

THE AESTHETICS OF INFORMATION SYSTEMS

Erik Stolterman
Department of informatics
Umeå University
901 87 Umeå
Sweden
erik@informatik.umu.se

Abstract

We have to acknowledge that the question of whether an information systems add value to an organization or not is to be found in an analysis of how people experience these systems. These experiences cannot be explained only by relating them to functionality or usability. The idea presented in this paper is that these experiences in a fundamental way influence how systems are valued. To be able to understand what value-adding is really about, there is a need for studies in the field of information systems aesthetics. There is a need to develop such an information systems aesthetics and I propose some suggestion for a research program.

(Word count: 4270)

INTRODUCTION

Why do people value a car so differently? Why is it that when one person feels good inside a certain building another person gets "bad feelings"? When people evaluate artifacts strange things happen. It is not easy to understand on what grounds the evaluation is carried out. Sometimes the evaluations of artifacts are very difficult to relate to concepts such as functionality, efficiency or usability. Information systems are not different from other artifacts in this respect. The hypothesis in this paper is that the same phenomena exists in the relation between people (users, managers, designers) and information systems.

The common way to evaluate information systems is often restricted to a very small number of criteria (Willcocks, 1992). Willcocks has examined a large number of research findings and concludes that there is a need for "developing evaluation as a social and organizational process" and that the area of evaluation is "under-developed" since it is too focused on "technical" aspects and has not been able to grasp "intangible" benefits. We have to acknowledge that the question of whether an information systems adds value to an organization or not is to be found in an analysis of the individual and social reactions and experiences the system creates. There is a need for a study of the *aesthetics of information systems*.

In his well-known study Ramirez (1991) describes as his purpose to fill "a theoretical hole". For him traditional organizational theories does not answer the question why someone wants to become a "part of an organization because she feels that the work which the organization carries out is 'beautiful'" (Ramirez, 1991).

In the same way we could ask the question where is the "beauty" of an information systems? What kind of reactions does a "beautiful" or "ugly" information system raise. What are the associations and feelings people get from in-

formation systems. In this paper I will argue for the need of studies of these reactions – how people experience information systems¹.

The line of reasoning is shortly like this. First I will argue that the (cause–effect) relation between the information system designer and the designed information system is *not* as strong as is commonly thought. The relation between the designer's intentions and the implications of the system is perceived (from the designers point of view) in a to "optimistic" way. This view is based on the idea that if it is possible to find out everything about the relation it will be possible to prescribe how to transform the designers intentions into the designed systems implications. This is an idea in the tradition of Enlightenment where reason and measurement of qualities are of fundamental importance. In this paper I will challenge that view and contrast it with a perspective of information systems based on the Romantic tradition. This will lead to the conclusion that as designers we need to know more about how people experience information systems. My assumption is that these experiences in a fundamental way influence how systems are valued. *To be able to understand what value-adding is really about, there is a need for studies in the field of information systems aesthetics.*

THE INFORMATION SYSTEM AS A PRODUCT

Since there is a strong belief in the idea that the quality and the value of a product is a result of a design process, it might sound strange to talk about the "death of system design". The idea is however to try to state that researchers in information systems have to shift their focus from being almost totally process-oriented to be more product-oriented, or stated otherwise, they have to accept information systems research as a science of artifacts. One important part of a

¹ With "people" I mean users, managers or whoever will encounter the system. It is very important to remember that all too often the focus is on how users (or end-users) experience a system, it is even more important to remember that when managers judge or value an information system it is often made based on a very short and "immediate experience", since they don't have time to reach behind the first "impression".

science of artifacts is to develop theories and concepts by which it is possible to *name* and *frame*² qualities of an information system. For these concepts and theories I will use the term aesthetics.

I will examine two arguments behind the idea of the "death of systems design". Both of them will show the importance of a product oriented research. Research focused on the aesthetics of information systems.

The relation between the designer, the design and the observer

It is possible to study IT-products from, at least, two different perspectives. One is based on the assumption that the use and understanding of an IT-product is directly a result of a conscious design effort, or we can assume that the study of the qualities of an IT-product is totally independent of the design process and the designer.

My hypothesis is that system designers have much less control over the qualities of the final product than what is often assumed in the literature on information systems design and HCI. Richardson (1993) argues that conventional design theories exaggerate the designers influence over the outcome of the interaction between the designed artefact and the culture in which the artefact is used or situated. He also addresses the necessity to give a closer attention on what are the designer's responsibilities towards the culture. In Richardsons examination of this relation he is concentrating on the concepts of form and function. It is, of course, both difficult and dangerous to use these two concepts, since they have ancient roots and have been constantly examined through history. Richardson is aware of this danger but he is convinced that

² The concepts of "naming and framing" is presented by Schön (1987). Within the area of design theory some authors have been successful in arguing for a broader view on design, especially criticising the traditional view on design of artifacts as based on "technical rationality". There is a new design theoretical "paradigm" evolving trying to include artistic and aesthetic dimensions into traditional engineering design areas (Schön, 1987; Buchanan, 1992; Pye, 1978).

there is no other way, "there exists a necessity for a new examination, a new equation, to rethink their relative balance..." (Richardson, 1993).

The project Richardson is trying to pursue is to show that the relation between the designer and the designed object is not as strong and logical as is often expected. His findings leads him to a conclusion which he describes as "the death of the designer". The death of the designer is actually not one, but two, and Richardson argues that one is related to form and the other to function.

One way to approach the question of form is through *product semantics*. This is one of the most well-developed conceptions of form, according to Richardson. He discusses two schools of product semantics, the process oriented and the function oriented. These schools use semantics to guide the designer to design a product in a way in line with the intentions of the designer, i.e. the semantics is used to support the designer in the design practice. This is often done by having semantics telling the designer how to design the shape of a button, a door, a key, etc, so it will be obvious for the user how to make use of the opportunities of the product. Often product semantics is focused on a very primitive level, i.e. the semantics is rarely more than ideas about the pure shape of objects and often as generic as possible. Richardson states that both these schools has "held to the modernist model of closure, of a singular, logical meaning that is discerned upon apprehension of the product by the user" (Richardson, 1993). This is not the only way to understand the relation between the user, the designer and the designed artefact. Some literary critics have discussed a similar relation, between the author, the reader and the book. One interpretation of this relation is that it is the reader that actually "writes" the book when he is reading. The author has no control over the process of reading and interpretation of the text. This way we reach a model "that is open-ended, unpredictable, and outside the designer's influence" (Richardson, 1993). This is for Richardson the first death of the designer, the one related to form. It is not possible by

using form to communicate one single and precise meaning, which therefore denies the designer of his pedagogical role. All attempts to communicate meaning are only possible within boundaries of probability. For Richardson this conclusion does not mean the end of the designer, the death does not lead to paralysis but to liberation.

To Richardson there are two ways the function of a product is decided outside the control of the designer. First of all the designer is often left out from the very early stages in the design process where the function of the product is decided. Often he has to work with the product as if "it is *a priori*, a given". The designer is also out of control after the product is manufactured and "the forces of culture take over and the function becomes redefined, once again, outside the designer's control" (Richardson, 1993).

Richardson concludes that the designer is, since he is left out of control, prevented of having any influence over ideological issues, since every designed product must be seen as an *ideological container*. Since every design is based on ideology and influenced by the culture from which it arises, it is not possible to foresee and predict how a designed product from one culture will be interpreted and used in another culture. So, not even function could be understood as in the hands of the designer. This is, according to Richardson, the second death of the designer.

The death of the designer is a very adequate and obvious description of the situation within information systems design. The traditional system designer is someone who by conducting careful analysis of an organization can reveal the needs leading to a design of the proper functions in an information system that will solve the problem of the organization. There are two major and quite recent changes in that picture, analogous to Richardsons "two deaths".

The first change is that the early stages of information systems design has moved away from the information systems designer and into the realm of

management planning and strategy. Not long ago was the competence to do an overall design of information systems reserved for the professionals in the IT-area. Today that competence has spread and the knowledge and understanding of the relation between information systems and organizations is no longer only possessed by system designers. The situation is more and more becoming similar to what Richardson distinguish as when the designer has little opportunity to influence the information systems function since it is "a priori" to him, defined by the top management.

The second change is the discovery, acceptance and understanding of the problems with the use of information systems. The attention on this question has over time been increasing. Today a lot of research seems to be focused on what might be labeled as *the semantics of information systems*. The basic idea behind this research is the belief that there do exist generic qualities and properties that will lead to predictable consequences, i.e. wanted reactions and actions by the users. The "problem of usability" is seen as a system where the product and the user are two components and it is necessary to make a nice and well-functioning interface, that will make both sub-systems function well (Adler & Winograd, 1993). I will later on argue that this kind of semantics is defined too narrowly and will not be sufficient when it comes to explaining peoples reactions and experiences of a certain information system.

Another argument behind the conclusion of the death of the designer is the overall change from uniqueness of design to the manufactured mass-product. IT-products have to a large extent been unique products made for a specific organization and purpose at a specific time and place, but is now more and more becoming mass-produced products. My point here is not to argue that a mass-produced product is a result of less design efforts than a uniquely designed product (an IT-product has the strange quality of not having a separate design and production process), but this development leads to an alienation of

the designer from the use situation and from the users. It is not possible to easily "measure" the users satisfaction with the product. Their experiences and reactions will not easily be accessible beside as a statistical calculated value.

"The death of the designer" and the mass-produced information system are two phenomena which could be seen as arguments for a more close study of information systems as "ready-made" objects. And if we want a more elaborated and all encompassing information systems semantics, we have to incorporate and develop an information systems aesthetics.

THE NEED OF AN INFORMATION SYSTEMS AESTHETICS

In this chapter I will argue for the need of a new information systems aesthetics. I will do so by referring to a similar attempt within organizational theory.

The idea of the "beautiful organization"

Ramirez has in his book "The beauty of social organization" (1991) argue that everybody experience the beauty of an organization. That kind of experience is not something we can chose to have or not, the experience is always there when we encounter an organization and often so strong that is will form our opinion about that organization. Ramirez became intrigued by these experiences "their nature, their wonder and their reason" (Ramirez, 1991, p 12). He quite soon realized that the existing organizational theories did not include the experiences he was interested in. The experiences were neither acknowledged as existing nor explained. Experiences of the kind Ramirez studied where rather thought of as being irrational and/or uninteresting since they did not focus on the usual functional, economical or social aspects of an organization. So, Ramirez had to do it himself, he had to "fill this theoretical hole" (Ramirez, 1991, p 27).

Ramirez assumed, after having studied theory in aesthetics, that it would not be possible to find and describe necessary and sufficient factors that would

define a beautiful organization. Instead he formulated three purposes with his research

- ” • to determine *why* this aspect exists alongside others in our experiences of at least some organizational phenomena;
 - to explore and try to understand *how* it is distinct from, and compatible with, other, better known, aspects of organizational experience; and
 - to, in so doing, examine *what* this dimension of the experience reveals.”
- (Ramirez, 1991, p 12).

To Ramirez it was the *experience in itself* that became the object of study. The fact that people have this kind of experiences was reason enough for undertaking the study. I believe that it is possible to transfer the rationale behind Ramirez's study into the area of information systems research. People do experience information systems, not only as functional, efficient or as user-friendly or not, they also experience these systems as a whole, carrying other dimensions which heavily influences the overall judgement of the systems value.

This became apparent in an interview-study where twenty professional information system designers answered that they without problem could distinguish if a specific information system was of a high or low quality. But they could not explicitly describe on what grounds they did this evaluation (Stolterman, 1992). However they were convinced of their ability to make such judgements. It was obvious that there judgement was not formed by some analytical thinking (at least not conscious), rather it seemed as they intuitively made an overall picture of the system, or stated otherwise, they experienced the system. Based on that experience they made a judgement of the quality and value of the information system.

The ideas of Ramirez and the results from the interviews makes the need for an aesthetics of information systems plausible, or at least interesting enough to be considered as a possible object of study.

THE AESTHETICS OF INFORMATION SYSTEMS

What is needed is a language that makes it possible to talk about, describe and analyse the *overall character of the information system*.

An aesthetics of information systems has to be built on what people really experience when they are faced with these artifacts. Their experience of quality as an overall notion, their judgement of the product as a totality, can be seen as the sum of reason, ethics and aesthetics. The judgement of an information system is related to the wholeness, the immediate experience, which gives a very strong and definite feeling of how things "really are". According to Ramirez the rhetorical power in this kind of experiences is very strong and convincing. That might be the reason why sometimes designers gets frustrated with users or managers that don't want to use a new system though the designer "knows" it is a very good system, complete with all the functions asked for, and perhaps even with a well designed interface. But still nobody seems to like the system. In a situation like this it is not unusual that designers claim the users or managers to be irrational. The problem still remains, they don't want to use the system. One interpretation is to assume that the users or managers are unable to see how the system adds value to their work or to the business activity they are engaged in. Another interpretation, more in line with the ideas in this paper, is to assume that the "beauty" of the system did not correspond to the aesthetics of the users or managers.

It is possible to explain the nature of these experiences by labeling them as some kind of subconscious emotions, not possible to make visible and understandable, and totally subjective. But that doesn't change the fact that these experiences influence peoples judgement. A more fruitful way is to assume that

these experiences are necessary and possible to describe and understand. There has been attempts to make them intelligible. One such example is the work of Brenda Laurel who questions the traditional way of describing the interface between computers and humans, by proposing the idea of "computers as theatre" (Laurel, 1992). Laurel is convinced that users experience of the computer is possible to design, and that these experiences are not only a matter of function and usability. She says that "Unlike a strictly scientific approach, the notion of *designed experience* leads to a design discipline in which ideas like *pleasure* and *engagement* are not only appropriate but attainable". Laurel is convinced that the interaction between humans and computers is much more complicated and has a lot more dimensions than is traditionally assumed³. Laurel states that it is possible to design systems to have these qualities, but it is possible to take that idea one step further and suggest that it is not only possible, it is inevitable. Every design of an information system is a design of "designed experiences". It is not something a designer can choose not to do, it is always done, conscious or unconscious.

If we assume that artefacts have to be studied as creating overall experiences which very strongly will affect peoples way of valuing these systems, we have to face the question whether the object of study should be the system or the people experiencing the system.

One very important aspect of information systems in this context, is to acknowledge that information systems by their users are often perceived as having a focal point, a core, a kernel, i.e. they are seen as having an identity, and even a character. Often designers see systems as a group of functions hanging together as a system without any focal point. To the designers the system don't have any

³ This is also argue in Turkle (1984). Turkle is not only arguing the aesthetics dimension of the computer but also the psychological.

identity, instead they are seen as a "society" or as a system of separated functions.

For users or managers the identity- and character-perspective seem to be more common. The reason for this is that it makes the system visible and possible to understand and handle. So, for users an information system is often seen as a product, with a distinct identity and with a certain character. (Children, and sometimes adults too, show this quite openly when they intuitively address the system as a he or she, and even as having a personality.)

So, if we want to understand the way people judge the value of information systems, it is important to accept the dimension of the aesthetics of information systems.

A RESEARCH PROGRAM – SOME SUGGESTIONS

If we consider the aesthetics of information systems as a possible object of study, we are faced with a lot of new questions. How should these studies be carried out? What should the purpose be? In this section I will very shortly make some suggestions concerning a *research program of the aesthetics of information systems*. There are, of course, a lot of interesting aspects that has to be studied, but I will only mention a few.

The goal with a research program should be to make to process where peoples judge and value information systems intelligible. In order to do that it is necessary to acknowledge the aesthetics of information systems. There is a need to create knowledge and concepts by which this phenomena can be described and thereby made visible. To reach this goal some things ought to be done (beside the three points from Ramirez mentioned earlier), for instance:

1. To study how people experience information systems – this should be done with the aim of covering aspects described above with concepts such as *immediate experience, beauty* and *overall character*.

2. To study how the aesthetics of information systems relate to how these systems are *judged* and *valued*.
3. To study if there are any relations between agreed upon qualities of the information system and certain specific experiences.
4. To name and frame these experiences and how systems are valued. This could be done by describing different *styles* and *good examples*.

One very large and interesting area of research is to establish procedures and techniques to measure and interpret how people in different social contexts experience, interbred and evaluate their information systems in the perspective of the aesthetics of information systems. One way of doing this could be to follow the tradition from architecture where this kind of studies has always been in the centre of their intellectual history. Two of their core concepts are *style* and the *good example*. These concepts might be suitable also in the area of information systems, they add one important dimension to the traditional way of formulating criteria of good quality by focusing on generic and wholistic qualities. A style is only existing as a relation between details and the whole. A good example is not a list of details, it is an example of the overall character, of the relation between details and the whole, between function and form.

Someone has to formulate the aesthetics of information systems as described above, so there is also a need for *information systems critics*. People that perform the studies, examines the experiences, formulates styles and designates good examples. This is perhaps not the task of the designers, nor of the users or managers, none of those have the time or the knowledge. It has to be the task for information systems researchers.

CONCLUSION

If peoples experiences of information systems is in line with the ideas presented above it has important consequences. It becomes more important for

information systems research to acknowledge the "death of the designer", i.e. information systems research should not be completely focused on the design process and constantly trying to improve that practice, at least not based on the idea of a too simple (cause-effect) relation between the intentions of the design and the implications of the result. Information systems researchers should instead see as their main task to be information systems critics, in the same way as research in literature is not focused on the problem of how to improve the writing process. Instead they are focused on the products, and their aesthetics. This has also consequences for education. A good designer is a person with a developed feeling for style and quality, based on a personal aesthetic competence. A very good proponent for a shift in higher education based on the idea of the "artistic" designer is Schön with his concepts of *practicum* (Schön, 1987).

There are today more and more attention given to new dimension of information systems, such as aesthetics and also ethics. This has to be further explored if we want to get more knowledge about how people experience and value information systems.

REFERENCES

- Adler, P. S., & Winograd, T. (1992). *Turning technologies into tools*. Oxford: Oxford University Press,
- Buchanan, R. (1992). Wicked problems in design thinking. *Design Issues, Vol. VIII*(Number 2), 5-21.
- Laurel, B. (1992). *Computers as theatre*. Reading, Mass.: Addison-Wesley.
- Pye, D. (1978). *The nature and aesthetics of design* . New York: Van Nostrand Reinhold company.
- Ramirez,R. (1991). *The beauty of social organization*. Munich, ACCEDO.

Richardsson, A. (1993). The death of the designer. *Design Issues*, Vol IX, number 2.

Schön, D. (1987). *Educating the reflective practitioner* . San Francisco: Jossey-Bass Publishers.

Stolterman, E. (1992). How system designers think about design and methods. *Scandinavian Journal of Information Systems*, 4,

Turkle, S. (1984). *The second self: computers and the human spirit* . New York: Simon & Schuster.

Willcocks, L. (1992). Evaluating information technology investments: research findings and reappraisal, in *Journal of Information Systems*, Vol 2, number 4.