

Where are the Ionians of User Experience Research?

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ABSTRACT

The paper discusses about the attempts to clarify and define the concept of User Experience, using the difference between Babylonians and Ionians to astronomy as a parable. According to paper, the effort in UX research may be too heavily directed towards immediate practical usefulness, and suggests that there is a need for a complementary conceptual-theoretical discussion.

Author Keywords

Theory, empirical research, usability, history

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION: DEFINING USER EXPERIENCE

User experience (UX) as a term has emerged into HCI discussions around the change of the millenium, and since then it has gained more and more acceptance, use and momentum, becoming one of the central topics of HCI. A series of conferences (DUX) has been founded around it, and it is perhaps characteristic that even within a rather small Finnish HCI community half a dozen PhD theses on UX have been produced during the last years.

Despite this interest there is no commonly agreed definition what is the content of the concept of user experience. According to [8] a multitude of different models on UX have been developed, but none of them has gained any wider acceptance, and her view towards them is quite skeptical: "From the practitioner's point of view the current definitions have only a relative value; they may build the framework in research area, but do not offer ways to create proper tools that would help in building and evaluating user experience"[pp. 22-23]. Kaikkonen gives 5 examples of models, and they seem mostly consist of different features

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affecting UX. The selection of these features has been based more on practical considerations than on theoretical analysis; in Kaikkonen's analysis only one background theory is once mentioned.

This kind of state of affairs within a field of research is naturally quite unsatisfactory, and there is an active subcommunity within HCI working on systematising and conceptualising the heterogenous UX field. It has organised special interest groups, workshops and panels for that purpose in many recent conferences, such as NordiCHI '06, HCI '07, CHI '08, CHI '09, and INTERACT '09. The next step in this development will take place in Autumn 2010 in the form of a Dagstuhl seminar, where thirtysomething invited UX experts will gather "to focus and identify the core concepts of UX" (excerpt form the seminar invitation material), and the organisers have produced a "white paper" on UX to serve as a starting point [14].

Interestingly enough, this paper does not discuss about any of the mentioned models and definitions already developed by the UX research community, except by mentioning that there are many of them. Neither does the white paper refer to any background theories or models or even to a possible need for them. There is also a preliminary task assigned to the participants before the seminar, the purpose of which is to collect insights on user experience to be used as a source material for consolidation. This will happen by using a method called Conceptual Analysis, which "works from a shared consensus on the key attributes, illustrative examples, and non-examples at play in order to build conceptual consensus" (excerpt form the seminar invitation material). So the development of core concepts is expected to take place inductively, based on the empirical material which will be the opinions of the paperticipants.

These white paper and preparation task for the workshop put me into a contemplative mode. By no means is my purpose to scorn or belittle the honest and legitimate efforts of the organisers, far from that: I eagerly accepted the invitation to the seminar myself. But I was lead to ask, if this consolidation of personal, practice-grounded opinions is really the way to define what user experience means. Is the more theoretically oriented research on human experience this far so poor and the models developed so bad, that nothing can be learnt from them? And is there a real reason not to look towards any existing research and

other background theories and models beyond HCI? And then another story, that of Babylonians and Ionians came to my mind.

EMERGENCE OF SCIENTIFIC ASTRONOMY

In his classical book on scientific thought, *Foresight and Understanding* [16], Stephen Toulmin uses as an example the difference between Ionian and Babylonian science around 400-600 B.C. Both of them contributed to the creation of scientific astronomy, but in a very different ways. Babylonians were masters in calculating the times and dates of astronomical events, and their mathematical command of celestial phenomena was far ahead of Ionians. But, to our knowledge, they achieved all this without any theory how the heavens are constructed and working. They computed the celestial motions in a purely arithmetical way: first by a painstaking empirical observation and data collection of what was happening, grouping similar things together, and then analysing each of the motions separately using a long series of observations, and searching for a regular predictable patterns. When these were found, it was possible to combine the individual variables and find lunar eclipses, for example. Babylonians succeeded in expanding this kind of analysis to the movements of the major planets, a feat unsurpassed for next eight hundred years or so.

On the other hand the early astronomy of Ionians was not interested in calculations, but it consisted almost entirely of speculative theorizing, where all kinds of analogies were used to create a system how heavens are constructed and work. Ideas such as circular tubes full of fire, with small holes visible as stars, lumps of flaming rocks, non-luminous, invisible bodies obstructing the light of the Moon, and so on. No system capable to any prediction was possible to be based upon these ideas. These crude models were, however, the starting point for the continuing development of a quite sophisticated and adequate mechanical model of heavens, completed eventually by Ptolemy. So Babylonians were empirists, who valued prediction and usefulness over understanding, while Ionians were theorists who went after explanation and understanding, even at the cost of practical uselessness.

With the example Toulmin wants to make a point that in science, prediction and understanding do not necessarily go hand in hand, but they represent rather different approaches to issues, and that currently it is expected that scientists must combine both approaches. Both Babylonian and Ionian contributions were also finally needed for the scientific astronomy to get started: there was a limit, beyond which it was not possible to push the empirical forecasting without any systemic modelling; but without the empirical evidence it was not possible at all to test the validity of any theories.

It is not farfetched to think, that the organisers of the Dagstuhl seminar are now leaning towards the Babylonian way of doing research: a careful collection of observations, and then finding common patterns among them. A

legitimate effort indeed, one that could be called the initial categorization of facts in the absence of a theory. But where are the Ionians of UX? Their voice seems to be so feeble that it is not heard, certainly not enough to be answered and refuted, for example. Interesting situation, and worth of a small historical detour.

BABYLONIANS AND IONIANS IN USABILITY RESEARCH

If we look 25 years back in the history of HCI, an interesting parallel situation can be found, albeit in a reversed form. HCI in its current form emerged in 1980s as an answer to the needs of rapidly expanding PC market. Earlier, with larger computer and software installations, a final training and installation phase had been vital for success, and often some roughest edges of new software were also polished off during this step. The commercial success of PC had opened mass markets for PC software, but with a condition that they must be usable “off-the-shelf”, without any such special training. This is still a relative tall order, and despite the currently available guidelines and usability techniques many software vendors are still struggling with it; quarter a century ago nobody knew how it could be achieved.

HCI of the 1980s was a struggle to get a handle of the situation, and Babylonians and Ionians can again be identified in the discussions – only their roles are reversed: there was plenty of Ionians and only a few Babylonians. In the middle of 1980s the information processing variant of cognitive psychology was the dominant school of thought in psychology. It forms a good base for modeling, and the development of such models to understand use situations was a prominent thread of HCI research at that time. In the beginning the tone of research discussions was optimistic: for many the practical challenge was helping not only to develop better computer systems, but also better models and theories for cognitive psychology. Ionians were leading the way with their models, and empirically oriented Babylonians coming from industry were only able to make somewhat bitter comments:

“We invite the authors [of this volume] to observe some people doing real work and try to do this with as few theoretical preconceptions as possible, following a hermeneutical approach: We predict that they will find a rich set of observations and questions, which could serve as the basis for further modeling and theorizing”[17, p. 357.]

Over the course of the 1980s the initial optimism faded. Some success had been achieved within special limited areas, but in general the Ionian approach to HCI of 1980s did not deliver the goods needed. Too many features of real life had to be abstracted out to make the models and theories applicable, and then the practical usefulness of the results was seriously limited. So the demand for more Babylonian approach grew louder and louder:

“For the most part, useful theory is impossible, because the behavior of human-computer system is chaotic or worse, highly complex, dependent on many unpredictable variables, or just too hard to understand. Where it is possible, the use of theory will be constrained and modest, because theories will be imprecise, will cover only limited aspects of behavior, will be applicable only to some parts of some systems, and will not necessarily generalize; as a result, they will yield little advantage over empirical methods.” [11, p. 60].

Towards the end of the 1980s the perhaps inevitable happened: practical methods for usability design and testing had matured in industry (IBM & Digital) workshops, they were able to deliver good enough goods for practical design, and Babylonians took over. Usability became rapidly the leading concept in HCI, and it took the HCI community by storm. Nobody was anymore interested in theories and models, and those Ionians who did not change over withered slowly away. In the fringes, small groups continued to experiment with new post-cognitivist theories [10], but they did not have large audiences nor have they had much influence on UX research.

The last 20 years of usability research have been an unquestionable success: methods for design and testing have continuously improved, and technology development has brought forth new problem frontiers to be solved (GUI, WWW, mobile devices). The success of usability has been the major factor in the growth of the HCI community and increased visibility of its research. The only limitation has been the finding, that usability – as practical and useful it is – cannot really be used to sell products. And this has become a certain problem, when the focus of HCI research has during the last decade moved from initial mandatory work-oriented systems towards discretionary use [6]. Therefore the need for a new concept, user experience: something that can be measured and used in predicting how well does a product sell.

Thus the UX research of today has two strong reasons why to lean towards a Babylonian approach: first, the whole mainstream HCI tradition and its cornerstone usability has done decades extremely well without fussing about models and theories. For younger members of the community who have grown into research during the period this may well be a fact of life, and those who still want to mess with theories look like freaks. Secondly, it is exactly the Babylonian properties of prediction and practical usefulness that are needed: who is really interested in explanations? Small wonder if researchers are at least tacitly if not openly agreeing with the Landauer coda above [11], written almost 20 years ago.

DISCUSSION

I have nothing against prediction and better methods: practical usefulness is a major driver in our research, and advances are impossible without empirical experimenting and testing. But, as Toulmin points out, prediction and

practical usefulness, and explanation and interpretation are not competitive but complementary approaches to knowledge. If we focus only on practical usefulness and exclude explanation and interpretation, we do serious harm to our very nature as researchers. The purpose of research – at least the research done in universities – is to develop better understanding of the world around us.

The people who have organised and participated the series of events to define UX are without doubt most active and dynamic members of the UX research community. I wish all success to their efforts (and hope to be a useful member of the Dagstuhl event myself). But besides trying to squeeze out the last drop of evidence from empirical observations, and generalisations I feel that there should also be a complementary conceptual and theoretical debate on the issue, and this is currently lacking.

There should be no shortage of voices in such a debate. First, there are those fringe post-cognitivist theories on HCI, whichever is their orientation, anthropological [15], phenomenological [5], or activity-theoretical [9], they all should have something to say about experience. Besides them we have also a number of philosophers and psychologists who claim to have something to say about human experience. Pragmatism has had a strong interest in experience, and both William James [7] and John Dewey [4] have well-developed conceptions on experience. Mihaly Csikszentmihalyi has written several books about experience [2,3] and Middleton & Brown have formulated a perspective on experience from a social psychological point of view [13]. It would be high time to bring these background theories better to bear in UX research as well.

On the other hand, there are also recent critical voices within psychology who think that experience has not received enough attention as one of the foundational concepts of psychology, see [1]. And this is surely a topic UX researchers should be aware of.

CONCLUSION

It has been possible to successfully deal with usability issues using only Babylonian methods, just as it happened long ago with planet movements. But Toulmin’s story about ancient astronomy has one more interesting turn to be told: when Babylonians attempted to use their tried and tested empirical method for predicting earthquakes and appearances of locusts, they failed miserably despite the efforts and masses of empirical material they collected for the purpose. So how do we know? Although usability and user experience may seem to have same origins, perhaps difference between them is as large as that between planet movements and appearances of locusts. And this is an issue that is very difficult to answer at the level of empirical evidence only, as Babylonians can witness; one has necessarily to start to speculate and experiment with models and theories as well, to understand and interpret similarities and differences.

Thus we are in a need for more Ionians in UX research.

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REFERENCES

1. Bradley, B. (2005) *Psychology and Experience*. Cambridge University Press, Cambridge.
2. Csikszentmihalyi, M. (1990) *Flow – The Psychology of Optimal Experience*. Harper & Row, New York.
3. Csikszentmihályi, M. (1996), *Creativity: Flow and the Psychology of Discovery and Invention*, New York: Harper Perennial
4. Dewey, J. (1934/1980) *Art as Experience*. Perigee Books, New York.
5. Dourish, P. (2001) *Where The Action Is: The Foundations of Embodied Interaction*. MIT Press, Cambridge, Mass.
6. Grudin, J. (2006) Is HCI Homeless? In Search of Inter-Disciplinary Status. *Interactions*, Jan/Feb 2006, pp. 54-59
7. James, W. (1902/2009) *The Varieties of Religious Experience*. The Echo Library.
8. Kaikkonen, A. (2009) *Internet on Mobiles: Evolution of Usability and User Experience*. TKK Dissertations #200. (A PhD dissertation.) Helsinki University of Technology, Espoo.
9. Kaptelinin, V. and Nardi, B.A., (2006) *Acting with Technology. Activity Theory and Interaction Design*. MIT Press, Cambridge, Mass.
10. Kaptelinin, V., Nardi, B., Bødker, S., Carroll, J., Hollan, J., Hutchins, E. & T. Winograd (2003) Post-cognitivist HCI: Second-Wave Theories. Panel description. In *Proceedings of the CHI2003 conference*, ACM, New York, ss. 692-693.
11. Landauer T.K. (1991) Let's Get Real: A Position Paper on the Role of Cognitive Psychology in the Design of Humanly Useful and Usable Systems. In Carroll, J.M. (ed.) *Designing Interaction*. Cambridge University Press, Cambridge, pp. 60-73.
12. Middleton, D. & Brown, S. D. (2005) *The social psychology of experience: studies in remembering and forgetting*. Sage Publications, London.
13. Roto, V., Lai-Chong Law, E., Vermeeren, A.P.O.S. & Hoonhout, J. (2010) *User Experience White Paper*. Distributed beforehand to the participants of the Dagstuhl UX workshop, October 2010.
14. Suchman, L. (2006) *Human-Machine Reconfigurations: Plans and Situated Actions 2nd edition*. Cambridge Univ. Press, Cambridge, Mass.
15. Toulmin, S. (1961) *Foresight and Understanding. An enquiry into the aims of Science*. Hutchinson, London.
16. Whiteside, J. & Wixon, D. (1987) Discussion – Improving Human-Computer Interaction – a Quest for Cognitive Science. In Carroll, J. M. (ed.) *Interfacing Thought: Cognitive Aspects of Human-Computer Interaction*. MIT Press, Cambridge, Mass. pp. 353-365.