

Interaction Design Aesthetics keynote SIDeR 2006

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1 (interaction design aesthetics)

I want first of all to thank the organizers for inviting me here to say something about my views on interaction design aesthetics.

There is a growing interest in aesthetical aspects of human computer interaction. Some speak about “the aesthetical” turn. But what is aesthetics really all about in this context?

It seems reasonable to say that design practice in general rests on aesthetical foundations in some sense. In this context interaction design aesthetics also seems to be of some importance. In what follows I will try to discuss the meaning of this:

- what is interaction design aesthetics all about?
- what is the role of interaction design aesthetics within the general design process?

2 (hidden, forgotten)

Aesthetics has not been of focal interest in human computer interaction in the past. In design practice on the other hand, as well as in design research, aesthetics is more or less by definition a basic issue.

There is an important distinction to be made here between human computer interaction as empirical science and interaction design as design practice.

But as this distinction has been somewhat blurred in the past aesthetical matters has, to a considerable extent, been hidden and forgotten also in more design related areas of human computer interaction which is seen in

- a strong focus on empirical usability studies – implicitly design is seen as the mere derivative of analysis. Here the basic problem in design is lost out of sight; the problem of turning analysis into design,
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- a view of computational technology as the mere technical implementation of given specifications. In neutral technical solutions basic aspects of expressiveness will be lost out of sight.

Although the distinctions between the basic rationality of the design process and the empirical analysis of given facts is becoming more and more clear in the area of interaction design we still lack stable foundations in many respects – though lots of work is being done to change this, take for example recent books by Paul Dourish and by Jonas Löwgren and Erik Stolterman.

3 (aesthetics – design aesthetics)

We all know that aesthetics has something to do with the experience of art, sensuous knowledge, beauty of things, style of products and so on. But what is it as a guiding force in the process of designing? And, more specifically, what is it as a guiding force in the interaction design process? What is design aesthetics and interaction design aesthetics all about? And why is it important in design and more specifically in interaction design?

In industrial design in general the answer is obvious somehow. Design is all about shaping the actual appearance of a product, the actual form and expression of the car, the garment. When we talk about “shaping the actual appearance of a product” we mean all decisions that defines this particular product; its outer form, its internal functionality, its interface and so on.

It is the logic of design expression that is the basic aesthetical guiding force in the design process. Design always starts with something given. It is that given we express in the process of designing. And it is the design logic of resulting expressions that design aesthetics is all about; the way in which we express that given, the rationale behind basic expressional choices in the process of designing.

A basic purpose of systematic design aesthetics is to explain the logic of design practice; to provide a logical foundation of design practice. The notions of form and expression are central to such an explanation; we form the expressions of things in the process of designing.

4 (form, expression)

The question is then what all this mean with respect to interaction design? What is interaction form and what is interaction expression and how do they relate to each other?

By “form” we then usually understand the way in which material builds things; that might be the way in which bricks and cement builds the house or the way in which our movements builds an act of dancing.

If “form” refers to the way in which material builds things, then “expression” refers to the way in which things present themselves to us, it is a notion that relates to the form of presentations. It is natural to think of it as that notion dual to “impression”, that is the way things themselves appear in contrast to the way in which we see them. It is like saying hello to the chair as it presents itself to us – it may or may not make an everlasting impression, but it is still there saying hello to us.

Design means forming the expressions of things; in the process of designing we make all the expressional choices that not only makes the thing we design a chair, but furthermore this particular chair. We decide the way in which it will present itself to us as a chair; through color, texture, sound, behavior and so on.

5 (an example)

In how many ways can an automatic door open itself?

There is the “trust-me-door” that quickly slides open when you are only a few feet away. There is the “welcome-step-in-door” that slowly opens when you just start walking towards it.

Now what does it mean to focus on aesthetical aspects of door-interaction in the design process?

This must have something to do with the relation between what we do and what the door does. The behavior of the door somehow defines this relation. There are expressional aspects to consider here; the way in which the door presents itself to us in use.

6 (behavior, expression)

The basic behavior and expressions of the automatic door is something we design, not something we derive.

As a door it presents itself as a component of a house, something we open and close. But it is an automatic door, so “open” and “close” means something different as compared with the old-fashioned doors we open and close using a handle.

Opening and closing a door involves something we do and something the door does; we interact with the door in certain ways and the door functions in certain ways. Interaction design is then all about defining how the door relates function and interaction to each other with respect to elementary acts of use.

The idea of the automatic door is that we simply walk right through as the door opens itself. What we need to do is to define this as a relation between the way in which the door open itself and the way in which we walk through it.

7 (to derive the design)

The aesthetics of this concerns the logic of a given door-definition, that is the form of the definition as such, the way in which we, by definition, open the door. Now it may often look as if we derive such things by analysis. We have a population of users and we investigate the needs and requirements of the users.

From this we clearly see a design of the automatic door, the requirements and needs it must satisfy. It must be this and that wide, it must not close itself too quickly and so on. This type of requirements clearly introduces certain design restrictions.

But there will never be any door unless we at some point make a shift from analysis to design, that is start making constructional choices, expressional choices.

We turn requirements and needs into expressions, we make aesthetical, formal decisions. We cannot look for a foundation of this in analysis of given needs and requirements.

8 (the mysterious turn)

Let us take a closer look at this. The initial brief just says; design an automatic door – that is with respect to some given context. So what is a door? Something we can open and close, something we walk through, something we use to open and close a house.

What does that mean? What does it mean to say it is automatic? This initial analysis of the brief provides us with basic design variables – open, close. A further analysis put restrictions on these variables; if we are going to walk through the door, then open must at least mean this or that. Now we can continue like this providing an intricate and complicated specification of an automatic door.

But at some point there is a mysterious turn; we turn from analysis to design. The geometrical form of the door will be a circle. The door will be a tube through which we crawl into the house. Now design aesthetics is all about the motivation of this type of expressional choices. With respect to design aesthetics a strong expression is one that has a strong and coherent motivation. Note that these expressional choices also provide further restrictions of variables and also a further analysis of what a door might be like.

All this relates to the design and construction of the door itself as a thing, but also very much to the design of intended use of the door.

9 (interaction design)

It is perhaps meaningful to make a distinction between expressing function and expressing use, interaction.

If product design traditionally has a focus on expressing function, then we could perhaps say that interaction design focuses on expressing use.

Usually we associate interaction design with use- and user oriented design of computer based products and systems. But designing the interaction with products, expressing use is of course of basic interest in industrial design in general.

Interaction design is in this sense an important component of the design process in general. It is a matter of designing the acts that defines intended use of things and systems. Designing computer interfaces and computational interaction devices is a part of this, but nothing that defines interaction design as a specific area of design.

10 (computational things)

The design of computational things is still a bit special here; the interaction design component of the design process has a rather specific material foundation. We program behavior of things in use.

It is the computational material that makes this a specific area of design and not some particular “interactive” property of the things and systems we design. I am not quite sure that my computer is more “interactive” than my old rocking chair.

But as the computer itself as a big machine more and more disappears in the background it is important to see that computational technology reappears as a new design material. We build things with a new expressive material; we build computational things.

What is typical for these things is simply that their behavior in use depends on the executions of given programs. This material is just like the material of music a time-material and it shows itself only when we use things. To understand the expressiveness of computational technology as material is of course essential here; it is a new temporal material that is fast becoming just another common industrial design material.

A basic issue of interaction design aesthetics is then to investigate how the expressiveness of computational technology builds the expressiveness of use; in many ways a challenge for experimental interaction design.

We have to program a behavior for the automatic door. We also have to define the components and mechanics of the door, which forms material out of which we build the expressions of an automatic door in use.

11 (interaction design form)

What is interaction form all about?

Form, the shape, the general structure of something...form, the way of doing something...

Design is what introduces the definitions of new things, new systems. Form, in a more general sense, strongly relates to the logic of such definitions; the way in which the design defines the new things, the new systems.

It is clear that form in this sense not only refers to the geometrical shape of things as spatial things.

It is also clear that the logic of a definition determines the way in which material build things.

12 (some examples)

Consider some examples:

A geometrical form: We say that this or that thing has the form of a square. What does it mean? In planar geometry a square is a quadrangle where angles and sides are congruent; they have the same form.

The form of an argument: An argument is something that supports a proposition, something showing that a proposition is true. The form of an argument, the logic of the argument definition, is then the way in which it shows the truth of a proposition.

Argument: If it rains, the ground gets wet. It rains, thus the ground gets wet. The argument is correct purely by its form.

Form: If A, then B. A, thus B.

13 (more examples)

The form of a computer program: The form of a computer program, as stating a complete set of instructions for a computation, is the way in which it instructs the computer to compute.

The notions of a loop, pattern matching, recursion, iteration are typical such formal notions.

Car driving: The form of car driving is the way in which we drive a car. The form of a car is not only its geometrical form, but also the logic of driving inherent in the way in which the car is built.

Playing chess: The form of chess playing is the way in which we handle the rules during games. The main formal problem in designing a game is of course the logic of playing the game.

14 (function, interaction)

Now let us try to make the distinction between function and interaction a bit more precise: function is what a thing does when I use it, interaction is what I do when I use the thing.

When we use a modern washing machine the machine washes and that is what we do too. But “washing” then means different things. The machine is doing the actual washing in some sense while we handle and monitor the machine. Function might be quite complicated matters here, interaction on the other hand is perhaps reduced to loading the machine, pressing a button and then sitting in a chair doing nothing – this is also the very idea with a machine doing the job for us.

It is rather natural to think of interaction form as the way in which a design relates function and interaction to each other. A formal property of interaction is then a property that characterizes such a relation between function and interaction.

To say that the automatic door is inviting may be a way to talk about formal properties of a door with respect to design intentions. This is something completely different from talking about your experience of walking through a particular door. It can be a measure of design success if these different aspects match.

15 (interaction design expression)

An act of use is not only characterized by intentions, but it is also an expressional entity, a way of presenting something. We drive our car to transport ourselves to various places; we present ourselves driving a specific car.

The intention is rather abstract, the expression very concrete.

Expression, in the context of interaction design, refers to the way in which a design presents itself through the acts of use. Function and interaction meet somehow in the expressions of use; functionality resides in the expression of things in use.

In the process of designing we build these expressions by defining acts of intended use. What is concrete here are definitional expressions, not expressions of actual use.

16 (to express interaction form)

Computational technology gives us a very rich and expressive material to express “interaction” form.

We express intended use by programming.

As we build computational things, digital products, we use programs to formalize interaction patterns and to more or less indirectly formulate fragments of a logic that builds the products as performing instruments.

When we build the automatic door we decide how to express the function of the door; the way in which it open and close itself in use. We also have to decide how functionality relates to interaction; if it is the “trust-me-door” or the “welcome-step-in-door” or something else...the expressions of interaction.

17 (what is it we design)

One reason why interaction design aesthetics is a bit difficult to grasp is the fact that it is difficult to grasp what it actually is we design in interaction design.

In a design there is always a given definition of intended use, how to handle the given thing, system; what it means to use it. There is a description of the elementary acts that defines intended use, elementary acts that relates function and interaction to each other.

When we buy things that are not completely obvious with respect to actual use we get a manual that in more or less obscure terms tell us how to use the thing, that is how intended use is defined and how function and interaction is supposed to be related in the design. Intended use is then acting as a whole in which elementary acts connects in intricate patterns.

The design of a camera involves a definition of what a “camera” is in terms of use – this is at least a step in opening up the brief. A central component in the design process is then also to define what it means to use this particular camera.

But even if this is clear enough in some sense, it is at the same time rather abstract and perhaps a bit vague. If we say we design a camera we know that it in the end should lead to the construction of a thing we can take pictures with. The definitions that define the acts of using the camera are of more intangible nature, but nevertheless relates to essential components of the design process.

When we install the automatic door it might at first look as if we only designed a thing, a door. We then walk towards it and nothing happens. It doesn't work. What does that mean? Oh it functions, but only at night when there is nobody here. What we mean is of course that we see nothing of the relation between function and interaction that we expect from an automatic door.

18 (usability)

Now take another example. Assume the task is to design a computational communication application, that is an application that makes it possible for us to use our computers to communicate with other people. Of course, we have already have e-mail and so on, but just imagine we start from scratch.

So if we say that we will design a computational "mail"-application what does that mean? Or if we say that we will try to turn the computer into a telephone what does that mean?

In both cases we make very strong form decisions. In the first case the application will ask us to view it as a mail application and in the second case as a telephone.

We design an application. That is we design some software and possibly also some hardware, but we also provide a definition of what it means to use the application; it is a mail system, it is a telephone. The magical metaphors that makes it all so easy.

The graphical user interface with its drag-and-drop helped us to see the communication system as a mail system. The mailbox, sending the mail, receiving the mail, writing the letter.

Suddenly it was so easy. But I am not so sure any more. There seems to be different things behind the scene; the e-mail is certainly something different. So maybe we should revisit the problem of designing computational communication and rethink the given solutions. To provide a more explicit and distinct aesthetical perspective with respect to the expression of interaction.

19 (foundations)

So where should we look for a foundation of all these expressional choices we make in the design process? My main point here is that this is basically an aesthetical question. We ask for the expressional logic of a design. It is not enough to prove a choice with respect to given restrictions and given requirements. This merely says that this particular choice is not wrong.

One answer to this question is that a foundation can be found in the interaction form that guides the design; that is the way in which the design intensionally is supposed to relate function and interaction to each other.

Take a digital piano as an example; how do we explain and motivate basic choices in the design of this digital music instrument? When using the instrument I play music on it. The meaning of this for this particular piano is what guides the design; that is also where we can look for a foundation of the basic choices we make in the design process.

The mail metaphor is also what expresses the interaction form that guides the design of our e-mail systems.

20 (the mysterious user)

The notion of a user is central to human computer interaction as an area of analytical studies, but also with respect to main traditions in interaction design practice; user centered design.

But what happens with the “user” when we adopt a more aesthetical perspective on foundations, when we focus on interaction form? Aesthetics in this context concerns basic logical principles that relates to the way in which we define “interaction”. This also means that notions like “me”, “us”, “users”, “performance” and so on, in this context, are logical variables and not variables open for empirical studies.

21 (analytical matters, definitional matters)

An inherent difficulty here is to make the necessary distinctions between definitional matters of the design process and analytical matters of empirical studies.

In a systematic design aesthetics, providing a logical foundation for design practice, form and expression refers to the form and expressions of definitions; to the way in which basic definitions relates function and interaction to each other and to the way in which basic definitions presents a design through intended acts of use.

22 (the user is a logical fiction)

Within the design process “use”, “users” are logical notions we define, where “intended use” is the focal notion that determines the design; the acts that define intended use simply refers to a logic of intended use that tell us what the thing, system is by definition, the interaction form.

How we define these things and systems through actual use is a different matter. But the inherent logic of design expressions is still what links intended use with actual use.

23 (design, performance)

What makes a design strong from an aesthetical point of view is that the logic of acts defining intended use is strongly inherent in the thing we design; a strongly inherent interaction form. It is what makes the guitar a guitar whereas we of course can use it as something else.

The notion of interaction design form considered here puts the design in focus as the focal object of a rational constructive design process. But as soon as we actually use the designed thing,

system it is more a matter of performance; it concerns the way in which we ourselves relate function and interaction to each other.

It is important to keep the distinction between intended and actual use in mind; the difference between definition of things by design and definition of things by use.

It is also important to keep a basic distinction between analysis and design in mind; is it a question we ask analyzing given things or it is a question we ask designing things yet to be seen.

We prepare for the magical turn by analysis, but turning is not a matter of derivation. It is here that design aesthetics comes and help us; the expressional intention that relates function and interaction to each other.

When the turn is there we can always look back again in analysis; is there a strong motivation that explains what it was all about.

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