Persuasive Design: Fringes and Foundations

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Abstract. To understand what it means to design 'persuasive technology', one probably needs to understand it in relation to design in general. Using examples from a variety of areas of design discourse, the first part of the paper presents the idea that design is inherently persuasive. Following a discussion of what this might imply to the identification of 'persuasive design' as an emerging research area, the idea of objects as persuasive arguments in material form is presented. Suggesting that this notion could be used as basis for working with persuasion in design, the paper finally presents a practical example of how this might work in a design research project.

1 Introduction

As a new research area emerges it faces a certain challenge: on one hand it needs to build on what is already there; on the other, it needs to differentiate itself from its surroundings as to motivate its existence. And so, to understand the conditions for growing a new research area like persuasive technology, we need not only look at the core issues around which it will be formed, but also at its fringes where it connects and disconnects to what surrounds it. As others have provided excellent presentations of the core issues (cf. [9]), the focus of this paper will be certain parts of the outskirts.

In what follows, I will present some thoughts on 'persuasive design'. The ambition is not to properly define 'persuasive design' as a research area, nor to present an overview of what it may entail or what canonical examples might be like. Rather, the purpose is to discuss some problems and possibilities pertaining to how it relates to a more general design discourse.

2 Inherently Persuasive Design

A significant challenge in describing and eventually also defining 'persuasive technology', is that technology in general not only can, but perhaps *needs* to be understood as inherently persuasive, and that technology design as such always is about persuasion in one way or another. If this argument is right, it means that 'persuasive technology' as a concept defining a new area is somewhat problematic.

In everyday life, there is a range of everyday situations where we understand that design influences the way we think, often with respect to commercial incitements. It

seems, things and environments can be designed to persuade us to, for instance, buy something we at first did not know we needed. What is perhaps not that clear, however, is that design shapes the way we think and live also in other and sometimes fundamental ways.

A useful starting point for this investigation is the work of the American design theorist Buchanan on how design can be understood as rhetoric:

> In this sense, rhetoric is an art of shaping society, changing the course of individuals and communities, and setting patterns for new actions. However, with the rise of technology in the twentieth century, the remarkable power of man-made objects to accomplish something very similar has been discovered. By presenting an audience of potential users with a new product – whether simple as a plow or a new form of hybrid corn, or as complex as an electric light bulb or a computer – designers have directly influenced the actions of individuals and communities, changed attitudes and values, and shaped society in surprisingly fundamental ways. This is an avenue of persuasion not previously recognized [3, p. 93]

At least in this part of the world, we live in a more or less man-made environment where even the layout of the ground as well as its landmarks have been designed to some extent. In all these environments and objects, there are prescribed ways of using them that will influence and govern the way we work, live and think. Though the idea that technology needs to be understood as a cultural phenomenon, and that there are strong relations between technology, materiality and society are not in themselves new, there is an increasing interest in what these relations actually look like (cf. [4,12]). Buchanan again:

> The point, however, is not simply that technology is distinct from science. More important, it is that technology is fundamentally concerned with a form of persuasion and, as with traditional rhetoric, speaks from no special authority about the good life. It provides only resources that are used to support a variety of arguments about practical living, reflecting different ideas and viewpoints on social life. ... Design is an art of thought directed to practical action through the persuasiveness of objects and, therefore, design involves the vivid expression of competing ideas about social life. [3, p. 94]

> This article suggests that the designer, instead of simply making an object or a thing, is actually creating a persuasive argument that comes to life whenever a user considers or uses a product as a means to some end. [3, p. 95f]

Thus, Buchanan presents an explicit argument that technology design is about persuasion, and that it can be analysed in rhetoric terms. There are, however, related views also in other fields of enquiry. Let us compare Buchanan's argument with Akrich's sociological perspective on the design of technical objects:

> For some time sociologists of technology have argued that when technologists define the characteristics of their objects, they necessarily make hypothesis about the entities that make up the world into which the object is to be inserted. Designers thus define actors with specific tastes, competences, motives, aspirations, political prejudices, and the rest, … A large part of the work of innovators is that of *"inscribing"* this vision of (or prediction about) the world in the technical content of the new object. [1, p. 207]

Buchanan's and Akrich's remarks suggest that design activity directly deals with issues of persuasion, in the sense that the technical object carries with it certain ideas about its use and context. That these "persuasive arguments" and "inscribed visions" at least to some extent translate into the user's experience of the design can be seen in critical perspectives on technology design. For instance, Marcuse once made the following remark:

> The means of mass transportation and communication, the commodities of lodging, food, and clothing, the irresistible output of the entertainment and information industry carry with them prescribed attitudes and habits, certain intellectual and emotional reactions which bind the consumers more or less pleasantly to the producers and, through the latter, to the whole. The products indoctrinate and manipulate [16, p. 14]

This critique is quite present also within design – thus not only being about the perspective of an external observer. One example can be found in the work of Dunne:

> This enslavement is not, strictly speaking, to machines, nor to the people who build and own them, but to the conceptual models, values, and systems of thought the machines embody. User-friendliness helps to naturalise electronic objects and the values they embody. For example, while using electronic objects the use is constrained by the simple generalised model of a user these objects are designed around: the more time we spend using them the more time we spend as a caricature. [5, p. 30]

On a more general level, the question of whether technology, in principle, can be neutral or not, has been analysed in the philosophy of technology. Especially from Heidegger onwards, relations between the tool and its user, between technologies and ways of thinking and living, have been explored (e.g. [2, 12, 13]). A re-occurring idea in this work is that just as the user uses an object, so does the object use its user.

> The question is never so much a matter of controlling technologies, since even the simplest technology (such as dip ink pen) has an ombra of counter control on the user. I am used as much as I use any technology, whether on a first person or a social level. [12, p. 116f]

Combining the perspectives exemplified above, it seems that there are rather strong reasons for assuming that ideas about use and users do translate into the designed thing in ways that can be seen as rather similar to what persuasion is about. Paraphrasing Fogg [9], one might be tempted to say that technology *always* change what we think and do.

An observation, that follows through all the examples presented above, is that design is normative: a given thing could always have been designed differently. The man-made deals with the contingent. As designs are normative, about setting norms, they do not only present and represent a certain point of view that can be contested, they also act as a kind of arguments in favour for adopting that particular point of view. But does this in itself make design into a matter of persuasion? One might object that we deal with a somewhat diluted notion of persuasion here, as seemingly all design will influence the way people act and think.

Consider an example from Fogg's seminal paper on persuasion and computers, where he illustrates that not all changes in behaviour and attitude can be understood in terms of persuasion as some of them lack a designer's intention to persuade: "a rain

storm may cause people to buy umbrellas, but the storm is not a persuasive event because it has no intentionality associated with it. (However, if an umbrella manufacturer could somehow cause rain, then the rain storm might qualify as a persuasive tactic.)" [8, p 226]. But what about the umbrellas themselves? If Buchanan [3] is right, they need to be understood as persuasive artefacts as they do bring about a change in our behaviour, and possibly also in our attitudes, in relation to the rain. Further, though the designers of the umbrella probably did not think about their design in terms of 'persuasion', the resulting change in user behaviour, and possibly also attitude towards being outdoors when it is raining, is certainly intentional.

Just as the designer makes certain decisions, so does the user; there is always a choice between accepting and disregarding the proposed way of doing things. The fact that a given design represents a certain perspective on the issues dealt with, does, of course, not imply that the user is bound to think the same way. Thus, there is a certain *dialogue* going on: the designer proposes certain things through the designed thing, and the user then accepts, refutes, or modifies these in relation to her own position. In practice, results of such a dialogue can, for instance, be seen in the often unpredictable discrepancies between intended and actual use (cf. [19]). But this does not, in itself, determine whether this is about persuasion or not; just as any other means of persuasion can succeed or fail, so can a persuasive argument carried by a design.

Whether we accept the idea that design is inherently about persuasion or not, at least we learn that identifying any clear borders around 'persuasive design' is far from trivial. In terms of 'argumentation' much design is quite remote from what we might think of as 'persuasive arguments', but if we turn to the effect that designed objects have on people, their attitudes and actions, it is clear that we are dealing with quite powerful means for influencing people. Clearly, the notion of persuasion in design touches fundamental aspects of what design is about.

3   Developing 'Persuasive Design'

How, then, can we qualify the term 'persuasive design' and make it meaningful as a concept describing a 'new' research area? Let me briefly suggest a few options.

One way to make the notion of persuasive design more precise in relation to the more general design discourse discussed above would be to define the term in a more technical way, much like the term usability is now used in the usability literature. This is a strategy for focusing our attention and effort towards a limited set of issues, of course realizing that much of what is included in our everyday use of the term would have to be left out, just as much related to the use of things is left outside of for instance the ISO definition of usability [14]. Around such a technical notion of persuasion we would then be able to cluster analytic tools, design methods, evaluation techniques, etc. which, hopefully, would enable us to achieve a certain predictability of outcomes.

Another way would be to think about persuasive design as we have come to think of user-centred design. Obviously, all design involves users at some point (unless it never becomes used at all, that is), but with user-centred design, we place concerns related to user participation, satisfaction, etc., at the centre of the process. Persuasive design interpreted this way would then be able to deal with many kinds of design,

much like user-centred design methods can be applied in many areas. Very likely, this would eventually define the area in terms of a set of methods and approaches rather than as a specific kind of design, much like user-centred design is easier to understand in terms of characteristic processes than in terms of certain outcomes.

A third strategy, at least at the moment advocated by the author, would be to think of persuasive design as centred on the notion of argumentation as embedded in, and embodied by, artefacts, and the *dialogue* between designer and user regarding use that follows from this. It recognizes that persuasion is not something designers necessarily choose to do, but simply do, and that it therefore is something we need to acknowledge, explore and understand as we design things.

This notion of 'persuasive design' points to a basic aspect of how design, use and object are related. Therefore, it can not be restricted to the objectives of persuasion, i.e. about finding out the means for persuading a given audience to think in a certain way, as it needs to deal with persuasion not only as communication of designer intent, but as a way of relating to artefacts. Of course, persuasive design in this sense can be about the design of information systems and online services, but it is perhaps in the increasing interest in issues of embodiment, materiality, and forms of interaction where physical and material aspects are central, that we more clearly see the close relation to the studies and critique of technology discussed above (cf. [18]).

In the following section, I will try to develop these ideas of embodied arguments and object-user dialogues a bit further as to illustrate how they can be seen as a basis for working with persuasion in design.

4   Arguments in Material Form

Implicit in the discussion above is the idea that the means and modes of persuasion involved here do not work like more traditional communication processes, where we might expect to find explicit and preferably verbalized arguments. Rather, it seems that things influence the way we think and act simply through their physical form, i.e. that the 'persuasive argument' seem to be able to exist in material form.

Since this may sound a bit strange, let us consider a few examples. One illustration could be ergonomic design and how such design can be used to influence people's behaviours. A beautiful example of how to make someone sit in a certain fashion is Aalto's *Paimio* armchair No. 41. Designed for patients with tuberculosis, its back has been designed to promote a posture that eases breathing. Another example is the *Balans* chair by Opsvik and Menghshoel for Stokke, where you partly sit on your knees to achieve a very upright and ergonomically beneficial posture. Both these chairs suggest a certain way of sitting and they do so for a specific medical purpose – and when you sit down in them, it is hard not to accept the suggestion.

Though not explicitly dealing with the notion of persuasion, there are a several theories about how physical objects may influence the actions and attitudes of their users. For instance, we find such ideas in product semantics where the process of making sense of products in often linguistic terms is studied (e.g.[15]). If one is more familiar with the cognitivist line of enquiry, one might think of notions such as situated or embodied cognition (e.g.[17]). Or consider the term 'affordance' as introduced by Gibson [10]. Though Gibson's main concern was how to understand

how the living animal makes sense of her environment in meaningful ways, various interpretations of the concept have become widely used in especially technology-related design to describe features of an object that, in various ways and senses, 'inform' the user about what can be done and how.

To generalise, there are several ways of describing how an object can 'invite' its user to given courses of action just by the way it presents itself to us. However, just as we normally do not refer to all things in the world as being 'designed', so does the idea that objects lend themselves to certain actions not in itself make this into a matter of persuasion. But here we need to consider the role of designer intent, the role of that *someone* who designed the thing – is it not a different story when we use 'affordances' to describe design intentions, i.e. when we explicitly aim to form the object in a way that will invite to certain courses of action (cf. Fogg on intention as a characterising feature of persuasion [8])?

Another place to look for examples of how arguments can be embodied in material objects, is design where the aforementioned dialogue between user and object regarding use is intentionally exposed. To continue the rhetoric metaphor, we might look for examples of 'rhetorical questions' in design, or examples where there is a slight but still clear shift from design as providing a definite answer about what to do, to design as posing questions about use and context.

Let us consider an example from a designer here in Eindhoven: Poll's chair *Do Hit* produced by Droog Design comes as an unfinished piece that you have to shape yourself using a sledgehammer. Is this an example of a designer not trying to persuade the user about a certain way of 'sitting' like the Aalto and Stokke chairs discussed above seem to, or is it indeed a way of enforcing an argument using a rhetorical question? Whatever the answer, the Do Hit chair creates a rather complex relation between design and use through its involvement of the user in the process of forming the object. Hunt comments:

> To explore formlessness of design is not necessarily to forgo form altogether, which would be impossible. … What distinguishes this approach is the abandonment of form as the first principle of design success. Instead, designers are venturing into the muddier regions of design's impact on our social life. They are exploring alternative ways of using the process to address social, emotional, and political ends. Again, the transformation of the social environment – not just the built environment – emerges as the focal point of the project. [11 p. 69]

Continuing our discussion of chairs, the *Faraday Chair* by Dunne is an example where a departure from the expected is used as a way of exposing certain questions, in this case about what it means to live in an environment saturated by electromagnetic radiation.

> A FARADAY CHAIR could provide a new image of the technological person: not of a cyborg fusing with technology, or of a master of technology, but of vulnerability and uncertainty about the long-term effects of the technologies now so enthusiastically embraced. … Although the final object was a smaller version of a day bed, requiring the occupant to adopt a foetal position, I kept the title FARADAY CHAIR to suggest that, once electromagnetic fields are taken into consideration, conventional assumptions about everyday objects need to be re-examined. [5, p. 104f]

Being a Faraday cage that looks more like an aquarium in which you will barely fit than anything resembling a traditional chair, the Faraday Chair embodies a different meaning of what it means to sit down and have a rest. Just because it is so far from a traditional chair, it can not easily be accepted as just an alternative design solution. Instead, this tension creates a space for critical reflection upon how we relate to electronic objects – and to chairs for that matter.

Neither Do Hit nor the Faraday Chair are typical examples of what we might think of as 'persuasive designs'. In fact, they are quite far from anything we would expect to find in the emerging literature on the subject. Their relevance as examples of how to approach issues of persuasion in design, however, becomes even more apparent as we think of, for instance, objectives such as how to initiate changes in user behaviour and attitude. In some ways related to the idea of technology 'breakdown' as a way of opening up new design opportunities by revealing something we can not see when things are working like normal (cf. [20]), they present examples of how to create resistance in use, something that make us to stop for a moment and reflect upon our habits and relations to the familiar we no longer see but simply take for granted. In relation to such issues, work on how to open up a space for critical reflection might well be quite important to the development of persuasive design, perhaps even more so as it explicitly deals with issues of how rather complex questions and arguments can be expressed in and through physical objects.

Presumably, none of the four chairs discussed above were originally conceived as 'persuasive arguments' or 'persuasive designs'. More likely, they were just 'designed', be it with certain ideas about use and user. And yet, a persuasive dimension of design is clearly present here. Again, these rather intriguing examples of what we might think of as 'persuasive design' remind us that this is a far from trivial subject.

5   A Practical Example

As an illustration that the perspective on persuasion in design sketched above is not just a theoretical construct, but potentially also a viable starting point for actual design projects, I will describe some of our own work that were inspired by these ideas. In a project called *Static!* funded by the Swedish Energy Agency, we have explored ways in which experimental interaction design can be used to promote awareness of, and stimulate changes in, energy consumption. The basic idea was to look for complements to existing strategies such as information campaigns and more energy-efficient technologies, and instead explore how the ways we interact with objects could be reinterpreted and transformed as to create a different and possibly also more subtle and tangible relation to energy in everyday life.

The Static! project was structured as a series of case studies, or sub-projects, each exploring different use contexts, design materials, object categories and/or design approaches. The ambition was to develop a palette of examples of how energy could be made more present in and through design that could act as a basis for further development and study. In the following, I will describe two such examples – the *Energy Curtain* and the *Erratic Radio*.

5.1   The Energy Curtain

The Energy Curtain was developed at the intersection between Static! and another project that explored how emerging technologies might be combined with traditional design materials, in this case information technology and textiles [6]. Thus, the aesthetics of textile materials in combination with electronics was a central issue, as were questions about how the use of electronic objects depends on continuous access to electrical power.

The Energy Curtain is based on a reinterpretation and transformation of what it means to use a curtain to control light. Typically, a curtain is moved (e.g. rolled down) to create the shade and then moved away (e.g. pulled up) when we instead want to enjoy the sunlight. This 'new' curtain adds another layer to this interaction. The side facing outwards is covered with solar panels that collect energy whenever the sun is shining. The side facing the room is made from a material where fibre optics have been woven into the fabric. Batteries charged by the solar panels power a series of diodes that light up the optic fibres and as the fibres have been sanded, their surface will emit light thus making the curtain light up in the dark.

Using this Energy Curtain implies that there is a direct trade-off between enjoying the sunlight now, or saving the energy to be able to enjoy its light later when it gets dark. Thus, the way we interact with it forces us to make an explicit choice – and since the curtain is self-sufficient and not connected to any power network it also becomes clear that we can not have it both ways. Using this curtain therefore becomes a tangible exercise in the art of finding a balance between consuming and conserving energy.

5.2   The Erratic Radio

Whereas the Energy Curtain focused on the interaction with a single object, the development of the Erratic Radio aimed at exploring also the context of objects in use [7]. Using the kitchen as a starting point, we developed a series of conceptual sketches of how the behaviour of household appliances could be made to reflect aspects of overall energy consumption and how our energy use accumulates through the interactions with multiple objects.

The notion of erratic appliances partly came as a response to an idea of expressing the indeterminacy and uncertainty that might follow from over-consumption and un-controlled increase in use of natural resources. These appliances are erratic in the sense that they start to behave strangely as energy use increases in their vicinity. Thus, to keep them working properly, one needs to keep the balance, e.g., by switching something off as another appliance is to be turned on. In this way, we aimed at making the consequences of one's actions happen "here and now" instead of something that might happen long after and most likely somewhere else.

The Erratic Radio works like a normal radio, but also here a second layer of interaction has been added. In addition to enabling the user listen to typical radio-channel frequencies, there is another hidden receiver detecting frequencies around 50 Hz, i.e., electric fields emitted by active electronic appliances. This second receiver then controls the normal one, making it tune out as it detects these electric fields. In practice this means that the radio will start to detune and then eventually loose its channel completely as energy use increases around it. To be able to use this radio, you therefore also have to pay attention to how the energy consumption around it changes.

Fig. 1 & 2. The Energy Curtain (Panel Version) and the Erratic Radio

5.3 Comments

Both the Energy Curtain and the Erratic Radio are speculative designs. Though our experiences so far indicate that they do challenge people to think about these matters, it is at this point not possible to say much about if and exactly how they change the way people relate to energy. But this is not only a question about persuasion efficiency, but also about the kind of dialogue between design, object and use that the notion of persuasion in design seems to open up.

Inspired by studies of how objects shape the way we think and act, we have tried to use physical interactions with things as a way of giving rather complex issues a concrete form. In these examples, there is an intention to build on a tension between an everyday, or 'old', understanding of the object and the 'new' picture provided by the redesigned thing. Both the curtain and the radio work like ordinary curtains and radios, at least in the sense that one can use them like one is used to operate such things. This way, we tried to avoid creating an entirely new context, as we wanted to intervene with already established patterns of use, thereby perhaps also making the user more closely associate these new experiences with energy consumption in general.

6 Concluding Remarks

Using examples spanning from design philosophy to critical design, I have tried to illustrate that we find strong relations to foundational issues in persuasive design in a variety of areas of design discourse, including areas that at first could be seen as being at its fringes. On basis of this overview, I argued that design can be seen as inherently persuasive and that objects can be understood as a kind of arguments in material form.

My final remark, then, would be to suggest that we should try to avoid developing persuasive design into a very specialised area like so many areas of technology development have become, but instead build on the observation that this research deals with central aspects of what design is about. From such a position we may take on the challenge of how to develop design to more consciously deal with issues of persuasion. Not primarily because we want to persuade people, but because we need to understand the persuasive dimension of the dialogue between object and user that seems to be going on as we use things. Otherwise we will never fully understand the difference between 'using' and 'being used'.

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