Persuasive Design – A Matter of Context Adaptation?

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Abstract: Within the field of Persuasive Technology it is widely acknowledged that successful persuasion is dependent on timing and the ability to act within the opportune moment known as Kairos. Kairos constitutes the link between the opportune moment and the appropriate action, all in consideration of the specific context. This paper argues that the claim of persuasive design may not be the ability to change the user’s attitude or behaviour towards a given subject, but rather on the ability to create designs, which adapt the context in a way, which facilitates the ability to act within the opportune moment.

Keywords: Persuasive Design, Kairos, Context, Context Adaptation, Context Awareness

Introduction

Based on findings within and beyond the EU funded e-PLOT project, this paper argues towards a wider and more nuanced understanding of Persuasive Design (PD). Methodological and theoretical research within the field of Persuasive Technology (PT) has so far primarily focused on a further development and deeper understanding of a list of design principles argued to hold persuasive potential (Fogg, 1998). However, once applied within more established research fields such as Technology Enhanced Learning (TEL), Information Architecture (IA) and Digital Mediation of Cultural Heritage (DMCH), these design principles appear to be already widely applied. This lack of originality challenges the unique claim of PD, and gives reason to look beyond specific design principles in order to clarify the potential of PD in relation to existing HCI areas. This paper suggests that the claim of PD may more reasonably be based on a wider understanding of the rhetorical notion of Kairos (Hansen, 2009), and more specifically the acknowledgement that in order for any technology to hold persuasive potential, there must be an appropriate and adaptive balance between the technology and the context in which is applied.

As our acceptance of technology has increased, so has the influencing potential of these devices. Amongst the newly established perspectives on technology application, which are being explored is the notion of applying interactive computer technologies when intentionally changing the attitude or behaviour of users. Most often, this approach to technology is referred to as persuasive or motivational design. The definition of Persuasive Technologies includes all types of interactive computer technologies designed with the intent to change attitudes and behaviour, however location based and context aware technologies are credited as holding a particular persuasive potential.
PD is most often described in continuance of work originally presented by Stanford University researcher, BJ Fogg, who in 1998 introduced the notion of PT, and in 2003 published the first book on the subject (Fogg, 1998, 2003). Approaching the notion of computers as persuaders from a social psychology perspective, Fogg suggests that computers hold a particularly strong potential to change the attitudes and behaviours of the users, but emphasizes that the designer cannot rely on coercion or deception when influencing the user. As such, Fogg defines a specific perspective on interactive computer technologies, which distinguishes itself from e.g. marketing technologies or technologies that somehow mislead the users. By this definition, Fogg not only highlights an important link between PT and classical rhetoric, he also emphasizes that ethical reflections must play a central role in relation to this particular type of interactive technology.

**Persuasive Design – Potential and limitations**

The acknowledgement that designers are able to greatly influence the way a given situation is perceived by the user, has encouraged researchers to explore and develop theoretical, methodological and practical aspects of applying computers as persuaders. In particular, much attention has been directed towards one aspect of Fogg’s research, known as The Functional Triad. The triad constitutes a categorized framework in which Fogg has identified three different psychological roles in which a persuasive technology may function, namely:

- **Tool** (Technologies which ease the intended behaviour)
- **Media** (Technologies which enable users to explore and experience the consequences of given actions)
- **Social Actor** (Technologies which provide social support)

Fogg refers to the functional triad as a framework for evaluating and understanding the user’s experience of applying a technology, and it is suggested that the reflections regarding the psychological role of the technology may be useful to researchers as they explore the notion of persuasive technologies further. Furthermore, the functional triad is argued to be of value to designers, as an inspiration to those who aim to develop persuasive technologies.

For each of the roles in the triad, Fogg lists a number of persuasive principles, which – through analysis of a large variety of persuasive technologies - he identifies as system design commonalities. In spite that these principles have been identified and categorized through careful exploration of already existing technologies (and as such do not constitute novel design solutions), they have become one of the primary points of interest for researchers who have sought to further develop Fogg’s work.

Most renowned within the PT research community, is the Persuasive System Design model (PSD), which was introduced by Oinas-Kukkonen and Harjumaa in the acknowledgement that the functional triad lacked a design oriented perspective. The PSD model presents a categorization of the persuasive principles of the functional triad, which establishes a link between these principles and well-known features of requirement specifications, thereby making the categories more apprehensible for system developers. (Oinas-Kukkonen, 2008). Other principle based research approaches include, mapping the principles to areas such as classical rhetoric and information architecture (Lykke, 2009; Pertou & Iversen, 2009), and
investigating and formulating individual principles and triad related perspectives, such as credibility, praise and rewards (Bertelsen & Schärfe, 2010) (Anne Gerdes and Øhrstrøm, 2011).

Each of the theoretical and practical approaches to the further development of the PT framework constitutes important perspectives in relation to establishing a deeper understanding of the potential of PT. However, the focus on formalising the PD principles also comprises a significant challenge once these theories and methods are applied within other research areas. As the design principles have originally been identified through analysis of already existing technologies, they themselves do not contribute with new approaches to design. As a result, the unique claim and novelty of PT is questioned when the framework is applied within more established research areas.

**Persuasive or simply enhanced?**

Several researchers have addressed the challenges related to Fogg’s original work, since the establishment of the PT research field. One of the first to point towards aspects which might be questionable, was Bernadine Atkins, who in 2006 published the paper “Captology: A Critical Review”, in which she places a strong focus upon the ethics of PT and also argues towards a distinction between education, advocacy and persuasion (Atkinson, 2006).

Whilst Atkins approach may have motivated others to place a stronger focus on the ethics of PD, it can be argued that the PSD model exemplifies an attempt to not only develop and applicable method for persuasive system design, but to also meet some of the implied problems related to the applicability of Fogg’s original framework. However, while the PSD model presents a more formalized understanding of the content of the functional triad, the focus remains on the individual principles, rather than on the different roles of the triad, and does as such differentiate itself from Fogg’s original recommendations regarding the triad.

In the process of exploring the cross field between PD and IA, Marianne Lykke comes to the conclusion that whilst the persuasive principles can be related to IA components, the principles themselves do not lead to any extraordinary design ideas (Lykke, 2009). Thereby Lykke’s conclusion exemplifies one of the fundamental challenges when applying the existing theoretical and methodological framework for PT to more established fields; namely that the framework does not provide argumentation towards a unique claim for PD, but merely comprises a reflective meta-layer to existing design approaches.

Similar conclusions were reached within the EU funded e-PLOT project, as steps were taken towards defining a theoretical and practical definition of persuasive learning designs. Several researchers, including Fogg and Atkins, have suggested that an overlap exists between learning and persuasion, but one of the challenges within the e- PLOT project has been to argue towards areas in which PD may in fact enhance existing learning technologies to an extent where the technologies may be defined as persuasive. The theoretical framework sought to define the cross field between the existing PD framework and a constructivist approach to learning, and in practice the two technologies which were included in the project were analysed from a PD perspective in order to determine areas in which PD might
contribute to the learning process. The acknowledgement that learning is something which takes place within an individual, and that we construct knowledge based on our experiences (Biggs & Tang, 2007), shares a number of commonalities with the notion of persuasion, where endogenous motivation is regarded as particularly important (Fogg, 2003). It became evident that both in theory and practice, the persuasive principles were already widely at use in technology enhanced learning, and as such offered no new perspectives to the further development of the technologies. From a theoretical perspective the approach to PD sprung from Fogg’s original work, but was supported by perspectives from classical rhetoric and temporal logic and more nuanced definition of persuasion (S. B. Gram-Hansen, 2012). Subsequently the approach to PD was related to a constructivist approach to learning, in the acknowledgement that this particular pedagogical approach showed several similarities to the theoretical framework for PD (S. B. Gram-Hansen, 2012).

Likewise, on-going research in the cross field between PD and digital mediation of cultural heritage argue that the persuasive principles do not constitute a unique claim for PD, nor does the notion of changing the attitudes or behaviours of the users. Cultural heritage can be seen as identity-forming and –reproducing and aiming to re-establish the lost relation to our past and rediscover our roots (Lund, 2004; Lund, Andersen, Christensen, Skouvig, & Johannsen, 2009). E.g. the former Danish Ministry of Cultural Heritage was created in order to rediscover the cultural roots of the Danes in a project that can be viewed as nationalistic in its aim: to establish a national identity. As such, the project exemplifies that the concept of attitude change is also an intended outcome which is focused upon in areas beyond the field of Persuasive Technology and PD. (S. B. a. G.-H. Gram-Hansen, Lasse Burri, 2013)

With several researchers from different areas coming to the same conclusions about the limitations of the primary elements in the existing PD framework, it appears reasonably to take a step back and work towards an understanding and potential definition of PD, which acknowledges and incorporates the work already achieved within the PT field, but which also clarifies the areas in which PD may potentially enhance the design and development of interactive computer technologies in different application areas.

**A matter of appropriate balance**

In exploration of the notion of persuasion, and in the aim of extending the theoretical foundation of Persuasive Designs, some researchers approach the challenges of this novel field from a foundation in classical humanistic traditions such as rhetoric, logic and ethics.

The very idea of persuasion is commonly considered as having been brought into the world by classical rhetoric. Classical rhetoric has been systematically related to social psychology by Michael Billig (Billig, 1996). A central statement in Billig’s *Arguing and Thinking*, is that we may gain significant insight into human perception by exploring argumentation and especially by studying what classical rhetoric can contribute to the field. Billig observed that social psychology had had a tendency to identify thinking with rule following. From classical rhetoric he learned, however, that while arguments and thought may well be based on rules, rules themselves arise from arguments, and indeed, may be disputed by arguments, that is to say that while rules do exist, they are not deterministic. One should not rely on the assumption
that following certain rules will always yield the desired results (Hasle, 2007; Pertou & Iversen, 2009).

One of the concepts, which are generally accepted as being a key element and a requisite for successful persuasion, is the rhetorical notion of Kairos. Kairos is often described as timing, or the ability to perform the appropriate action at the right time and in the right place. In term of appropriate, the performed action is required to be not only effective but also ethical. The concept sums up the principle that any rhetorical approach is based upon the specific situation, and that comprehension of the context as such is one of the most vital resources when deciding upon rhetorical means to apply to a given argument (Hansen, 2009). Hansen specifies that the definitions of Kairos vary from narrow translations such as “particular point in time” and “specific circumstance”, to wider concepts such as “situation”, “occasion” and “opportunity”.

When relating the different meanings of Kairos in a PD context, the narrow definition serves well in relation to specific design related choices, such as determining the appropriate time for initiating a persuasive strategy (i.e. triggering a specific behaviour), an argument which has been raised by several researchers over the years (Aagaard, 2008; Glud & Jespersen, 2008) The wider definition on the other hand, supports the argument that in order to successfully select and apply a persuasive principle to the design of a technological device, the designer must beforehand acquire a fundamental understanding of the context in which the device is to be applied, and use this knowledge to create a technology which will be appropriate to the given situation.

Kairos in itself is a powerful and multifaceted concept that is not easily formalized. As such, even though Kairos is vital in relation to successful persuasion, the concept in itself does not translate easily to the digital context of persuasive technologies. However, the challenges related to integrating the notion of Kairos in the development of interactive technologies, may be addressed by considering Arthur Priors perspectives on temporal logic. More specifically, the development of PDs may benefit greatly from Priors arguments that time is not only a specific moment but also a wider contextual concept, which he distinguished between as A-time and B-time Priors notion of B-time refers to the objective perception of time, which has dominated the philosophical and the scientific debate for centuries and which is expressed by for instance traditional calendars. A-time on the other hand refers to the contextual perception of the present moment, and takes into consideration the imbalances which are caused by previous events (Øhrstrøm, 1995).

Kairos as it is described by Hansen (2009), may be related to A and B time, by considering Priors notion of A-time as the formalization of Hansen’s wider definition of Kairos, whilst Priors notion of B-time may be related to Hansen’s narrow definition of the concept. Glud and Jespersen elaborates upon the importance of considering not only Kairos but also Prior’s notion of A- and B-time in the development of persuasive systems, in a conceptual analysis of Kairos in relation to location based services. They conclude that inclusion of Kairos in the development of mobile persuasive technologies is spatiotemporal and demand that all conceivable time dimensions are taken into consideration (Glud & Jespersen, 2008)
The different perspectives of Kairos presented by Hansen (2009) are inseparable in the respect that both must be taken into consideration when determining the appropriate moment to initiate a persuasive action. Likewise A- and B- time cannot be considered separate, but must both be taken into account when designing persuasive systems. In order to fully conceive the notion of appropriate timing, one must include both a broader understanding of the defined aim of the process, and consider the contextual reality of the user whilst the steps of the system is being completed.

It may be argued that a similar correlation or balance exists in relation to the concept of intentionality. PT is originally defined as interactive technologies that are designed with the specific intention to change the user’s attitude and/or behaviour (Fogg, 2003) and as such the intention itself becomes a central element in the understanding of PD. Designers will most often have a specific and quite complex intention with the design of a technology. This intention must to some extent be balanced towards the user’s intention behind applying the technology – an intention that is most likely influenced by exogenous factors. In consideration of the designer most often having a specific use context in mind when developing a technology, it may reasonably be argued that both context and design of the specific technology must be taken into consideration if such technology is to facilitate a persuasive purpose.

The notion of approaching the concept of PD as being multi-layered has furthermore been included in Fogg’s original framework. When introducing the concept of persuasive technologies, Fogg distinguished between Macrosuasion and Microsuasion as a way to explain and clarify the dynamics of persuasive technologies. The distinction between the two is important in terms of both analysis and development of PD in most computer technologies. The term Macrosuasion describes an overall persuasive intent of a technology, whilst Microsuasion refers to the use of PD principles in technologies which do not necessarily have an overall persuasive goal (Fogg, 2003). As was the case with temporal logic, Macrosuasion and Microsuasion can reasonably be related to the definition of Kairos as defined by Jette Hansen. The primary distinction between Fogg’s definition of Microsuasion and Microsuasion, in relation to the presented definition of Kairos and the reflections concerning the persuasive intention, is that whilst Fogg argues that Microsuasion may be applied in technologies which holds no macrosuasive intention, the latter two perspectives insist that both the wider and the narrow perspective must be considered if the persuasive intention is to be fulfilled.

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In the previous section, it is exemplified how the multi-layered perception of Kairos, may be linked to several of the perspectives which have been addressed as relevant to the further development of the PT and PD research field. Individually, these different examples do not provide sufficient insight to clearly define a unique claim of PD, however, the commonality between the different perspectives does motive a further consideration of the notion of ensuring an appropriate balance.
As mentioned, Kairos is widely acknowledged as a requisite for persuasion, and as such, a successful persuasive design must necessarily strive to comply with all three dimensions of the concept. In the process of doing so, location based and context aware systems have been credited as holding a particular persuasive potential, as they enable the design to incorporate location and time in the design. In 2007 mobile phones were argued to be the potentially most efficient persuasive technology, as they not only hold a particular technological potential, they also benefit from a unique affection from their users and have become the device which is brought into almost any situation, and widely accepted by others. (Bødker, 2012; Fogg & Eckles, 2007).

As such, various technological devices can be argued to hold the potential to meet both the timely and location based dimension of Kairos, however the persuasiveness of each technology is dependent on the device also being applied in the appropriate manner within the given context. This third and final dimension calls for a different and more nuanced evaluation of the intended use context, it may not be formalized and it may be argued to point towards the necessity of not only designing the appropriate technology, but also design the appropriate balance between the technology and the intended use context.

Previously it has been argued that the intentionality of the designer is not only directed towards the technology, but also towards the intended use context, and that by adding a technology to a given context, the user’s perception of that context is altered (S. B. Gram-Hansen, 2012). In consideration of the notion of appropriate manner, it may be that this perspective should be extended, in the sense that PD not only acknowledges the impact that the technology has on the context, it aims to create the appropriate balance between technology and context.

By doing so, PD may be considered an approach to design that particularly incorporates the notion of Context Adaptation (CA). CA is most often referred to in relation to development of context and location aware systems, as these devices actively adapt information about the contexts in which they are applied. However, considering the impact that a technology may have on a given context, CA in relation to PD may be considered a reciprocal balance, were the technologies adapt the appropriate information about the context, and the context is designed to adapt the technology.

In practice, this approach to PD distinguishes itself from PT, in a way that acknowledges the theoretical and practical steps taken so far within the PT research community, by distinguishing between PT and PD approaches. System oriented methods such as the PSD model address the challenges related to the specific technology design, where as PD is considered a wider concept which focuses on the establishment of an appropriate balance between technology and context, and which may serve as a meta-perspective to more established research fields.

References


