



DIFFICULT FORMS: CRITICAL PRACTICES OF DESIGN AND RESEARCH

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ABSTRACT:

As a kind of 'criticism from within', conceptual and critical design inquire into what design is about – how the market operates, what is considered 'good design', and how the design and development of technology typically works. Tracing relations of conceptual and critical design to (post-)critical architecture and anti-design, we discuss a series of issues related to the operational and intellectual basis for 'critical practice', and how these might open up for a new kind of development of the conceptual and theoretical frameworks of design. Rather than prescribing a practice on the basis of theoretical considerations, these critical practices seem to build an intellectual basis for design on the basis of its own modes of operation, a kind of theoretical development that happens through, and from within, design practice and not by means of external descriptions or analyses of its practices and products.

INTRODUCTION

In this text, we discuss conceptual and critical design, suggesting that they constitute a kind of critical practice in design. Tracing a historical background and contemporary tendencies, we consider implications for design research. In many ways, this is a report on how we have come to think about the certain foundations – and fringe movements – for the kind of experimental design research we have developed over the last ten years. We therefore conclude by returning to our own work, as a response to these opportunities and challenges.

A BACKGROUND TO 'CRITICAL PRACTICE'

Design is located in an ambivalent place, wavering between the concerns of culture and capital, which may be more decisively dealt with in art or architecture. In architecture, for example, disciplinary concern for aesthetic or social theories might be distinguished from those of the profession, which regulates accommodation of basic utilities and functions, or from those of other domains, such as real estate, public opinion, or popular culture (Hill, 2000).

The basis for criticality in design as a whole is less definitive – various types of design have emerged more recently, and are thus less established in both disciplinary and professional terms. Indeed, such terms may be so closely or even exclusively bound to the economic or technical conditions of their emergence, for example to the Industrial Revolution, that it becomes difficult to locate a basis for challenge or change. This prompts John Thackara to argue, “Because product design is thoroughly integrated in capitalist production, it is bereft of an independent critical tradition on which to base an alternative” (Thackara, 1988: 21).

Like architecture, product design is embedded within and thus dependent upon systems of finance and power, for example to support mass production and distribution. Unlike architecture, product design is typically qualified in terms of market value or return on investment. As Anthony Dunne and Fiona Raby argue, “At its worst, product design simply reinforces global capitalist values. It helps to create and maintain desire for new products, ensures obsolescence, encourages dissatisfaction with what we have and merely translates brand values into objects. Design... needs to establish an intellectual stance of its own, or the design profession is destined to lose all intellectual credibility and be viewed simply as an agent of capitalism” (Dunne and Raby, 2001: 59) This makes challenges to conventional systems – and values – of production and consumption particularly noteworthy in recent tendencies within design.

CRITICAL TRADITIONS IN DESIGN

There are a range of contemporary perspectives in product design that diversify or counter mainstream views on what design is and what it should be about. While rather amorphous as areas of interest or communities of practice, such tendencies are amassing an increasing number of examples, theoretical depth, and public exposure (Blauvelt, 2003; Robach, 2005; d'Ailly, Olausson and Sten, 2005). In such views, design, amended as 'conceptual' or 'critical', may counter conventions of utility and efficiency, profit and taste. This is not without precedent – indeed, heritage might be traced via critical architecture and anti-design (for more extensive background on 'critical practice', see Mazé, forthcoming 2007).

(POST-)CRITICAL ARCHITECTURE

In order to position a critique within design, or of other domains by means of design, a certain basis for exchange of ideas must be established. In architecture, client relations and legal norms may be taken up within the terms of the profession, but there is also an intellectual basis in the discipline for relating to aesthetic concepts and social theories from the humanities and sciences. Such terms have been central to 'criticality' in architecture over the last half-century and in 'post-critical' terms today. In the 1970s, with the end of an 'era of manifestos' (characterized by a few polemic positions and loose relations between theoretical rhetoric and practical reality), there was a general reconsideration of how to relate to theory in architecture. This involved rethinking how to relate both to 'operative criticism', posed from inevitably biased positions within practice, and to 'critical theories', introduced from without (Hays, 1999).

With respect to such 'border issues', several positions were staked out. Diana Agrest, for example, argued for a semi-autonomous architecture, in which certain aspects were understood as particular and normative, but those shared with other modes of production could be the basis for valid critical discourse (Agrest, 1976). Manfredo Tafuri argued that although political and practical terms might coexist, real ideological alternatives could not exist within a hegemonic system – thus, a truly critical architecture could only follow systemic transformation (Tafuri, 1974; see also Dal Co, 1978). Others argued against 'waiting for the revolution' – Jorge Silvetti took up the debate within Agrest and Tafuri's structuralist terms, but sought the possibility of 'criticism from within' (Silvetti, 1977; see also De Carlo, 1970). He posited that making, while necessarily compromised, gives form to critical issues that might otherwise be obscured by language or ideology.

By the 1990s, positions with respect to 'critical architecture' had polarized into two camps – one concerned with culture and the other preoccupied by form (Hays, 1984). At least in part as a reaction to such polarization, there has more recently been a revision of criticality. Rather than concepts of resistance,

disjuncture, and negation, post-critical proponents explore notions such as performativity, procedures, and pragmatics (Allen, 2000; Baird, 2004/5). In such perspectives, theory and criticality are repositioned in relation to a constructive and projective attitude, capable both of ideological and operational engagement. In fact, the mere pairing of the terms 'critical' and 'practice' becomes possible while previously it might have been a general cover for 'anti-theory'. Practice is explicitly put forward as an approach to – through materials, form, and construction – framing questions and alternatives to the status quo with clients and the public.

ANTI-DESIGN

The 1960s and 70s witnessed an explosion of radical movements questioning design in relation to wider societal and ideological developments. Originating in England and Austria, and then in Italy, anti-design continued a long national tradition of artistic and political discourse in design. An exhibition of Italian design at the Museum of Modern Art in New York surveyed a generation of designers who, "despairing of effecting social change through design, regard their task as essentially a political one" (Ambasz, 1972: overleaf). Three prevalent attitudes were identified – conformity, reform, and contestation – within design culture at the time. Alchemia and Memphis, for example, drew inspiration from Dada, Surrealism, and Situationism, promoting emotional play and symbolism over function, refuting assumptions of utilitarianism and consumption (Kristoffersson, 2003).

The critique posed by anti-design is not of design or planning as such, but of design in instilling and enforcing ideology. That is to say, design 'in service' to any imposed ideology, whether political, technological, or cultural, determined in advance and from outside. Rather than refusing to design or 'waiting for the revolution', proponents accepted the powerful effects of design representations and objects, launching a critique from within the conventions of practice. While engaging theoretically and politically, the activity of designing and design objects in themselves were seen to offer possibilities for 'active critical participation' in larger ideological systems (Lang and Menking, 2003). The 'products' of anti-design were not, however, intended as finished or closed forms. While object-oriented, form was often applied provisionally, to open up for ideas, debate, and appropriation – as alternative forms not only of product but ideological consumption.

Today, the ideological and political basis of anti-design and related countercultures is not present within society as before – indeed, many aspects of anti-design were rapidly subsumed into the mainstream, as a superficial aesthetic or marketing tactic bereft of deeper ideological engagement. More generally, the basis in capital, industry, and technology that underpin past conceptions of criticality – indeed, of design – no longer hold in the same way, or to the same degree (Jameson, 1985). Such complexity within and surrounding contemporary design make it difficult to locate the terms of criticality.

CONCEPTUAL AND CRITICAL DESIGN

Contemporary product design reveals a range of approaches to criticality in and through practice. Precedents might be traced via conceptual art and radical craft, such as the 'new jewelry' and 'new ceramics' – which fueled earlier anti-design movements (see Lees-Maffei and Sandino, 2004). For one thing, some are repositioning product designs in relation to other domains and institutional frames. Others borrow the polished representational and communication techniques from trade expos to provoke discussion with industry and the general public about different futures made possible by design. And still others instigate a debate about the ethical and moral implications of scientific advances as design mediates its reception in consumer society.

Conceptual design draws on art to orient a subversion of design norms. With respect to conceptual art, focus is shifted from the producer and the thing to the concept, and making as setting up such a concept through material objects, scripted or improvised interventions, installations or other means. Epitomizing such an approach since the 1990s, Droog design countered both Pop and analytic design, tendencies pervading the European design scene at the time. As Aaron Betsky describes, "Droog designers saw their task saw their task as gathering objects in the streets, with the designer adding only something invisible: the concept" (Betsky in Blauvelt, 2003: 51). Common strategies include the of high and low materials, precious substances, readymades, technology and trash, may be combined to expose issues of taste, habit and memory – even material scarcity may speak to ethics and (over-)consumption (Sandino, 2004; Verbeek and Kockelkoren, 1998). Instead of serving utilitarian functions, materials and form of conceptual design objects foreground a conceptual or symbolic function (Niedderer, 2005).

A more specific version of conceptual design is critical design, most associated in product and interaction design with Dunne & Raby. They posit the designer as a critically and materially engaged practitioner – a sort of 'applied conceptual artist'. In addition to art, they state: "Critical design is related to haute couture, concept cars, design propaganda, and visions of the future, but its purpose is not to present the dreams of industry, attract new business, anticipate new trends or test the market. Its purpose is to stimulate discussion and debate amongst designers, industry and the public about the aesthetic quality of our electronically mediated existence" (Dunne and Raby, 2001: 58). Early works challenged mainstream design tenets (Dunne, 1998). Dunne's 'post-optimal' object, for example, critiques product semantics and the human factors preoccupation with the ergonomic and psychological 'fit'. Instead, strategies of defamiliarization and estrangement from modernist aesthetics, are applied as 'user-unfriendliness' and 'para-functionality' to discourage unthinking ideological assimilation and promote skepticism by increasing the poetic distance between people products.

CRITICAL OF WHAT?

Developing an 'intellectual stance' requires consideration of the appropriate incorporation of critical social theory and critical social science. Certainly such influences have begun to inflect a certain ideological reflexivity about the social construction of knowledge, methods, and practice in technical and design practices (for example, Sengers, McCarthy, Dourish, 2006). However, the challenge is not only to understand and incorporate 'critical theories' from without, but the potentials and problems of 'criticism from within' practice. With respect to theories and practices of design, (post-)critical architecture, anti-design, and contemporary conceptual and critical design map out a territory of approaches to critical practice.

Original conceptions of criticality in architecture depended on clear, even categorical, distinctions of the insides/outside of the discipline. For example, borders might be defended or challenged in terms of discrete 'systems of production' – that is to say, the concerns, techniques, and knowledge proper to one discipline that might distinguish it from others. To some extent, we might position conceptual and critical design tendencies in similar terms – as querying and contesting the borders around design. Testing – and stretching the boundaries of – what design is and what it might be about, such tendencies operate from the fringes to question design foundations, and, vice versa, challenge wider socio-economic issues from a basis in design techniques and form.

Generally speaking, orientations might be characterized as:

- Outside-in. On one hand, such tendencies operate from the fringes, even crossing over into art or crafts to pose a critique of norms characterizing conservative or mainstream design. While still deeply engaged in the craft and production techniques of design, the primacy of certain concepts such as 'taste' and 'good design' are contested, concepts deeply rooted in a tradition of aesthetic judgment in art and design (history) discourse. Since critical design has evolved not just in relation to product but interaction design, different concepts are primary, such as 'functionality', 'usability', and other notions of technology merely as neutral but efficient tools. From the fringes, even crossing into other domains, such tendencies expose mainstream assumptions and conventions, provoking reflection and debate.
- Inside-out. On the other hand, the techniques and forms central to design practice are mobilized to articulate ideas about systemic conditions outside of design itself. The fads and fictions of pop culture and the techniques of persuasive design and marketing are engaged, but to different ends than service to culture or capital. Appropriating certain aspects from other domains, it is precisely the materiality and aesthetics of design that are foundational – not just for purposes of analysis or commentary, but for crafting constructive counterproposals and projective critiques. Made concrete in experiential and material form, socio-aesthetic theories from (post-)modern discourse are embodied to interject a critical distance or resistance to easy assimilation between ideas and things. Design form opens up such critique for wider speculation and debate.

CRITICAL DESIGN ≠ DESIGN RESEARCH

Sketching such traditions and contemporary tendencies toward critical practice in design, certain opportunities – and challenges – become evident for design research. Without the discourse around criticality long present in architecture, there is some consequent difficulty in locating the terms upon which alternatives to mainstream practice might be based in product design, or a 'critical distance' from other related approaches qualified. This might be seen in the difficulty in locating (or ambivalence in positioning?) the critical terms in more contemporary tendencies. Perhaps this is precisely why the need to develop an intellectual basis – and thus a role for research – might be necessary. Not only for improving design as 'problem-solving', but in creating a space for designers to reflect upon the ideas, theories, logics, and implications of design in and through practice. That is to say, the intervention of an intellectual basis for 'problem-finding'.

Indeed, central to the kind of critical design practice discussed here is engagement with the conceptual realm of design and, thereby, potentially also contributing to the development – through critique and counterproposals – of theoretical frameworks proper to design. Conceptual and critical design might be said to represent a shift in attention away from the spatial object in and of itself to the ideas behind form and emergent in formation. Explicitly dealing with the materialization of concepts, such concepts become not only external or retrospective descriptions of design objects, but an integral part of the design objects as such. In this way, the concepts and theories embodied in an artifact might be differentiated from tacit or propositional knowledge (see, for example, Frayling, 1993/4). Critical practice seems to point to the possibility of an internal evolution – rather than external construction – of design theory. This opens up for a design practice that is not only an operational, but also an intellectual basis, for design research.

A potential problem might be issues of scaling and generalization. For instance, if such a practice only evolves in relation to concepts central to its own domain, theoretical frameworks would never extend beyond, e.g. notions of taste, good design, or functionality. However, current developments seem to suggest that such critical practice has the potential to engage also in other concepts and theories, including ones only remotely related to design as it appears today. Again, the work of Dunne & Raby is an interesting example, given recent ventures into the realm of scientific concepts and experiments in the 'Bioland' project. Compare this to conceptual art, for example, which may have started undermining concepts primarily related to art itself, but did by no means stop there – and neither will, it seems, design. Though such problematics are not fully evident at this stage, we cannot dismiss the implications of 'critique from within' as limited to a single domain.

Within this territory sketched out by various examples of critical practice, we argue, there is a potential to develop a relation between design activity and its theoretical discourse that differs from the theory/practice dichotomy dominating much current design research discourse, including much practice-based research. The

very idea of a shift from problem-solving to problem-finding also opens up for a research attitude that relates in some ways to contemporary thinking of philosophical practice and conceptual analysis (Grosz, 2001).

There are two further issues exposed in seeking relations between critical practice and design research. First, tendencies of critical practice to challenge foundations might also be understood as part of a disciplinary project. For example, distinguishing between history, theory, and practice in architecture was a basis for establishing – and defending – foundations proper to design, in reaction to the failed social project of modernism and the changing role of design. Indeed, even opposition, to some extent, seemed to serve the need for building (a sense of) disciplinarity. If there is no extension beyond commentary or critique, conceptual and critical design might tend towards an overly self-reflexive and hermetic autonomy – design for designers. This orientation towards a kind of disciplinary autonomy is at the same time a promise and a problem of a critical practice and design research. On one hand, it points to a specific way of working with theoretical discourse in relation to techniques and formal conventions within design. On the other hand, there is a potential problem since much of contemporary design and critical practice cannot be disciplinary in any narrow sense.

Secondly, critical practice also challenges and transgresses the boundaries around design. Expanding the purview of design also means that intellectual and ideological bases are multiplied and distributed. Facing not only inwards towards disciplinary foundations, such tendencies reach out to implicate other domains involved in the social construction and consumption of design – including a range of concerns, ideas, and practices in use. Indeed, architecture and interaction design present counter-examples to how critical practice is often engaged in product design. Outside the confines of an art gallery – design for art's sake – built designs are consumed in use over time, as spatial and phenomenal practices (Allen, 1995). Further, the technologies central to interaction design require engagement over (long) time, receiving their final form only over time (Mazé and Redström, 2005). While critical practice presents a range of strategies for reflecting upon design, from within or without, issues of experience and use requires that we understand 'resistance to assimilation' in other terms than those of an alienated critic/observer.

While to some extent, we might be able to understand contemporary tendencies in the structuralist terms of inside/outside typical of early conceptions of criticality, there are certain difficulties in doing so that point to other possibilities and questions for future work. Indeed, certain conceptual frameworks within critical practice such as 'object as discourse' and 'design as research' provide an essential basis for thinking about how to combine intellectual and operational modalities for contesting and further developing design from within. However, as indicated by post-critical discussions and increasingly widespread integration of new technologies – as treated in interaction design – there is a need to reconsider and perhaps revise how we might think about mobilizing a critical practice as a basis for design research.

'OBJECT AS DISCOURSE'

In critical practice, the designed object might be understood as a sort of materialized form of discourse. In Dunne's case, "the electronic objects produced in the studio section of his doctorate are still 'design,' but in the sense of a 'material thesis' in which the object itself becomes a physical critique... research is interpreted as 'conceptual modeling' involving a critique of existing approaches to production/consumption communicated through highly considered artifacts" (Seago and Dunne, 1999: 16-17). As socio-aesthetic research, design making, in this case, is directed at the materialization and situation of aesthetic and critical theories. Through materials and form, ideas become available both for aesthetic reception and for everyday consumption.

In questioning design as merely 'in service' to ideas and problems posed in advance and outside of design, design itself is understood to be inherently ideological. But rather than a mere description of 'what is' or a normative prescription of 'what should be', critical practice exposes alternative or competing ideas, making what Stan Allen calls 'forceful propositions' about the status quo and future realities (Allen, 2000; see also Buchanan, 1989). While design form inevitably embodies certain ideas, such ideas and their materialization for purposes of 'ideological transfer' are questioned. The propositional and projective potentials of material form are crafted to foreground conceptual aspects for reflection within design and in use. Indeed, design exceeds mere quotation or commentary through the transformations possible only through material form.

CRITICAL OBJECTS – CRITICAL SUBJECTS?

Design certainly may take on roles that are conceptual, demonstrative, or persuasive. However, design moves beyond rhetoric by means of material form, everyday utility, and ongoing interaction. As the products – conceptual or material – of design practice enter the world, proposed ideas, values and use become open to deliberation and interpretation, affirmation or further critique. Just as design moves beyond commentary through material transformation, critical designs must be put to use in order to effect behavioral transformation. Indeed, it is precisely material form – 'physically perceptible and experienciable facts' (de Carlo, 1970) – that might allow for use as 'active critical participation.'

Thus, a notion of 'object as text' resonant in ideas of critique and criticism drawn from art history or linguistic theory in 'critical architecture', may not fully account for the conditions of use. Difficult forms might force a hermeneutic reading of the formal operations of its (de)construction – the architect quite literally situated as author, the inhabitant as reader. However, a much different story might be told during or after decades of inhabitation (Eisenman, 1975; Frank, 1994). As any range of postmodern and post-critical revisions suggest, architecture is not writing, nor are spatial practices discursive (Allen, 2000; Hatton, 2004). There is no

transparent 'ideological transfer' between reading and writing, production and consumption, design and use. In between, any number of interpretive, experiential, social, and cultural factors intervene.

Use involves a range of other ideas – and ideologies – that also come into play in personal, social, and cultural practices. As Charles Rice articulates, "'Critical' problems occur when projects founded in an opening up of critical experiential possibilities as part of a design process are then, as concrete buildings, confronted by the inherently critical experiences of actual subjects" (Rice quoted in Hatton, 2004: 107). Just as 'design' does not involve any absolute determination or unequivocal translation of ideas into form, nor does 'use' merely involve efficient translation of and compliance to such ideas. Further, since the interactive technologies central to interaction design put use into particular focus, further developing a notion of critical practice must engage with such questions – that is to say, how an 'object as discourse' meets 'reflection in use'.

DESIGN AS RESEARCH

Another more general issue is how 'criticism from within' might be related – or equated – to design research. Certainly, proponents of critical practice may engage rather deeply into social and aesthetic theories – but rather than categorical distinctions set out in early conceptions of criticality in architecture, there must be other bases established for 'criticism from within' inevitably biased and compromised positions in design. In post-critical architecture, as well as practice-based research, alternative intellectual bases for operational bases have been sought, for example, in pragmatic philosophies. For example, his account of 'reflective practice', Donald Schön describes a complex interplay of generative and propositional modalities in ongoing and situated practice, proposing that "When someone reflects-in-action, he becomes a researcher in the practice context" (Schön, 1983: 68). Rather than objective knowledge or abstract theory, conceived of as above or in advance of practice, such perspectives give primacy to subjective interpretation and practical experience.

In architecture, where other branches of philosophy and critical theory have been more pervasive, the notion of 'reflection' might be extended and differentiated more specifically in relation to notions of 'criticality'. A pragmatic conception of reflection is extended as a critical modality – to question and transform rather than only to describe and affirm. Jane Rendell considers 'reflection in action' in architectural research, but extends this to include the modes of critical thinking more central to architectural discourse (Rendell, 2000; see also Coyne, 2005). She argues for design and research that do not just solve or analyze problems but may critically rethink the parameters of a problem, theory or institution. Indeed, making in itself – particularly making experimental forms and conceptual artifacts – acts as a critique of the paradigms of knowledge held in the architectural profession and building industry.

Rather than merely tolerating uncertainty, and making every attempt to systematically reduce and manage it, critical theory may operate to open up and expose problematics. Resulting objects may not solve or resolve problems that might be the focus in professional practice – instead, they may critically rethink the parameters of the problem itself. In such terms, neither design nor research may be about solving problems or reducing uncertainty, but opening up complexity and criticality. Rather rote replication or systematic application, theory might operate as the intervention of ‘radical doubt’ (Bryson, 1990) and ‘tactical improvisation’ (Hunt in Blauvelt, 2003). Perhaps a shared aim of critical design and design research is not simplification but diversification of the ways in which we might understand design problems, ideas, and boundaries.

THERE ARE ONLY PRACTICES

Such intertwining of generative, propositional, and discursive modalities presents certain problems in practice-based accounts of research. In many such accounts, a design process might be equated to a research methodology – certainly this may characterize systematic enquiry carried out on an individual basis. However, as Rendell has pointed out that in architecture the same ‘product’ might be the result of a variety of different concepts and methodologies from diverse disciplines folded into a collaborative design process. Indeed, this is a particular characteristic of an extremely multi-disciplinary field such as interaction design. Any given design situation might well involve cross-disciplinary collaboration, multiple institutions, and stakeholder relations – comprised by any number of technical, design, artistic, philosophical, and social science practices.

Indeed, critical practice might deliberately mix up traditional measures of value – playing one against the other. ‘Use value’ or utility might be disrupted by strategies drawn from art, ‘exchange value’ might be critiqued in terms of meaning and sustainability, and the ‘sign value’ of appearance might be eclipsed by ambiguous, interactive, and open forms. Further, if use is considered as a form of ‘active critical participation’, any range of other practices may be intervened in proximate or cultural processes of use. Critical practice and design research might thus be understood to include – and juxtapose – multiple and even conflicting practices that may be more typically lumped together in disciplinary categories. As architect Stan Allen argues, “There is no theory, there is no practice. There are only practices, which consist in action and agencies. Practices unfold in time, and their repetitions are never identical” (Allen, 1999; see also Frayling, 1993/4).

IMPLICATIONS FOR (INTERACTION) DESIGN RESEARCH

Architecture and interaction design complicate notions of ‘object as discourse’ and ‘design as research’. First, they must be concerned with engagement not only in textual or formal terms, but in terms of performativity, interactivity, and transformation – over time. Further, criticality in such fields cannot be categorically or

relevantly located in terms of a single discipline or individual practice. What falls outside or inside design – in terms of boundary issues between disciplines and between design and use – remains an open question. While architecture and interaction design might highlight such issues, they will – we believe – also become increasingly in focus in other domains, as technologies become increasingly pervasive and with certain multi-, post-, or anti-disciplinary tendencies within critical practice and within design research (Sandino, 2004; Attfield, 2000).

A focus on temporal form and use as participation – central to interaction design (Redström 2001, Mazé and Redström, 2005; Mazé forthcoming 2007) – opens up new questions, such as how a critical design relates to reflective use, and, vice versa, how might 'active critical participation' somehow determine design. We must ask how thinking and making in interaction design – as 'problem-finding' rather than 'problem-solving' – might enquire into ongoing relations between critical design and critical use.

Indeed, it might be difficult for interaction design – and perhaps even for design research – to rest on any singular or stable set of foundations. One might even argue that such fields might be essentially characterized by multiple fringes – rather than foundations – at the edges of various disciplines where they overlap with others. Interaction design might be concerned with, and contest, any range of constitutive disciplines – design research might include any range of historical, theoretical, and operative practices. Building foundations that might be a basis for criticality in any traditional structuralist sense, that is, in terms of borders that might be categorically defended, are rendered more or less permeable and dynamic. Instead, perhaps we need to orient – and construct – different concepts for working with a 'criticism from within' in critical practice and design research.

A PROGRAMMATIC RESPONSE

Instead of conclusions, we would like to end this paper by briefly discussing how we have come to think of the notion of the 'program' as a way to frame such critical practice in a research setting. We also present some examples of our own critical orientations, as 'objects as discourse' crafted in our own work.

It seems that any simplistic notions of disciplinary 'foundations' with clear boundaries will be of little use here, since neither what happens during design nor during use can be easily described in such terms. Yet, it is precisely such foundations for practice that are often considered as the contribution of research. Furthermore, for critical opposition to be possible, there has to be something to oppose. Thus, this creates a somewhat problematic situation with respect to foundations – which are both necessary and defied.

As a response, we have developed a notion of the 'program' as a frame for experimentation. Elsewhere, we discussed the use of design research programs as "provisional knowledge regimes" (Binder and Redström, 2006), as a structuring of experimentation, and its theoretical orientations, in ways that are not absolute. As seen from the outside, such programs present *one* out of many possible world-views. From the inside, however, a program is meant to make the world appear in a certain way by means of positioning certain issues, methods, and materials in relation to each other. For instance, a program might build on concerns, concepts, and discourses from a range of disciplines but still present one idea of how they relate to each other.

As the program unfolds through collaborative and multi-disciplinary work over time, the meaning – or consequences – of this proposed view on the world evolve and materialize through design experiments. In this way, the program is meant to act as a, or even *the*, foundation for design when experienced from the inside. From the outside, however, we see that this notion of a foundation is something of an illusion, and that several other and, quite likely, even completely incompatible, perspectives co-exist inside.

In this way, the notion of the program might address the need for foundations that can be built upon or criticized, affirmed, or opposed in a critical design practice in a way that is still open for, and sensitive to, heterogeneity and multiplicity. In a sense, the program implies its own local short-term micro-practice (or even disciplinarity) by orienting an otherwise multi-/inter-/etc.- disciplinary group towards a common set of concepts, concerns, and methods. This makes it possible to relate what is going on to what happens inside other such programs, also on a 'disciplinary' basis by means of critique or opposition.

<p>SLOW TECHNOLOGY</p>	
<p>PROGRAM</p>	<p>In this program, combinations of multiple disciplines were directed at contesting distinction between aesthetic/technical practice (design/engineering, packaging/hardware). Thus we took up a position at the fringes and against mainstream Human-Computer Interaction – (an 'outside-in' position, as discussed above). In "designing for reflection" (Hallnäs and Redström, 2001), the program challenged ideas of 'use' and 'functionality' central to HCI by means of, for instance, deconstructing acts of use and focusing instead on the aesthetics and expressiveness of technology as material, and on how computational things present themselves to us as we use them.</p>
<p>EXPERIMENTS</p>	
	<p>'Expressions'. Experimenting with relations between 'ordinary' materials and computational technology, we created a series of devices for reading and writing information (Hallnäs et al, 2001). Exploring alternative aesthetics and expressions of basic acts of information technology, these were meant to shift focus from spatial surface to temporal form. One such device was the 'Fan House', a display where the pixels have been replaced by a wooden rack, fans and fabric.</p>
	<p>'Abstract Information Appliances'. This was a series of conceptual designs exploring what it would mean to design information appliances in terms of the expressions of basic acts of using computational things, rather than their functionality. These appliances included devices such as 'a waiting tube' (a device made for waiting), 'a free antenna' (turning the act of making a device available for communication into an act of intense concentration), 'curtains' (exploring the opposite of 'windows' as a way of arranging what can be seen) (Hallnäs and Redström, 2002). These experiments were concluded with a large-scale installation of an 'information deliverer': a device delivering pieces of information in the form of pieces of textile blowing through large plastic tubes (Hallnäs et al, 2002).</p>

<p>STATIC! ENERGY AWARENESS</p>	
<p>PROGRAM</p>	<p>In 'disciplinary' terms, Static! combined multiple design-related disciplines (textile/industrial/architecture/product, HCI/engineering, etc.) to query conventional notions of 'consumption' with respect to energy use and its relations to society, behavior, and the market – thus taking an inside-out position, as discussed above. Working with energy from both a technical and an aesthetic point of view, we explored energy as a sort of material to increase awareness of energy consumption through the interactions with everyday things (Backlund et al, 2006). To complement and challenge more conventional focus on problem-solving, participatory and critical practices experimented with aesthetic issues. For example, the form and materials of familiar domestic objects were decomposed – literally and conceptually. While carefully crafting visual, tangible, and experiential qualities, our intent was to materialize relations to energy such that they might be reflected upon, within design processes, in actual use, and in the public arena.</p>
<p>EXPERIMENTS</p>	
	<p>'Erratic Radio'. The Erratic Radio is a re-designed radio that 'listens' not only to normal radio frequencies but also to those around the 50Hz band – frequencies emitted by active electronic appliances. As a reaction to increasing energy consumption, the functional behavior of the radio becomes erratic and unpredictable, thus conceptually relating to the unpredictable, uncontrollable, and intangible effects of increasing energy consumption (Ernevi et al, 2005b).</p>
	<p>'Energy Curtain'. Using solar panels facing outside, the Energy Curtain collects energy during the day to light up in the dark at night. In use, this curtain is a tangible exercise in finding a balance between energy consumption and conservation – a choice between enjoying the sunlight during the day and having it collect energy to be able to light up during night (Ernevi et al, 2005a).</p>

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