

The soft side of ecodesign

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Abstract

In the field of ecodesign research, existing paradigms still stress the importance of relatively traditional internal value chain issues, such as formal organisation, tool development, customization and formal management commitment. Field research shows that companies perceive additional aspects equally or even more importantly. Such aspects include more social, psychological and sometimes intangible processes that can ‘make or break’ ecodesign implementation. Unwillingness to cooperate, gaps between ecodesign proponents and executors, and other organisational complexities play an important role. Moreover, it has become clear that the relative importance of such issues play different roles in different stages of the product development process (PDP). Discrimination between earlier and later stages of the PDP reveals additional insights that researchers in academia and industry alike should incorporate in prescriptive and descriptive research activities related to ecodesign implementation. © 2005 Elsevier Ltd. All rights reserved.

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1. Introduction

“...In-house designers and design consultants are in a unique position to influence environmental strategy. The design profession can do this by changing its emphasis and by giving the environment a key place within product parameters. New design tools will have to be added...” says Borsboom [1] in one of the first publications stressing the role of the designer in the context of ecodesign. Although environmental issues in design are almost a century old [2], it has only been since the early nineties that interest in this field has grown.

Taking a good look at what has been accomplished in the past decade in terms of systematically integrating environmental considerations in product design, it can be observed that at present there exists a wealth of idea, tools, methods, pilot studies, information and knowledge, from business, policy, as well as scientific perspectives. From the policy perspective, legal frameworks mostly or partly addressing environmental issues in product design are currently in place in various regions of

the world, including the European Union (e.g. WEEE, RoHS) and Japan (e.g. the Home Appliance Recycling Law), or are being drafted (e.g. EuP, IPP). Standards are in place that address, in varying degrees of sophistication, environmental aspects of product development, and that are either prescriptive (e.g. ISO14000 series) or non-prescriptive (e.g. ISO14062). Apart from that, a range of national and international government funded projects have been completed or are currently carried out. From the science perspective, at least five major conference series are almost exclusively devoted to environmental issues in product development; hundreds of scientific articles have been published, prepared by dozens of scientific and applied research groups at consultancies and academia across the world. From the business perspective, there is some clear operational evidence of ecodesign activities, which can be verified through for example company visits and statements in sustainability reports and other publications. Also, many companies have installed forms of product-oriented environmental management systems, are active in environmental benchmarking and/or have brought products to the market with (claimed) superior environmental performance.

Yet, in the community of researchers and practitioners that are involved nowadays with Design for Environment (DFE) it

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is common to hear dissatisfaction expressed about the frequency, quality and speed of the process of implementation of DFE practices in the electronics industry. Around the turn of the millennium, it was common, for researchers and companies alike, to express optimism about opportunities for competitive advantage from ecodesign activities; win–win paradigms seemed to be dominant [3–5]. More recently, calls for additional proof for this perceived benefit, especially on an overall business scale, have become louder. Whereas in the late nineties the focus was on showing that products with improved environmental attributes could indeed be made at little or no extra costs, little evidence (except perhaps in [6]) was created that such individually successful activities could deliver the promised competitive advantage when integrated in existing business. Evidence was mainly created in the form of prototypes and/or in niche markets; the lack of convincing evidence remains especially persistent in mainstream industrial business-to-consumer activities. Although repercussions of economic recession will undoubtedly have contributed to this retrenchment of environmental optimism, the lack of demonstration that existing paradigms can successfully materialise in regular industrial activities is likely the principal source of dissatisfaction.

This observation has been noted and is shared by fellow scholars. Tukker et al. [7] state that ‘...even in countries where method development, education and dissemination are reasonably mature, actual environmental product design still scores relatively low in the maturity profiles ...’. Similarly, Baumann et al. [8] state that ‘...there has been a lot of talk of environmental product development, but relatively little change in practice...’. Statements like these illustrate a shared view that ecodesign has not brought the competitive advantages claimed in the early days of this emerging discipline, a decade or so ago. Baumann et al. have taken this view as a base line for an article in the Journal of Cleaner Production in which they aim to map the green product development field from both engineering, policy and business perspectives. Based on a database containing around 650 articles, they arrive at a description of the effectiveness of research accomplishments in what they call the Environmental Product Development (EPD) field. As a result, they identify five main characteristics of research into EPD that provide understanding about the contextual aspects why EPD has not been as successful as it was predicted to become in the early nineties. These characteristics include too many normative suggestions with little practical relevance or testing; too much tool development; too little linkage between strategic intent and content; too little about the larger context of product development; and too little recognition of systems perspectives in policy making.

Based on these findings, Baumann et al. conclude that ‘researchers in the field of green product development need to adopt a more systemic perspective, in which the internal process of product development is related to other processes within the firm, as well as to processes of competition and cooperation with the economic actors in the product chain’. They also state that a systems perspective is necessary for environmental optimisation of resource use and minimisation of emissions, and that it is not sufficient to deal with

environmental issues on the level of the single company – a statement challenged in Section 7 of the present article.

Baumann et al. advocate a systems perspective to stimulate the development of green products; their main point is to better study the relation between the single company and relevant stakeholders in the product chain. And although they propose that the internal process of product development be related better with other processes in the firm, they seem to put relatively little weight on this, and make comparatively little effort to describe the need for research expansion in this latter area nor do they give examples of how issues on a micro-level negatively affect success in green product development. One of the reasons is probably that few of the publications in the survey have, in fact, studied such micro-level issues, which does not mean that they are not there. Boks [9] emphasises that there must be *a variety of sociological, psychological, emotional and perhaps intangible factors* on a company and even department level that research should address as well to make the integration of environmental considerations in industrial practice more effective. It has been suggested that such socio-psychological factors be referred to as *the soft side of ecodesign* to illustrate the contrast with ‘hard’ design and engineering aspects – hence the title of the present article. At this stage an exact definition of ‘the soft side of ecodesign’ is not given although the above characterization could come close; one of the aims of the ongoing research described in this article is to be able to define more exactly what these issues are. To illustrate what ‘soft side of ecodesign’ issues entail or could entail, an example is provided here taken from a 2003 interview with an electronics multinational. In this company, the responsibility for environmental matters is divided between two departments. One department, embedded in the corporate quality assurance department, is responsible for Life Cycle Assessment and all associated tasks. Another department, embedded in a supporting technology division is responsible for ecodesign, and is generally known to be very knowledgeable and all-round in matters of ecodesign. In this company, business units are free to seek help from either the LCA department (which is free) or the ecodesign department (which is not free). One employee of the ecodesign department stated that they had stopped, in their consultancy services to a particular electrical engineering department, to provide suggestions for improving energy consumption of their products because the electrical engineers saw this as criticism, and were not willing to accept this from a department with a relatively low internal ‘status’. The ecodesign department was afraid that the electrical engineering department would no longer seek their services and that they would choose to depend solely on (free) input from the LCA department. To avoid the loss of business, the ecodesign department had therefore decided to only provide targets without suggestions how to reach those targets.

This is an example where, even with the best of tools and knowledge about ‘technicalities’, the exploitation thereof is seriously hampered by lack of communicative skills as well as the perceived social status of individuals and departments. That this may not be incidental, was illustrated by Joseph

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