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Track 11: Technology and moral responsibility

The Reflexive Designer

- A method for sustainable technology
development

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INTRODUCTION

The often considered most evasive part of the frequently used trinity of sustainability (economical, environmental and social), social sustainability, is also the one we more often than not tend to leave behind. It might be justified theoretically due to its complexity in order to operationalise and analyse it (which is put forward by Marshall & Toffel, 2005, among others), but is that reason enough and what are the dangers in doing so? In this article the opposite action strategy is chosen i.e. to actually focus on the concept of social sustainability by analysing the relation between social sustainability and development of technology. In doing so, a suggestion is put forward, that design critique (resting on a critical tradition) could work as framework for further understanding, and that the notion of 'reflexive design' (proposed by among others Grin et al., 2004, resting on 'reflexive modernisation' by Beck, Giddens & Lash, 1997, and 'the reflective practitioner' by Schön, 1983) could actually work as a design method to enhance social sustainability in technology development. To be more precise, the suggestion here is that what is often forgotten in traditional design methods are (a) the position held by the designer her/himself before even meeting the stake-holders and the claim that technology designers almost act as neutral and (b) therefore could put the major responsibility on the purchaser or the user.

After this introduction, the paper has the following disposition; in section two, technology is presented as a hostage of first modernity in combination with a discussion of an alternative pathway. In section three the notion of social sustainability is examined briefly initially and thereafter combined with technology development. Following on these two discussions, the concept of

‘reflexive design’ is scrutinised and explicitly related to social sustainable technology development to be able to conclude with the last section, ‘critical reflection and constructive action’ where conclusions and ways forward are presented.

TECHNOLOGY: HOSTAGE OF FIRST MODERNITY

Credibility, legitimacy and growth of social science has for many years been based on a close connection with the idea of modernisation as the important objective in social transformation (Becker et al., 1997). And, more importantly, modernisation defined as economic growth and achieved through a western view on rational behaviour (ibid.). This normative foundation for social transformation has also, almost as a hostage, used technology as its crown jewel to illustrate, explain and legitimise its inner logic.

And even if there do unquestionably exist criticism, as for example the Marxist criticism of modernisation theories, it is not shown in policies and guidelines for societal development. There still exists a traditional development paradigm where new theoretical and conceptual challenges are not taken into account. More explicitly, technology has for long been held captive by a rationalistic and economic growth perspective where other implications, such a social implications, are seldom touched upon.

As Winner points out: “the beguiling but ultimately mistaken notion that technologies are ‘merely tools’ – things we pick up, use and then easily put away – poses a major barrier for understanding how we live today” (Winner, 2002). A similar question was raised by Stolterman in connection to expectations and understanding of digital transformation:

“How are information systems changing our society, our organizations, our social structures, our understanding of information and knowledge, our understanding of ethical and aesthetical aspects of the use of information systems?” (Stolterman, 1995:124)

Stolterman & Croon Fors continue the line of thought when emphasising the societal influences of digital technology by advocating a critical stance against “unreflective acceptance of digital technology” (Stolterman & Croon Fors, 2008:1), arguing that the big issues tend to be neglected. The actual purpose of involving in different areas of technology development is as such often too intangible and isolated from the big picture and there is a need for an intentionally critical position “to reveal the potentiality of technology and the way it positively can influence people’s experiences of their total lifeworld” (Stolterman & Croon Fors, 2008:7).

One possible explanation for the absence of these questions could be found in the perception of these issues as too complex and out of reach, which is claimed here, is happening to the issue of social sustainability in relation to technological development.

The possible impact of such a standpoint is multifaceted, (a) it could delimit the notion of technological development to only include solutions related to

economic growth, (b) which in its turn could delimit the possibility to get support for other kinds of technological development paths and (c) which, in the next turn, might hinder us from actually understand the social transformation we are part of and create ways of participating in it.

With the concept of reflexive modernisation theory Beck (1997) tackles these issues with a separation between first and second modernity where first modernity is characterised by simple modernisation processes of progress and growth. And, as a consequence, have developed blind spots for risks and side effects and, on top, lacks the ability to develop and follow strategies to deal with them. The inability stems from a logic of homogenisation and elimination of local knowledge i.e. the lack of “the craft to take contextual conditions into account” (Scott, 1998:309-341). Therefore, according to Beck, a re-orientation of modernisation (i.e. a second modernisation) is needed where we must recognize the normative dimensions to not end up in a situation where we throw away the child (the ‘demand of the Modernity’) with the bathwater (side-effects and risks) (Beck, 1997:14). In addition, Beck, Bonns & Lau (2003) argues for a different view of rationality, from expertise to contextual wisdom and development processes are politicised.

The above line of argument is by Grin (2005) connected to both Latour’s collective interpretation and Giddens’ structuration theory with a discussion about how a critical-reflective role “needs to be complemented with an elaboration of how this might help to transform practices and identify and create new opportunities for these practices to connect to each other, and contribute to a more comprehensive process of what I [Grin] like to call Re-structuration: the interrelated transformation of structure and action through structuration processes guided by the deliberate Re-orientation which Latour holds to be Re-Modernisation’s primary meaning” (Grin, 2005).

A re-orientation by transforming recursive practices through ‘discursive will formation’ where seemingly self-evident assumptions and anticipations is critically scrutinised. Potential difficulties are suggested to be dealt with through a combination of small ‘steps beyond the rules’, i.e. indicating that the devil is in the details.

The proposal by Grin (2005) is that central actors should be provided with the ‘strategic insight’ to induce a succession of steps. These guiding visions (from the German term Leitbild) serve as a mental image of an attainable future which offers a perspective beyond established assumptions and anticipations. According to Grin, these guiding visions may give ‘flesh and blood’ to Latour’s metaphorical ‘lever’ effect by help identifying concrete strategies need on the niche and regime level. Transforming the vision of radical modernity into context-specific visions (in plural) may therefore contribute to joint action for reflexive modernisation (Grin, 2005).

SOCIAL SUSTAINABILITY AND TECHNOLOGY DEVELOPMENT

Sustainable development is often perceived as a conceptual counter-position to ‘modernisation’ (Becker et al., 1997). And whereas modernisation dominated

the social sciences from 1945 and onwards it has since the 1970's been questioned with respect to three aspects (ibid.); (i) sustainable development breaks with the equivalence between development and economic growth, (ii) sustainable development questions the assumptions of a continuous, linear and more or less harmonious development for societies along a given track, and (iii) it puts to rest the idea that there is one, and only one, way and direction for modernisation to occur, which all human societies must follow. According to Becker et al. sustainability emphasizes the diversity of societal paths of development, depending on their particular cultural or political as well as their ecological starting points. Overall, it is a rejection of 'development' and 'modernisation' as mere economic growth formulated as universal by few for many (often put forward by scholars in feminist and post-colonial studies). In addition, social sciences have until now not developed their full potential within the sustainability field of research but left the field open for a strong bias towards the natural sciences (Becker et al., 1997).

Furthermore, social sustainability is often revealed as the most evasive of the trinity of sustainability; economic, environmental and social sustainability (McKenzie, 2004; Littig & Griessler, 2005). Elkington coined the concept of 'triple bottom line' (Elkington, 1997) and argues that even if social sustainability is included in the triple bottom line, the role played is rarely equal to the economic and environmental concerns. For example, The Global Reporting Initiative (GRI, established in 1997) has reported: 'in contrast to GRI environmental indicators... reporting on social performance occurs infrequently and inconsistently across organizations' (GRI, 2000). However, as McKenzie (2004) points out, social sustainability is far more difficult to quantify than economic growth or environmental impact, and the existing all-purpose indicators of social sustainability are too general to be useful. In addition, the 'social' element is seen as subordinate to the two others (McKenzie, 2004). And even if social sustainability's subordinacy and evasive position might be justified theoretically due to its complexity in order to operationalise and analyse it (which is put forward by Marshall & Toffel, 2005, among others), the question is whether that is reason enough to leave it behind and what kind of dangers are accompanied by such a pathway.

Only recently there have been attempts to create interdisciplinary and integrated models which aim at undertaking genuine research within the framework of sustainability into what sustains and promotes an equitable and just society (McKenzie, 2004). However, as McKenzie points out, it is necessary to define social sustainability as distinct from environmental or economic sustainability in order to develop its own models. Usually these attempts have had a strong focus on a single definition linked to measurable indicators resting on the thought that social sustainability is a 'condition' (see e.g. Pepperdine, 2000).

McKenzie, on the other hand, proposes a combination of condition and process with the following definition: *social sustainability is: a positive condition within communities, and a process within communities that can achieve that condition* (McKenzie, 2004) and presents the following features as indicators of the condition but also steps towards their establishment and implementations as aspects of the process:

- equity of access to key services (including health, education, transport, housing and recreation)
- equity between generations, meaning that future generations will not be disadvantaged by the activities of the current generation
- a system of cultural relations in which the positive aspects of disparate cultures are valued and protected, and in which cultural integration is supported and promoted when it is desired by individuals and groups
- the widespread political participation of citizens not only in electoral procedures but also in other areas of political activity, particularly at a local level
- a sense of community ownership
- a system for transmitting awareness of social sustainability from one generation to the next
- a sense of community responsibility for maintaining that system of transmission
- mechanisms for a community to collectively identify its strengths and needs
- mechanisms for a community to fulfil its own needs where possible through community action
- mechanisms for political advocacy to meet needs that cannot be met by community action

To focus both on condition *and* process highlights that a definition of social sustainability cannot be seen as universal and final, it is locally situated and should as such be locally translated and enacted. It also addresses the normative dimension in terms of accountability and justice. According to Becker et al. (1999) it is important to keep in mind the multiplicity and inherently dynamic character of the meaning of sustainability in stead of referring to static structures or qualities. Sustainability should therefore be understood as *a valued quality of processes, structures and systems* (Becker et al., 1999). This gives that the hermeneutic, interpretative and critical perspectives of social sciences might help to explore the cultural and social meanings that are attributed to these processes in terms of deeply incorporated habits or social practices. Thus, analysing the different meanings attributed to sustainability point to tensions between competing socio-political projects with different rationalities. The main challenge is then to carry out a non-essentialist understanding of sustainability which is capable of transformation, and simultaneously take its embodiment and embeddedness into account (Braidotti, 1999) and the suggestion here is that reflexive design is a possible way forward in doing so.

REFLEXIVE DESIGN

The core of the concept of reflexive modernisation (Beck, Giddens & Lash,

1997) is that it draws attention to “a process of judgement in which assumptions, knowledge claims, distinctions, roles and identities, normally taken for granted, must be critically scrutinised” (Grin et al., 2004:126). This also involves a crucial element of creativity, value dissent and major uncertainties (Beck, 1997; Beck et al., 1997) and a redefinition of existing fundamental differentiations and distinctions (such as nature-technology) which in turn implies rule altering politics.

By then using design theory that rests on a critical tradition (sometimes referred to as ‘critical design’, see e.g. Blevins, 2007) as a foundation for understanding the processes of technology development several options are disclosed. The basic assumption is that development processes are design actions (Löwgren & Stolterman, 2004). They are as such co-created in multi diverse contexts and often non-linear and complex. But still, they are design actions i.e. actions stemming from perceptions, notions and ideas of a possible future and the result of the actions are closely connected to these perceptions. However, these perceptions are not always deliberative, conscious, and elaborated on. They might hide underneath formal and socially accepted norms on development and future. But they will nevertheless unveil themselves in the creations.

“This means that practice is of extreme importance, but has to be analyzed and judged not by its own scales of measurement, but in relation to some overall values and ideals. Practice needs to be criticized, analyzed and reinterpreted” (Stolterman 1995:124)

In technology related development processes, for example in the creation of an information system, highlighting, elaborating and analysing these conscious and unconscious notions and ideas i.e. positions, creates a platform and structure to take social sustainability into account. Not as a traditional view on method (as possible to illustrate and describe as a generic process), but even so, both as a point of departure and line of thought to return to. Reflexive design “requires more than the usual involvement of stakeholders and co-producers in design: additionally, such ‘discursive will formation’ requires that institutionally embedded assumptions, knowledge claims, distinctions, roles and identities which are normally taken for granted, must now be critically scrutinised” (Grin et al. 2004:128). To be able to achieve fundamental changes in practice “we need to influence the values and ideals of practitioners” (Stolterman 1995:125).

And there are several value-oriented discussions put forward by among others Friedman, (Friedman, 1997, 2004) and Friedman et al. (Friedman et al., 2003, 2006), Cross (Cross, 2001), Kling & Star (Kling & Star, 1998), Nelson & Stolterman (Nelson & Stolterman, 2003), Löwgren & Stolterman (Löwgren & Stolterman, 2004), Margolin (Margolin, 1989, 2002) and Margolin & Margolin (Margolin & Margolin, 2003) and Nardi et al. (Nardi et al. 1999, 2003). And we can see arguments supporting human values through system design in computer ethics, social informatics, computer supported cooperative work (CSCW) and participatory design (PD) (see e.g. Friedman, 2006). And there are different methodologies and methods developed in these areas that hold great potential (e.g. participatory design methods, value-sensitive design features etc.).

These approaches are rich and rewarding and the notion of reflective design does not attempt to replace them by any means, on the other hand, reflexive design is highly related to them. Accordingly, the foundations are to be found both in participatory design, value-sensitive design, critical design, ludic design, critical technical practice and reflection-in-action (see Sengers et al., 2005 for a richer description of the relations). The idea is though that reflective design holds yet another important message that needs to be addressed i.e. the call for “a systematic approach to folding critical reflection into the practice of technology design” (Sengers et al., 2005). And according to Sengers et al. critical reflection could be defined as a way of *bringing unconscious aspects of experience to conscious awareness, thereby making them available for conscious choice* (Sengers et al., 2005:50).

To then try to unfold the definition into a systematic approach Sengers et al. proposes six principles:

1. Designers should use reflection to uncover and alter the limitations of design practice (to identify unconscious values and assumptions that are built in the very way we conceive of design problems, to analyze what practices and values are marginalized in HCI practices, to develop methods to bring marginalized practices to the center, and to stimulate debate on the activities and values HCI practitioners can and should support)
2. Designers should use reflection to re-understand their own role in the technology design process (to make conscious the personal preconceptions that are shaping their approach to design)
3. Designers should support users in reflecting on their lives (the central aim of the critical project is to enhance human freedom by supporting critical reflection and designers can play a strong role in this project by offering users new ways of experiencing and reflecting on their activities)
4. Technology should support scepticism about and reinterpretation of its own working (technologies are not inherently values-blind, they optimize different points of view and it is essential that we as designers work, not only to support users in reflecting on their activities, but to leave open a space for them to reflect on, and perhaps reject, how our technology is influencing their choice of activities and their engagement in these activities, and to feel empowered to re-appropriate the technology for alternate ends)
5. Reflection is not a separate activity from action but is folded into it as an integral part of experience (we should not design for reflection as a stand-alone activity but as one component of a holistic experience which also includes ongoing activity)
6. Dialogic engagement between designers and users through technology can enhance reflection (to avoid the designer standing aloof as a ‘reflective designer’ benignly passing down opportunities for reflection)

Together these six principles, drawing on critical theory, form a framework that could serve as guidance for designers to rethink dominant metaphors and values and engaging users in this same critical practice to “esign for positive social effects” (Sengers et al., 2005).

The combination of social sustainability, design critique and reflexive design has also been addressed by Blevis, (Blevis, 2007) and Blevis et al. (Blevis et al. 2007) by presenting Sustainable Interaction Design (SID). Blevis states that; “as a starting point for a perspective of sustainability... design is defined as an act of choosing among or informing choices of future ways of being¹” (Blevis 2007:503)

By choosing such a definition of design Blevis points out that it becomes apparent that design values, design methods, and designs themselves may be evaluated. The underlying thought is that there are no passive or neutral positions, and designers need to learn (a) how to design in a far more complex and critical frame, while developing a language of engagement with the ability to constitute dialogues of transformation with ‘clients’ or communities and (b) how to develop new and economically workable path finding and service practices (Fry, 2005). Notable is also that that sustainability should be a focus in interaction design actions as well, rather than by solely expecting such effects to be the dominion of legislation and public policy (Blevis, 2007).

The general framework Blevis et al. (Blevis et al., 2006) is advocating describes notions of design in terms of design values, methods, and reasoning and the bottom line is that SID prescribes an ethical imperative to create things that last” (Blevis et al., 2006:25) and a need to think beyond. As such, “issues concerning sustainability cannot be reduced to individual measurable properties of a design. Instead, sustainability is always about the whole, and about how all possible aspects are composed into one.” (Blevis et al. 2006: 29).

“Experience and insights based on an abstract conceptual understanding must be coupled to a pragmatic and intimate relation to actual real designs. Design critique is a way to foster such a sensibility of the particular over time within the mind of the designer” (Blevis et al. 2006:29)

Notable is that the image of sustainable design is two-folded (see Mankoff et al., 2007):

- Sustainability through design – how interactive systems can be used to promote more sustainable behaviours
- Sustainability in design – how sustainability can be used as a critical lens in the design of interactive technologies themselves

At the same time as it serves as a critical lens enhancing understanding it is also important to consider design as holding a potential to “go beyond” and actually contribute in creating technical solutions supporting and promoting sustainability. The potentiality factor is also linked to the discussion above about technology and second modernity, i.e. that we tend to expect too little

¹ The definition is inspired by several important design authors; Fry (Fry 2004), Willis (Willis, 2006), Winograd & Flores (Winograd & Flores, 1986), Heidegger (Heidegger, 1954), and Alexander (Alexander, 2002)

and that our point of departure effect the designs.

Both Sengers et al. and Blevis et al. touches upon the same bottom-line; design of technology is not only related to a sustainable development it also holds potential for reproducing values and ideals supporting a non-sustainable development (for example a short term economic rationality) and it is of great importance that designers (and researchers) acknowledge their own part in such a development process. Blevis et al. put forward a framework with values, methods and reasoning whereas Sengers et al. are more detailed and includes guiding principles for designers to reflect upon but the argumentation derives from critical theory combined with a call for constructive action. As Grin et al. points out; a reflexive design process holds potential to turn “a technically good idea into a ‘socially robust’ one by redesigning it, turning side effects into design criteria” (Grin et al, 2004:128, see also Gibbons et al., 1994).

CRITICAL REFLECTION AND CONSTRUCTIVE ACTION

Resting on the discussion above on technology as a hostage of first modernity (and its possible contribution to a second modernisation), social sustainability as a elusive notion (maybe especially in relation to development of information technology), and reflexive design as a design method to address the close relation between design actions and ideals and values (i.e. there are no neutral positions) and consequently, that design practice constantly needs to be criticized, analyzed and reinterpreted, the focus here turns to the designer in performance.

In 1998, Ehn & Malmborg posed the question: - what is the role of the designer in the so-called digital age? and begins to develop an answer by relating the question to transformations in design theory from functionality to design ability (again resting on Schön’s view of how designers reflect-in-action and have ‘conversation-with-the-material, see Schön, 1983). And, stating that design is less instrumental and “more as a historically situated social process that is full of uncertainty and ambiguity” (Ehn & Malmborg, 1998: 212). Concluding that design theory is rather support for “reflections about conditions for changed human activity” (ibid.) and can help improving the designer’s “competence to make ethic and aesthetic judgments that are appropriate in their context” (ibid.).

Following on such arguments, what is needed is both a critical stance to information technology and competence to design i.e. a combination of critical reflection and constructive action (Ehn, 1998).

These thoughts could also be found in Stolterman & Croon Fors described as ‘critical HCI research – a research position proposal’ where they argue that since a majority of contemporary research in the field of information technology is radically changing our everyday lives without taking responsibility by making the underlying values and ultimate goals of their efforts visible and open for critique” (Stolterman & Croon Fors, 2008:2). While addressing the researcher’s choice of methodology, the object of study and whom to serve, they argue that a unique research position is created and

this position needs to be intentionally critical to generate a creative approach that aims for the inherent potentiality of digital technology (Marcuse, 1964). But as long as this is not taken as a serious challenge they conclude that the “huge and almost infinite potentiality hidden in the digital technology” will not be revealed (Stolterman & Croon Fors, 2008:19).

A suggestion here is then that it is possible to (for example); combine McKenzie’s ten features of social sustainability with Sengers et al.’s six principles for reflective design on a level of empowerment and emancipation. The frameworks are both resting on a thought of actively formulating a locally situated shared knowledge that underpins conscious choices. And not doing so with hierarchical positions such as ‘the designer who designs for a user’ but as an equal process between them that continually includes critical reflection to avoid simplifications of a complex relation.

CONCLUSIONS

The aspiration of this article was to, by actually focusing on the often abandoned concept of social sustainability and more specifically analysing the relation between social sustainability and development of technology with the help the notion of ‘reflexive design’, put forward a framework to enhance social sustainable technology development. To be more precise, the suggestion was that is that what is often forgotten in traditional design methods are (a) the position held by the designer her/himself before even meeting the stakeholders and the claim that technology designers almost act as neutral and (b) therefore could put the major responsibility on the purchaser or the user.

And as such, the combination between an elusive social sustainability concept and designers that are not acknowledging their own role in the process holds potential threats. On the other hand, by deliberately focus on social sustainability, recognising its complexity and relate it to critical reflection and reflexive design methods (i.e. constructive action) we can create a possibility to grasp technology’s potentiality.

Hopefully the line of thought has been presented in a clear and easy-to-grasp manner and it is well argued for that avoiding complexity and detach oneself from the process also takes away the opportunity to alternative pathways.

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