collections to be played back in the caves.

The experiential aspects of Silence and Whispers are directed towards creating aesthetic experiences, in that we intentionally presented visitors with snippets of narratives, both audiotively and visually, that have stereotypical traits. Eg. an audio track would tell of the silhouette of a strange man that lurks around the island, scaring children, and written in chalk is a snippet of a story about a girl who fell down the rocks outside of the cave. Although these were real events from Suomenlinna, we deliberately cut them to a level of generalizability so as to couple visitors' physical inquiry (ie. moving through the caves) with a mental state of inquiry by inviting them to "fill out the blanks" in the narratives by coupling them to their own previous experiences and preconceptions. These deliberate omissions and fragmentations also posed

visitors with a manner of conflict, in that the narratives were not necessarily resolved, but rather called upon the visitors to find out how they might conclude, either by finding other fragments and snippets by navigating the caves and the soundscape, or by making them up themselves.

The installation was intended for an adult audience, but even so many users found it more frightening than Balder's Funeral Pyre due to the fact that it was situated in caves that for a large part were completely dark, save for a few flickering candlelights illuminating select narrative fragments. The installation requires an active intent on the side of the visitors if they are to get anything out of it. However, this expressed commitment and engagement, we believe, will lead to a greater feeling of fulfillment and potential aesthetic experiences when visitors interact with the installation.

It should be noted that we (the designers) do not conceive of the installation as a finished product, rather we view it as an experiment that will on the one hand elicit more stories about Suomenlinna, on the other hand provide empirical data about how an auditive and physical narrative space frames visitors' behaviour, experiences and desires to express narratives themselves.

CONCLUDING CONSIDERATIONS AND FUTURE WORK

Based on Deweyan pragmatism, this paper has presented a perspective on users as inquisitive co-creators of experience in interactive installations. This perspective is characterized by the three interrelated aspects of experience, inquiry, and conflict. It is a perspective that encourages interaction designers to regard users as proactive and capable of finding ways of making sense of installations that are not self-evident in their structure, presentation, or operation.

The perspective is pervaded by interaction. In a pragmatist understanding, the notion of interaction goes beyond that of a computer responding automatically to given types of input – it rather denotes a systemic understanding of the reciprocal relationship between experiencer and circumstances in a situation. This is intrinsic to understanding the way that inquisitive experiencers co-create experiences, and it mirrors Dewey's understanding of the *work of art* (as opposed to the static *art product*) (Dewey 1934) as a reciprocal relationship between an expressive artist and an appreciator who actively assimilates the art product: "The work takes place when a human being cooperates

with the product so that the outcome is an experience that is enjoyed because of its liberating and ordered properties.” (Dewey 1934 p214)

The pragmatist perspective I have presented is not thought to replace traditional conceptualizations of users; it is rather a critical attempt to challenge the views on users that reduce them to intramentalist computers incapable of employing bodies and circumstances in situating strategies for experiencing and inquiring, and devoid of aesthetic aspirations. The pragmatist perspective presented here is one that emphasizes participation, engagement, and risk with the promise of greater rewards and extra-ordinary interactive experiences.

The paper represents an initial approach to formulating a pragmatist perspective on users, and it is in need of further elaboration and empirical explorations. The two cases are examples of quite different types of experience-oriented installations, their main common denominator being that they are intentionally designed to challenge users. This implies respecting users and their competencies. Many interaction designers turn to Schön (Schön 1983) to understand their profession and develop an understanding of themselves as reflective practitioners, capable of reflective inquiry engaged in iterative explorations through situational back-talk. I propose that we think of the users of our systems equally capable.

ACKNOWLEDGEMENTS

Many thanks to Louise Aagaard, Maiken Fogtmann, and Jacob Kreutzfeldt for a great time working on Silence and Whispers, and to Maria Hellström and Ilpo Koskinen for arranging the Nordes Summer School. I would also like to thank my colleagues at CAVI who took part in the creation of Balder’s Funeral Pyre, and Professor Kim Halskov with whom I have previously written about the project. Balder’s Funeral Pyre is part of a project funded by It-korridoren (j.nr. 63499).

REFERENCES

Card, S.K.; Thomas, T.P. & Newell, A. (1983)
’The Psychology of Human-Computer Interaction’,
London: Lawrence Erlbaum Associates

Coupland, D. 1991,
’Generation X: Tales for an Accelerated Culture’

Dewey, J., 1934,
’Art as Experience’
Perigee Books

Dewey, J., 1938,
’Experience and Education’
Simon & Schuster, New York

Dewey, J. 1969-1991,
The Collected Works of John Dewey’ (Ed Boydston, J. A)
Southern Illinois University Press.
(Standard references are to The Early Works (EW), The Middle Works (MW), and The Later Works (LW). In citations volume and page number follow these designations.)

Field, Richard (no date available)
’John Dewey’, Internet Encyclopedia of Philosophy
<http://www.iep.utm.edu/d/dewey.htm>

Gedenryd, H. 1998,
’How Designers Work – Making Sense of Authentic Cognitive Activities’
PhD Dissertation, University of Lund, Sweden.

McCarthy, J. Wright, P. 2004,
’Technology as Experience’
MIT Press

Madsen, K. H. & Dalsgaard, P. 2006,
’Inspiration Card Workshops’, *Proceedings DIS 2006*.

Miller, G. A. 1956.
’The magical number seven, plus or minus two: Some limits on our capacity for processing information.’
Psychological Review 63, pp.81–97.

Petersen, M.G., Iversen, O.S., Krogh, P. and Ludvigsen, M. 2004,
’Aesthetic interaction’, *Proceedings DIS 2004*, pp. 269-276.

Rogers, Y. 2006,
’Moving on from Weiser’s Vision of Calm Computing: Engaging UbiComp Experiences’, Dourish, P. & Friday, A. (eds.) *Proceedings UbiComp 2006*.

Schön D. 1983,
’The Reflective Practitioner.’
MIT Press, Cambridge, MA.