Discursive Design: Beyond Purely Commercial Notions of Industrial and Product Design Bruce M. Tharp, IDSA, The School of the Art Institute of Chicago Stephanie M. Tharp, IDSA, The University of Illinois–Chicago

Design is a mess. How do we begin to make sense of a discipline where a quick dip into the popular, trade, and academic literature confronts us with monikers such as: user-centered design, ecodesign, design for the other 90%, universal design, sustainable design, interrogative design, task-centered design, reflective design, design for well being, critical design, speculative design, speculative redesign, emotional design, socially-responsible design, green design, conceptual design, concept design, slow design, dissident design, inclusive design, radical design, design for need, environmental design, contextual design, and transformative design?

Without a compelling taxonomic or other (perhaps less "threatening") way of organizing design activity, we have difficulty understanding and communicating the range and influence of our efforts not only to our students, but to our academic and practicing colleagues and partners. What commonly results when attempting to include or exclude different creative activities are overly simplistic dichotomies: commercial versus non-commercial design, design for business versus social design, real design versus conceptual design, or perhaps most off-putting, "real" design versus art-based design or charity design. The most common way of classifying design, which is through association with object category—furniture design, houseware design, automotive design, sportswear design, consumer electronics design, etc.—is of less concern in this paper. This method was more useful at the dawn of the profession when it was more homogenous, however instead of an object-centricity, which is often predicated upon preconceptions of use and relation to the market, we are concerned with broader and less assumptive issues of design content, context of use, and designers' intentionality.

The profession of industrial design is rooted, of course, in service to industry. Our forefathers were stylists (in the least derogatory sense of the term) and collaborators with the engineering, manufacturing, marketing, and executive arms of commercial entities amid the excitement of the increasingly industrializing economies of (primarily) North America and Europe. Most typically, their efforts resulted in mass-manufactured goods sold in mass marketplaces. However, with almost a century of maturation, the discipline has responded to shifts in culture, society, economy, technology, and politics, and has ventured beyond the nest. This is not to say that Henry Dreyfuss' work of 1929 is much different from today's Henry Drefuss Associates, but that the field has broadened and there are more and varied participants.

We are currently in a period of flux (Sarstad & Emanuelsson, 2005) where voices from environmental design, the DIY (Do-It-Yourself) movement, critical design (Dunne, 2005), and socially responsible design are becoming significantly strong, and are calling for the detachment of Design from a necessarily economic and mass-productive foundation (Walker, 2007; Fuad-Luke, 2005). The "real design" notion emanates from corporate design practitioners (the undisputed First Peoples of Industrial/Product Design) and their commercial brethren who envision Design through a strict early twentieth-century lens; nonmarket activity beyond functional problem solving or styling is seen as insignificant and fringe, especially when of a critical or provocative nature. While useful, this conventional notion of design is limited and ignores the intellectual and larger social potential of design.

Having always lagged behind art and architecture, design theory and criticism have not fully conceptualized or accounted for these and similar perspectives. In this paper we will first introduce a framework that accounts for the existing range of design activity, meaningfully encapsulating the many aforementioned categories into four primary fields: commercial design, responsible design, experimental design, and discursive design. This structure acknowledges growing contemporary concerns and activity, legitimizing their challenge to the hegemony of economics within "real design," though without ignoring the fiscal imperatives of how designed objects become realized for (popular) consumption. After introducing this four-field approach, which serves to contextualize discursive design, the main emphasis of the paper will be on its problematization.

Commercial design is what is commonly understood as industrial/product design and comprises the overwhelming majority of the (object) design profession. This is design activity that is oriented toward and driven by the market, wherein success is largely determined in economic terms—sufficient return on investment. Certainly given the complexity of bringing a product to market, there may be other factors that cause a good product to fail commercially (e.g., marketing, quality control, competitive underselling), but what is crucial in this conception is that the primary intent of the designer is to create products that are useful, useable, and desirable (Cagan & Vogel, 2001), that customers can afford and that generate sufficient profit.

Taking the example of the iPhone, we have what is rudimentarily a gadget, be it highly seductive in form and sophisticated in function. It has proven quite profitable for Apple, as even between the announcement of its sale in January 2007 and the first days in the store, their stock value increased 65%, and then up to a 135% total increase by the end of the year. And beyond the realm of gadgetry, Phillipe Starck's Louis Ghost chair for Kartell sold over 200,000 units in 2006, representing over \$60,000,000 in sales.¹ While just a (highly profitable) chair, Starck includes an element of "concept" in its design, capturing the spirit of classic Louis XV chair, but in twenty-first century clear polycarbonate plastic, which gives it a ghostly quality. Aside from the perhaps "artistic" quality and intellectual content, it is still an object that was designed using cutting edge industrial processes for a mass market, with the chief intent of producing profit for Kartell.

The primary (though not only) driver of commercial design is to make money.

Responsible design encompasses what is largely understood as socially responsible design, which is driven by a more humanitarian notion of service. Here the designer works to provide a useful, useable, and desirable product to those who are largely ignored by the market. Issues such as ethics, compassion, altruism, and philanthropy surround the work, be it for users in developing or developed countries. While Responsible Design can and often does have a relation to the market—being "commercially available"— its primary intent is not a maximization of profit, but instead to serve the underserved.

The XO laptop of the One Laptop Per Child (OLPC) program is a prime example that has garnered a great deal of press in recent years. As stated on their Web site (www.laptop.org):

OLPC is not, at heart, a technology program, nor is the XO a product in any conventional sense of the word. OLPC is a nonprofit organization providing a means to an end—an end that sees children in even the most remote regions of the globe being given the opportunity to tap into their own potential, to be exposed to a whole world of ideas, and to contribute to a more productive and saner world community.

Here is a laptop computer, a prototypical industrial design product, which is made commercially available to governments and aid organizations,² though it is not "conventional" in its means of distribution or its philanthropic intent. Another example that also helps to make the distinction from Commercial Design is the Ableware one-handed cutlery set,³ which with the aid of a spring mechanism cuts a bite-sized piece of food and allows it to be skewered on fork tines with a simple downward motion. Amputees and people with limited dexterity are better able to feed themselves and live more independently. While this is a product that exists on the market, its impetus came from compassion—this object is not highly profitable as the market is fairly limited. The designer's primary intention was one of service. It is helpful to compare Ableware to OXO Goodgrips where Sam Farber's intent was to create a commercially viable mass product line around more comfortable and grip-able handles. Financial viability was primary. This is not to say that Responsible products cannot or should not be profitable, but that this was not the driving force nor a necessary condition of their existence.

¹ This figure uses the retail sales price, which is over well over \$300, and now \$410 at the Museum of Modern Art Design Store.

² Though they tried to sell to consumers in developed markets as an alternative funding scheme.

³ http://www.allegromedical.com/

The primary (though not only) driver of responsible design is to help.

Experimental design represents a fairly narrow swath within the broad field of design, and its primary intention is exploration and experimentation. Experimental design is defined more by its process than the outcome. In its purest form it is not driven by a terribly specific end-goal of application, but instead is motivated by a curiosity—an inquiry into, for example, a technology, a manufacturing technique, a material, or an aesthetic issue. Much work at the MIT Media Lab is fairly typical: technological investigations that are looking for relevance in the everyday. Again, as with responsible design, a marketable object may eventually result, especially after refinement and when directed at a specific market, which is often by others who buy or license the object, technology, or process. But the primary intent of experimental design is to explore possibilities with less regard for serving the market.

Popular Swedish design group Front Design created their Animals project as a way of exploring the possibilities of a non-humanly-mediated production process: "We asked animals to help us [design products]. 'Sure we'll help you out,' they answered. 'Make something nice,' we told them. And so they did."⁴

What resulted were everyday objects: wallpaper that was "decorated" by a gnawing rat, a lamp cast from a rabbit's burrow, wall hooks that were formed by constricting snakes, a lampshade created after recording a fly's path around a light bulb, a vase created by casting the impression of a dog's leg in deep snow, and a table whose top is patterned by the paths of wood consuming beetles. None of these everyday products were successfully commercialized as they were not intended to be viable products, but instead the product-form was the means through which they investigated ideas of randomness and mediation within the context of mass-production and everyday objects.

Similarly, Malte Wagenfeld, the director of the industrial design program at RMIT University in Melbourne, Australia, is presently running a research project, the Aesthetics of Air. He sets up experiments using "smoke" to visualize air circulation in indoor spaces, such as the microwinds created when a door is closed, a window opened, a ceiling fan spins, or by someone walking. This investigation might possibly result in designed objects or it might just help understand and reconceptualize the role of objects within space and indoor climate systems, especially in light of reducing energy consumption.

The primary (though not only) driver of the experimental design is to discover.

Discursive design refers to the creation of utilitarian objects whose primary purpose is to communicate ideas—they engage in discourse. These are tools for thinking; they raise awareness and perhaps understanding of substantive and often debatable issues of psychological, sociological, and ideological consequence. Discursive design is the type of work that is generally less visible in the marketplace (though it can certainly exist there), but rather is seen mostly in exhibition, print, and film. This is where design rubs up most closely against art. Importantly, however, these are objects of utility, which are carriers of ideas; in order to be considered design rather than art, they function in the everyday world, but their discursive voice is what is most important and ultimately their reason for being. These objects are aligned in many ways with what is commonly understood as "conceptual design" because of their emphasis on ideas or concepts over the tight constraints of usefulness, usability, and desirability.

The Placebo Project by Anthony Dunne and Fiona Raby⁵ is a strong example of discursive design, where they wanted to raise awareness and debate regarding the role and costs of technology in contemporary life through the topic of Hertzian space—the engulfing fields of electromagnetic waves generated by electrical devices. One object from the series is the Compass Table, which is an ordinary, unadorned wooden table whose top surface has been embedded with twenty-five simple, navigational compasses. The table functions as any other table would, however when, for example, a cell phone sitting on the table

⁴ http://www.frontdesign.se/portfolio.htm

⁵ http://www.dunneandraby.co.uk/

rings, the compass needles begin to dance and make visible the electromagnetic waves that enter into the home and surround its occupants.

While Dunne and Raby's work was not created for the marketplace, the Hug salt and pepper shakers designed by Alberto Mantilla are very successful commercially and have a strong and intentional discursive voice. These are two shakers abstractly anthropomorphized, which differ only in color—one white and one black. The shakers with their stubby arms nest together appearing to hug each other. From their web site (www.mintnyc.com):

The very nature of the Hug salt and pepper shaker connotes brotherhood. The bold use of black and white suggests that we are all brothers and sisters on this planet and we need to treat each other with kindness, compassion and respect.

The primary (though not only) driver of discursive design is to express ideas.

This four-field approach to the product/industrial design discipline—commercial, responsible, experimental, and discursive—is posited as a useful framework in understanding the breadth of professional activity beyond typical twentieth-century notions that are inextricably tied to markets. It is critical that the inclination and ability to generate significant financial profit is not a *requirement* for design activity, though design *may* (and often does) engage with business in varied ways. In addition to this decoupling, the framework also helps to establish a means to categorize design activity, making more sense of a cluttered field susceptible to frequent neologisms.⁶ However, we acknowledge, as with any attempt to reduce such complexity to just a few categories, in some cases the fit may not be perfect. To this end, it is also important to emphasize that the categories are not entirely distinct from one another; there is overlap. In fact it is rare for a "pure" object, e.g., one that only intends on making money but is not interested in experimentation or a notion of service or some voice.

These four fields are defined by the *primary* intent of the designer, acknowledging that there is rarely a single intent, but that there is a dominant force or driver. And it is also important to note that this scheme is based upon the design intention rather than public reception. How effective could a sense-making framework be if it were based upon the highly variable and inconsistent ways in which an object could possibly be interpreted? So despite the "death of the author" issues, which we largely agree with, here intentionality is favored because it offers firmer footing, and we are interested in this issue from the designer's perspective; we primarily seek a design audience where academics and practitioners better understand their location and effectiveness within the discipline.

Now that discursive design is located within the field of design activity we can focus more upon its problematization and importance. We believe that products have a unique place, role and ability to affect thinking, which is the ultimate goal of the discursive designer. They intend to raise issues that will cause public debate and/or self-reflection—important attributes of an informed, engaged, and democratic society. While it is beyond the scope of this paper to trace the history of this type of design activity, it can be most easily connected to Italian radical design or anti-design in Italy in the 1960s with Archizoom, Superstudio, Gruppo 9999, Gruppo Strum, and in the 1970s with Studio Alchymia, and up through Memphis in the 1980s and Droog in the early 1990s. Further, it is important to emphasize that art, music, dance, theater, literature, and other design disciplines like architecture, graphics, and fashion, all historically have done, and still do, critical and discursive work. So while the ultimate goal is not in any way unique to product/industrial design, the question is if we wish to use design and engage with society in this manner, how do we best do it? Fundamentally this entails understanding what is unique about products and what their advantages are over other creative media with similar goals: their scale is approachable, they are ubiquitous, can be durable, and are part of the everyday; they are our partners, the props, and tools with which we navigate the mundane and magnificent in life. This is their strength

⁶ In naming these four fields, great concern was given for using the most descriptive and least confusing terms. While discursive design is certainly a neologism, it is offered as part of a taxonomic system that intends to help unite rather than ethnocentrically differentiate design activity.

and what we want to tap into as we use these objects to transmit substantive ideas and messages—we are extending their (typical) capacity and making them more critical and socially engaged.

In the last few years a growing recognition and interest has developed in what is known as critical design. This has largely been defined and popularized by the work of Anthony Dunne and Fiona Raby with their exhibition and writing of texts such as *Hertzian Tales* and *Design Noir*. And it is important to note that critical design shares similarities with discursive design, but we see it as falling within the realm of the discursive. To have an impact—to make people aware and have them reflect and ultimately change their mindset and actions—the critical has to stand apart and be recognized as such. It is this distance between the critical object and the ordinary that creates the shock—the alterity—that allows one to become aware and get out of the rut. And something that is critical of, say, the market and those issues, has difficulty existing within it. If the distance between the propositional object and reality is too close, then it loses impact and efficacy, it is too easily subsumed within conventional thinking. And this is why Dunne and Raby's work does not exist on the market and lives, instead, in exhibitions and in print.

While we agree with their position in desiring something shocking, the problem, of course, with this is that who then is the audience? The answer is those who go to design exhibitions and read alternative design books—a pretty narrow and limited audience. Also, this design is intentionally shocking and eminently provocative, and therefore will not connect with and/or appeal to many (even within that narrow sliver that encounters it).

What discursive design does is include not only objects that are capable of existing within the market (accepting that they have less capacity to shock) but it also hinges upon the idea of discourse as opposed to the edge that "critical" has to it. We believe it is possible to extend the reach of these ideas further into the population. So, we see in the reflective nature of critical studies an essential element of the discursive, but critical design exists within the broader rubric of discursive design.

In further problematizing discursive design, we will outline four of the most important aspects with which designers should be concerned: *context* of reception, *effect* of reception, *mode* of discourse, and *character* of the object. Their introduction will help further explain how discursive design can and does exist within the world and how it is differentiated within the realm of designed objects. These four qualities are intended to act as a guide for the discursive designer, to help them hone in on crucial concerns for the realization of such objects. So while these can help to analyze discursiveness in already designed objects, they are ultimately posited as a guide to facilitate the design of new, discursive objects.

Context refers to the situation or setting for the reception of the discursive object—how does the audience come in contact with it and how does this begin to affect understanding? The broad, primary contexts in which the public consumes these objects and their messages are: the market, exhibition, print, and film. The most challenging for the discursive object is the marketplace, and indeed this is the maior point of distinction between Dunne's critical design, which he claims cannot exist in the market. The main reason for this difficulty is that it is not at all common for discursive objects to exist in the marketplace and as such, consumers often are not tuned-in for or expect commercial products to have such a voice. The market is so overwhelmingly seasoned by the mandates of product usefulness, usability, and desirability that discursiveness is foreign. As well, it is often quite difficult for designers to create an object that has the typical utilitarian product attributes as well as a resonant voice—this adds an additional layer of complexity to the already challenging task of creating a commercially successful product. In order for a consumer to feel comfortable purchasing a discursive object or a retailer to carry an object, the message generally cannot be too dark, edgy, or controversial. The capacity for it to shock, which is a hallmark of Critical Design, is necessarily decreased; the messages within the mass marketplace are less controversial and less instigative. Mass merchants, especially publicly traded companies and national and multinational corporations are highly susceptible to boycotts and are rightfully cautious about anything controversial that they are directly or indirectly associated with or endorse. However, the Internet is offering a more viable outlet for such work, especially if a site is constructed specifically for the discursive product and not associated with other products or a larger commercial entity. The disadvantage of the market context is that generally the message has to be softened to be palatable, with the concomitant challenge that the message will be lost amid the product's utility. The discursive object uses use-value to

carry its primary reason for being, its sign-value. But the fact that it has use-value that is available to the consumer is its strength. By existing in the marketplace and as an object that a user might engage with daily, the audience is often broader and the message is part of the everyday.

Typically discursive design has existed primarily within the contexts of exhibition, print (physical and digital), and film. Dunne and Raby's work is exhibited internationally and is also eventually incorporated into book projects. As well, Noam Toran is a designer/filmmaker who often creates discursive objects as part of his films. As mentioned, existing outside of conventional markets, these objects can be more provocative and potentially have their message more audible and/or have greater impact. As the aim is debate and self-reflection, the more shocking the object, the more effective it is. However, the limitations of these contexts are that generally they have a smaller audience. Who encounters the objects and the important messages within? Only a relatively small number of individuals from a somewhat elite social tier. While the Internet holds the promise of broad and (relatively) free access to depictions of these objects, still one generally has to deliberately seek them out or be lured there through another similarly minded web site. And these contexts of exhibition, print, and film are also the standard means for the dissemination of art, which often colors discursive work. Because discursive work most frequently does not exist in the marketplace, and is instead "exhibited," it is often misunderstood as art. Yet as Dunne emphasizes, it is important that it reads as design:

Too weird and [design] will be dismissed as art, too normal and it will be effortlessly assimilated. If it is regarded as art, it is easier to deal with, but if it remains as design it is more disturbing, it suggests that the everyday as we know it could be different, that things could change (Dunne, 2007).

So a key question that the discursive designer needs to ask is what is the context of reception, which is often assumed with commercial design. The answer to this will help inform design decisions so that the issues of usefulness, usability, and desirability can be harmonized with the content and intensity of the message.

Since discursive design is located within an intellectual arena, *effect* is understood by leaning upon a basic model from the field of psychology with roots back to Aristotle and Augustine (Hilgard, 1980) where mental functioning is classified within three areas: cognition, affect, and conation. Knowing that the mind can be affected in three primary ways opens different possibilities for the discursive designer who is trying to communicate with an audience. To affect *cognition*, the designer conveys information that makes the user/viewer aware of an issue or to understand it better, e.g., that drinking water from plastic bottles has a far greater carbon footprint than getting it from the tap. Secondly, *affect* relates to the mind's emotional response to stimuli. The user may be aware of or understand an issue, like the carbon footprint of bottled water, but have little or no feeling about it. The discursive designer may decide to focus upon a "deeper" or emotive response rather than a more rational, informational impact; they want people to "feel" the issue. And finally *conation*, deals with will and the desire or motivation to respond.⁷ Someone may be cognizant of the environmental impact of plastic bottles, or respond to the issue at an emotional level (sense of great loss or degradation), but the goal with conation is to have the audience impelled to respond (stop drinking packaged water, and or help spread the message).

While the nuances of such a tripartite division of mental activity have been debated over the centuries, here it has been appropriated to assist the designer in understanding the kind of response that they wish to achieve. For most issues it seems that conation stands as the most demanding response to elicit from the user/viewer—to get them to care, to want to act. The costs of trying to achieve this (in design terms of trying to successfully integrate numerous competing issues) may be too great and the designer may "settle" for understanding or an emotional response. However, there may be times when the designer has less of a stance and merely wants to address the issue—they feel it is important, but they have less of an agenda. Or perhaps a sense of understanding is too difficult to achieve, especially with a complex issue,

⁷ It should be noted that some feel that conation is less of a third distinct category and more a combination of cognition and affect—that one is motivated when they understand and has feelings.

and the designer just wishes to touch the user/viewer emotionally; this may be the best and most immediate goal for the topic or context. Ultimately such a division helps designers to understand better the possible outcomes of their work and design more effectively to these ends given their various strengths, weaknesses, and demands.

Mode of discourse addresses the manner in which the discursive object communicates. Here we have loosely drawn upon modes of discourse within the field of linguistics. Examples include narrative, description/information, argument, directive, and query, which are perhaps most common. The message that the object expresses can be a narration or the progression of an event or ideas—the object can help tell a story or be an integral part of a sequence. *Description/Information* involves an account of a (static) situation, issue, or object or other detailing of a subject or problem. An *argument* is more rhetorical and is an attempt to persuade, while the *directive* makes an explicit demand, which brings the discourse to the fore. The *query* brings forward a question and can be intentionally provocative or rather neutral, where it is not an answer that is necessarily important, but the debate or reflection upon the idea. While there are certainly other modes of discourse or forms of communication, the aforementioned are fairly common structures. Additionally, there are also issues of the nature or quality of these forms. Humor can be effective, as can irony, satire, noir, and hyperbole. By considering various techniques and means of structuring the communication as well as their quality, the designer may choose a strategy that works best in matching the design goals.

While mode does not deal specifically with the object, just the message that it coveys, *character* address important physical and production issues. A helpful analogy lies with the billboard: billboards may have a specific message (e.g., Are you worried about bad breath?) written on it in a particular mode (query), but the physical form of the billboard (character) can vary (e.g., a massive highway billboard, a human billboard, a truck-mounted billboard, an electronic billboard). The challenge for the designer is to choose the character of the object that best supports the structure and quality of the message, as well as the context of reception and the intended effect. Here, we further offer four primary areas of concern regarding the form of the object itself: the practical, possible, poetic, and provocative.

Practical deals with the degree to which the object follows the typical dictates of "good" product design, addressing usefulness, usability, and desirability. This is understood from the user's/viewer's perspective. The notion of practicality is a basic assumption of commercial design and largely with responsible design, but can be called into question with experimental design and discursive design. Ease of use may be called into question—intentionally making an object difficult to hold, for example—so as to heighten an effect or make a particular point or some other reason. This type of challenge to the norm is what Dunne refers to as the parafunctional object (2001).

While *practical* deals with the consumption side, *possible* addresses the production side. Fundamentally this has to do with how probable, plausible, or feasible the object is. Again, this is an assumption within the commercial realm, however, for the discursive designer such production issues may not be so important; perhaps the discursive object is something that would only exist as a prototype and descriptive of a "real" or future object, and thus encountered in exhibition. Commonly this has to do with the level of technology incorporated—is this for a present or future scenario. Further, it may be that the object could be manufactured today, but the materials, production process, distribution, costs, etc. would be unreasonable. For example, a discursive object may be specified to use moon dust within its concrete mix for some conceptual reason; this certainly is achievable but not particularly feasible.

While *poetic* is a literary term, here it is used to describe not the message, but the physicality of the communicative object. It deals with the aesthetics of form, interaction, context, and concept as well as their interrelation. The poetic object has a special capacity for the expression of discursive design ideas, especially as we think about affecting emotional states.

Provocative deals with the extent to which the object-form stimulates, challenges, offends, and foments. Certainly the message/discourse can and often is provocative, especially if it intends to spark debate or controversy and challenge the status quo, but so too can the object itself. This provocation can deal with conventions of form; object category or typology; functionality; and means and contexts of production,

distribution, acquisition, consumption, maintenance, and disposal. The most provocative objects, of course, are those that exist outside of the marketplace; as aforementioned, desiring to have the discursive object communicate to a larger audience and potentially have them purchasable necessitates a less controversial or provocative message and object form.

In conclusion, we have attempted to make sense of a cluttered design arena, while at the same time make space for newer forms of design activity that venture beyond the commercial foundations that initially defined the field of industrial/product design. And in problematizing discursive design, the framework posited is helpful in understanding this kind of work that is increasingly being produced, but more importantly it offers a structure that can assist the discursive design practitioner. As we begin to combine elements of context, effect, mode, and character, what new forms of objects and discourse might be produced? What is the marketable object, whose message is conative, whose approach is narrative, which is highly practical and poetic, that deals with the discourse of gender hegemony in the workplace? All of these key attributes of discursive design offer a creative structure that helps guide the designer in their attempts to use the special medium of "products" and exploit their intellectual potential and ability to importantly contribute to current and future social life.

References

Cagan, J., & Vogel, C. (2002). Creating breakthrough products. New Jersey: Prentice Hall.

Dunne A. (2005). Hertzian tales. Cambridge: MIT Press.

Dunne, A. (2007). Design interactions. The Royal College of Art.

Fuad-Luke, A. (2005). Slow design, section 2.2, slow theory: A paradigm for living sustainably?. Retrieved May 6, 2008 from http://www.slowdesign.org.

Hilgard, E. (1980). The trilogy of mind. Journal of the History of the Behavioral Sciences, 16.

Sarstad, M., & Emanuelsson, H., (Eds.) (2005). *SHIFT: Design as usual or a new uprising?* Stockholm: Arvinius Forlag.

Walker, S. (2007) Disconnecting design from the bottom line. Sustainable Innovation 2007 conference. Surrey, UK. October 30, 2007.