Introduction

Routine is the codification of experience. Routine enhances efficiency and facilitates production by providing a template for operations. But, as Owen Pedgley notes in his review of the Designing Design Research event at the Royal College of Art, "Every once in a while, it is useful to take time out, away from the technicalities and intricacies of one's own research, and reestablish a sense of perspective and purpose alongside the goals of the wider research community." Pedgley's observation can be applied to reading as well. Rather than focus on a particular set of professional concerns or report on specific developments in one area of practice, the material collected for this issue of *Design Issues* addresses a range of topics. In the subtle and intimate way in which reading operates, *Design Issues* introduces arguments and commentaries that interrupt routines and present the readers with fresh perspectives and challenging questions. Routine codifies and interruption provokes; in an artfully balanced life, both are necessary to sustain productive engagement with the subject matter of design.

This issue of the journal offers a rich collection of different perspectives on design. In "Where the Two Sides of Ethnography Collide" Rob van Veggel, an anthropologist, asks the pointed question: what does ethnography contribute to design practice? He draws upon his own experience in order to reflect upon how ethnographic research does—and sometimes does not—fit into the design process. Probing the relationship between different professions is also at the heart of Birgit Helene Jevnaker article "*Vita Activa*: On the Relationship Between Design(ers) and Business." How, she asks, do designers actually work with and for business organizations, and how can that relationship be enhanced? In "On Art's Romance with Design" the critic Alex Coles reviews the often contentious relationship between Art and Design. In light of design's impact on contemporary art practice, the questions Coles raises are fundamental to how we understand the dynamics of contemporary visual culture. In an intriguing way, Coles's probing of the relationship between Art and Design makes a fascinating pair with Sherwin Simmons's essay on "Ernst Neumann's 'New Values of Visual Art': Design Theory and Practice in Germany at the Turn-of-the-Century." In his early twentieth-century poster work, Simmons argues, we can see Neumann rethinking the place of the artist in modern culture and shrewdly assessing the emerging role of design (as opposed to the traditional role of the Fine Arts) in shaping the visual culture of modernity. Product semantics, one of the key concepts in design theory, is the

subject of Loe Feijs and Frithjof Meinel's essay "A Formal Approach to Product Semantics with an Application to Sustainable Design." The authors move back and forth from the elaboration of a theoretical framework to the application of ideas to the design of specific products.

The list of topics in this issue is diverse: appreciating Ethnography, navigating the borders of Art and Design, managing organizational relations, conceptualizing professional identities, crafting semantic content, designing design research. No doubt individual items on this list may be routine for some of the readers, taken as a whole, however, the editors believe that the contents of this issue offer ample opportunities for a stimulating "time out."

Richard Buchanan
Dennis Doordan
Victor Margolin

Where the Two Sides of Ethnography Collide

Rob J.F.M. van Veggel

Much has been written about how well ethnographic research fits into the design process.[1] My experiences as an anthropologist working in the design field indeed confirm this. But I also have noticed tensions in my collaboration with designers—tensions at the points of collision between the different sides from where anthropologists and designers approach ethnography.

In this paper I explore these collisions by reflecting only on my own experiences as an anthropologist working within the design field.[2] I do not analyze the tensions anthropologists in general might experience when cooperating with designers.[3] Still, by placing my own collisions with designers in wider contexts, I hope to provide a number of observations on the employment of ethnography in design in which fellow–anthropologists and designers might recognize their experiences, and start a discussion on the employment of ethnography that goes beyond an often encountered description of "This is the way we do it."

The Side of the Designers

In order to develop products that are easy and intuitive in their use, and that are useful and easily integrated in existing practices, designers need to know who the users of these products are going to be, what they think, what they do, and how they might use these new products. Previously, designers shared aspects of their lives with these users, or were still socially close enough to them that they could base their designs on presumptions of who these users were, and how they used these products. In contrast, our present economy is characterized by an enormous level of specialization in production and distribution. A car designer most likely won't meet the person who is driving the SUV he designed. Add to this social distance the economies of scale: that SUV is not only sold in Detroit, but also in Frankfurt, Seoul, and Melbourne—places the car designer might never visit. Complicating the issue even more, consumption has become specialized, too. In the past, Ford produced the Model T to be sold to any potential car owner. Now a SUV is designed to be marketed to a highly specific type of motorist. In addition, many products, especially software, have become highly customizable: you probably use your word processor differently than the person in the cubicle next to you. Because of specialization of production, globalization, targeted marketing, and customization, designers

1 I presented an earlier version of this paper at a meeting of the Chicago Association for the Practice of Anthropology in January 2002, and received many helpful comments. I also would like to thank Allan Segall and the editors of *Design Issues* for their constructive observations.

2 Presently, I'm working in the Netherlands for Royal Auping, a manufacturer of bedroom products. This paper is based on my experiences working in Chicago from 1998 until early 2002, and working for consultancies and Website design companies.

3 There still are too few anthropologists working in this field, and each has an idiosyncratic career path, so I cannot make any generalizations.

can no longer assume to know the users of their products. But they have to research these users—A research that has become critical to a product's market success.

To fill in the gap in understanding users of new products, designers have turned to the sciences.[4] Initially, they turned to psychology, which has had limited application. First of all, psychologists develop their understanding by performing tests in controlled environments such as labs. The resulting knowledge often is too general, too abstract, and too much divorced from real life situations, and therefore difficult to apply in actual situations targeting specific customers. Second, psychologists primarily approach humans as individuals. But most people do not use applications and tools individually but instead cooperate, and therefore intricately communicate and coordinate with others in quite varied settings within distinctive local cultures.

Like marketers, designers have turned to sociology, especially quantitative or statistical sociology, to understand the people targeted in product developments as living in social and cultural contexts. This research can be much better adapted to the needs of designers. Indeed, to supply designers and marketers, research companies collect the demographics and psychographics for every possible market segment. Given the quantitative nature of these data, these metrics are invaluable for making economic decisions. However, for many design projects, the use of this research is limited because surveys consist of questions on characteristics, behaviors, and attitudes that are based on presumptions on what these characteristics, behaviors, and attitudes are. This research method cannot question these presumptions and, therefore, delve into to the deeper level of understanding needed by designers. In addition, this data is not "rich" in the sense of evoking the use of particular products in its multifarious facets.

Another limitation of statistical data (and one that it shares with focus group data) is that it is self-reported. Such data are invaluable when it comes to understanding attitudes toward certain products and marketing approaches, and also useful in understanding what people do and use in activities that cannot be directly observed. But there is a social pressure involved, and people are more inclined to say what they think they are expected to say. What's more, people very often find it impossible to tell what they do and what they use because some activities may be so routine that people are not aware of exactly how they perform them. Or activities can be so intricate (and employ certain tools and cooperation) that people cannot describe them outside the context in which they actually engage in them.

Aware of these limitations in understanding users, designers more recently have turned to another science, anthropology, and to the method of ethnographic research. To fulfill users' needs by appealing to users' desires, designers need to question their own

4 Designers also have turned to an indirect study of prospective users. For instance, they have consulted official documents such as job descriptions and experts including managers and marketers. But these documents and experts often only describe the ideal flow of tasks, leaving out gaps and necessary tweaks, mistakes, likes and dislikes, social tensions, and the whole array of tools routinely used in practices. Not only are these sources often geared towards an ideal, they also often are biased by their own presumptions about users and usages.

presumptions and to think and act as a user, and then to translate these needs and desires into the medium that he or she, as a designer, dominates—software, Websites, cars, or whatever. How are those needs and desires detected? One way to find out is simply to ask the customer. A user can well articulate what he would like in his next car. That is interesting and important data, but it has the limitation of being self-reported. Moreover, a user usually doesn't understand all the possibilities in car design available to the designer. A designer requires a deeper understanding of the driver's needs and wishes than the driver might be able to articulate. This is much like studying a language. One can ask speakers of that language to describe it. Sure enough, a number of speakers will tell you interesting features of that language. But to speak that language, one needs to know how it is grammatically structured. (And few speakers are able to explain that to you.) However, most speakers construct good sentences, and when probed, they can tell you immediately what sounds right and what sounds wrong. It is by observing and subsequently analyzing these sentences that one can understand the language on that deeper level needed to speak it. (It's also on this level that the descriptions of the language given by the speakers make more sense, because they now can be placed in the context of grammar and correct language usage.) And when one speaks the language, one can translate it. It is this level of understanding that ethnography can provide. By studying people in their actual routine behaviors, performing these behaviors with the tools they routinely use in their usual physical and social environments, and possibly complemented by these users' explanations and descriptions of these behaviors, ethnography produces an understanding that a designer can use to translate the users' needs into new product designs.

In addition to this richer and deeper understanding gained through ethnography, this method of research has additional practical advantages. Unlike psychological research, ethnographic research does not require an elaborate and costly laboratory setup (and everything that goes with it); nor like statistical sociology, an organization of survey interviewers, survey processors, etc. Ethnographic research can even be implemented by one single person, using simple tools such as pen and paper, or more updated but still simple ones such as a video camera. Because of its simple organization and tool requirements, an ethnographic research project can be quickly designed and cost-efficiently implemented to collect the very specific data needed for a particular design project.

Concluding, designers approach ethnography for the practical reasons of gaining a rich and deep understanding of users that can be easily integrated into design projects, and yet quick and relatively inexpensive to obtain.

The Side of the Anthropologists

Anthropologists approach ethnography from a different direction.

In the Age of Enlighenment scholars began to answer questions on topics such as the nature of society, the nature of government, and the nature of language with empirical data derived from societies and cultures very different from their own Western society and culture. By studying the most exotic people, they attempted to discover our common humanity. Anthropology—more precisely socio-cultural anthropology[5]—developed out of this intellectual endeavor, but only became a truly empirical science when anthropologists began to gather their own data by going to those exotic people.

The first anthropologist to do primary research was Bronislaw Malinowski. In the introduction to *Argonauts of the Western Pacific* (1922), he laid out the principles of ethnographic research or, as this research also is called, participant observation. The ethnographer participates as closely as possible in the lives of the people he studies. And while participating, he observes these people, what they do, and what they use for doing what they do. But in a wider sense, the ethnographer asks for explanations, not through the more conventional interviews, but through conversations that are, for these people, as natural as possible. Thus, the ethnographer integrates what they do and use with what they think. Every point of contact that an ethnographer has with the subjects of his study can result in data, which he later integrates into one holistic understanding.[6]

While still adhering to Malinowski's groundwork, anthropologists have further developed the ethnographic research method. How people perceive the ethnographer determines what they tell him and what they let him observe. Therefore, ethnographic data need to be interpreted in relation to the ethnographer's role as perceived by these people. Another development is the interpretation of what the ethnographer observes and hears with the ethnographer's role in a particular society. Anthropologists also have shifted the topic of their research. They still study exotic people, but now in addition they employ techniques developed to study people very different from us, to study our own society, but with an emphasis on questioning aspects often taken for granted as they assume the studied people to be different, perhaps just as different as exotic people.

As ethnographers study people in the largest possible variety of existence, their methods are very open, nonstandard, and improvisatory in order to adapt to this limitless variety. I would argue that the only fundamental commonality to all ethnographic studies is how in the studies of these different people, anthropology (as theory) and ethnography (as research method) continuously complement each other.

The first phase of an ethnographic study consists of the formulation of the research questions. The socio-cultural reality is

5 In the U.S., anthropology consists of "four fields": socio-cultural, linguistics, physical or biological anthropology, and archeology. In this paper, anthropology means socio-cultural anthropology.

6 Please note that ethnography, thus formulated, is very broad. For instance, it employs focus groups—not necessary the ones taking place in rooms with two-way mirrors, but naturally occurring group conversations. Or it includes what in the design field is called contextual inquiry: this is a narrower form of ethnography limited to the analysis of task flows. Malinowski and the earliest ethnographers did research in pre-literate societies. Later on, when ethnographers studied societies which produced texts, or which were described in texts, these materials also were used as research data.

highly complex. In order to study it, one needs to discipline and focus oneself by formulating which aspects one is going to study, how one is going to study these, and how answers to these questions will contribute to the solution of a particular problem—be it an academic or a practical problem. Moreover, the socio-cultural reality is never self-evident: one perceives it through preconceptions (i.e., theoretical but also common-sensible, or what anthropologists call ethnocentric conceptions). In the formulation of the research questions, one attempts to articulate these preconceptions (i.e., theory) in terms of the goals and methods of the research.

The second phase consists of the actual contact with participants. In sharp contrast to quantitative research in which participants answer preformulated questions by predetermined replies, the ethnographic research questions formulated in the first phase are more abstract, more directional than actual questions to be asked. It is precisely at this phase of contact with the participants that the ethnographer formulates the actual questions, literally in the sense of spoken questions or, more broadly, in the sense of aspects to which he pays attention in an observation. The formulation of these questions in the field enables the ethnographer to participate as closely as possible in the regular lives of the research subjects. And the formulation in the field also makes it possible to radically question the researchers' presumptions. As the researcher interacts with the participants, he needs to reflect simultaneously on the received data (i.e., he needs to start interpreting the data) and develop a direction for the next set of questions of the study. (Again, this is in sharp contrast to quantitative research in which one attempts to standardize this contact with participants as much as possible.) In some cases, this reflection might even result in a reformulation of the research questions developed in the first phase. This interpretation and development of the direction is, of course, theoretically informed (i.e., one attempts to relate the data to abstract conceptions on how people behave, interact, etc.).

The last phase comprises the final interpretation of the data. Although this might seem to be a purely theoretical exercise, one returns again and again to the contact with the participants (i.e., notes on contacts or as one remembers them). This contact always is foremost in the anthropologist/ethnographer's thinking when interpreting data.

The texts resulting from these ethnographic studies discuss ethnographic data in the context of theoretical reflection, and vice versa. Moreover, they develop a theoretical argument through providing ethnographic cases. Pure ethnographic or pure anthropological texts are rare.[7]

In addition, there is an even higher level on which anthropology and ethnography complement each other. Anthropologists also reflect on the nature of anthropological understanding as that intimately relates to the context in which ethnography is applied.

7 It's for that reason that the training of an anthropologist culminates in doing ethnographic research on which a doctoral dissertation is based.

Decolonization made anthropologists reflect on ethnographies written of colonized people, and how this research method was influenced by this political context and thus shaped our understanding of other people. Feminism made anthropologists reflect on the gender of the ethnographer and how that has shaped our understanding of other people. Therefore, anthropologists have become very sensitized to the multiple aspects of the context in which particular research projects take place and how these aspects shape the understanding gained by these projects. A crucial part of an anthropologist's training consists of reading very diverse studies while paying close attention to which data are used in which contexts to gain which insight. Thus, an anthropologist develops a creativity in the use of specific methods; a use that is never a recipe but always dependent on the understanding of the possibility of a given research context.

Concluding, anthropologists approach, ethnography as the methodological component of a theoretical endeavor to understand humans as socio-cultural beings, who presumably act and think in different way: ethnography is a method to understand other people—anthropology is that understanding.

Where the Two Sides of Ethnography Collide

Designers have discovered ethnography as an appropriate research method, and design companies now hire anthropologists to ascertain the highest quality in the application of this method. I am one of these anthropologists. The companies I have worked for range from design consultancies (which at times even included marketing) to Website development companies. During my work, I have felt tensions at different moments in the work process. By analyzing these tensions as collisions between the two sides of ethnography, I have attempted to clarify issues in the integration of ethnography into the field of design. Please note that these collisions don't have to be negative. Indeed they can be very creative, keeping both ethnographer and designer on their feet. That's why their clarification can contribute to the integration of ethnography.

I describe four forms in which I, as an ethnographer (or more broadly researcher), have been integrated within the design field.[8]

Collision No. One

In one organizational form at a Website design company, teams working on a project consisted of people with different skill sets, and accordingly different responsibilities. My task was to study the user of a prospective Website. Another team member was responsible for the wire frames and information architecture. A third member was the visual designer. Some projects also used a business strategist. And there was a project manager overseeing our work and interfacing with the client.

This company attempted to integrate these different skills and responsibilities by having frequent team meetings in which the

8 Though these forms are drawn from my experiences, they are not empirical descriptions. In order to ensure a certain degree of anonymity, I describe them in a highly abstract form. Moreover, I have made composites of different actual cases in order to make my point clearer.

important steps in the design development were taken with, ideally, everyone's input and consent. My first project was the development of a Website facilitating communication between event planners, (a particular type of organizer), their providers of needed services and products, and their clients. In the kick-off meeting, team members, together with the client, formulated a very broad research plan: to interview event planners and to conduct focus groups with vendors. My first task for this project was to create the research tool, that is, an interview guide for studying the event planner's work processes, and a focus group guide for studying vendors' work processes. The meetings during which I presented these tools to fellow team members generated little feedback. When I began to analyze the collected data, I presented several analytical strategies hoping to receive more feedback from fellow team members on the most appropriate analysis given this project. Again, hardly any feedback was obtained. In the meeting in which we were going to assess the functionality (that is to translate my findings into wire frames and an information architecture), communication broke down completely. I couldn't fathom how to present my analysis to the interaction designer; and the interaction designer didn't know how to interpret my findings. And the project manager had no idea how to bring us together. Eventually, the interaction designer came up with wire frames and an information architecture in an ad hoc manner using what she had observed in the few participant interviews and focus groups she had attended, as well as statements that she had heard me making about the prospective users. And a very helpful coworker took a closer look at my findings and helped me translate them into use scenarios and functionality. However, these two streams of work really weren't integrated. Since the meeting in which our communication broke down, I was no longer included in the team meetings for this particular project: my contribution to this design project thus ended. The team had to work now on the development of the screens. All in all, the goal of using a deeper understanding of prospective users to develop this Website was not achieved.

Perhaps this experience was the result of the fact that we all were neophytes: in the following project, I was careful to focus my analysis on specific functionality. One could say that we just needed to develop a common language—a language in which I wrote my findings, and which the interaction designer could read in terms of functionality. Another apparent factor was territoriality. We were supposed to collaborate but, implicitly, we had our own territories to protect. Our communication broke down in the meeting in which we were to translate my findings into functionality because we were treading borderland and where our territories were not clearly demarcated. All of these factors were definitely in play, and would have been resolved by us becoming more experienced in design methodology, but I would argue that there was a deeper issue; one

of collision between the different approaches to ethnography; one resulting from what anthropologists call positivism, from the side of the designers.

Positivism is the epistemological position that data can be understood in their own right, that they "speak" for themselves. This contrasts with the general anthropological stance—as explained earlier—that data always need to be interpreted within the context in which they were collected, specifically the social context of the relation between researcher and participant, but also the theoretical context (i.e., the research questions). The epistemological position opposite to positivism—and the one which has been most prevalent in the social sciences—is that data, or facts, are constructions made in the research and analytical process.

With hindsight, I now can see that when my coworkers and I were discussing the research questions, interview and focus group guides, and the analytic strategies, my team members didn't see any reason to give me input. I was the authority on research, and I was supposed to tell them what the prospective users were doing. When they were working on the wire frames and information architecture, they saw no reason to consult me: I already had provided the information on what users did that was, in my coworkers' perspective, deemed necessary. The functionality assessment meeting broke down because the presentation of data wasn't anticipated to be problematic. When I was eliciting feedback on possible analytical strategies, the project manager asked me to simply write down as clearly as possible what I had learned from the prospective users.

If we had had a common language in terms of a template in which findings were presented, this collision would not have surfaced; but it definitely might have been present. Of course, this all depends on what is understood within a "common language." I have seen templates that guide the integration of research and design very well. However, these languages achieve that by limiting the research. For instance, a task flow chart is very useful when observing how people perform subsequent tasks. A task flow chart is helpful in designing screens for these tasks. In many design projects, such a common language functions perfectly, also clearly demarcating territories between the different responsibilities. But I think such a common language short-circuits important creative steps in a design project by presuming that the application has a structure based on subsequent tasks. I would rather have several "common languages"; each with its own presumptions, in order to decide in our team discussions which one is going to be used in a particular project. And, of course, I think that we still should have the possibility to develop a totally new common language. Such an approach to common language (i.e., language in the plural), with the option to create new ones, requires a different understanding of what the data are and how they are used in a design project. In that case, designers cannot assume that the ethnographer is going to tell them what the

users are and what they do; we all have to collaborate and determine what data are, and how we construct them given our common goal. Ethnography can contribute in a more powerful way than gaining a quick and inexpensive understanding of users: as ethnographers study people that are unlike us, they can question presumptions designers might have about the application, or product, and thus contribute to product development truly focused on users.

Collision No. Two

I also have worked in teams consisting of researchers (one or more) and designers, all sharing equally in the responsibility for setting up the research, executing it, analyzing the data, and formulating the findings or deliverables. This team organization also included a project manager who interfaced with the client and kept us on track. Within this organization, I encountered two types of tension.

It has been my experience that designers in this form of organization typically thought that a broad determination of who, where, and when we were going to interview and observe was sufficient preparation, even for team members who had never done, or been trained in, any form of research. They didn't perceive the need to reflect more than very briefly on the actual design problem, which data we needed to solve it, and how we were going to collect the data. For example, in a project to develop recommendations for retail interior redesign (in which I was the main researcher), I was called in at the end of the kick-off meeting. The client, the project manager, and our company's sales person had just concluded this meeting when I was asked to join them. They had written down on a board the design problems the client was interested in—problems including the content and form of the information displayed on shelves, the spatial organizations of the several departments, and the design of the customer service/check-out counter. I was walked through the notes and the next morning we were going to start observing and interviewing customers while shopping: we were going to work under the presumption that we just could observe and interview shoppers on the appropriateness of the content and form of the displayed information, on the spatial organization of the store, and the design of that counter. We didn't need to think about what to look for in these observations, and what to ask in these interviews—we didn't need to think about which data we needed to solve our client's design problems.

From the side of the anthropologist, I perceived this problem as the one of empiricism, the epistemological stance that all knowledge originates in sensory experience, and only in that experience.[9] On the other hand, it widely has been accepted in the social science academic community that knowledge originates in the interplay between preconceptions—theory if you like—and empirical experience. To reiterate, one perceives patterns, relations, etc. in the sociocultural reality according to one's preconceptions. By making these

9 Empiricism is similar to positivism. However, positivism is more an approach to data, while empiricism involves the collection and interpretation of data.

preconceptions explicit, and by reflecting on the appropriateness of them with regard to a given problem (i.e., by formulating research questions and formulate, albeit an implicit, theory), one actually confronts these preconceptions with empirical reality and advances one's understanding of it. As an anthropologist in that retail interior study, I would have liked to reflect on the cognitive paths in the purchase process that were implied in the displayed information and store layout. I would have liked to consider what we needed to observe in shopper behavior, and what questions we needed to ask shoppers, in order to assess if they indeed were following these paths. And more important, how were we going to discover where and when the retail interior didn't support the shopping process, and thus find the points for improvement? I would have liked to consider if we needed to look at the interaction between shop attendants and shoppers, or only at individual shoppers; and to what degree the age and gender of observed and interviewed customers was relevant. The underlying structure (theory, if you will) of these questions could have been a simple framework of who was communicating with whom; what was being communicated; why were they communicating; how were they communicating; and when and where were they doing that—the communicators being in this framework the customer, the store, and possibly the shop attendant.

In these teams, the designers believed that by simply going into the field, the patterns of behavior, connotations of objects and practices, etc. would be entirely self-evident. For instance, when, in a project in which we were going to develop ideas for a wireless device for shoppers, I suggested the development of research questions for observation in the sense of a framework of points to which we would pay attention. A designer countered that, if there were eighty patterns of shopping behavior, he wanted to gather data on all eighty. He was concerned that such a framework would limit him in his observations. However, the socio-cultural reality is never self-evident, and one always perceives it through preconceptions. To be able to distinguish these patterns, one needs criteria (theory!): these patterns never exist outside those criteria. For instance, already in order to identify two patterns in a certain behavior, one needs a criterion to assess whether a behavior is one or the other.

In addition to the tension occurring when formulating research questions the other type of tension, also related to empiricism, occurred in the analytical phase of the research. Here the significance of collected data is layered. On the most superficial level, their significance is self-evident. But analysis is the process of stepping back from this superficial level—of distancing oneself from the data—in order to perceive the underlying or deeper structure (as described in my example on grammar). For one particular project, we had interviewed a number of people and videotaped these interviews. One fellow team member expressed surprise that I wanted to watch these videotapes. She thought that they were only made to

give to the client as proof that the interviews had taken place and had no further function in the research process. She also argued that she, as a designer, needed the immediacy of being present at an interview so that she could come up with design ideas, and that watching the videotape would be too distancing. In the retail interior redesign project, a coworker expressed a similar concern. Occasionally, we had asked participants what changes in the interior of these shops they would like to see. This in and of itself can be valuable information. Again, as in my language example, correct sentences provide valuable information. But one designer wanted to turn the findings into a list of these findings without attempting to perceive any structure in and between them. This would be similar to studying a language by making a list of utterances, without attempting to perceive the underlying grammatical structure. The empiricism of the designers consisted of their opinion that the data should be used on surface value without confronting the data with more abstract notions—theory—in order to get to its deeper structure. Again, ethnography's contribution might go further than offering a quick and inexpensive understanding of users: ethnographers can guide designers' understanding of users towards structures of meanings and behavior that lay underneath the surface of observable practices and elicited quotes by the theoretical part of their training. As anthropologists, they can delve to the deeper, "grammatical" level of users' behavior and attitudes, and thus facilitate a much more adequate "translation" of behavior and attitudes into products.

Collision No. Three

The third type of collision between designers and myself didn't occur within a project team, but on the departmental level. Within our design department, there were other people with the same job description and responsibility as I had. However, they were trained primarily as designers, and only secondarily with additional training in research. Tensions occurred when we worked on how to articulate the design methodology, and how to present our contribution as the design department internally to coworkers outside our department, as well as externally to clients.

To me, my designer coworkers' understanding of research and data seemed rather mechanical. To oversimplify their understanding (and definitely not to do full justice to it), ethnography was useful because one gained an insight of how people actually behave—an insight relevant to interface and interaction designers. Ethnography thus contrasts to, for instance, a focus group because this latter method gives access to what people think—an insight relevant to brand designers, "marketeers," etc. (i.e., how the users could be approached in marketing messages). My coworkers often emphasized that what people do and what they think are very different, without necessarily dwelling on the fact how this might differ and how behavior and thinking might connect on a deeper level.

Thus, what in my view was mechanistic in their approach was the notion that one particular research method collects a specific kind of data that are only of relevance for specific tasks in a project—a parallel difference between research methods and resulting input needed for different tasks.

Again, in some design projects, such an understanding of research is appropriate, and even very efficient and practical. But ethnography has a larger potential. For instance, for the design of the Website enabling the communication between event planners, providers, and clients, my goal was to study and analyze these forms of communication. I interviewed a woman who told me that her favorite and most frequently used communication tool was e-mail. She claimed that she knew how to use it very well. I asked her to open Microsoft's "Outlook" and show me how she organized her e-mail. It turned out that upon reading a message she would delete it, but never empty the Deleted Items folder. At times she needed to look up messages that she had previously read, so she would go into the Deleted Items folder, which had become her archive of sorts. I probed her on other functionality, such as rules for receiving, but she was not aware of them. Indeed, as my coworkers noticed, what this participant said might be interpreted as very different from what she actually did. My task was to study the forms of communication as they actually happen, and not as participants themselves report how they communicate—and my research method was very appropriate to this task. In the approach of my designer coworkers, I should have focused on how this participant was using her e-mail, and ignored what she had said about her usage of it. Indeed, marketeers defined the target group through their research techniques as intensive users of e-mail, just like the woman I had interviewed. But it is the strength of ethnography that one attempts to understand why people behave and talk as related phenomena. As an ethnographer, it was obvious why this woman reported something apparently different from what she actually did. Her cognitive model of e-mail was like that of the telephone: solely a means of communication but not a means of archiving. That's what she said she did and she did what she said. The problem was that my coworkers—designers and marketeers—understood someone presenting herself as a heavy user of e-mail—someone who uses all the functionality of e-mail. By not only observing what she did but also by listening to what she said, I gained this insight, which was valuable in both the design of this Website and in the marketing of it.

My insight into this participant's cognition and behavior was accidental to the Website development methodology advocated by our company. Designers became interested in ethnography because this research method can provide them with a rich and deep understanding of the prospective users of products. However, precisely because ethnography provides this understanding, I felt underutilized when working as an ethnographer within strictly the

design field. Researching users, I came up with an understanding that would have been useful for branding, marketing, and business strategy. But because I worked within the design department, my potential to contribute to economically successful products was curtailed because I couldn't provide input to these other disciplines.[10] Being exposed to a wide range of research methods, ethnographers can contribute to product development—in the largest sense including the marketing of these products—by designing creatively more appropriate research projects, and not just observing "actual behavior."

Collision No. Four

As an anthropologist, I have mainly dwelt on the perception of these collisions from the anthropologist's perspective. Designers have commented that my work (and I've heard from other anthropologists that they have received similar comments) was academic and indecisive. It was academic in the sense that we wanted to bring theory and methodological discipline to the projects during the several phases, while designers were wondering what those theories and methodological disciplines contributed to the solution of the design problems. Anthropologists were not to engage in unnecessary theorizing for which there is no place in the corporate world. In short, anthropologists were blamed of "gazing at their belly button," and not delivering. I believe that it's a matter of balance. Theory can vary tremendously. Indeed, I've observed anthropologists working on design projects using theories clearly totally out of scope. The anthropological training is geared towards this since students are taught to reflect on mundane details of life by placing them in abstract frameworks—the complementary relationship between anthropology and ethnography. But often I have used a rather simple framework, for example, to study communicative processes by simply asking as research questions about who was communicating with whom; what was being communicated; why were they communicating that; how were they communicating that; and when and where they were doing that. Such a framework is a theory. Theory isn't necessarily something grand, but just a conceptual skeleton underpinning one's thoughts.

Indecisive—the other comment by designers on anthropologists—might be the result of differences in training. By training, anthropologists are inclined to perceive nuances, complex interrelations, and embeddedness in wider contexts, while designers are trained to look for more concrete problems. And as anthropologists attempt to evoke the multifaceted experiential world of the participants, designers have to come up with a "less is more" solution to the design assignment. Again, there is no clear-cut solution to this problem. It's also a matter of balance, and more important, what's required for a given project.

10 Designers very generally perceive the use of ethnography in their design developments. However, many other people involved in bringing products to market don't. For instance, many business strategists, marketers, and brand designers prefer quantitative data. Although also from the marketing side, ethnography is becoming more appreciated as a resource for consumer understanding. At least that's what is indicated by a wide range of articles these days, as well as courses such as strategic marketing taught at business schools. Yet most of the business strategists and marketers I have met lag behind this important trend.

Conclusion

Collision perhaps is a word that sounds negative. Much has been written about the successful integration of ethnography in the design field, but in this paper my intent was to go deeper. I think that underlying issues of this integration have surfaced in the collisions between designers and anthropologists. At every company I've worked for (and indeed I've heard that the same thing was going on at lots of other companies) there was a continuous, self-reflexive attention focused on the process or the methodology, and with good reason. In this methodology, the different responsibilities are distributed in a design project, and the methodology becomes a positioning tool to differentiate one consultancy from the other. But I've never been involved in a project that followed the methodology as it was planned to be—and this doesn't seem to be typical only for the companies I have worked. Of course, there is and always will be a discrepancy between the reality and the ideal, and it's good to be self-critical and work on improvement by attempting to attain an ideal. But in this paper, I have not tried to focus on the methodology per se, but instead I have looked at the people who are executing the methodology (i.e., the anthropologists/ethnographers and designers, and how they approach ethnography from different sides due to their different backgrounds).

Collision can be positive when it is used creatively, when it keeps both designers and ethnographers on their toes. A fellow researcher told me how wonderfully she collaborates with a designer who helps her to keep focused, while she makes him aware of a wider understanding of users. As she told me, this happened often at the most unexpected moments in a project and in their cooperation. It's this dynamic that cannot be caught in a methodology—in a description of "This is how designers and ethnographers do it." It's a dynamic that comes from the contact between different people contributing to their common goal, and it's proverbially what makes the total worth more than the sum.

On Art's Romance with Design

Alex Coles

There always has been a rift between art and design in our culture. Yes, there has. Purists submit that the distance between art and design has to be preserved in the name of specificity; in an age where there is a multimedia meltdown, they warn that art must take care not to relinquish what is specific to it. Meanwhile, more nonchalant players insist that, on the contrary, to survive and be relevant in such an age, art needs to be more gregarious—it must reach out beyond its own confines—and design is surely one of its more suitable bedfellows. The sense of specificity that comes with an awareness of a discipline's history, however, is as important to design art as the ability to make connections between disciplines. So perhaps both groups are partially misguided.

Project, an installation by Jorge Pardo at Dia:Chelsea in New York in 2000, is a good example of why a comprehensive knowledge of the different disciplines is important. Pardo refashioned Dia:Chelsea's ground-floor gallery, bookstore, and lobby in such a way that integrates these three formerly discrete areas into a flowing stream of vibrant tiles. Thus, to experience the installation is to be catapulted into a vertiginous world enveloping both the art gazer and book buyer alike. By way of reprieve, both ends of the space are coated with pastel-colored murals conceived by Pardo, and an adjacent office space is filled with his low-hanging lamps. A full-scale clay model of Volkswagen's most recent Beetle took center stage in the gallery, while in the bookshop there is a seating area replete with delicately arranged chairs designed by Marcel Breuer and Alvar Aalto in the 1920s and 1930s. Pardo effectively preserved a sense of specificity in the installation through the decisive articulation of each space and object while, at the same time, striving to be gregarious by drawing the objects that constitute the installation from across art and design.

Such installations have rendered design crucial to an understanding of contemporary art. So, too, have the flurry of recent group exhibitions devoted to design art. These include *What If? Art on the Verge of Architecture and Design,* at the Moderna Museet in Stockholm, 2000; *Against Design,* at the Institute for Contemporary Art, University of Pennsylvania, Philadelphia, 2000; *Beau-Monde: Toward a Redeemed Cosmopolitanism,* Site Santa-Fe, 2001–2; and *Trespassing: Houses x Artists* at the MAK Center for Art and Architecture, Los Angeles, 2003. Despite these exhibitions, extended critical commentaries on the trend have been noticeably lacking.

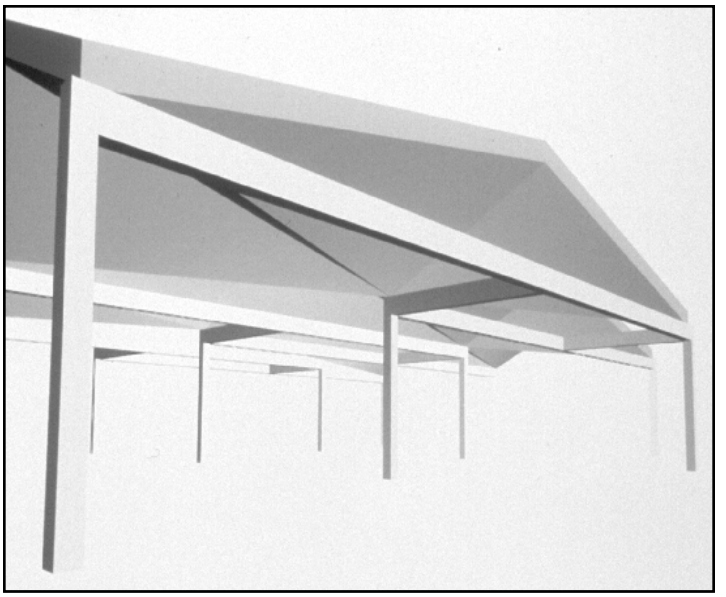


Figure 1
TRESPASSING: Houses x Artists, Jim Isermann, Jim Isermann House, Digital image. Courtesy of the artist and OpenOffice, MAK Center, 2002.

Vilém Flusser, the philosopher, and witty and erudite commentator on design, devoted an entire essay to a simple explanation of the etymology of the word. "'Design' is derived from the Latin *signum*, meaning 'sign,' and shares the same ancient root. Thus, etymologically, design means 'de-sign.'" [1] Flusser subsequently elaborated on other words used in the same context, such as "technology." "The Greek word *techne* means art and, is related to *tekton*, a carpenter. The basic idea here is that wood is a shapeless material to which the artist, the technician, gives form, thereby causing the form to appear in the first place." [2] In this account, the words "design," "machine," "technology," and "art" are closely related, one term being unthinkable without the others. But modern bourgeois culture of the mid-nineteenth century made a sharp distinction between the world of the arts and that of technology. As a result, culture has been split into two, mutually exclusive branches: one scientific, quantifiable and "hard," the other aesthetic, evaluative, and "soft." This unfortunate split became irreversible towards the end of the nineteenth century and, in the end, the word "design" came to form a bridge between the two. In Flusser's late-twentieth-century reading, design indicates the site where art and technology meet to produce new forms of culture, and so the role that design plays is crucial to the vitality of the arts.

But artists and critics have had a field day denying the impact of design on art. Intrepid formalists from Roger Fry to Michael Fried have tended to bring to the foreground what they term the "design" of a work while, at the same time, paradoxically playing down the design context—tricky, given that much of what they support comes from a narrow reading of the 1920s Bauhaus school. For them, design is a structure that can carry the artist's aesthetic conviction. In no way

1 Vilém Flusser, "About the Word *Design*," *The Shape of Things: A Philosophy of Design* (London and New York: Reaktion Books, 1999), 17.

2 Ibid.

is it respectable in itself. Conceptual artists of the late-1960s likewise tended to be evasive about design, with the result that many of their arguments also appear weak, especially considering their substantial recourse to industrial design and typography. To the extent that, without design, the work of both formalists and conceptual artists is inconceivable, it seems unfair that they refer to it in a pejorative sense. A key issue to keep in mind when thinking about design art is that all art is designed, even if it endeavors to appear otherwise. In the end, for artists, it is really just a matter of emphasis: to be overt or covert about an engagement with design. Of those artists to approach design, only the "pop artists" fully embraced it. Richard Artschwager openly admits that he started out as a furniture maker, Andy Warhol did not hide that he previously had been an illustrator, and the London-based Independent Group went so far as to include designers and architects. Even within pop there were some misgivings, however: Ed Ruscha published his graphic design work from the 1960s under the name of Eddie Russia, a pun on the political climate of the time, to be sure, but also on art's fear of design.

More exhilarating still was the strategic coyness towards design by the "minimalists." In the 1980s, Donald Judd ordered chairs and tables which were fabricated according to his specifications. Though they were eminently close in tone to the sculptures he had been producing since the early-1960s—sleek in structure, deadpan in facture—Judd endeavored to keep the two forms of his output distinct. So anxious was he about this divide and what it meant that he took great care to protect his double life. While hours were spent scheming away behind the scenes, Don the designer was rarely seen in public with Judd the artist because he foresaw that this could lead to all his output being exclusively contextualized within the design world. The consequence of this surely would have been that his occasional essays for *Home and Garden* on art and its relation to the interior would be taken as the cornerstone of his theoretical output, undesirable for a philosophy graduate accustomed to writing for *Artforum.* After all, Judd is an artist who occasionally turned his hand to design when he needed something to sit on, eat off, or live in—or simply something to make money from. According to Judd himself, he was in no way a designer per se.

To a more recent generation of artists, although it has the look of design, Judd's work does not implement any of the characteristics they associate with it, such as an open attitude towards working with different disciplines or the ambition to create conditions for the viewer to have a truly dialogistic experience. Artist Tobias Rehberger recently suggested that one of Judd's outdoor sculptures be temporarily refashioned into a bar in order to produce a new, collaborative artwork. The Judd Foundation turned the proposition down flat. Explaining the motivation behind projects such as Rehberger's, artist Liam Gillick said: "In common with many people of my generation, I embraced certain aspects of design as a part of a critique of estab-

3 Liam Gillick, "The Semiotics of the Built World," *Liam Gillick: The Woodway,* exhibition catalogue, Whitechapel Art Gallery (London 2002), 81.

4 George Nelson, "Modern Decoration" in *George Nelson on Design* (London: The Architectural Press, 1979), 185.

Figure 2
Liam Gillick, Big Conference Centre Limitation Screen, 1998.
Anodized aluminum, Plexiglas, 300x240 cm.

lished terms of judgement within an art context."[3] In the eyes of this generation of artists, Judd is no longer able to hold himself aloof from the design context.

But in the parlance of Judd's time, the problem with Gillick's spin on design and Rehberger's proposal is that a piece of high art would be turned into that much-maligned thing: good design. The term "good design" actually derives from an infamous annual exhibition of contemporary design trends mounted by The Museum of Modern Art in New York (MoMA) between the late-1940s and the mid-1950s in the hope that something of their aesthetic would make its way into the culture at large.

Designer and theorist George Nelson furnished an account of what good design looked like during this period, with particular reference to what he termed the "plywood and rubber plant school of good design."[4] With his tongue firmly in cheek, Nelson recounted how an architect of his acquaintance had bought a station wagon because he had designed a number of modern houses that needed to be published in the architectural press. Since his clients owned no modern furniture, in order to achieve the required interior shots, the architect was forced to load the station wagon with a photographer, his cameras and lights, a large rubber plant, and a few Aalto stools, armchairs, and tables. Nelson's story reveals how ubiquitous the notion of "good design" had become by the mid-1950s, and hence almost meaningless to cutting-edge designers and artists such as himself. Given this leveling-out of cultural territory, it makes sense that the term often was used by art critics seeking to disparage new art forms that they considered too smooth for their gritty, avant-garde tastes. For example, in the early-1960s, Clement Greenberg could say that he felt "back in the realm of Good Design" whenever he was in the presence of minimalist work.[5] By the same token, a few lines later, he also suggested that painters such as Ellsworth

5 Clement Greenberg, "Recentness of Sculpture" (1967) in *Clement Greenberg: The Collected Essays and Criticism,* Vol. 4, John O'Brian, ed. (Chicago and London: The Unviersity of Chicago Press, 1993), 254.

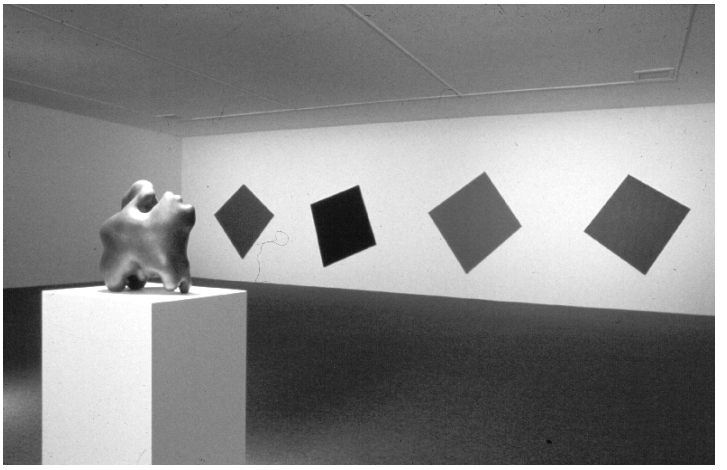


Figure 3
Kenneth Price, *Underhung* (1997) and Ellsworth Kelly, *Blue Black Red Green* (2000).
SITE Santa Fe's 4th International Biennial *Beau Monde: Toward a Redeemed Cosmopolitanism,*
July 14, 2001–January 6, 2002.

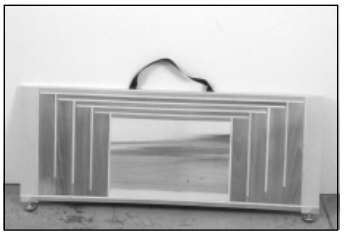


Figure 4
Joe Scanlon *Prop 2*, 2001.
Wood, fabric, metal, rubber, and lacquer.
17 x 40 x 1 1/2 inches (43.2 x 101.6 x 3.8 cm).

Kelly and Kenneth Noland set an example to be followed as they "rise above Good Design" while utilizing formal elements derived from design, in particular from the Bauhaus. Even though all this was many years ago, it came as no surprise when the most recent design art came to the attention of critics in the late-1990s that the same terminology was used again. According to some critics and artists, especially the ones still under the influence of Judd's generation, Pardo's work nestles easily within the confines of good design. And so, once again, the high art of one generation is seen as the good design of another.

The term "design art" only adds to the furor. Perhaps it erodes the ideological gulf between the disciplines too smoothly. Let it be clear from the outset then that it is a term derived from many of the contemporary artists associated with it. Joe Scanlan, for one, frequently peppers his felicitous essays on the subject with it. In a 2001 essay co-authored with Neal Jackson entitled "Please, Eat the Daisies," he furnishes the reader with a crisp explanation of the term: "Design art could be defined loosely as any artwork that attempts to play with the place, function, and style of art by commingling it with architecture, furniture, and graphic design."[6] The active development and use of the term "design art" by artists sharply differentiates it from, say, minimalism, a term its alleged exponents were none too happy with, since it was applied to their work by an external body, the critic. Sometimes the two words—"design" and "art"—are kept apart by artists, but just as frequently they are run together. In print, this appears to make a difference, but in actual fact it is only a semantic one and is not visible in their work. So there is no need to get too bound up in the term itself.

Most often when design art is discussed, it is in terms of the way it "transgresses" boundaries. But making too much of this particular issue is to befuddle an already complicated situation. For it is not so much that these artists transgress boundaries, as that they engage art and design in a romance which is of interest. The notion of "simultaneity" is useful here because the most enticing design artists are utterly flexible regarding the role they play, being content to work as designers and as artists at different times, although not always in the role or circumstances in which they would be expected to do so. Sonia Delaunay was the first to use the term in the 1920s. Perceiving the practices of certain artists from her time onward as simultaneous practices alleviates the necessity to think of design art as a fixed paradigm or movement. Instead, it can be thought of more as a tendency on the level of practice rather than a fixed theory.

The economy of the exchange between art and design also is worth considering. To artists, design is attractive because it provides a way to make money, to reach a larger audience, and to look stylish—not to mention having something to sit on and live in while you are making more design art. On the other hand, art entices designers,

6 Joe Scanlan, "Please, Eat the Daisies," *Art Issues* (January/February 2001): 26.

Figure 5
Franz West *Knutschnische* 2000, Environment with work by West 2000, Steinbach, Gelatin 2000, mixed media dimensions variable.

because it is something you can acquire an attitude from if you want to appear profound while, at the same time, producing something to go on your wall.

Many of the considerations regarding this polemic turn on the way in which ornament and decoration relate to design art. Since the infamous 1908 essay "Ornament and Crime" written by Adolf Loos, there has been a tendency to assume that ornament, and with it the decorative effects of art, architecture, and design, are degenerate or are at the very least superfluous to what is required. In Loos's account, these effects were the products of the way in which exponents of the art nouveau style at the turn of the twentieth century tended to run the different disciplines together. Loos made a moral imperative out of his theory that disciplines must be kept apart in order to limit the decorative: "I have discovered the following truth and present it to the world: cultural evolution is equivalent to the removal of ornament from articles in daily use." [7] Not satisfied with stopping there with his drive to expunge ornament from his life, Loos even subjected his diet to the same relentless discipline: "The spectacular menus of past centuries, which all include decorations to make peacocks, pheasants and lobsters appear even tastier, produce the opposite effect on me. I walk through a culinary display with revulsion at the thought that I am supposed to eat these stuffed animal corpses. I eat roast beef." [8] This tendency continues today. In *Design and Crime (and Other Diatribes),* Hal Foster bemoans the loss of specificity in the name of Loos's polemic against ornament. Loos's "anti-decorative dictate is a modernist mantra if ever there was one," Foster asserts, "and it is for the puritanical propriety inscribed in such words that postmodernists have condemned modernists like Loos in turn." [9] But Foster perceives that times have changed again, since "Maybe we are in a moment when distinctions between practices might be reclaimed or re-made." [10] The notion of specificity is played off against the tendency to work across disciplines and, on this occasion, specificity once again wins. So it is not difficult to understand from the remainder of the book that Foster takes things even further than Loos by clinging to a strict vegetarian-like diet of medium-specific art.

As a repercussion of how the terms of Loos's inquiry continue to dominate the entire debate, there is a necessity to recover the discourse about forms of design that accent the ornamental and decorative. It is no coincidence that this task is at the very center of the texts of some of the most unfashionably incisive critics who have written about the correspondence between art and design: John Ruskin, William Morris, and Oscar Wilde. The first two promoted a social agenda that was bound up with the aesthetic effects of ornamentation. Making a case for handcrafted design, they perceived how the divisions made between the arts of the "intellect"—architecture, sculpture, and painting—and those of the "decorative"—interior architecture and the crafts—were based on

7 Adolf Loos, "Ornament and Crime" (1908), *Programs and Manifestoes on Twentieth-Century Architecture,* Ulrich Conrads, ed. (Cambridge, MA: The MIT Press, 1964), 20.

8 Ibid., 21.

9 Hal Foster, *Design and Crime (and Other Diatribes)* (London and New York: Verso, 2002), 14.

10 Ibid.

a false presupposition. In his essay "The Lesser Arts," signed off in 1882, Morris asserts that his agenda is to study the subject that is the "great body of art, by means of which men have at all times more or less striven to beautify the familiar matters of everyday life." [11] Ruskin likewise insisted in 1859 that:

> There is no existing highest-order for art but is decorative. The best sculpture yet produced has been the decoration of a temple front—the best painting, the decoration of a room. Get rid, then, at once of any idea of Decorative art being a degraded or a separate kind of art.[12]

Wilde concurred with their insights, but skewed their methodologies to such an extent that his version charged that the frivolity that ornament encouraged could, at its most superlative, be transgressive; he alone elucidated how sensual freedom could ride on the back of an aesthetic flourish. *The Picture of Dorian Gray,* published in 1891, advocates such aesthetic reverie, and nowhere more effectively than in the opening scene:

> From the corner of the divan of Persian saddle-bags on which he was lying, smoking, as was his custom, innumerable cigarettes, Lord Henry Wotton could just catch the gleam of the honey-sweet and honey-coloured blossoms of a laburnum. And now and then the fantastic shadows of birds in flight flitted across the long tussore-silk curtains that were stretched in front of the huge window, producing a kind of momentary Japanese effect. In the centre of the room, clamped to an upright easel, stood the full-length portrait of a young man of extraordinary personal beauty.[13]

Wilde pans across myriad disciplines—including contemporary interior decoration, Japanese ornament, and avant-garde painting—in one eloquent swoop. Wilde, Morris, and Ruskin all were loosely associated with the arts and crafts movement in Britain in the late nineteenth century. In numerous ways, the so-called great avant-gardes that followed in the early twentieth century—De Stijl in The Netherlands, the Bauhaus in Germany, and the Russian constructivists—forwarded theories sympathetic to the art and design issue. Writings by the exponents of these movements pursued a much more exacting sense of how correlations between art and design could be pressed into service by utilizing a muscular theoretical program. In "The Theory and Organization of the Bauhaus" from 1923, Walter Gropius stated, "The Bauhaus strives to coordinate all creative effort, to achieve the unification of all training in art and design. The ultimate, if distant, goal of the Bauhaus is the collective work of art in which no barriers exist between the structural and the decorative arts." [14] As a result of Gropius's characteristically firm purchase on the situation, the flexibility and frivolity that Wilde's prose exhibits is limited. Decorative effects are discarded, and the

11 William Morris, "The Lesser Arts" (1882) in *Art in Theory: 1815–1900,* Charles Harrison, William Wood, and Jason Geiger, eds. (Cambridge, MA and London: Blackwells, 1998), 751.

12 John Ruskin, "The Decorative Arts" (1859) in *The Two Paths* (London: Geroge Allen, 1956), 74–76.

13 Oscar Wilde, *The Picture of Dorian Gray* (1891) (London and New York: Penguin Books, 2000), 7.

14 Walter Gropius, "The Theory and Organization of the Bauhaus" (1923) in *Art in Theory: 1900–1990,* Charles Harrison and William Wood eds. (Cambridge, MA and London: Blackwells, 1993), 340.

kinks are straightened out. Gropius's discourse allowed what, particularly in the U.S. became the avant-garde's aim of bringing the arts together, but the sense of flexibility that such a meeting ought to yield is forfeited—the running together of the arts became a dry theoretical program, almost as disagreeable as Loos's. As a result of the widespread dissemination of Bauhaus dogma, the speculative aspects of design and decoration were hampered, if not embarrassed, into silence until much later. Although the dialogue flourished in the 1960s, it was superseded by slices of grey neo-conceptualism right through to the mid-1990s, when these issues once again came under the spotlight of critical attention through the exhibitions mentioned earlier. This brings us to the present.

A more flexible approach towards design is crucial for art. Recovering discourses such as Wilde's on ornament is part and parcel of this project. So too is the recovery of the work of artists such as Henri Matisse. For it is no coincidence that Matisse is one of the few artists who moved all the way between pattern, with his easel painting, and architectural design, with his Chapel of the Rosary in Venice. Matisse's insouciant attitude towards design was noticeably far more speculative in nature than that of either Gropius's version of the Bauhaus or Loos, who both strove for mastery over it. Matisse's work is flexible enough to take inspiration from border disciplines, and yet strong enough to stimulate them in return. He always ensured that, rather than disappearing, boundaries between disciplines were only momentarily blurred. And it is precisely this emphasis on the transitory—that is, on the permeable over the solidly defined or, conversely, the completely erased—border that gives Matisse's art its potency today. It is also fitting then that Matisse should have the last word here with a statement from 1908—the same year as Loos's diatribe against ornament, no less—that ingeniously turns a painting into a piece of design without even sweating:

> What I dream of is an art of balance, of purity and serenity, devoid of troubling or depressing subject matter, an art that could be for every mental worker, for the businessman as well as the man of letters, for example, a soothing, calming influence on the mind, something like a good armchair that provides relaxation from fatigue.[15]

15 Henri Matisse, "Notes of a Painter" (1908) in *Matisse on Art*, Jack Flam, revision ed. (Berkeley, CA: University of California Press, 2001), 42.

Vita Activa: On Relationships between Design(ers) and Business

Birgit Helene Jevnaker

Footnotes begin on page 45.

How do designers actually work for business organizations that previously may have neglected[1] to cater to their design issues? A plethora of specialist designers has emerged[2] and they currently are offering their productive services in multiple ways to business firms and other organizations that still tend to be partly ignorant of design approaches and expertise.[3] The relatively young profession of modern "industrial design"[4] is a case in point because industrial designers commonly offer their productive services to managers, who often are unfamiliar with their specialism.[5] The highly experienced, Milan-based, German industrial designer Richard Sapper, working for IBM and several other companies, recently claimed: "Today, in many corporations, design decisions are in the hands of people without the slightest knowledge of the subject, asking consumers what they want."[6]

Rather than predicting the need of more knowledge or organizational "absorptive capacity"[7] on the one hand, or "survival of the fittest" designers in competitive markets on the other, we need to zoom in on *living-work relationships* between designers and organizational people to understand their interacting abilities and "lifeworlds" while working together. When I started to explore how designers actually work with firms and vice versa, I therefore chose this route—as an industrial organization researcher—approaching the field of design-business collaboration in a fairly open manner to see how it occurs. As I became increasingly aware of the complexities and unconsciousness of design issues in many organized settings, one nagging question emerged as potentially significant: How might dynamic capabilities[8] in designing repeatedly be *enabled* in connection with organizations when organized agents were working, often temporarily, with designers? This seemed almost paradoxical; how to stabilize something that seemed to be in constant flux?

Approaching Design-Business Work Relationships

Instead of examining designing from a control-oriented or instrumental view, which has dominated many product development textbooks and early design management literature,[9] I adopted a phenomenologically inspired approach[10] to understand rather than prescribe, but I do not confine my focus to the everyday routine. Design work seems to encompass more than business-as-usual,

especially when we zoom in on new approaches, relationships, and innovating efforts between designers and organizations. No doubt, the design-business relationships are moving targets, but can some reoccurring practices be found? While exploring how designers work with manufacturers, I noticed that designers as well as business people with various disciplinary backgrounds may become highly involved in a wide range of activities connected to design conceptualizing, projecting, and working closely together in order to achieve "something more." Interestingly, design collaboration towards new solutions seems to offer formative experiences[11] and even self-transcending reflections.[12] Although design expressions are embraced as a vital force in designing, we still do not fully understand their potential, for example, for organizations.[13]

This article, therefore, specifically explores the design-innovating activities that seem to flow richly between designers and organizations, and which constitute constructive circles,[14] as well as beyond organizational borders. Design activities—since living work-relationships in business are not merely about products—identities, man-machine interfaces, networks, or projects.[15] Design-in-business may be all this, but it is going on more between designers and their collaborators when they are designing creatively "in the mess." I use this phrase to refer to conceiving and constructing something with others in the "real world"—typically messy[16]—design-business situations attempting to capture more of the complexities and imaginative human actions involved. I find it of particular interest that designing in the mess seems to become a highly activity-based life—*vita activa*[17]—between people and situated things, which may evoke emotions, but also tensions and mixed-motive interests. As suggested by designer Richard Sapper:[18]

> With a brilliant idea, you can solve a problem but you have to refine it to make it practical. You make a sketch or model to give form to the idea, but it doesn't come alive until it is injected into the larger world of a company or factory. Many other people have to have a dialogue with you and make a product out of it. As a result, the model changes—sometimes for the worse, sometimes for the better.

What, then, does it mean to work in concert with business organizations attempting to make something "for the better"? IBM's Thomas Watson, Jr. often is cited from his reflection that "good design is good business,"[19] while British design pioneer James Pilditch always stressed: "See good design and you see a good client,"[20] but what is actually a "good client," or better, a mutually leveraging design-client relationship? How does this collaborative, often highly secret, process take place? Insofar as talented designers *work* with others—whether in repeat client organizations or collaborating on a more short-term basis across a variety of contexts—their work probably would rarely adhere to idealized paradigms of the individual

designer-creator on the one hand, or the anonymous "cog in the wheel" work of inside design-and-development staff on the other. The machine metaphor for designing in highly structured linear ways, progressing harmoniously from clear goals and specifications towards expected outcomes, does not seem appropriate for what is going on between designers and their clients, although I discovered that industrial design students may be enthusiastic about more "ordered" processes.[21] In practice, however, real-world design challenges tend to be regarded as fascinating but "messy"—i.e., difficult to deal with, and full of awkward complications, fragmentation, and unexpected fluctuations, according to first-hand participants[22] who still seek to bring the benefits of more competent design to a variety of stakeholders.

To understand designing in the postmodern[23] society, I believe that we need to open up to the various ways of designing constructively "in the mess"—rather than using the lens of linear order or harmonious compromise—to capture how designers actually are cooperating with business organizations and beyond. A decade ago—before much of the current knowledge-management obsession came about in parts of academia and the consultancy industry—Paul Rand, a pioneering graphic designer, pointed out that "There is no set body of knowledge that must be mastered by the practitioners. What the designer and the client have in common is a license to practice without a license." [24] And yet his graphic design work for IBM suggests that design issues may become, at least temporarily, cultivated and retained in meaningful ways through connecting and synthesizing design-business work. In short, it is feasible to make design significant in the organizational context over time and space, but little is known about how designers work with their common collaborators, such as business firms.[25]

Grounded in my fieldwork tracing ongoing collaboration between exemplary firms and designers, I could identify a wide range of design activities—I propose at least seven—feeding into the reoccurring collaborative circles unfolding through design-business relationships. As one key informant proposed: "What is really important is that the parties actually *colaborate*, that is, work together." [26] I noticed that collaborative relations also might encompass (partly) autonomous design efforts distributed not merely in the organization, but beyond its borders. Bearing this in mind, my point in this article is not the classification of activities, dividing these into fixed categories or discrete topics. Rather, I wish to open a window allowing access to how designers work with organizations and beyond, including appreciating what actually enables more constructive designing, even "in the mess."

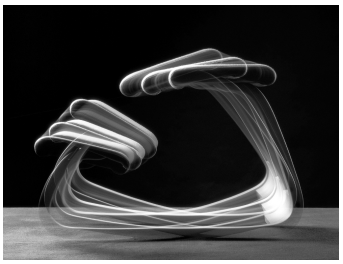


Figure 1 and 2
Example of Balans furniture.

Studies of Outliers

As Starbuck[27] recommends, the paper draws mainly on the study of "outliers" to gain new insight into firms and allied designers that have excelled in product design. It draws on several primary data sets. First and foremost, an in-depth study of five Scandinavian small- and medium-sized product companies that have pursued a collaborative product design approach with industrial design consultants, and thus could offer rich experiences (see Tables 1 and 2, and elaboration elsewhere). Secondly, I draw on international cases, which have helped me gain a broader picture (see below). Initially, a focus group, an explorative literature review, and a comparative "most similar"[28] case study of two chair-makers of "balans" furniture—definitely an outlier in the Scandinavian furniture industry[29]—helped to refine the research questions.

Balans (Latin and Norwegian meaning "balance") means the body's self-regulating posture, giving freedom for dynamic uses of the muscles while seated, and was a fresh but controversial idea within furniture design at the time. The display of about ten models caused quite a sensation when exhibited at the 1979 Scandinavian furniture fair in Copenhagen.[30] Through tracing design-business collaboration in two companies involved in this balans case, I learned about the innovating dynamics between creative designers and championing managers—often from the middle ranks—who helped to extend and eventually transform the scope of these enterprises. Balans was originated by a loosely coupled group of external designers and one inventor to introduce new concepts and ways of thinking to a few "willing" organizations and help them address user problems and nurture alternative ideas of sitting. The new designs generally were met with skepticism, as often happens with innovative solutions. "Whether it will catch on is anybody's guess," wrote one journalist outside Scandinavia.[31] So I also learned what already established ties with business could mean when championing for something new and unfamiliar. Last, but not least, I noticed the continuous design-related work needed to actually realize the innovative solutions—in this case through established organizations—in order to ever reach end users.

In a study of the *Lillehammer Olympic Design Program 1994,* an entirely new and temporary organization, I learned more about how new design approaches could be proactively communicated and organized across company borders by a fairly small group of dedicated design promoters, even when facing a complex and time-compressed mega event with high stakes and many managerial crossroads.[32]

To some extent, this opportunity for rich insight into complex design and development while it was evolving also was possible in my *main multiple-case study of five product-based firms* (two of which were the balans-influenced furniture makers) in order to investigate these further. Scandinavian companies often are fairly open to researchers, and the five firms chosen responded to repeated queries. They were small- and medium-sized firms at the time (approximately 60–300 employees in 1994), and were presumed to have relatively short communication channels between industrial design and the company's management. Hence, design/business relations and experiences might be transparent. The five firms were picked so as to represent some "constancy" in task environments, as well as some possible variety in knowledge background, because two companies were operating within form-based industries (furniture making) and three were operating in engineering- and technology-oriented industrial settings, although it turned out that both types of industrial milieus had tended to ignore design expertise.[33] In short, they were "most similar" in certain characteristics[34] such as size, industry, and product-based competition to allow for sharper focus on possible interesting variations such as the location and integration of design expertise.

To avoid stereotyping, and specifically target the innovating "outliers," I carefully selected firms and respective design partners actually *working together over time and within more than one project* (i.e., genuine relational data). Being aware that any reconstruction may be subjective, I interviewed and talked repeatedly with both designers and management who no doubt had accumulated firsthand experience of what otherwise is sparsely researched.[35] The medium-sized firm settings provided access and transparency in a commonly secret product innovation area, and I got repeat access to rich accounts and documentation of how firms collaborate with designers in practice. Furthermore, collaborations were ongoing while I visited the respective sites, so I also could see work-in-progress while talking *about* it.

Table 1
Five Norwegian/Scandinavian Export-Oriented Manufacturers

Product-based firms	Core products
HAMAX	Consumer-oriented plastics for leisure
TOMRA	Automated machines for handling beverage containers returned by the consumer
GRORUD	Window and door metal-based fittings
HÅG	Ergonomically designed office chairs (for the contract market)
STOKKE	Ergonomically designed furniture (for the individual customer)

The respective design consultants working with the Norwegian-Scandinavian companies also were interviewed and visited. All were highly skilled and experienced designers (more than ten years design work experience), some of whom also had design-relevant international experience of interest to the manufacturing firms. For example, the Dutch design consultancy, n | p | k[36] represented the bicycle user country par excellence in Europe, which was targeting HAMAX when planning to redesign its children's bicycle seats. It is also worth noting that one of the independent design experts, Peter Opsvik, worked for two of the firms investigated, the furniture makers HÅG and Stokke, which tended to be seen as unusual when I presented this finding to international audiences. In this article, I present new material from my recent follow-up study[37] of HÅG H05, which is an innovative new office chair line designed by Peter Opsvik and his design firm in collaboration with HÅG.

Table 2
Designers or Design Consultancies Selected for the Study of Industrial Design Collaboration

I. Industrial designers working for the Norwegian firms	**Position and Background**
Roy Tandberg from Tandberg Total Design, Asker.	• Part-time employed designer at Tomra, free to work for other clients. • Product design education at the Art Center, Los Angeles, and work experience in the U.S.
Steinar Flo, Oslo.	• Independent industrial design consultant. • Metal design/industrial design education in Norway and Sweden.
Wolfram Peters from Ninaber/ Peters/Krouwel, Leiden.	• Partner of one of the largest industrial design consultancies in the Netherlands. • Educated in industrial design at TU Delft.
Peter Opsvik from Peter Opsvik Ltd., Oslo.	• Founder, and alternative seating design pioneer (balans design solutions). • Educated in furniture design in Norway and London, with further studies in ergonomics in Germany. Work practice at the Tandberg Radio Factory, where he worked as an industrial designer.
Additional International Design Consultancies	**Characteristics**
IDEO Product Design & Development (Bill Moggridge, Ingelise Nielsen, Alison Black, Tim Brown), Palo Alto and London.	• Industrial/product design and Engineering design with multiple complementary disciplines. • Offices on three continents: Tokyo, San Francisco, Palo Alto, Chicago, Grand Rapids, Boston, and London.
Fitch (Deane Richardson, Sandra Richardson, David Clare), Ohio and London.	• Multidisciplined design and branding consultancy; the British Fitch is famous for its strengths in retail design and branding, and the American Fitch merging with RichardsonSmith in Ohio has a special strength in industrial product design. • Offices on three continents: Ohio, San Francisco, Boston, London, Paris (through Peclers), and Singapore.

The article also draws on international comparisons because there seem to be enabling commonalities in key processes, though several idiosyncrasies are present as well. Open focus-group discussions and long interviews and conversations were conducted initially in order to identify the most critical issues between designers and firms.[38] The initial overall intent was to identify and understand "what happens and how," (i.e., how a capability for design advance of firms occurred in practice). The focus on design/business relationships and the search for other potentially enabling conditions were sharpened in the in-depth company study, since the initial focus group pointed to the critical importance of a *dynamic collaboration* among designers and business firms.

The five design-business collaborations studied in-depth were unique, as are all genuine relationships. However, the collaborating parties all had rich and ongoing experiences of relevance to understanding how design and business can cooperate more significantly. Both process reflections and beneficial outcomes indicated the latter, such as intersubjective experiences of design's contribution to unique products, increased sales, new national and international markets, and increased knowledge and competence in the organizations. I noticed that designers also had felt the messiness and challenge at work in and between organizations.[39]

The regional and medium-size characteristics also may represent limitations of the findings (though some of the firms have shown considerable growth beyond the SME-level). Thus, effort was taken to expand the research base with complementary material and insight. Several local design consultancies (in Oslo and Bergen) were visited as part of teaching in design management. Additional international design-consultancies, most notably Fitch and IDEO, were visited and interviewed with repeated follow-up conversations to gain broader understanding (cf. table 2). Moreover, researchers doing related in-depth studies on design/business collaboration were invited to a workshop in Bergen. Afterwards, a researched set of product design cases from Nordic, European, American, and cross-national settings was collected into a *Design Alliance* anthology,[40] allowing the search for similar patterns and contrasts[41] in the five Norwegian companies, as well as more conceptual discussions. An iterative, multiple-case logic comparison with the additional international cases was exploited and suggests interesting common patterns, although considerable differences in firm characteristics also exist.[42]

Findings

How do designers actually work for manufacturing firms? Grounded in the cases investigated, it is clear that designing for companies is rooted in a wide range of activities, and some of these go beyond what are currently described in textbooks. Design-constructing consisted of the following seven activities at least:

1. Action-impulse and Direction-setting

Design tends to start with a contextual sensing or enactment of a "problem" or other kinds of action-impulses in everyday life. For example, Peter Opsvik became aware of children's seating problem when his first son was born: he discovered that no chair existed that was adjustable to a growing size and could allow the child to sit at the table together with the grown-ups. In the case of HÅG's H05, the project directions were specified and given in 1994/95 (see table 3), but such essential elements as the foot governing were developed long before and the designer already had patented it.

Table 3
Chronology of Product & Design Development:
The case of HÅG H05.

	Curriculum Vitae H05
1993	HÅG launches HÅG Scio with a combined seat depth and back height adjustment.
1989/99	Peter Opsvik builds the first prototype with a wheel for function adjustment.
1994/95	HÅG starts the development of a new functional work chair, and decides to use Peter Opsvik as designer.
1995/99	HÅG has "integrated product development," in which market, factory, product development, and designer are represented in the project group. This entire group's input in terms of customer requirements, ergonomics, environment, and ease of production are fed back into the design process.
2000	HÅG is able to present an entirely new concept—a chair representing the pinnacle of HÅG's whole philosophy. The name is H05 (HÅG H05).
Experience	This is where it starts: I'm not giving up until the whole world can move when they sit down.

Source: HÅG's Product Development May 2000. It should be noted that H05 also builds on experiences with HÅG Credo, which was launched in 1982 and 1992 (redesign) (see Jevnaker, 1995a).

HÅG H05

2. Design Exploration and Analyses

Behind the new-product models of the firms researched typically is a *prolonged* design exploration of user situations, technical configurations, aesthetic and communicative concerns, and repeat material and component analyses, etc. In fact, design efforts over more than twenty years can be traced behind HÅG H05 launched in 2000 (see table 3, and company/design description elsewhere[43]).

HÅG H05

3. Imaginative Conceptualization

The core idea behind HÅG H05 is the integrative and "brilliantly simple" opportunities for balance, movement, and variation through foot governance support and a flexible, built-in adjustment mechanism so that the chair follows the body's natural movements while seated. The concept was developed over more than ten years, and is

rooted in dynamic ergonomics, which has emerged as a new field of knowledge during the last two to three decades through the contributions of Opsvik and his colleagues.

This sustained investment of personal and interpersonal efforts also was recognized by Magne Storli, one of the engineers that previously worked at TOMRA, another of the companies studied, when reflecting on the questions, "How do you get a good idea?" and "When can you expect it to come?"

> You have to be active. I think you have to *do* something to get a good idea, to put yourself in a position where a good idea is needed. (Then) It can come half-past three in the morning. Before you went to bed you were not finished with your "stuff"; i.e., a need for a solution has been built up. And you need to work on the idea and link to friends you believe in.[44]

As already illustrated in the balans conceptual development in the late 1970s, insight tends to be rooted in conversations around prototyping, body-and-idea-storming use-simulations, and the exploitation of a metaphoric language.[45]

Drawing: Chair use study

4. Visualizing and Prototyping

Every design/business case I have encountered to date is characterized by a lot of drawings, renderings, and 2D, 3D, or 4D (digital) modeling. For example, the creative designer, Peter Opsvik, invests both time and money in building three-dimensional prototypes. Indeed, the designer prefers to be "in" the prototypes—as a potential user:

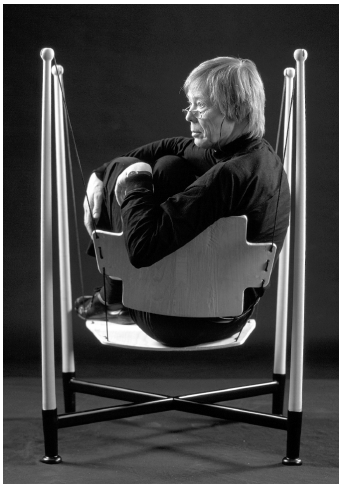
> Therefore we build some prototypes to achieve this." (interview 30.6.94) He later added, "Hundreds are built—that is what it all consists of.[46]

This also was clearly visible while visiting his studio repeatedly in Oslo. This is no surprise for designers—rich activity and samples of prototyping also were found during the author's visits to IDEO[47] (London and Palo Alto) and Fitch (London), and they allow enriched conversations—literally speaking, around prototypes. Product development managers in the firms investigated especially appreciated three-dimensional prototypes.

HÅG H05

5. Narrating and Making Sensual Sense

Making sense of the new products has been a major activity at HÅG. Indeed, the design efforts have led to a design philosophy that has set a new standard for sitting.[48] This philosophy is rooted in experimentation and, since the 1970s,[49] designers, inventors, and middle managers supporting and even fighting for the new and unconventional design approach have proactively enacted and tried to make sense of the user's sitting problems.[50] Designers and entrepreneurial



Peter Opsvik

managers often draw heavily on metaphors and analogies—especially designer Peter Opsvik and the rhetoric-conscious Torgeir Mjør Grimsrud, chairman of HÅG's board. During the launch event of H05, the designer vividly explicated his ideas on foot governing by comparing humans with apes, who use their arms, while we use our feet in all we do. "The feet have governed us for millions of years, so choose the chair with the best foot governance," recommends Peter Opsvik.[51]

Table 4
Launching Process of a New Product Series: HÅG Chair H05

Step	HÅG H05 Launching Process
1	HÅG Mentors—week 48, 1999.
2	Internal Kick-off, Røros, 13–15 January 2000. Internal Kick-off, Cologne, 24–25 March 2000.
3	Local training of sales force, with exam.
4	External kick-off.
5	External local training with exam
6	Mass communication

Source: HÅG Product Development, May 2000.

HÅG Capisco

6. Testing and Validating

New product designs in the sample investigated were always tested and validated through extensive interaction and conversations among the designers and the companies' key developers, top and middle management, marketing staff, etc. Contacts during development work "when it is at its most hectic" might be daily, as explained by Opsvik in relation to the Stokke Company.[52] HÅG has adopted an integrated product development method, and inputs also were sought from a wider network, such as dealers or relevant specialists. For the most part, this testing and validating is orchestrated through the secret product development process. However, the foot governance concept actually was presented in the prototype stage at a furniture fair in Oslo as an additional foot-platform appliance for HÅG Capisco. Comments were collected systematically from anyone interested, which was a new approach. The concept later was incorporated into HÅG H05.

7. Delivering and Following-up

In all the firms and design projects investigated, considerable effort was invested in delivering the best possible solution in time (e.g., trade fairs sometimes have fixed deadlines, which can create problems). Interestingly, in the case of HÅG H05, the product development and design teams were not willing to cut corners to compress the development time. The product development director explained that, since HÅG has a reputation for innovative quality products, it

Table 5
Marketing Materials Used for HÅG H05

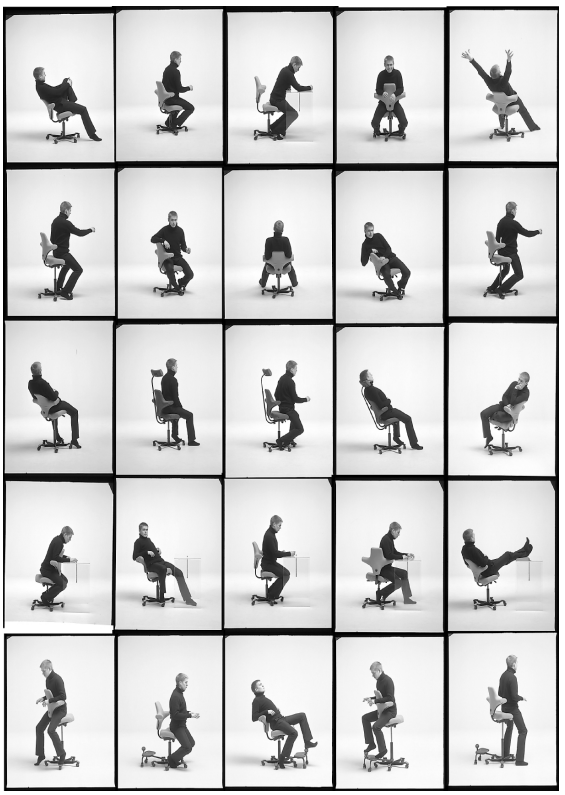
Marketing Material
• Ads
• Incentive campaign
• Film
• Manual
• Teaser/invitation
• Diploma
• Brochure/price sheet
• Brief case/bag
• Cheat sheet
• Internet teaser
• User guide
• Press release
• Philosophy book
• Flag
• Newspaper
• 3-D drawings
• Display material/poster

Source: HÅG, May 2000.

was felt that compromise in the short run would be detrimental in the long run if the new chair design was put on the market without the necessary testing and follow-up work. A solution to the increased pressure on HÅG's product development team was to divide all projects into two categories: "green" and "red." Green projects had to be effectively finalized sooner rather than later. Red projects were truly innovative ones that would need special protection from being unduly influenced by upcoming trade fairs and other short-term marketing initiatives. When the H05 series finally was ready, five years after its formal beginning (see table 3 and 4), a comprehensive and creative marketing plan also was in place. It incorporated drama and marketing events, and included a wide range of supporting materials (see table 5) for both internal and external audiences. The internal audience and an extended corporate network were targeted first. This case study illustrates how design can expand knowledge and serious play beyond product creation, and facilitate a coherent creative approach.

Discussion

A new interest in industrial design in relation to business organizations has emerged during the last several decades, according to British design researcher Dumas.[53] Svengren[54] pointed out that design could be a strategic resource for firms but found, in line with others,[55] that conceptual integration is particularly critical. To date,



HÅG Capisco

it is still not clear how competence for design can emerge in firms, as pinpointed by Kristensen.[56] With reference to the present study, we may appreciate how design making actually is done on multiple levels in and beyond the firm: designers might engage in nonroutine work that extends from product development to marketing communications and launching-and-learning events that have elements of surprise and pleasure, as well as "edutainment." This is most evident in HÅG's setting where design, no doubt, also is drama. Dramaturgical skills are not new concerns for industrial design, with pioneers such as Henry Dreyfuss[57] who had roots in stage design, but perhaps these elements need to be rediscovered.

The HÅG H05 case is a fascinating outlier, at least in Scandinavia, where people are "serious." Yet design making is not merely fun. More often than not, it seems to be tension-rich and tough in terms of hard work, late nights, missing information, unforeseen technical problems, frequent iterations, asymmetric understanding of how "far" design should go, frequent meetings, and perpetual attempts to figure out how things can best be expressed. Given this, it seems significant that design tends to be rooted in a range of seriously inquiring and communicative activities, from problem-finding to making sense and building credibility in strategic terms.

Designing with Reflective Practitioners "in the Mess"

During my fieldwork, I noticed that, when designers[58] work with organizations, they attempt to relate to the past as well as the present in order to help conceive and construct future possibilities. Within knowledge philosophy[59] this is an old concern—how do we sort out what to keep or strengthen, and what to change? However, what the (present or past) realities of the organization and its target groups are seems to be elusive and perhaps not shared, as recently discovered by a group of Nokia designers and researchers reflecting on their firsthand mobile usability work experiences.[60]

Organizational psychologist Karl Weick has underlined the typical equivocalities when humans are making sense of organizations,[61] and Donald Schön[62] used the metaphor of "a swamp" when speaking about the real-life challenges of practice. Being aware of the many indeterminate or "wicked"[63] aspects of design, what might be the desirable or appropriate future for organizational stakeholders tends to belong to the fuzzy *not-yet-known* that needs to be explored rather than merely calling for integration of the known. How do designers cope with all of these challenges when working with organizations?

Design Making

In most textbooks on "how to buy design," the design process starts with either the brief or with the initial strategy and marketing research to define the problem.[64] Grounded in the author's research base, design activities do not necessarily start with briefing; designers can be at work preceding the initial business planning or brief. The brief activity is seen as significant,[65] but designers also work autonomously and design activities can start long before they are formalized as projects or commissions. This tendency also was found by design-historian Karen Freeze,[66] in her research at the German electric appliance firm Braun:

> Design entered product development most often at the "idea" stage, long before a formal project was undertaken.[67]

This is counter to most literature on product development and the management of design, which recommends clear goals and task specification before actual product development begins. When visiting Braun in November 2000, I[68] had the opportunity to learn more from Braun management and designers: "Everything is in flux, we work (continuously) for things time ahead"; Peter Schneider, the new design director at Braun, informed us. He displayed a long list of all of the activities undertaken by the relatively small design group (twenty-three people at the time), and he reflected on "how difficult it is to plan for success." In the case of Braun's new shaver cleaning system, courage and luck ultimately led to the solution. To sum up, Schneider highlighted Braun design as "a living way of thinking." In principle, "design" (designers and collaborators in design function)[69] thinks "outside the box" and "this creative part of the product is fairly cheap," he concluded. I also noticed that ideas can sometimes float around for years and meet skepticism, such as the shaver cleaning system, but they may still be turned into profitable innovations.

Dynamic Processes

A recent orientation in the overlapping areas of economics, organization studies, business history, corporate strategy, and innovation is the focus on dynamic capabilities and knowledge-creation and integration, which is not surprising when recognizing fragmented or highly specialized organization members.[70] The "dynamic capabilities" concept, introduced by economists and innovation researchers, sensitizes us to firm specific "sensing and seizing" new opportunities and the integration of capabilities, including the capture of its economic values.[71] In brief, it highlights organized capabilities that are more dynamic and entrepreneurial "while nevertheless possessing administrative skills"[72] in a shifting environment, although I would argue that, so far, this conceptualization does not shed light on how such beneficial capabilities are developed or achieved. From considering dynamic capabilities as an integrated set of resources or

"routines to learn routines," Eisenhardt and Martin[73] reconceptualize them as specific organizational processes by which managers *alter* their resource base. Examples may be drawn from product innovation, strategizing, and allying. Eisenhardt and Martin conclude:

> Overall, dynamic capabilities are best conceptualized as tools that manipulate resource configurations.[74]

The industrial design-cases investigated provide insights into how this actually happens through the specific product innovation processes. Thus, from a design perspective, we may agree to this reconceptualization. Yet there is something more going on that is not fully captured by the "tool" analogy, which can be recognized from looking into HÅG's history since the firm's reorientation in 1973/74 when it adopted a professional design approach. Creative imagination is typically facilitated by a kind of "probing conversation" around prototypes, and also is expressed in a rich, mediating language of metaphors, body-language, and the improvisational use of analogies in groping for meaning. Particularly creative actors are visible, but more than one creative persona is involved. Management ranks are included, as well as designers.[75] Managers experienced design making as both fascinating and something that might lead to or involve large, risky investments. Designers find it risky not to invest in design making. What is worth noting, and which can add to our understanding, is their ongoing engagement in a flow of design activities and partly overlapping innovation arenas tuned by their work relationships. In combination, I suggest this can enable designers and business managements to create new values, imagining something more, but also framing and stabilizing the "new" through these rich streams of design-related activities creating or refining the something new for the organization.

In general, more collective creativity-based approaches have been neglected by organizations, but an increased interest is emerging in creative imagination or even "jamming"[76] in work life. Yet the new creativity guru, John Kao,[77] stresses both the art and discipline of business creativity. Problem finding and representation is seen as a key to giving full flow to creative design work.[78] This also is mirrored in my findings: much effort is invested in design exploration and analyses, which support a creative problem-solving approach. In recent literature, the usual stages of creative thought are outlined (preparation, incubation, illumination, and verification/evaluation) together with divergent/convergent abilities.[79] What is worth noting is that many of the characteristics we often observe[80] in creative thinkers—especially in the art/design domain—such as rebelliousness, risk taking, playfulness, intuition, humor, and even irony, are being introduced in the current business and organization literature.[81] Management in the firms investigated all point to the value of designers as "fresh thinkers." Leonard and Swap draw our attention to the need for an "alien":

> It is hard to generate creative abrasion when we are isolated or surrounded by people just like us. We can enrich the pool of ideas by visiting people and environments that are "alien"—outside our normal networks. ... Visits to aliens can build new knowledge, expose us to approaches to a problem that we would never think of, or even inspire a different definition of a problem.... Such visits will be valuable if we are prepared to observe, absorb, and apply the experience back to the occasion triggering the need for creativity.[82]

For established firms with a conventional-thinking management, management guru Tom Peters has suggested getting in contact with provoking professionals and young talents from the creative sector or "new economy."[83] However, how organizations relate to the kinds of personalities, intersubjective experiences, and rich interaction that may give rise to certain forms of creativity is not dealt with in detail, or often is dismissed in both practice and theory. It is here that, for example, cognitive psychology with its focus on individuals alone, has its limitations.[84] Also, the concept of an "alien" does not quite fit with several of the cases investigated. With (partly) the notable exception of the Swedish telephone company Ericsson, designers in the exemplary firms were able to gain acquaintance and confidence to collaborate over time.[85] Therefore, the appreciation of designers as fresh thinkers needs more elaboration, and this will be addressed below.

Generation of Consciousness "From Outside"

In accordance with the Russian psychologist Vygotsky, design-collaborating experiences can serve as "generators" of consciousness.[86] Rich experiences—such as those design activities might lead to—need "thick description."[87] For example, the management and staff of chair-maker HÅG became aware of the power of "foot-governed movement"—to achieve the small dynamic movements and variations while seated—through the design, development, and marketing of the new chair H05. While observing one of the major product launching events, I noticed that both the key designer and one project leader, a physiotherapist by background, most vividly showed, using their own bodies onstage, how and why this foot-governing movement was significant for the seated person. Interestingly, this bodily "show-and-tell" was a repeated pattern of reasoning and speaking that I had observed ever more refined over the decade that I had followed this chair maker. It illuminates how a particular kind of discourse and skilled guidance—what I coined "inaugurating" design learning[88]—can develop over time. Through a broad reading,[89] I later became aware of how this resonates with Vygotsky's ideas, such as his "developmental method." In his view:

> We need to concentrate not on the *product* of development but on the very *process* by which higher forms are established.... To encompass in research the *process* of a given thing's development in all its phases and changes... fundamentally means to discover its nature, its essence, for "it is only in movement that a body shows what it is." Thus, the historical study of behavior is not an auxiliary aspect of theoretical study, but rather forms its very base.[90]

One aspect of Vygotsky's ideas seems particular important: building consciousness from outside through relations with others. His theory provides a link between higher mental functions and social behavior. Kozulin[91] stresses that "some outer layer of reality should be referred to in the course of explanation," and he suggests that socially laden activity may serve as such a layer. This helps us understand what happens in the design/business relations investigated. Within the case of HÅG, the design expert located outside the firm was a crucial consciousness-raiser, but he was not the only one. The entrepreneurial new manager of this firm already in the mid-1970s was searching for new ideas in chair design. He arranged meetings within the firm, invited guest speakers, and recruited a physiotherapist for the firm. From the mid-, or at least late-1970s, he also engaged in dialogues within a broader network, most notably the balans design group together with Peter Opsvik and other collaborating designers.[92] Both designers and creative managers contributed to a new vocabulary that did not come out of the dictionary. It came out of "concrete dialogic situations," which is in line with another Russian, Mikhail Bakhtin.[93]

Based on the design/business relations, we may add that not only socially laden activity is crucial. Rather, an iterative circle of mediations that create meanings from mind-to-mind through sensing matter (whether physical or virtual) seems important. Because objects can offer some shared space,[94] but also lead to reflective distance—a kind of third form of communication—between people, I suggest that this can help overcome cultural lock-ins so common to management in established organizations.[95] As in psychology, Vygotskian ideas may help us move towards recognizing that social origins cannot even stop with the "inter-mental plane" between persons-and-objects. As Wertsch and Tulviste[96] say: "Instead, the point is that the forms of mediated inter-mental functioning involved must themselves be recognized as being socioculturally situated with respect to activity settings and associated mediational means." Translated to design situations, this can help us become aware of the significance of how design activities actually are organized or otherwise enabled.

Towards an Expanded Value-Seeking Activity

Given the late-industrial or postmodern complexities in external (e.g., shifting market demands) as well as internal relations (people working more independently from one project to the next), our understanding of design-business relations needs to take into account these simultaneous complexities.[97] At first glance, the design developments at HÅG, as well as Braun, might seem full of particularities. Yet I argue that commonalities exist which can enable innovative design making on a sustainable basis. In line with the sociologist Erving Goffman,[98] it is possible to identify some implicit routines or capacities that seem to frame the design-related activities and interactions that flourish. Among these routines we may distinguish between the design efforts and interplay that happen externally, and the activities that occur in a more hidden context. Most design making occurs literally "backstage"—in the design studio, workshop, and within the corporate secret spaces (product development departments, boardrooms, executive meetings, steering groups, etc.). As in the theatre, on the soccer field, or in the publishing houses; this distinction apparently helps to create a well-prepared and potentially attractive expression of and stage setting for product design.

Yet the metaphor should not be taken too far because there also are possible differences: industrial design can be more "democratic" or team-based and longer lasting. Designer Peter Opsvik often stressed the long-term values. Indeed, the idea of temporality, such as for a performance, may be missing in design, as pointed out by a reflective interaction designer.[99] Following Goffman,[100] we may still appreciate the situational context or "framing" of experience as seen from this backstage/front stage metaphor. Based on the cases researched, it is not surprising that design making tends to be structured according to certain interaction rituals and territoriality. What then actually happens within the various arenas that can be valuable for innovation and its realization?

Design Making "Backstage"

Most of the design-related activities outlined in previous sections are performed backstage, such as the first insights and direction for further search, briefing, concept-creation, prototyping, testing, and follow-up work. Much of the work not visible to the public enfolds in the design studio, in the corporate product development premises and related workshops, and in other work or meeting space. In fact, the word "backstage" also is used in fashion design, and a clear demarcation typically can be found in most design consultancies and product development departments. Work-in-progress and not-yet-launched entities are carefully protected from the random visitor (e.g., at IDEO). At HÅG, even Grimsrud, the former CEO, chairman of the board, and main owner, had to give advance warning before he could enter the product development department

with any companion or guest, something which the author also experienced. This was among the sacred rules that no one could break, and it protected the firm's product creation process. It comes as no surprise, from a business-competition perspective, since HÅG has experienced many imitators, but it also may protect a physical space that is safe, informal, and stimulating. Kao reminds us of the need to build and secure a "hot zone" to nurture creativity at work. Based on HÅG's H05, it is worth noting the need to protect not only the design and development territory, but also the time context for genuine innovation-efforts. This indicates a temporality in design making that can be staged with more or less practical wisdom, and the creative "red project" labeling was an attempt to improve signaling in the company context.

Design Making "Front Stage"

In the external design work, HÅG excelled compared to the other firms investigated, and therefore this firm—and especially its last product, the HÅG H05-has been used to illuminate and ground this article's conceptual discussion. In addition to a managed corporate visual profile, this company exploits design as a conscious medium for building knowledge and understanding for the company's product designs, user benefits, and philosophy of dynamic sitting that are cornerstones of HÅG's philosophy. Design also is explicated literally on stage, such as during the recent launch events of the H05 by, for example, the designer's show-and-tell: "What one actually pays for is the air between the chair and the headrest," explained Peter Opsvik.[101] Thus, the design making takes on an expanded role as guiding "teacher" and also storyteller (long before this came into fashion). Although corporate financial resources were invested and professional assistance sought, the firm's internal staff also was heavily engaged. One employee even volunteered a new song about the "love for H05," which was seriously rehearsed and taped during the internal launch event in which I took part and observed that people really were enjoying it all, on or off stage. To sustain its innovative profile, it is significant that HÅG continues to invest in design making, and suffuses all of its activities with knowledge creation, catering to as well as mobilizing its networks and also its internal audience.

In these ways, the company has created new territories for its design thinking, sometimes blurring front stage with backstage insights—and vice versa, as experienced during the launching of HÅG H05 (e.g., internal events are covered and explicated in the press). The passion and creativity that repeatedly can be experienced at HÅG may also suffuse the front stage events, as when internal staff members perform in humoristic ways onstage—even cat walking or role-playing with the company's chairs. To a critical eye, this might resemble some form of corporate religion. Yet what I found more triggering is that this spirit also can be traced in the

daily struggle for new and better "sitting solutions" that can refurnish the world, as framed by the top manager. This suggests value seeking through a humanized design ethos[102] and courage;[103] a bold emphasis to expand value creation, combined with complementary assets full of life that are not readily copied by imitators. Braun's top management also repeatedly pinpointed the stress on "guts" for creating innovative values. According to the new design director, Braun Design stands for the "preservation of lasting design values," while at HÅG, design expertise is seen more as a means to increase users' movement and insight in its long-term redesigning project. At any rate, it is a paradox—that designers are aware of—that, in order to build either kind of long-term values, design making, at least at these firms, tends to set new standards which create the need for a constant flow of design-enriched activities. Perhaps this dilemma is why "staging" them with considerable practical wisdom within the corporate networks seems so important to enable and sustain value innovation.

Conclusion and Implications

In this article, I have explored and analyzed how design is enabled through a number of design-related activities, which go beyond the prototyping described in previous literature.[104] By extending the "dynamic capabilities" view in strategy and organizational economics with activity-based and relational perspectives, we may understand how design in firms actually may be enabled through design expertise and unconventional approaches, even from the outside. Or alternatively—as in many of the cases studied—by reflective designers wandering repeatedly in-and-out and in-again. It is significant that this mobile work pattern is a way to provide both imaginative freshness and an engaging continuity in a number of design activities, which is critical when innovating because the meaning, appropriateness, and credibility of design innovations seems to need to be refined, remade, or "reborn" continuously.

The expanded design making can become strategic, thus creating a new or extended consciousness of product innovations for humans, through which firms can gain a competitive advantage and eventually self-transcend their raison d'etre. This happens through processes that are highly dynamic, and which need to be further researched. A stage-setting metaphor might be adopted, which is a distinction in usage although design is not necessarily "directed" by a single mind or is temporality-conscious. Yet this distinction may help to uncover and differentiate between a profiled design front stage and its more hidden backstage creation and interaction; which mirrors how design activities actually tend to be organized in more or less restricted contexts of space/time, but also how it creates new frontiers and boundaries.

In conclusion, I propose that the same forces that make design-business relations fragile are the same that can enable a wider scope for design in organizations. In the settings studied, not merely the number but the scope and dynamics of design-activities as driven by live agents became fundamental for keeping up engagement and continuity in the actual design-business value creation, because there were not many alternative stabilizers in design.[105] In fact, the parties' continuous struggle for something more seemed to "construct" or mobilize the productive relationships among organizational agents and designers as well, allowing creative dialectics and even the designers' "contrabriefs" [106] to achieve something more. In sum, these collaborators' rich *vita activa* included creative abrasions[107] and political action[108] that helped constitute more-dynamic design capabilities for firms and their target groups. On this background, I argue that the firms' "dynamic capabilities" were highly relational and activity-based, and were accumulated as more or less hidden treasures of constructive work relations. A major implication for practice as well as theorizing is the importance of sustained engaging in, and listening and learning from, this innovative designing in the real-life mess of organizations and their multiple stakeholders, even though these dynamics seem to unfold in idiosyncratic ways in or around each firm, and typically develop slowly over time.

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1 See Philip Kotler and G. Alexander Rath, "Design: A Powerful but Neglected Strategic Tool" in *Journal of Business Strategy* 5:2 (1984): 16–21. This is a question mainly neglected in both management and organization studies, according to, for example, Bruce and Cooper, who also reprinted Kotler and Rath's seminal article. See Margaret Bruce and Rachel Cooper *Marketing and Design Management* (London: Thompson, 1997).

2 A 1987 report by the Design Council, UK, estimated that the rapidly expanding British design consultancy business was worth more than £1 billion a year and employed 29,000 people, according to John A. Walker, *Design History and the History of Design* (London: Pluto Press, 1989), xi. Later reports underscored the significant growth of design consultancies during the 1980s, estimated at up to 3000 companies employing 40,000–50,000 designers, and with 7000 graduates coming into the profession each year, although the recession from 1990 onwards brought about a sharp deterioration in trading conditions, according to an introductory overview in Margaret Bruce and Barny Morris, "A Comparative Study of Design Professionals" in *Management of Design Alliances: Sustaining Competitive Advantage,* Margaret Bruce and Birgit H. Jevnaker, eds. (Chichester: Wiley, 1998), 263. In their own comparative survey of the UK, Sweden, and Denmark, about ninety percent of survey respondents perceived long-term relationships as being "very important" and "important" to the success of a design firm. Slightly more than half of all the relationships that respondents had with clients became long-term (Bruce and Morris, ibid., 277).

3 See, e.g., Kotler and Rath, "Design: A Powerful but Neglected Strategic Tool."

4 "Industrial design" is complex but, briefly put, it is a transdisciplinary human-centered and visually projecting expertise for industrial purposes, e.g., designing products and product or service systems but, as a "general specialty" it also may contribute to "built" environments, communication, and digital services. See, e.g., John Heskett, *Industrial Design* (London: Thames and Hudson, 1980).

5 See, e.g., Vivian Walsh, Robin Roy, Margaret Bruce, and Stephen Potter, *Winning by Design* (Oxford: Blackwell, 1992) and references and further grounding in the anthology, *Management of Design Alliances,* co-edited with Margaret Bruce, with contributions from an international design and management research group.

6 Richard Sapper, cited in Michael Webb, "Richard Sapper Out of the Black Box," in *Richard Sapper,* Marisa Bartolucci and Raul Cabra, eds. (San Francisco: Chronicle Books, 2002), 22.

7 This concept draws attention to a priori knowledge with regard to the capacity for absorbing related information or learning something new, and was coined by Wesley M. Cohen and David A. Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation" in *Administrative Science Quarterly* 35: 1 (1990): 128–152. See brief discussion as applied to design contexts in Birgit H. Jevnaker, "Developing Capabilities for Innovative Product Designs: A Case Study of the Scandinavian Furniture Industry" in *Product Development: Meeting the Challenge of the Design-Marketing Interface,* Margaret Bruce and Wim G. Biemans, eds. (Chichester, UK: Wiley, 1995), 181–201.

8 I use the term "dynamic capabilities" as a sensitizing concept and—inspired by a Schumpeterian view on competition and organization—as proposed by a group of economists, most notably David Teece. See, e.g., David J. Teece and Gary Pisano, "The Dynamic Capabilities of Firms: An Introduction" in *Technology, Organization and Competitiveness,* Giovanni Dosi, David J. Teece and Josef Chytry, eds.(Oxford and NY: Oxford University Press, 1998). For use of "sensitizing concepts," see Herber Blumer, *Symbolic Interactionism, Perspective and Method* (Englewood Cliffs, NJ: Prentice-Hall, 1967).

9 See, e.g., Robert G. Cooper, *Winning at New Products* (Reading, MA: Addison-Wesley, 1993, 2nd ed.); Glen L. Urban, John R. Hauser, and Nikhilesh Dholakia, *Essentials of New Product Management* (Englewood Cliffs, NJ: Prentice-Hall); and William J. Hollins and Stuart Pugh, *Successful Product Design* (London: Butterworths, 1990). Note, however, that the latter authors make a demarcation between a "mechanistic, fruit-machine type of process—i.e., pulling the handle and hoping to win the jackpot" (forward page, by Stuart Pugh)—and they also acknowledge more fluid membership in design-related activities. Yet they recommend a structured sequence of design actions framed by a systematically layered planning process starting from management commitment to design, financial control, and design requirements.

10 Alfred Schutz, *The Phenomenology of the Social World* (original ed. in German, 1932) translated by George Walsh and Frederick Lehnert (Evanston, IL: Northwestern University Press, 1967) and also Amadeo Giorgi, "An Application of Phenomenological Method in Psychology" in *Duquesne Studies in Phenomenological Psychology* (Vol. II), Amadeo Giorgi, C. Fischer, and E. Murray, eds. (Pittsburgh: Duquesne University Press, 1975).

11 See John Dewey, "The Live Creature" from *Art As Experience* (1934) in *The Essential Dewey Volume 1,* Larry A. Hickman and Thomas M. Alexander, eds. (Bloomington and Indianapolis, IN: Indiana University Press, 1998); see also, e.g., Victor Margolin, "The Experience of Products" in *The Politics of the Artificial* (Chicago: The University of Chicago Press, 2003), 38–59. For field evidence, see, e.g., Birgit H. Jevnaker, "Make the World a Better Place to Sit In!" in *Design Management Journal* 4:2 (1991): 48–54.

12 See my initial focus group discussion with a group of designers and some of their collaborating clients, and additional key informants, moderated and arranged by the author in collaboration with the Design Council of Norway, February 21, 1991. The focus group discussion was video-recorded, fully transcribed (verbal text), and analyzed afterwards. See Birgit H. Jevnaker, "Industridesign som kreativ konkurransefaktor" ("Industrial Design as a Competitive Factor," in Norwegian). Report 54/96. (Bergen: Foundation for Research in Economics and Business Administration SNF, 1996).

13 See, e.g., Robert Blaich with Janet Blaich, *Product Design and Corporate Strategy: Managing the Connection for Competitive Advantage* (New York: McGraw-Hill, 1993).

14 This is grounded in my fieldwork, but accords with the "circle" terminology used by Klaus Krippendorff, "On the Essential Contexts of Artifacts or on the Proposition that 'Design Is Making Sense (of Things)'" in *The Idea of Design,* Victor Margolin and Richard Buchanan, eds. (Boston: MIT Press, 1995).

15 Klauss Krippendorff delineates some of these as "steps taken," and proposes a design discourse that I find "triggering." See Klauss Krippendorff, "Propositons of Human-Centeredness: A Philosophy of Design" in *Foundations for the Future: Doctoral Education in Design,* David Durling and Ken Friedman, eds. (Stoke-on-Trent, UK: Staffordshire University Press, 2000), 58–59.

16 Examples abound, see, e.g., Blaich, *Product Design and Corporate Strategy.* For a recent report embedded in firsthand design-in-business experiences, see *Mobile Usability: How NOKIA Changed the Face of the Mobile Phone,* Christian Lindholm, Turkka Keinonen, and Harri Kiljander, eds. (New York: McGraw-Hill, 2003).

17 I have borrowed this concept from Hannah Arendt, *Vita Activa oder Vom tätigen Leben* (Chicago: The University of Chicago Press, 1958; Norwegian translation published by Pax Forlag in 1996).

18 Webb, "Richard Sapper Out of the Black Box," 18.

19 See, e.g., Ellen Shapiro, *Clients and Designers* (New York: Watson-Guptill, 1989), 12. The citation of Thomas J. Watson, Jr., CEO of IBM from 1956 to 1971, is based on an interview with Jonas Klein, formerly responsible for IBM's worldwide graphic design programs. Paul Rand, design consultant to IBM for more than thirty years, cites Watson in a similar way, but he adds that it is equally true that bad design is good business. See Paul Rand, *Design, Form, and Chaos* (New Haven: Yale University Press, 1993), 33.

20 James Pilditch, "Using Design Effectively" in *Design Management: Papers from the London School of Business,* Peter Gorb, ed. (London: Architecture Design and Technology Press, 1990), 14. Pilditch makes it clear that he spoke as a design consultant with reference to this statement.

21 I discovered this as an educator—and also as part of my fieldwork—while talking with industrial design students reflecting on their experiences with business and other organizations (approximately seventy percent of their education is project work, part of which is with companies). I have been involved in course development and also lectured regularly at the Industrial Design Institute (previously part the National College of Art and Design, now the Oslo School of Architecture) from 1991/92.

22 Informed by previous literature, this is grounded in my own field research from 1990/91, including comparative research; see, e.g., Bruce and Jevnaker, *Management of Design Alliances.* See also Blaich in *Product Design and Corporate Strategy,* 112.

23 I refer to postmodern or late-industrial society as a matter of fact, although I am aware of other contemporary contexts for designing and business development.

24 Paul Rand, *Design, Form, and Chaos,* 15.

25 See, e.g., Margaret Bruce and Barney Morris, "A Comparative Study of Design Professionals," 39–61.

26 See note 12.

27 William H. Starbuck, "Keeping a Butterfly and an Elephant in a House of of Cards: The Elements of Exceptional Success" in *Journal of Management Studies* 30:6 (1993): 885–921.

28 See Robert K. Yin, *Case Study Research: Design and Methods,* Applied Social Research Methods Series, 5 (Beverly Hills, CA: Sage, 1984/89).

29 See, e.g., Fredrik Wildhagen, *Norge i Form. Kunsthåndverk og Design under industrikulturen* (Oslo: Stenersen, 1988, in Norwegian). See also Birgit H. Jevnaker, "Make the World a Better Place to Sit In!," 48–54.

30 See case analysis with references in Birgit H. Jevnaker, "Inaugurative Learning: Adapting a New Design Approach" in *Design Studies* 14: 4 (Oxford: Butterworth-Heineman, 1993): 379–401.

31 I. Morden, "Are You Sitting Comfortably?" in *Evening Argus,* Monday, June 11, 1979, cited from press clippings and medical reports on balans furniture, The Balans Alternative Sitting, HÅG Ltd., rykken+co Ltd, STOKKE Factories Ltd and Westnofa, March 1982. See also Jevnaker, "Inaugurative Learning," 381.

32 See "Designprogrammet for OL," Petter Moshus, ed., report on the design program for the XVII Olympic Winter Games in Lillehammer 1994 (Oslo: Kulturdepartementet and Norsk Form, 1994, in Norwegian) and Birgit H. Jevnaker, "Designing an Olympic Games in the Face of Chaos: The Case of Lillehammer" in *Design Management Journal* 6:3: 41–49.

33 See Birgit H. Jevnaker, "Den skjulte formuen. Industridesign som kreativ konkurransefaktor" ("The Hidden Treasure," in Norwegian). Report 36/95. (Bergen: Foundation for Research in Economics and Business Administration SNF, 1995a) and "The Hidden Treasure-Competitive Advantage through Design Alliances," Working Paper 58/1995 (Bergen: Foundation for Research in Economics and Business Administration SNF, 1995b). The paper also was published in "Hidden Versus Open Rules in Product Development" from the 1996 Product Development Research Workshop at the Delft University of Technology (TU Delft, 1996): 99–114.

34 Barney G. Glaser and Anselm L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (New York: Aldine de Gruyter, 1967).

35 See, e.g., Angela Dumas, "The Effect of Management Structure and Organizational Process on Decisions in Industrial Design" (Ph.D. thesis, London Business School, 1993).

36 The previous name of this Dutch design consultancy was NinaberlPetersIKrouwel, now just called nlplk.

37 Data were collected by the author during 1999–2001 through observation of launching events, exhibitions, and presentations to various audiences, repeat conversations with project managers, the key designer; and involved corporate staff; visits to the company; written company material; and press clippings.

38 See Jevnaker, "Industridesign som en kreativ konkurransefaktor" (in Norwegian).

39 See, e.g., Birgit H. Jevnaker, "Strategic Integration of Design and Innovation: Dilemmas of Design Expertise and Its Management" in *International Journal of New Product Development & Innovation Management* 3:2 (2001): 129–151.

40 See Bruce and Jevnaker, *Management of Design Alliances*.

41 See, e.g., Yin, *Case Study Research*.

42 See, e.g., Birgit H. Jevnaker and Margaret Bruce, "Design as a Strategic Alliance: Expanding the Creative Capability of the Firm" in *Dynamic Strategic Resources: Development, Diffusion, and Integration* Michael A. Hitt, Patricia Gorman Clifford, Kevin P. Coyne, and Robert D. Nixon, eds. (Chichester, UK: Wiley, 1999), 267–298.

43 See Jevnaker, "Den skjulte formuen" (The "Hidden Treasure" main empirical report).

44 Author's conversation with Magne Storli, October 18, 1999.

45 See Jevnaker, "Inaugurative Learning." For a seminal discussion on methaphors, see George Lakoff and Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (New York: Basic Books, 1999), and also their previous book, *Methaphors We Live By* (Chicago and London: University of Chicago Press, 1980).

46 Jevnaker, "Den skjulte formuen" (The Hidden Treasure report), 401.

47 See also Tom Kelley, *The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm* (New York: Doubleday, 2001).

48 See elaboration and other references in Jevnaker, "Make the World a Better Place to Sit In!," and also "Inaugurative Learning" and "Developing Capabilities for Innovative Product Designs."

49 Jevnaker, "Inaugurative Learning." See also Peter Dormer, *Design Since 1945* (London: Thames and Hudson, 1993), 149.

50 See Birgit H. Jevnaker, "How Design Becomes Strategic" in *Design Management Journal* 11:1 (Boston: Design Management Institute, 2000), 41–47 and "Championing Design: Perspectives of Design Capabilities" in *Design Management Journal Academic Review* 1 (2000): 25–39.

51 Author's observation during launch event in Oslo, 13 March 2000.

52 Jevnaker, "Den skjulte formuen" (The Hidden Treasure report), 401.

53 See Dumas, "The Effect of Management Structure and Organizational Process on Decisions in Industrial Design."

54 Lisbeth Svengren, "Industriell design som strategisk ressurs" (in Swedish). (Ph.D. thesis, Lund University Press, 1995) and Lisbeth Svengren, "Integrating Design as a Strategic Resource: The Case of Ericsson Mobile Communications" in Bruce and Jevnaker, *Management of Design Alliances,* 159–178.

55 See, e.g., Blaich, *Product Design and Corporate Strategy* and Jevnaker, "Inaugurative Learning." I would like to add that there seems to be more of creative dialogue rather than any complete or harmonious "conceptual integration" in constructive relationships between organizations and designers, so this needs further exploration and discussion.

56 Tore Kristensen, "The Contribution of Design to Business: A Competence-Based Perspective" in Bruce and Jevnaker, *Management of Design Alliances,* 217–241.

57 See, e.g., Russell Flinchum, *Henry Dreyfuss, Industrial Designer: The Man in the Brown Suit* (New York: Rizzoli, 1997).

58 This is grounded on the present study (see note 33) and complementary observations within, e.g., a Scandinavian communications agency.

59 See Bengt Molander, "Kunnskapers tysta och tystade sidor: ett forsök til översikt" in *Nordisk Pedagogik* 3: 90 (Oslo: NFP & Universitetsforlaget, 1990, in Swedish).

60 See Christian Lindholm, et al., *Mobile Usability*.

61 See, e.g., Karl E. Weick, *Making Sense of the Organization* (Oxford and Malden, MA: Oxford University Press, 2001).

62 See Donald A. Schön, *Educating the Reflective Practitioner* (San Francisco: Jossey-Brass, 1987), 3.

63 See discussion in Richard Buchanan, "Wicked Problems in Design Thinking" in *The Idea of Design,* Victor Margolin and Richard Buchanan, eds. (Cambridge, MA and London: The MIT Press, 1995), 3–20.

64 See, e.g., Dorothy Goslett, *The Professional Practice of Design* (London: Batsford, 1960/1984, 3rd ed.); Marion Hancock, *How to Buy Design* (London: The Design Council, 1992); and Bruce and Cooper, *Marketing and Design Management*.

65 A recent visit (Sept. 11, 2003) to Kode Design, a young industrial design consultancy in Oslo, also revealed how designers seek to leverage the brief during their work for organizations, because initial briefs often are highly incomplete and technically oriented.

66 Karen Freeze, "Braun: Designing and Developing for a New Oral Care Category (A)" Case Study Braun (Boston: The Design Management Institute/Harvard Business School Press, 2000).

67 Ibid., 15.

68 "We" are the conference participants at the Tenth International Design Management Research Conference arranged by the Design Management Institute (DMI) in Frankfurt, November, 2000. Thanks also for follow-up "probing" personal conversations with Peter Schneider and Bernhard Wild, design director and chairman of Braun's board, respectively, in addition to good discussions with design historian Karen Freeze.

69 Peter Schneider actually said "design" thinks outside the box, not "designers," which may connote a broader understanding beyond individual designers, e.g., referring to Braun's corporate design function.

70 See Christian Knudsen, "Pluralism, Scientific Progress, and the Structure of Organization Theory" in *The Oxford Handbook of Organization Theory—Meta-theoretical Perspectives,* Haridimos Tsoukas and Christian Knudsen, eds. (Oxford: Oxford University Press, 2003), 262–286.

71 David J. Teece, "Capturing Value from Knowledge Assets: The New Economy, Markets for Know-how, and Intangible Assets" in *California Management Review* 40:3 (1998): 55–79.

72 Ikujiro Nonaka and David J. Teece, "Research Directions for Knowledge Management" in *Managing Industrial Knowledge,* Ikujiro Nonaka and David J. Teece, eds. (London: Sage, 2001), 333.

73 Kathleen M. Eisenhardt and Joan A. Martin, "Dynamic Capabilities: What Are They?" in *Strategic Management Journal* 21:10–11 (2000): 1105–1121.

74 Ibid., 1118.

75 See also Dumas, "The Effect of Management Structure and Organizational Process on Decisions in Industrial Design."

76 John Kao, *Jamming: The Art & Discipline of Business Creativity* (London: HarperCollins Business, 1996). Several other writers in recent management and organization studies also have used jazz metaphors. See, e.g., Karl Weick, *Making Sense of Organizations,* and Max De Pree, *Leadership Jazz* (New York: Dell/ Doubleday, 1992/93).

77 Kao, ibid.

78 See, e.g., Jerry Hirschberg, *The Creative Priority: Driving Innovative Business in the Real World* (London: Penguin, 1998) and Kristensen, "The Contribution of Design to Business: A Competence-based Perspective."

79 See, e.g., Dorothy Leonard and Walter Swap, *When Sparks Fly: Igniting Creativity in Groups* (Boston: Harvard Business School Press, 1999).

80 See also David Durling, *Design Research News,* 6:4 (April 2001) (digital format).

81 See, e.g., Gary Hamel and C.K. Prahalad, *Competing for the Future* (Boston: Harvard Business School Press, 1994); Gary Hamel, *Leading the Revolution* (Boston: Harvard Business School Press, 2000); and Mary Jo Hatch, *Organization Theory: Modern, Symbolic, and Postmodern Perspectives* (Oxford: Oxford University Press, 1997).

82 Leonard and Swap, *When Sparks Fly,* 79.

83 Tom Peters, *The Circle of Innovation: You Can't Shrink Your Way to Greatness* (New York: Knopf and Vintage, 1997/99).

84 See Leonard and Swap, *When Sparks Fly.*

85 See Bruce and Jevnaker, *Management of Design Alliances.*

86 See, e.g., Lev S. Vygotsky/Alex Kozulin, eds., *Thought and Language* (Cambridge, MA and London: The MIT Press, 1986).

87 Clifford Geertz, *The Interpretations of Cultures* (New York: Basic Books, 1973), inspired by the philosopher Gilbert Ryle, *The Concept of Mind* (Harmondsworth, Middlesex, UK: Penguin, 1949/1990).

88 Jevnaker, "Inaugurative Learning."

89 Kathleen M. Eisenhardt, "Building Theories from Case Study Research" in *Academy of Management Review* 14:4 (1989): 532–550.

90 Lev S. Vygotsky, cited in James V. Wertsch and Peeter Tulviste, "L.S. Vygotsky and Contemporary Developmental Psychology" in *An Introduction to Vygotsky,* Harry Daniels, ed. (London and NY: Routledge, 1996), 58.

91 Alex Kozulin, "The Concept of Activity in Soviet Psychology: Vygotsky, His Disciples and Critics" in *An Introduction to Vygotsky,* Harry Daniels, ed. (London and NY: Routledge, 1996), 101.

92 Cf. Jevnaker, "Den skjulte formuen" (The Hidden Treasure report). This also suggests an important boundary work; see Birgit H. Jevnaker, "Exploring the Innovating Inbetween: Industrial Design as Boundary Work" in *International Journal of New Product Development & Innovation Management* (Dec–Jan 2003): 339–358.

93 See Caryl Emerson, "The Outer Word and Inner Speech" in *An Introduction to Vygotsky,* Harry Daniels, ed. (London and NY: Routledge, 1996), 126.

94 See both Weick, *Making Sense of Organizations,* and Schrage, *Serious Play.*

95 See, e.g., Richard Foster and Sarah Kaplan, *Creative Destruction* (New York: Currency & Doubleday, 2001).

96 Wertsch and Tulviste, "L.S. Vygotsky and Contemporary Developmental Psychology" in *An Introduction to Vygotsky,* 65.

97 Bente Løwendahl and Øivind Revang, "Challenges to Existing Strategy Theory in a Postindustrial Society" in *Strategic Management Journal* 19 (Chichester, UK: Wiley, 1998): 755–73.

98 Erving Goffman, *Frame Analysis: An Essay on the Organization of Experience* (New York: Harper & Row, 1974; reprint editon: Boston: Northeastern University Press, 1986).

99 I owe this argument to industrial designer Birgitta Cappelen, cofounder of Interaction Design, Oslo (It became part of Adcore, and later Creuna), from a recent discussion, February 2001.

100 Goffman, *Frame Analysis.*

101 Author's observation from launch event, March 13, 2000.

102 See, e.g., Jevnaker, "Inaugurative Learning" and "How Design Becomes Strategic."

103 Lisbeth Svengren, "Industriell design som strategisk ressurs" (in Swedish), also identified this courage quality.

104 For an overview, see Michael Schrage, *Serious Play.*

105 Dumas and Mintzberg delineated some other mechanisms of managing design, such as "design policy," "design program," and "design function"; none of which were particularly salient as drivers of design work in the companies studied, although some firms were working on introducing or sustaining elements. Angela Dumas and Henry Mintzberg, "Managing Design Designing Management" in *Design Management Journal* 1:2 (1989): 8–14.

106 Michele de Lucchi once used this phrase in a speech. See Michele de Lucchi, "The Contra-Brief: A New Tool for Fostering Innovation and Beauty" in "Managing Design for Strategic Innovation," Proceedings from the Third European International Design Management Conference (Boston: Design Management Institute, 1999). This accords with actions identified among the designers I have interviewed or more informally talked with, including Michele de Lucchi.

107 See Dorothy Leonard (-Barton), *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation* (Boston: Harvard Business School Press).

108 See Hannah Arendt, *Vita Activa.*

Ernst Neumann's "New Values of Visual Art": Design Theory and Practice in Germany at the Turn-of-the-Century

Sherwin Simmons

Footnotes begin on page 64.

An exhibition entitled "Ernst Neumann and His School" held in 1910 in the library of the Royal School of Applied Art in Berlin provided an opportunity for reflection about Neumann's contributions to German art's development since the turn-of-the-century.[1] Paul Westheim praised him as a leader of artistic printmaking, known for his experimentation and innovative teaching, and also as the creator of distinctive posters, such as his large advertisement (figure 1) for an appearance of the dancer Sarharet in 1903 at the Wintergarten in Berlin.[2] Neumann was among the first German artists to apply his talents to commercial graphics, continuing the spirit of the great French poster art of the 1890s. Westheim suggested, however, that this inventive spirit actually restricted his success, for Neumann refused to follow the two trends that were coming to dominate German advertising—the "object poster" of Lucian Bernhard and the "prestige poster" of Ludwig Hohlwein.[3]

Figure 1
Ernst Neumann, *Wintergarten Saharet*, 1903, color lithograph poster, 135 x 92 cm.

Fritz Hellwag, who also reviewed the exhibition, offered more insight about the specific visual quality of Neumann's posters by relating them to the "Americanism" of Berlin's variety theaters.[4] Posters were like variety acts, he argued, since they had to capture the public's attention for brief spans of time, doing so with bursts of strong sensation that often had a distinctive, almost brand-like character. While this practice suited modern consumption, it posed a danger of creative stagnation for an artist like Neumann, who had built his early success on "the skillful importation of grotesque whims and tricks that have been proven in American advertising." [5] Neumann escaped a creative dead-end, however, because he enlivened his posters with strong spatial effects, which were influenced by impressionist painting's ability to capture movement and life through light and color. The basis of Neumann's artistic success, Hellwag wrote, was his continued attentiveness to what Neumann had described as "a *panischen Schrecken* (panicked shock), produced by sudden spatial experience in nature." [6]

Just such a powerful effect characterized the Sarharet poster. The popular Australian dancer looks out and down at her audience from the stage, her face seen beside her right leg that has been pulled vertical by her right arm, thus creating the "big split" that had become her brand-image. Colors swirl across the background, contrasting with rivulets of black, crimson, and gold that describe her costume's intricate layers, voluminous skirts and dangling pompons. All seems calculated to evoke her dance's dazzling effect, which one commentator described as "insane spinning, it is like some mysterious zephyr whirls around her and becomes a typhoon." [7] After Neumann's poster appeared on the columns, however, it was quickly replaced by another poster (figure 2) that featured only Saharet's face —centered and framed within a hexagon, her name inscribed below in distinctive script.[8] No artist's signature appeared on the poster, only the publisher's name —Hollerbaum & Schmidt —compressed into a square signet to the lower right of the image. It is likely that an association with the work of Franz Stuck was intended, for Stuck had exhibited a portrait of Saharet at the Munich Secession in 1902.[9] This was shortly after the dancer wrote a letter to the *Münchner neueste Nachrichten,* announcing that Stuck had asked her to pose for him during the run of her act at a Munich theater.[10] Her action repeated the way her manager had previously publicized Franz von Lenbach's sponsorship of her trip to Munich in 1899 to pose for him. The poster's script is exactly the same as the dancer's name painted on Stuck's portrait and the publisher's signet repeats the square shape of the artist's signature and date.[11] In addition, Stuck frequently used hexagonal frames for his portraits, that form had also enclosed the head of Pallas Athena in his famous 1892 poster for the Munich Secession. Saharet's frontal face with large staring eyes framed by twining tendrils of hair reminds not just of Stuck's female portraits, but also of his 1892 painting of Medusa.[12] Thus, while the

Figure 2
Hollerbaum and Schmidt, *Saharet,* 1903, color lithograph poster, 135 x 90.5 cm.

second poster advertised the dancer through a sexual frisson associated with Stuck's mythic paintings, Neumann's poster focused on the sensory shock produced by the frenzied movement and dazzling color of her variety act.

An essay published in 1903 by Hermann Eßwein, a Munich art critic who was Neumann's close friend and published a book about his art in 1905, reinforces the observation that the rapid-fire shock of attractions was what Neumann admired in variety. [13] That essay satirized the new artistic cabaret that Ernst von Wolzogen had made fashionable in his Motley Theater in Berlin during 1901. Eßwein wrote that the appearance of "Genius" and "exalted Mrs. Pallas" on stage in Berlin had suffocated everything that was truly modern in variety and turned it into a type of Jugendstil comic opera for German philistines. Variety had become decorative and domesticated, Eßwein said, deprived of the movement and "the spontaneous shocks" that linked variety to "our materialistically brutalized, secularized, capitalistic age of machines."

This appreciation of that age's new forms of art was characteristic of a series of ten lectures entitled "New Values of Pictorial Art" that Neumann and Eßwein presented during 1902–03 at the School for Modern Graphic Arts that Neumann directed in Munich.[14] The ideas expressed therein represent a forgotten effort to theorize how some saw the potential for technology to fundamentally change the practice of visual art at the turn-of-the-century, for Neumann and Eßwein asserted that easel painting was at a dead end in 1902.[15] While impressionism had begun as a salutary effort to paint things in light and air, after achieving this it had turned from the object to an emphasis on painting as an expression of artistic subjectivity. Eßwein and Neumann believed that this was an unfruitful psychological development that eventually led many artists to seek consolation in symbolic-religious themes and archaic forms connected to art's past ritualistic function. Most significantly, this subjectivism pulled art away from the objective problems of modernity, breaking artists' connections to a mass public hungry for new visual experiences. The lectures identified three promising paths in contemporary visual culture.[16] First was the growing involvement of artists with furniture design and other applied arts. A second direction was satirical illustration as represented by Thomas Heine's work for *Simplicissimus.* This was important because it involved artists with modern illustrated magazines and "represents a synthesis of the factual (drawing of forms) and the personal (painterliness), which is humanly necessary because this art is born out of the age's psychological struggle."[17] The final area was original graphic art for a growing middle-class market. Eßwein and Neumann pointed to Felix Vallotton and William Nicholson as foreign models for printmaking, while mentioning Toulouse-Lautrec and the Beggarstaff brothers as stimuli for German artistic posters.

Neumann was a leading figure in this graphic arts movement. Born in 1871 the son of a painting professor at the Kassel Academy, Neumann pursued his father's profession, studying initially in Kassel and then in Munich. Little is known about his early paintings, however, he soon shifted his focus to drawing for the new satirical journals *Simplicissimus* and *Jugend* that began publication in 1896. Economic pressure led him to join with Heinrich Wolf to found a school for graphic art in 1900.[18] In the lecture series presented at the school Neumann and Eßwein stressed graphic art's growing role in modern life and its alteration of existing artistic values. They praised art reproduction firms, such as Callweg, Bruckmann, and Hanftstängl in Munich, for broadening interest in art and even applauded photography's increasing use in pornography.[19] Graphic art was leading a shift from "connoisseur value" to "use value" as the foundation of artistic appreciation.[20] The unrestricted possibilities of reproduction allowed the graphic artist to reach "not only the few museum visitors and wealthy connoisseurs, on whom the oil painter is dependent, but the whole of the educated class, every pedestrian (through the poster), every reader of illustrated newspapers and books designed in a modern way."[21] Neumann began to explore applied graphic art, creating posters and programs for the *Eleven Executioners*, a cabaret founded in 1901 to forge a new relationship between art and variety theater. Frenzied dance was frequently the subject of this advertising for the cabaret, as seen in a program cover (figure 3) where a dancer's face looms against a middle-ground depicting the Sphinx. Printed in brilliant red, the dancer's ecstatic expression contrasts powerfully with the mute, dull green visage of the Sphinx.

Neumann only vaguely alluded to the thematic contrast in such a work, but he did frequently use the phrase "panicked shock" to describe the expressive effect that he desired from such a spatial contrast, lived experience could produce shocking effects, making them a crucial component of graphic art, particularly advertising.

> Sensational advertising isn't produced by ornamental surface decoration, but by the confrontation of things, by the oppositions of stillness and movement, by painterly factors, etc. [. . .] Contrasts, striking representations of situations, accidents, the most extreme and bizarre artistic effects, for which oil painting was never suited, exactly this ultimate artistic freedom will be welcome by the visual artist as an emancipation from the aesthetic of oil painting.[22]

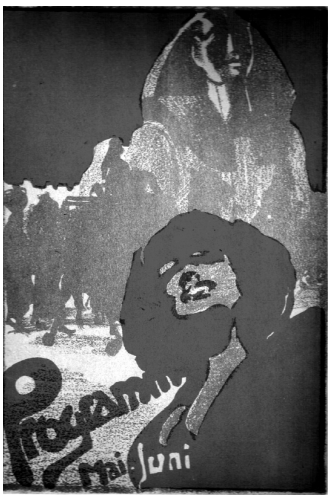


Figure 3
Ernst Neumann, Cover of program for *The 11 Executioners,* May–June 1902, color lithograph.

Arising from Greek mythology, the term "panicked shock" described the impact of Pan's appearance in the heat of mid-day on people and herds of animals —a moment when the normal sense of natural and human order was disrupted by a sudden event, producing disorientation and anxiety.[23] Arnold Böcklin had represented the effect in two paintings of 1860; and Pan's hybrid form, which forced

momentary awareness of the animal within the human, became a powerful symbol in artistic creations at the turn-of-the-century.[24] *Pan in the Bush,* a dance-play by Otto Julius Bierbaum, was one such work.[25] It opens with two groups of students, segregated by sex and accompanied by adults, entering a forest clearing on a hot summer mid-day. While picnicking, boys and girls began to mix in a dance that becomes progressively wilder, despite adult efforts to restrain it. Suddenly, the large figure of Pan rises from a rosebush, producing "a panicked shock" that only an older boy and girl resist, each captivated by Pan's stimulation of sexual attraction. In subsequent scenes, all of the characters of Arcadian eroticism join with the young students in dances and pagan ceremonies that eventually include the adult escorts, who are also seduced by the pleasures of intensified life under the sign of Pan. The German forest and educational system were poetically fused with mythical Arcadia. Franz Stuck, Bierbaum's artist friend, also populated his landscapes with centaurs, fauns, nymphs, and other mythological creatures, always hinting at the local and contemporary in the paintings.[26] Neumann, in contrast, refused any elision of the gap between contemporary visual reality and a mythical past, satirizing this fusion in a drawing (figure 4) for *Simplicissimus* that responded to Stuck's poster for Munich's VII International Art Exhibition of 1897.[27] It shows a contemporary woman stripping off the mask and garb of Athena Parthenos, Stuck's symbol of the Munich Secession, and escaping from the exhibition hall.

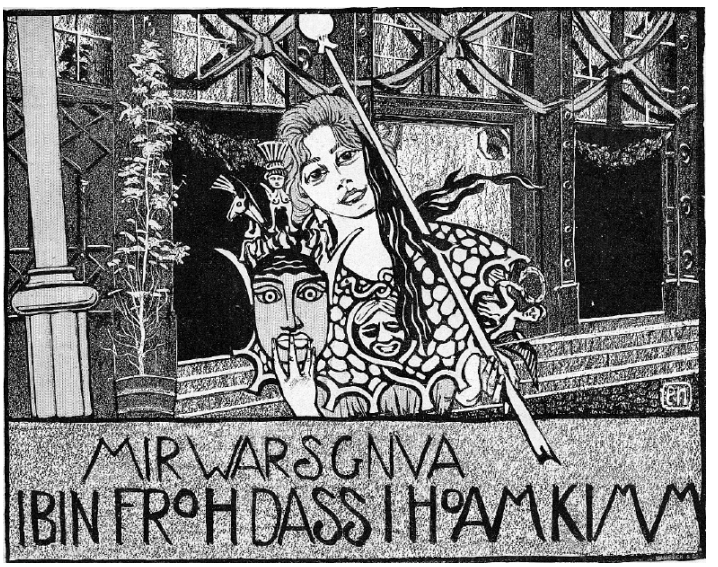


Figure 4
Ernst Neumann, "Liberated Art (at the conclusion of the exhibition in the Glass Palace)," *Simplicissimus* 2:32 (1897):

Figure 5
Ernst Neumann, *New Subscription to Kladderdatsch at all Bookstores and Post Offices, 2.25 Marks per Quarter-Year,* 1899, 69.5 x 46.5 cm.

Figure 6
Ernst Neumann and Georg Braumüller, Cover of *The Serpent,* 1903, color lithograph.

The first work in which Neumann portrayed the exciting space and content of the modern city was a poster (figure 5) that he designed in 1900 to announce the entry of *Kladderadatsch,* one of Germany's oldest humor magazines, into the new century. Having been founded in Berlin at the time of the 1848 revolution, *Kladderadatsch* had grown both politically and artistically conservative.[28] Neumann altered its image by turning the mischievous boy's head that had come to identify the magazine into a fiery storm cloud looming over the city, its modern power embodied by the electric pole in the foreground. The electrical theme as well as the striving for instantaneous impact through spatial composition and direct address creates a shock effect. Neumann discussed this spatial effect in a lecture and essay entitled "Methodical Drawing," in which he called for a drawing style that would express the actuality of the twentieth century by being objective, essential and making creative use of perspective and movement like Japanese woodcuts.[29] Having a Hokusai print in mind, he stated that the objective-constructive drawing of a suspension bridge "must express the astonishment, the surprise, the shock, about the fact" that the bridge could carry the weight of the men crossing it.[30] Electric lines sag and stretch in Neumann's poster, indicating a spatial expanse that is countered by the looming demonic head.

Neumann believed that such montage-like contrasts were necessary to express the thrills and dangers of urban industrial life. This structure may have been stimulated by Neumann's enthusiasm for Japanese prints, particularly the way Ando Hiroshige had juxtaposed enlarged screening foregrounds with distant landscape backdrops to evoke collisions of rural and urban realms at Tokyo's edge.[31] Neumann used a similar montage in his cover (figure 6) for *The Serpent,* a booklet about differences between the art worlds in Munich and Berlin.[32] The representation of Siegfried slaying the dragon Fafnir in the background was created by Georg Braumüller, a friend of Neumann. Boldly printed in violet ink, it likely symbolized Munich's artistic backwardness. Thus, the background contrasts in style, technique, and content with the foreground composed by Neumann. It is printed in black with more tonal values and depicts not a literary serpent, but a snaking network of streetcar tracks, overhead trolley lines, and queues of Berliners. Neumann addressed his interest in combined print-making techniques by writing:

> New forms that were suited to fully express modern feelings and concepts —thus distinguishing these from the non-modern, like the automobile from the stage-coach—could really not be grabbed out of the air or arise ex nihilo. Everything new is always just the old developed further, and to talk about creating the new is really nothing other than to observe the old from new points of view, to bring old elements together in new relationships, to put it succinctly: to combine.[33]

He claimed that recent literature offered many examples of the ways that older forms and techniques could be combined in new ways, without concern about distinctions between high and low, to express modern experience. The cover's foreground-background montage seeks a similar expression, but the montage extends to foreground's figures, for they were gathered from other works. One senses that these figures were based on photographs, a quality addressed in Eßwein's book:

> He finds a kinetic-psychological formula for the persons whom he represents, which is so essential, is present in such a pointed way, that we experience the same sensation as, for example, with those sudden events that cut off a movement and as a result first call attention to the phenomenon of movement: a horse that falls or pulls up in full stride, a person hurrying along stopped in his tracks by a sudden shock, surprise, etc. Neumann paints female dancers, who are caught motionless with mask-like faces in the middle of their strained positions, gestures that are grasped firmly with complete artistic consciousness, with exactly the same panicked and surprised effect that is offered in snapshot photography.[34]

Neumann believed that snapshot photography could help the visual artist better understand the phenomenon of movement.[35] He also recognized that artists such as Lenbach and Stuck had made photographs taken of their models an integral part of the process they used to paint portraits, but argued that photography offered much more than just a means to naturalistic accuracy.[36] "The artist uses the photograph correctly, only if he employs it non-naturalistically, that means only as material, as raw material, as a model for an intensive creation of his own."[37] Neumann studied photographic contrasts, sharpening and enlarging them into more dramatic oppositions.[38] Poster-like immediacy, joined with the direct address and truth-value associated with snapshots, contributed to the shock effect of his works.

In a lecture delivered at Neumann's school, Eßwein identified similar qualities in the actuality films of early cinema.[39] He described a visit to a cinema and how he entered a simple small room, densely packed with an audience seated on benches that faced a screen. Suddenly the room darkened and a bright still image of a street appeared, but then, he wrote, "came an abrupt twitch and vibration, and this life moved." A fire brigade band marched by playing its music silently, then the image vanished, the lights came on, and the audience conversed while the reel was changed. Eßwein sat and considered the contrasts between the short films, while comparing his reactions to other audience members, in particular those of a young machinist and a German poet. Eventually a shout from the rear announced the next film: "Number thirty five! Hobboken–New

York! The longest bridge in the world! Filmed from the locomotive's front platform!" Eßwein then described the illusion of how the viewer seemed to move on the rails. A rapid montage of urban views began to flash by as the train built speed until it climbed the grade to the bridge, where he experienced a, "towering diminishing steel framework over our heads, strong and hard, confining us here, so that we feel rather than just see the depths into which we are traveling." Finally the train entered another city and halted at station platform where people stood waiting. Suddenly, the image vanished, the lights came on and a voice shouted "Remain seated!" A sudden panic pushed the audience to the exits. Someone speculated that a woman had fainted, to which Eßwein responded sarcastically that it was rather a "world-view" that had fallen and provoked the panic. Pleased that the German poet had left muttering "But my God, life that no longer has any ideals!" Eßwein shouted "Bravo!" and reseated himself to enjoy more of the program.[40]

Technology produced effects that both constituted and corresponded to modern visual experience and signaled a shift in world-view. Art had to respond to the new spatio-temporal experiences of urban and industrial life, which Eßwein characterized in the following passage about Berlin:

> Ours are lives uncannily fast in action:—On a sultry day in northern Berlin I passed a large storage area. On the enormous surface it contained nothing but rusting, discarded machine parts, boilers that were burst, all possible types of mechanisms, which had only a few weeks before traversed large areas of life. However, no poetic legend stood over the entrance, rather a somber company sign.[41]

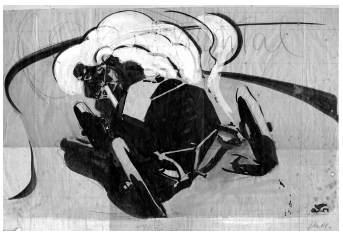


Figure 7
Ernst Neumann, Poster sketch for Continental Tires, 1902–03, pencil and gouache.

The artist in Berlin only needed to pay attention to an "hour of our nervous life, on which metropolitan traffic certainly places great demands" in order to discover new values.[42] Among the poster designs that Neumann and his students displayed in their 1903 exhibitions, hoping to elicit business commissions, many stressed urban-industrial experiences—onrushing locomotives, views from train cars, and furniture moving vans.[43] A boldly patterned and radically foreshortened racing car, which was depicted swerving through a curve and throwing up a dust cloud, dominated a design (figure 7) that Neumann submitted to a major poster competition that was held on behalf of a group of firms in Hanover at the beginning of 1903.[44] Measuring approximately 1.5 by 2 meters, it won third prize in the competition's section devoted to advertising for Continental rubber tires.[45] Unlike Robert Engels, who won first prize with a sentimental image of a young girl rolling a tire on the beach, Neumann developed his design from sensational images in newspapers and

magazines that illustrated stories about the attractions and dangers of the new sport of automobile racing.[46] Simplifying the forms to create a bold immediate effect, he created the most dynamic image of an automobile to that point in time.[47]

This focus on the new experiences of urban-industrial life was paralleled at the turn-of-the-century by the investigations of sociologists such as Georg Simmel and Gustave LeBon who theorized that the modern world assaulted human consciousness with many new pressures and shocks. Neumann's and Eßwein's efforts to analyze and explore the centrality of "shock" in the artistic response to these conditions anticipated aspects of Walter Benjamin's and Ernst Jünger's cultural criticism during the 1920s. Eßwein's explanation of why people paid twenty pfennig to experience cinematic shocks was sociological, for, he wrote, that they "wanted here to forget their mushy, grim business and family for a moment" and to experience something beyond "the sole daily possibility to run around a treadmill to which they are harnessed."[48] Attending the cinema was an act of protest, but also a necessary exercise for becoming better able to absorb the shocks of modern life.

Neumann and his circle sought such shocks through mountain climbing, bicycling, and automobile racing. Reinhard Piper recalled how the group traveled to the Bavarian Alps in June 1902 to witness a stretch of the Paris–Vienna automobile race that was won by Marcel Renault.[49] Neumann developed a great enthusiasm for racing and had little patience with theories about speed's role in nervous degeneration promulgated by Max Nordau and other writers. For instance, Neumann and Eßwein answered statements made by French psychiatrists after a substantial number of deaths forced the suspension of the Paris–Madrid race of 1903 with an essay that rejected the idea that any mental disability could be caused by speed. Rather than causing degeneration of the nervous system, racing "demands a continual energetic disciplining of the sporting temperament by cool reflection and as a result produces that harmonic reconciliation of the intellectual and emotional aspects of the soul that is the trademark of the true sportsman." [50]

Neumann believed that the creation of posters that served modern industry and utilized the spatio-temporal qualities of contemporary experience tore the artist "from the sterile isolation in which, without modern means of expression, he can only experience himself as a tragic-comic anachronism in our age of electricity and social problems." [51] However, Neumann made important contributions to the Munich art world beyond his works and writings. He pressed for the inclusion of poster designs in Munich's art exhibitions, arguing that it would help reverse the city's loss of prestige if Munich became the first city to recognize applied graphic art as an equal among the other fine arts.[52] He also proposed an organization that would help make artists aware of their rights within the existing legal code while also pushing for the expansion and improve-

Figure 8
Georg Braumüller, *Amelang's Art Gallery,* 1903, lithograph poster, 64 x 87 cm.

ment of their economic rights.[53] He and his students addressed such issues pictorially. For instance, Braumüller's poster (figure 8) for Amelangs Kunstsalon, which held an exhibition of Neumann and the Munich Association of Graphic Artists in 1903, represented an elegantly dressed woman and an artist carrying a portfolio and case, approaching each other on opposite sides of a steel bridge. The image can be read as a symbolic visualization of economic exchange within the contemporary art trade—it takes place in the modern city, involves unequal power relationships, and the commercial gallery mediates the relationship between producer and consumer. Neumann's sophistication about such issues was also manifested in his creation of a trademark-like sign during 1899, which he began to use to identify the authorship of his works.[54] He developed the sign from a Jugendstil design that depicted a man leaning back against a strong wind while his huge coat blows like a wave in front of him. He gradually abstracted the shape of the man into a distinctively dynamic image that was unified with his initials. While personally trying to protect his own economic rights, he also called for the creation of a new type of artistic institution that would help connect applied graphic artists with businessmen, answering thereby the businesses' advertising needs while also protecting the participating artists' rights.[55] In Fall 1904, after Neumann moved from Munich to Paris during 1903, Reinhard Piper opened a Central Distribution Office for Graphics, which focused not on the facilitation of advertising commissions, but on the marketing and distribution of collectable graphics.[56]

Neumann's reasons for his move to Paris are not clear. He joined the approximately 500 German artists who had arrived in the city by 1907.[57] Although Neumann initially sketched in the variety theaters and on the streets and wrote reviews of French art exhibitions for German journals, his interest in the Paris art world

declined, as he sensed its refusal to reconsider artistic practice in the face of new modes of production.[58] A diary entry from December 1905 reflected about his apparent lack of realization of a flourishing artistic career that his Munich period had promised, but also went further in its judgment about visual art's future:

> How old-fashioned I live here today in a secluded studio. A dealer asked me recently : What are you doing, do you have new things ready "for the trade " ? No, I have nothing ready. [. . .] The French of today want culture and can't, while over there, our, my Michel could and doesn't want to. Thus I don't believe that the Frenchman today is not capable of learning something from the Germans, he is too arrogant and without talent. French art has no future, one could expect it from Germany if Böcklin, Menzel, Lenbach and Stuck didn't stand in the way. *Simplicissimus* alone is the only spiritual protest. Sadly only the artistic formula of negative protest, which lacks positive, creative, and presentable power. We need people, who possess clarity like Th. Th. Heine, have pictorial ability like Wilke, coarseness like Paul, in addition to this are able to paint like none of these can and are artists in addition, then we would have a German art.[59]

He began to associate primarily with commercial illustrators and motor sport enthusiasts, spending his time at the Café Excelsior rather than the Café du Dôme where German artists gathered. While living in Paris he traveled widely and became more intensely involved in designing and racing motorcycles.

He returned to Germany in October 1908, settling in Berlin after deciding that it was the center of modern life. Circumstances in the German art world had changed during his time in Paris. While Reinhard Piper had published Eßwein's eight volume series entitled *Modern Illustrators* during 1904–05, Eßwein had begun to despair about whether his espousal of an artistic practice based in mass culture would prevail over an emerging narrative about the necessity of modern art taking its lead from the formal values of French impressionism. Julius Meier-Graefe had voiced the latter view strongly in a series of books between 1902 and 1904.[60] Eßwein had reviewed his book on post-impressionism, rejecting what he saw as its lack of objectivity.[61] However, he recognized in letters to Piper that the critic's argument was quickly winning followers in Germany.[62] Moreover, Piper soon met Meier-Graefe and was won over, publishing a small book entitled *Impressionists* in 1907 and engaging him to write a major study on the work of Hans von Marées.[63]

After his move to Berlin, Neumann no longer made any effort to engage the established institutions of "high art," following thereby the lead of other advertising artists who had developed their separate professional sphere while Neumann was in Paris. The

Association of German Advertising Professionals and the Association of Supporters of the Poster, producers and consumers of advertising art, formed in 1903 and 1905, both of which began publication of their respective journals in 1910. Contributors to these journals, like supporters of the new advertising art had begun to do around 1904–05, stressed the necessary division between the creative values and approaches of commercial and fine artists. They often pointed to Neumann as an early example of an artist who found an appropriate balance between creative innovation and the commercial interests that he served, Paul Westheim emphasized that these qualities were particularly seen in Neumann's continuing work as the advertising director for Sorge & Sabeck.[64] His advertising for this firm, which specialized in sporting goods and accessories for cars, motorboats, and airplanes, varied widely in style and concept, depending on whether it was for a product catalogue, a magazine ad, or a poster. His 1908 poster for Sosa tennis balls (figure 9) focuses the viewer's attention on a cluster of balls that lie on the court at the bottom of the net. While the upper half of the space is closed off by the net's interlaced cords, the viewer is drawn to that space by the suggestion of buildings and a tree line in the distance, while the tennis player's swing and stride provide a counter-movement, literally bursting through the net's surface. It is an irrational spatial effect, simultaneously calling attention to surface and depth. Drawing is both bold and subtle, while the color combinations—blue, light green, red-orange, grey and white—are unusual and striking. Neumann's design challenged the printers' professional skills, creating a poster whose artistic complexity was radically unlike any other poster. An

Figure 9
Ernst Neumann, *Sosa. Sorge and Sabeck,* 1908, color lithograph poster for tennis balls, 130 x 84 cm.

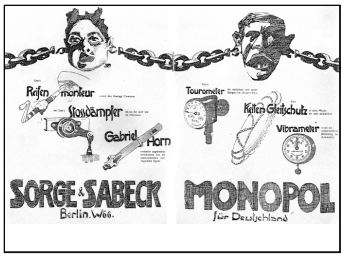


Figure 10
Ernst Neumann, Advertisement for Sorge und Sabeck automobile parts in *Motor*, a technological journal, ca. 1908.

Figure 11 (right)
Ernst Neumann, "Behind the Scenes of Modern Advertising," brochure for Neumann's advertising studio, ca. 1911–12.

advertisement in a technology journal (figure 10), however, was very different in approach, although equally unlike typical print ads. It combines extremely objective drawings of automobile parts with broader style above that caricatures two male heads, which are linked by heavy chains that are hooked to their ears and move to and fro in space—an extremely startling and grotesque image that seizes the reader's attention, while also linking the two pages.

Neumann opened an advertising firm—Ernst Neumann Studio for Modern Advertising—in October 1910.[65] A prospectus, which included a photograph (figure 11) of the work space, stressed the necessity for businesses to consult a professional who possessed proper budgetary and technical experience in order to develop a sophisticated advertising campaign that would be tailored to specific business needs. It also emphasized that the development of such a campaign was a collaborative effort, employing the skills of various types of professionals. Neumann repeated this stress on collaboration in statements he made later about a controversy that followed his sale of the firm in February 1913 to Alfred Braun, his assistant and former student. Neumann had employed his pictorial signet as the firm's logo. Braun considered it to be part of the firm's property and continued to use it after he had turned the firm into a G. m. b. H. Neumann objected and obtained a legal judgment in his favor. However, Braun continued to charge that for much of the time that Neumann had directed the firm, the real creative design had been done by Braun and Paul Neumann, while Neumann concerned himself primarily with business matters. Finally, in 1920 when Braun protested the association of Neumann's name with posters that he had designed as Neumann employee, Neumann responded with a letter in which he described himself as an *Industriegraphiker*.[66] He wrote that the new profession of industrial graphic art had changed the relationship between hand and concept in art as artists had taken

on assistants and employed industrial processes. This division of labor led to increased anonymity and in reaction, Neumann said, artists developed an obsessive vanity about authorship and personal touch. Neumann believed those working in advertising art must realize that they were part of an industrial process which dictated many of the decisions. Traditional notions of authorship based on the previous mode of production were therefore outdated, because the hand execution of the design ready for printing was only part of the technology of reproduction. The head of the design firm who gained the commission, developed the concept, and dictated the technological processes to be employed was as much the creator of the final product as the drafter of the design.

Following his operation of the advertising studio, Neumann's focus turned increasingly to teaching and automotive body design. He was appointed in 1913 to the first chair of advertising art at the School of Applied Art in Charlottenburg.[67] He contributed an essay "The Architecture of the Vehicle" to the *Jahrbuch des deutschen Werkbundes 1914* and exhibited automobile and truck bodies (figure 12) at the Werkbund Exhibition in Cologne during the same year. Neumann termed such work a new realm of artistic expression:

> The human eye doesn't want to only register the movement of vehicles optically, but it also wants to experience it, to grasp it in a demonstrative way so to speak. Thus the form should speak of propulsion. Body and motorized power should coincide within a unified complex of sensations. [. . .] The eye of the public must first "learn to see" air, for twenty years the painter already could.[68]

Neumann remained primarily a car and motorcycle designer until his death in 1954; however, the Papler phaeton body that he exhibited in 1914 shared much with the artistic signet that he had adopted in 1899. Both sought to excite and activate the eye and body, emblemizing the accelerated life of a modern industrial age.[69] Like his posters' spatial and coloristic contrasts, they created and engaged an aesthetic of speed and shock.

The Cologne exhibition showed the world what the German Werkbund had achieved in the years since its formation in 1907. Its buildings and exhibits reflected the effort to produce works based on "New Values of Visual Art." While Neumann had been one of the first artists to engage the processes of industrial production and the rise of mass culture, his participation in the Werkbund exhibition marked the moment when his name began to vanish from the history of modern art and design. If one looks closely, however, at the photograph of his Berlin studio in his firm's prospectus, one finds a hint of his continuing influence on German graphic design. Examples of his early poster designs hung on the studio's walls. Neumann stood as the second figure along the right wall and above him hung a poster for a detective agency that had been exhibited

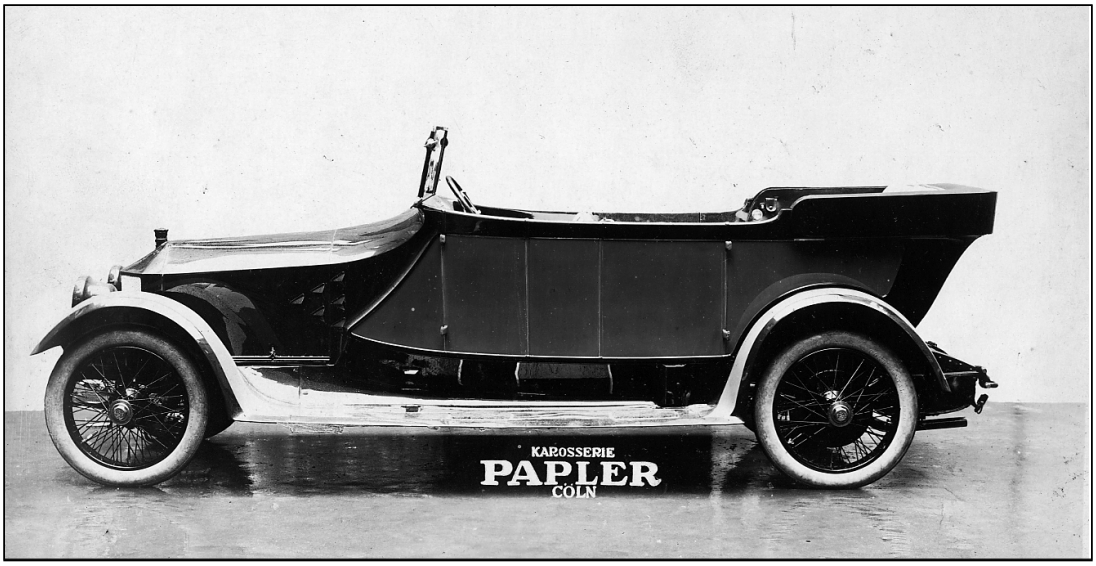


Figure 12
Ernst Neumann, Phaeton body designed for the Paper firm in Cologne, exhibited at the German Werkbund Exhibition in 1914.

at Amelangs Kunstsalon in 1903. Its title "Hands Up!" appeared in English in the catalogue.[70] It represented close-ups of two raised hands that were likely developed from a photographic source, the field behind divided symmetrically into squares of two colors on which each hand was centered. Texts overlay the hands' images. It was a remarkable image for that date, radically unlike any other graphic design of the period. Its shocking, montage-like effect anticipates the famous "5 Fingers has the Hand" poster that John Heartfield designed for the German Communist Party in 1927.[71] Yet, as this essay's discussion of the 1902–03 lecture series has indicated, it was an image consistent with Neumann's extraordinary effort to define "New Values of Visual Art" at the turn-of-the century.

Acknowledgments
I thank Reinhold Kraft and Georg Solms for their hospitality and generosity in opening their Neumann archives to my inspection. A longer version of this essay, entitled "Ernst Neumanns 'Neuwerte der bildenden Kunst': Kunsttheorie und—Praxis um 1900," appears in Reinhold Kraft, Thomas Müller, and Georg Solms eds., *Ernst Neumann-Neander 1871–1954* (Düren: Hahne und Schloemer, 2004). The book accompanies an exhibition that opened at the Leopold Hoesch Museum in Düren on September 19, 2004 and traveled to the Pinakothek der Moderne in Munich.

1 The exhibition included 200 works by Neumann and students whom he taught in a graphic arts class at Clara Fischer's art school. "Kleine Mitteilungen," *Mitteilungen des Vereins der Plakatfreunde* 1:2 (1910): 42.

2 Paul Westheim, "Ernst Neumann und seine Schule," *Archiv für Buchgewerbe* 47:2 (1910): 34–36.

3 For discussion, see: Hanna Gagel, "Studien zur Motivgeschichte des deutschen Plakats 1900–1914," Ph.D. dissertation, Freie Universität, Berlin, 1971.

4 Fritz Hellwag, "Ernst Neumann und seine Schule," *Kunstgewerbeblatt* 22:5 (1910): 93–95.

5 Ibid., 94.

6 Ibid., 95.

7 Alfred Walter Heymel, "Saharet," *Dekorative Kunst* 3:9 (1900): 373.

8 Walter von zur Westen, "Neue deutsche Plakate," *Archiv für Buchgewerbe* 42: 11–12 (1905): 492.

9 Heinrich Voss, *Franz von Stuck. Werkkatalog der Gemälde* (Munich: Prestel Verlag, 1973), cat., no. 234/534.

10 The letter appeared on April 17, 1902. See Brygida Ochaim, ed., *Franz von Stuck und der Tanz,* exhib. cat., Franz von Stuck Geburtshaus Tettenweis, 2000, 30–34.

11 It is possible that the poster's design was actually by Stuck, but unacknowledged because of the way Lenbach had been attacked for allowing his art to be exploited for advertising purposes. For an example of the attack, see: Paul Rieth, "Der Zauberlehrling," *Jugend* 3 (1902): 50.

12 Voss, *Franz von Stuck,* cat., no. 74/192.

13 Hermann Eßwein, "Variéte," *Freistatt* 5: 15 (April 11, 1903): 292–293. His book on Neumann was the sixth in a series called "Moderne Illustratoren." Hermann Eßwein, *Ernst Neumann* (Munich: Piper Verlag, 1905).

14 Some partial typescripts survive, but the ideas expressed therein were made more widely available in the more than 25 articles that Neumann and Eßwein published in various newspapers, art magazines, and cultural journals during 1902–1903.

15 Hermann Eßwein und Ernst Neumann, "Zum Probleme des Impressionismus," *Freistatt* 5:9 (February 28, 1903): 952–954.

16 Ernst Neumann und Hermann Eßwein, "Wege und Ziele der modernen Graphik," *Freistatt* 5:21 (May 23, 1903): 409–12.

17 Hermann Eßwein, "Neue Möglichkeiten und Neuwerte," *Freistatt* 5:28 (July 11, 1903): 555.

18 The *Münchner neueste Nachrichten* reported on March 1, 1902 that Wolff planned to accept a position in Königsburg, leaving Neumann as the school's sole director.

19 Semper idem. [Hermann Eßwein?], "Betrachtungen über die Reproduktionen von Kunstwerken," *Freestatt* 5:19 (May 9, 1903): 376; und Hermann Eßwein, "Photographische Pornographie," Freistatt 5:24 (August 22, 1903): 676.

20 Hermann Eßwein und Ernst Neumann, "Die Graphik—Bedarfskunst oder Spielerei?" *Kunst und Handwerk* 53: 3 (1902-03): 78–81; und "Die soziale Stellung des Künstlers," *Der Werkstatt der Kunst* 1:45 (September 8, 1902): 713–715.

21 Hermann Eßwein, "Die Graphik und ihre Bedeutung für die Neuzeit," *Die Werkstatt der Kunst* no. 19 (March 10, 1902): 296–297.

22 Ernst Neumann, "Über graphische Techniken," *Monatshefte für graphisches Kunstgewerbe* 2:2 (November 1903): 16.

23 For discussion, see Reinhard Herbig, *Pan: Der griechische Bocksgott* (Frankfurt: Vittorio Klostermann, 1949), 18–19; and Philippe Boreaud, *Recherches sur le dieu Pan* (Rome: Insitut Suisse, 1979), 137–175.

24 Rolf Andree, *Arnold Böcklin. Die Gemälde* (Munich: Prestel, 1977), cat. no. 120 and 121.

25 Otto Julius Bierbaum, *Pan im Busch* (Berlin: Insel Verlag, 1900).

26 In his book about Stuck's work, which went through many editions, Bierbaum wrote:
Whoever has an ear for the undercurrents of the modern soul, knows that a world view is emerging that strives for such goals, a world view again of an artistic type. Friedrich Nietzsche is its most powerful prophet and Franz Stuck now works with it in his art, because it has matured. Nietzsche's verse reverberates from his pictures:
Oh life of mid-day! Solemn time!
Oh summer garden!
The "innocence of the South"absorbed him.
O. J. Bierbaum, *Stuck* (Bielefeld und Leipzig: Velhagen & Klasing, 1899), 115–116.

27 Hollmann, *Das frühe Plakat,* cat. no. 3217.

28 Ingrid Heinrich-Jost, ed., *Kladderadatsch. Die Geschichte eines Berlliner Witzblattes von 1848 bis ins Dritte Reich* (Köln: C. W. Leske, 1982).

29 This lecture was apparently presented on December 15, 1902, the fourth in the lecture series. Neumann published the lecture with credit to Hermann Eßwein as joint author. "Methodisches Zeichen," *Freistatt* 5:1 (January 4, 1903): 794–796.

30 Ibid., 795. Also see Neumann und Eßwein, "Wege und Ziele der modernen Graphik," 410. The print was Katsushika Hokusai, *Suspension Bridge Between Hida and Echu* from the woodcut series *Rare Views of Famous Japanese Bridges,* ca. 1834.

31 For discussion of the overlay of spatial systems in Hiroshige's *One Hundred Famous Views of Edo,* see Kirk Varnedoe, *A Fine Disregard* (New York: Harry Abrams, 1989), 53–73.

32 The booklet's planned content is indicated by an entry in the catalogue of the Schwarz-Weiss Ausstellung of the Vereinigung graphischer Künstler München which was held at Amelangs Kunstsalon in Berlin from May 24 to August 14, 1903. The entry concerned no. 41 of the works that Neumann exhibited. The booklet was to include an essay by Eßwein, that would have engaged an ongoing debate that had been first raised by Hans Rosenhagen's article "Münchens Niedergang als Kunststadt" that appeared in the newspaper *Der Tag* in April 1901. Neumann and Eßwein published a separate article about the issue: "München und Berlin," *Münchner Zeitung,* 28 June 1903.

33 Ernst Neumann und Hermann Eßwein, "Zum Thema 'Kombinationsdrucke," *Kunst für Alle* 17:22 (July 1902): 464–465.

34 Eßwein, *Ernst Neumann,* 30.

35 Hermann Eßwein und Ernst Neumann, "Die Bedeutung der Photographie für den bildenden Künstler," *Die Kunst für Alle* 18:3 (November 1902): 59–63.

36 For the use of photography by Lenbach and Stuck, see: J. A. Schmoll gen. Eisenwerth, "Lenbach und die Photographie," in Rosel Bollek und Winfried Ranke, eds., *Franz von Lenbach 1836–1904,* exhib. cat., Lenbachhaus, München, 1986, 63–96; Jo-Aanne Birnie Danzker, Ulrich Pohlmann, und J. A. Schmoll gen. Eisenwert, eds., *Franz von Stuck und die Photographie,* exhib. cat., Museum Villa Stuck, München, 1996.

37 Eßwein und Neumann, "Die Bedeutung der Photographie," 61.

38 Neumann's posters were color lithographs. Photography played no role in their physical production, but they were developed through the study of photographs. They do share some visual qualities with the exhibition posters that Georg Einbeck did develop as gum bichromate photographic prints. See Einbeck's poster for the Seventh International Exhibition of Artistic Photography held at the Kunsthalle in Hamburg in 1899, as reproduced in Fritz Kempe, ed., *Kunstfotografie um 1900 in Deutschland,* exhib. cat., Institut für Auslandsbeziehungen, Stuttgart, 1979, 5.

39 Eßwein presented "Grand Cinématographe International" at the second lecture evening held at Neumann's school on November 17, 1902. "Kunstchronik," *Münchner neueste Nachrichten,* 13 November 1902. He published it as "Grand Cinématograph International," *Freistatt* 5:5 (February 1, 1903): 872–875.

40 Tom Gunning has discussed the aesthetic of actuality film in early cinema: "The Cinema of Attraction: Early Film, Its Spector and the Avant-Garde," *Wide Angle* 8:3–4 (1986): 64–70; "An Aesthetic of Astonishment. Early Film and the (In)credulous Spectator," *Art & Text* no. 34 (Spring 1989): 31–45; and "'Now You See It, Now You Don't': The Temporality of the Cinema of Attractions," *Velvet Light Trap* no. 32 (Fall 1993): 3–12.

41 Hermann Eßwein, "Berliner Bilder," *Freistatt* 5:38 (July 11, 1903): 551.

42 Hermann Eßwein und Ernst Neumann, "München und Berlin," *Münchner Zeitung,* no. 144, 28 June 1903.

43 See the reproductions in *Monatshefte für graphisches Kunstgewerbe* 2:2 (November 1903): 13–15.

44 Carol Hilarius, "Neue Künstlerplakate," *Monatshefte für Lithographie und graphisches Kunstgewerbe* 1:7 (April 1903): 53–54; und Erich Hafnel, "Der Plakat-Entwurf-Wettbewerbe vom 31 January 1903," *Dekorative Kunst* 6:8 (May 1903): 313–317.

45 The full scale version can be seen in a photograph of Neumann's studio in Berlin ca. 1912 that appeared on a prospectus for his advertising firm. It is seen among other poster designs along the rear wall in the photograph.

46 For discussion of the development of these sensational illustrations of speed and danger in the modern world, see Ben Singer, *Melodrama and Modernity: Early Sensational Cinema and Its Contents* (New York: Columbia University Press, 2001), 59–99.

47 For comparison to other automobile advertising, see Annette von Pelser und Rainer Scholze, *Faszination Auto: Autowerbung von der Kaiserzeit bis heute* (Berlin: Westermann-Kommunikation, 1994); und Daniel Bordet, Frédérique Decoudun, und Jacques Dreux, *Pneu Continental: Le temps des pionniers 1890–1920* (Paris: Somogy Éditions d'Art, 1996).

48 Eßwein, "Grand Cinématograph International," 873.

49 Piper joined Neumann's circle in early 1897 while working as an apprentice bookseller in Munich. Reinhard Piper, *Mein Leben als Verlager* (München: R. Piper, 1964).

50 Hermann Eßwein und Ernst Neumann, "Schnellingkeitswannsinn?" *Freistatt* 5: 24 (June 13, 1903): 477.

51 Neumann und Eßwein, "Zum Thema 'Kombinationsdrucke," 465.

52 Hermann Eßwein und Ernst Neumann, "Zur Hebung der Plakatkunst," *Kunst und Handwerk* 53:5 (1903–04): 128–129.

53 Neumann organized the first meeting on June 4,1902 about these economic issues. Hermann Eßwein, "Zu wirtschaftlichen Organisation der bildenden Künstlerschaft," *Die Werkstatt der Kunst* 1:35 (June 30, 1902): 551–553.

54 Dating of his use of the new signet is helped by the fact that the drawing he contributed to no. 15 of *Jugend* in 1899 has his previous initial signet, while no. 19 has the pictorial signet. This fact seems to contradict Neumann's assertion in the following source that he had begun to use the pictorial signet in 1895: "Neumann gegen Neumann," *Seidels Reklame* 1:7 (July 1913): 221. The uniqueness of his adoption of this trademark-like design is seen in the fact that James McNeill Whistler's butterfly signet is the only other pictorial signet found in a reference book of artist's signatures. John Castagno, *European Artists: Signatures and Monograms, 1800–1990* (Metuchen, N.J.: Scarecrow Press, 1990).

55 Ernst Neumann und Hermann Eßwein, "Kunstanstalt und Künstler," *Die Werkstatt der Kunst* 2:11 (December 15, 1902): 168–169; und "Zur Warnung für Plakatkünstler," *Die Werkstatt der Kunst* 2:31 (May 4, 1903): 488–489.

56 "Eine Vertriebs-Zentrale für Graphik," *Die Werkstatt der Kunst* 3:34 (May 23, 1904): 533–535; and Ernst Neumann, "Eine Vertriebs-Zentrale für Graphik," *Die Werkstatt der Kunst* 3:37 (June 13, 1904): 581–582.

57 "Ein Bund deutscher bildender Künstler in Paris," *Die Werkstatt der Kunst* 6:42 (July 22, 1907): 577–578.

58 Ernst Neumann, "Was die Kunst in Paris sagt," *Die Kunst-Halle* 9:19 (July 1, 1904): 290–293; und 9:20 (July 15, 1904): 309–311.

59 Typescript in Neumann archive.

60 Julius Meier-Graefe, *Manet und sein Kreis* (Berlin: Bard, 1902); *Der moderne Impressionismus* (Berlin: Baird, 1903); und *Entwicklungsgeschichte der modernen Kunst* (Stuttgart: J. Hoffmann, 1904).

61 Hermann Eßwein, "Besprechungen/ Julius Meier-Graefe," *Freistatt* 5:24 (June 13, 1903): 477–478.

62 See letters from Hermann Eßwein to Reinhard Piper on October 9, 1905; December 9, 1905; January 15, 1906; and October 19, 1906 in Ulrich Buergel-Goodwin and Wolfram Göbel, eds., *Reinhard Piper: Briefwechsel mit Autoren und Künstlern 1903–1953* (Munich Piper, 1979), 89–95.

63 After learning much about art publishing through working at the Callweg publishing firm and through his association with Georg Müller, who had worked for Bruckmann, Piper opened his own publishing house in 1904. Eßwein's series *Moderne Illustratoren* launched the venture. Twelve volumes were initially planned, but the series ceased with the eighth volume on Aubrey Beardsley. Publicity about the series claimed that it would "provide a complete and integrated picture of contemporary art, in so far as it illustrates modern life."

64 Paul Westheim, "Ernst Neumann, eine Reklamekunstler und Pädagoge," *Mitteilungen des Vereins deutscher-Reklamefachleute*, no. 12a (1910): 9–14.

65 Neumann stated that he founded Ateliers Neumann in October 1910 and sold the firm to Alfred Braun in February 1913. See: "Neumann gegen Neumann," 221.

66 "Industriekünstler und ihre Gehilfen," *Das Plakat* 11:9 (September 1920): 440.

67 "Ein Lehrstuhl für Graphik und Reklamekunst," Mitteilungen des Vereins deutscher Reklamefachleute, no. 46 (November 1913): 389.

68 Ernst Neumann, "Die Architektur der Fahrzeuge," Jahrbuch des deutschen Werkbundes 1914, 48–49.

69 One of the strongest statements of this aesthetic is found in a passage from a Neumann letter ca. 1904 about a long-distance trip by motorcycle, which anticipates much that was expressed subsequently in F. T. Marinetti 's "The Founding and Manifesto of Futurism" of 1909. The passage is quoted in Eßwein, *Ernst Neumann,* 45–51.

70 It was no. 14 in the catalogue.

71 John Heartfield came to Berlin in 1913 to study with Neumann at the Charlottenburg School of Applied Art. Wieland Herzfelde, *John Heartfield: Leben und Werk* (Dresden: VEB Verlag der Kunst, 1970), 9–12; Stefan Heym, "Der tolle-Heartfield," *Wochenpost* no. 8 (June 1961): 16; und Hans Reimann, "John Heartfield," *Das Stachelschwein* 4 (June 1927), 37. Heartfield mentioned in a radio interview that Neumann helped him win a design competition sponsored by automobile manufacturers for a frieze in the Transportation Building. Radio interview in 1966 with Heartfield in Berlin. Peter Pachnicke und Klaus Honnef, eds., *John Heartfield,* exhib. cat., Akademie der Künste zu Berlin, Berlin, 1991, 391. This mural can be seen in a photograph in the Neumann archive. For discussion of Heartfield's 1927 poster, see Sherwin Simmons, "'Hand to the Friend, Fist to the Foe': The Struggle of Signs in the Weimar Republic," *Journal of Design History* 13:4 (December 2000): 319–339.

A Formal Approach to Product Semantics with an Application to Sustainable Design

Loe Feijs and Frithjof Meinel

1. Introduction

Product semantics is important because it can make the difference between commercial success and failure. We propose a formal framework that is rooted in the theory of signs but, at the same time, is practical and directly applicable. Product semantics is essential in the design of products that must be easy, safe, efficient, and pleasurable to use. It is not easy to read the meaning of a given thing because the meaning may depend on the context in which the thing is shown, next to the cultural and personal background of the maker and the reader. For the formal framework, we borrow concepts from semiotics (the theory of signs), and denotational semantics, a branch of computer science studying the meanings of computer artifacts such as programs. Another innovation is our use of pictures in which we freely mix formulas and images.

The scope of the framework developed thus far includes the classical design of physical products such as furniture and vehicles. We have not yet covered designs that are of a more virtual nature, such as Web design or brand design. The framework is capable of dealing with messages of a personal or ideological nature. The area of sustainable design is included, which is important in view of its societal relevance. We do not go into the complexities of postmodern semiotics including, for example, the phenomenon noted by Baudrillard that signs tend to be consumed in a cyclic way and refer to a simulated world.

2. Formal Framework

2.1 Meaning Functions for Signs

The sources of our modeling concepts are Shannon's theory of information and communication,[1] Pierce's theory of signs,[2] Eco's semiotics,[3] and denotational semantics.[4]

Eco proposes the term "s-code" for a set of signals or notions ruled by internal combinatory laws. A "code" is a rule coupling the items of one s-code with the items of another. Thus, a code establishes the correlation of an expression plane with a content plane. Sometimes the correlation behaves like a function in the mathematical sense, like the square function mapping 1 to 1, 2 to 4, 3 to 9, etc.

1 See Claude E. Shannon, "A Mathematical Theory of Communication," *Bell System Technical Journal* 27 (July and October 1948): 379–423 and 623–656.

2 See Daniel Chandler, *Semiotics, the Basics* (London: Routledge, 2003). The original reference to Pierce is *Collected Papers of Charles Sanders Peirce,* 8 vols., Charles Hartshorne, Paul Weiss, and Arthur Burks, eds. (Cambridge, MA: Harvard University Press, 1931–1958).

3 See Umberto Eco, *A Theory of Semiotics* (Bloomington: Indiana University Press, 1979).

4 Michael J. C. Gordon, *The Denotational Description of Programming Languages: An Introduction* (New York: Springer-Verlag, 1979)

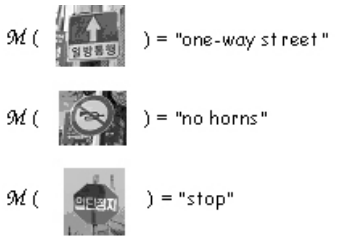


Figure 1
Meaning function with s-code of traffic signs as domain.

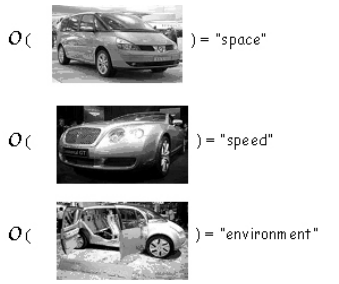


Figure 2
Meaning function about car forms and what they are optimized for.

Eco calls it a "sign-function." In mathematics, when f is a function, one writes, for example, $f(1) = 1$, $f(2) = 4$, and $f(3) = 9$. In computer science, one calls it a "meaning function." In figure 1, this notation is used for a meaning function: M, whose domain is an s-code of traffic signs and whose range is another s-code, strings in English. In semiotics: a *sign* is a pair consisting of an s-code (a traffic sign) and the corresponding meaning (for example "one-way street").

Eco mostly deals with texts, but physical products work as signs, too. In Bürdek's work[5] the sign functions of products are treated in Chapters 15 and 16. Dormer[6] gives a survey of goals for which product semantics can be used: follow function, fashion, self-explanatory design, etc. Krippendorff & Butter[7] is another classic.

2.2 Meaning Functions for Products

According to Eco, the meaning of a sign is a cultural unit, not the physical thing. What are the meanings of the products, systems, and services designed by industrial designers? In Eco's terms, what are the semantic fields and how are they structured? The answer depends on the product type and the culture in which it is interpreted. The traffic sign is a traditional sign, but now we can demonstrate that it also is possible to put real products in place of these signs. Figure 2 shows three existing products belonging to the s-code "car forms" and the meaning function O, mapping to the semantic field "what the car is optimized for."

Similar examples can be given for other aspects of cars, syntactically considering color, form, and material, as well as other aspects of the semantic field such as emotions, associations, price expectations, buyer profiles, etc. Until now, color, form, material, and texture have been the main constituents of the s-codes for industrial designers (next to engineering aspects). It will be necessary to add behavior to s-codes, too.[8]

2.3 Semantic Fields

In this section, we develop a formal view on meanings. If P is a set of products (designs) and S a semantic field, a meaning function is a function $M : P9 \rightarrow S$. For example, consider the traffic signs of figure 1 again. Here, P is the set of traffic signs (see figure 3) where we add a pair of brackets { and } to indicate a set. S is a set of commands about desired behavior on the street: P = {"one-way street," "no horns," "stop," etc.}. The latter set is called the semantic field (Eco's terminology). But other products are more complicated than traffic signs. Even when not created as a sign in the first place, it is inevitable that any product becomes a sign. It emits messages about its function, its intended use, its owner, etc. The question we address next is: What are these messages? or, more general, *What are these semantic fields?* If we adopt the terminology that product p emits

5 See Bernhard E. Bürdek, Design, *Geschiedenis, theorie en praktijk van de productontwikkeling,* (Deu Haag: Ten Hagen Stam,1991, German version; 1996, Dutch version).

6 See Peter Dormer, *The Meanings of Modern Design* (London: Thames and Hudson, 1990).

7 Klaus Krippendorff and Reinhart Butter, "Product Semantics: Exploring the Symbolic Qualities of Form," *Innovation, Journal of the Industrial Designers Society of America* 3:2 (1984): 4–9.

8 Loe Feijs and Kees Overbeeke, "Design Science: Meaning, Action, and Value" (Presented at the Sixth Asian Design Internaional Conference; Tsukoba, Japan, 2003).

Figure 3
Defining the domain of a meaning function as a set.

message *s* whenever *M (p) = s,* we must ask what these messages are. According to Eco, the elements of a semantic field are "cultural units" (not necessarily words, things, or facts). The definition of semantic fields is not without problems.[9]

2.4 Multiple Meaning Functions

We allow for several semantic fields. Each semantic field is concerned with one aspect of the object of design. We approximate the complexities of semantic fields by a Cartesian, coordinate-wise approach. We always can add other aspects later on.

To illustrate the concept of multiple meaning functions, each mapping to a different semantic field, we again take traffic signs as products. The first semantic field is a set of commands *S1*= {"one-way-street," "no horns," "stop," etc.}. The second semantic field is a set of countries, *S2*= {"Korea," "England," "The Netherlands," etc.}. So we have two meaning functions $M1 : P \rightarrow S1$, that tells the command, and $M2 : P \rightarrow S2$, that tells the country where the traffic sign appears. Thus,

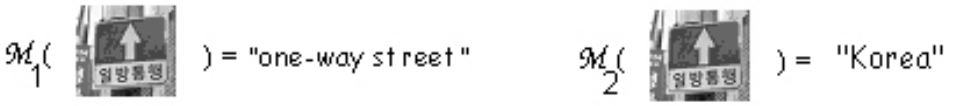


Figure 4
Equations for two distinct meaning functions.

Compositionality is the idea that a composite object's meaning can be understood by taking the meanings of the constituent parts and combining them in a way that is typical for the object type at hand. For really complex objects, compositionality is a way of handling complexity. In some cases, the notion of "Gestalt" or archetype is indispensable. In other cases, the composition works on the basis of features. Referring to the second car of figure 2, the conclusion that this car is optimized for speed need not be obtained by a general impression of its "gestalt" or its "archetype," nor is it necessary to examine *all* details of its construction. The outcome of the function *O* that tells what the car is optimized for can be derived by considering three details: the size of the motor compartment, the presence of cooling fans on the brakes, and the size of the headlights (see figure 5).

9 See Umberto Eco, *A Theory of Semiotics* (Bloomington: Indiana University Press, 1979), 80 for a survey.

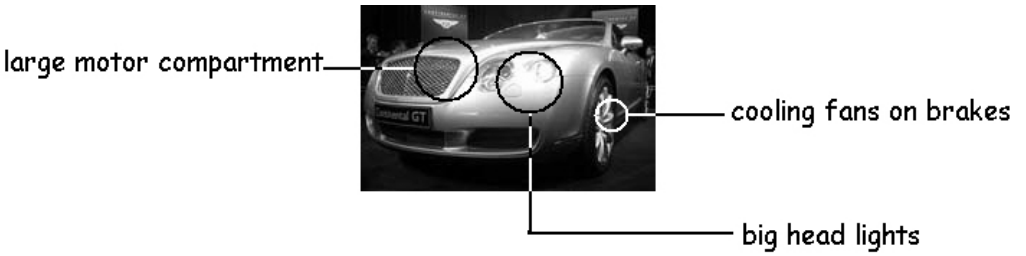


Figure 5
Car details telling what the car is optimized for.

Consider *O* as a mathematical function of three arguments, say a_1, a_2, and a_3 (motor compartment, brake fans, headlights, respectively). For simplicity, let the arguments be Boolean values (false or true) such that for a_1, *false* means "not a large motor compartment" and *true* means "large motor compartment," etc. We can write down defining equations for *O*.

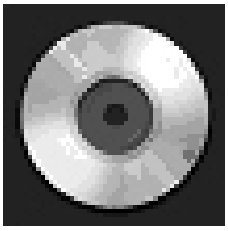
O (true, true, true) = "speed"
O (true, false, true) = "speed"
O (true, true, false) = "speed"
O (false, X, Y) ≠ "speed"

In other words, for the car to express that it is optimized for speed, it is necessary to have a large motor compartment. If it has a large motor compartment and at least one of the other characteristics, then it is optimized for speed. Although this is not a complete set of defining equations, it gives the general idea.

2.5 Mechanisms of Sign Production

The following distinction of signs is due to Pierce: symbols, icons, and indices. A "symbol" is a sign based on convention—it must be learned. An example is the "no parking" traffic sign (see figure 6). An "icon" resembles the thing it stands for. For example, the icon of figure 6 (right), denotes a CD drive. An "index" has a physical connection to the thing it means, or carries an imprint of its meaning (smoke is a sign of fire, an open door is a sign that someone is home, footprints are a sign someone has passed by).

Figure 6
Example of a symbol ("no parking") and an icon (CD drive).



Eco has laid a basis for a theory of sign production. He considers three linked processes: (1) the process of shaping the expression-continuum; (2) the process of correlating that shaped continuum with its possible content; and (3) the process of connecting these signs to factual events, things, or states of the world. He writes: "Some signs seem better adapted to the expression of abstract correlations (like symbols), and others that would appear to be more useful in direct reference to states of the word, icons, or indices are more immediately involved in the direct mentioning of actual objects." In our case, the situation is reversed: the material features of designed objects such as a chair or a bicycle serve as signs. These material signs refer to states of the world, sometimes in a direct, technical sense, sometimes conveying abstract ideas.

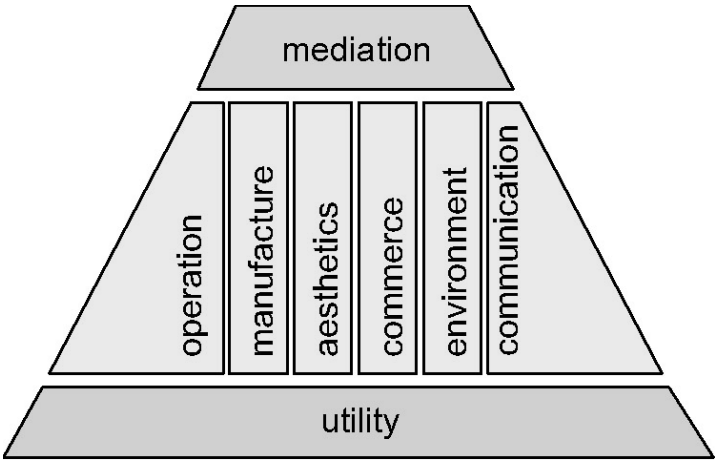
Eco distinguishes between two types of sign production: *ratio facilis* (reusing an existing sign by replication) and *ratio difficilis* (creating a new sign). Conventions, similarities, analogies, examples, and imprints play a role in creating new signs. Design includes *ratio difficilis* since designers create new forms, meanings, and values which, once known, become part of human culture and hence a part of codes. But there also is a lot of *ratio facilis* in design, since the existing codes to a large extent determine how users understand a product. If all signs carried by new products would be invented from scratch, users would have difficulty in recognizing and operating the products.

3. Focusing the Framework

So far, we do not have a classification of semantic fields. Let us assume that most messages are of a predicative nature: the message asserts a property or a fact about a certain subject. If we say "My sister is a painter," then "My sister" is the subject and "is a painter" is the predicate. Sentences such as "My sister is a painter" need not be true: perhaps my real sister is a scientist. This is not a defect of the sign system. On the contrary, according to Eco, it is essential that signs can be used to lie (this also holds for Tarski's truth in logic). The subject-predicate structure helps to classify the semantic fields. We classify them by subject, asking "What is the message about?" It can be about a concrete product function (e.g., "This chair is comfortable.") but also about something more abstract ("The user of this bicycle is sportsman-like.").

One of the first classifications of product functions is the architectural theory of Vitruvius (31 B.C.). He distinguished between *utilitas* (utility), *firmitas* (firmness, construction), and *venustas* (beauty, sign). As an adoption of Vitruvius's trinity, modern product functions include utility, operation, manufacture, commerce, and environment, etc. They must cover all aspects of a product that users and producers care about, and which concern the interests of society, too.

Figure 7
Layers of semantic fields.



We outline eight semantic fields, ranging from practical issues of product functions (utility, operation, manufacture, commerce, etc.) to the mediation of ideas about something else. The semantic fields are grouped into three layers. The relation between the layers is defined by dependence. The solution of the lower layer's functional problems is necessary for the higher layer messages to make sense. Thus, the higher layer is dependent on the lower layer. For a chair, for example, if nobody can sit on it, messages about manufacturing, commerce, etc. can hardly reach the audience. The layers of semantic fields are given in figure 7. The layers are:

• Utility: the essential basic function of the product.

• Extended functions: aspects that a designer has to address to make the product successful and operational including manufacture, environmental concerns, aesthetics, commerce, and communication.

• Mediation: this happens when the product is used to send messages about something else—not the product itself. In the extreme case, the product is a carrier of matter (a coffee cup) or of information (a television). For the electric bicycle case, we choose two semantic fields: the *user* and *sustainable development* itself.

The bottom layer of figure 7 marks the *utility function,* which defines the product by data such as power, size, or application range. Six further functions are arranged on top of *utility.* The *operational function* includes the user-product interface for physical and cognitive interaction. Ergonomic data and the adaptability to different users' needs are summarized in that function. The *manufacture function* tells about the mechanical structure, materials, and technologies. Furthermore, this category visualizes the tools used for designing the products—for instance, model-making technologies, computer software, and the ability to fit to other system components. The *aesthetic function* focuses on shapes, colors, and proportions. For

interactive products, it also makes sense to speak of the aesthetics of the interaction. This leads us to the *commercial function.* Industrially produced products only make sense when they have the character of selling goods. All features and the selling price have to be attractive in the market to set a consume impulse. The *environmental function* sums up the effects to the natural and social environment—resource consumption, emission of unhealthy substances or disturbing noise, and visual pollution. It considers the whole product life cycle from development, manufacturing, use, and maintenance to reuse, recycling, biodegradation, etc. Finally, there is the *communication function.* It is best if the product is self-explanatory, and no extra communication functions have to be designed.

For the top layer of figure 7, we choose two semantic fields: the *user,* and *sustainable development* itself. We use the term mediation because the product is sending messages about something else, not the product itself. We motivate our choice next. We consider messages about the user because people use products to emit messages about themselves; a Mercedes tells about the user's wealth. Nice clothes make the user look young or attractive. Cars, clothes, chairs, and bicycles share the property that, considered as carriers, the user is the content. We consider messages about sustainable development for two reasons. One reason is that sustainable development is not only a technical problem, but also an awareness issue. The other reason is the role designers can play for sustainable development: to create propositions that help to envisage possible future worlds.[10] Writers, artists, and filmmakers create such visions, but the unique role of designers is to show what is possible, taking constraints related to manufacturing, environment, etc. into account. Or, as Marzano puts it, "Design is a political act. Every time we design a product, we are making a statement about the direction the world will move in." [11]

Sustainable development means designing products that do not exhaust the world's natural resources. That results in efficient usage of materials and energy, as well as a reduction in pollution. Other aspects such as product life cycle, recycling, and fair trade are important but outside the scope of the present article. The case study we did concerned an electric bicycle. Because its concept was related to sustainability, the aspects of efficient usage of energy and the reduction of pollution play an implicit role.

We use the classification of figure 7 for instantiating the framework of Sec. 2. First, the two lower layers. In principle, each product has several meaning functions: one for "utility" and one for each extended product function. If, for a certain product, some functions are uninteresting, we work with fewer meaning functions. We need semantic fields, called $S_{utility,}$ $S_{operation,}$ $S_{manufacture,}$ and so on. The set $S_{utility,}$ by definition, contains all possible messages about a product's utility. We also need several meaning functions, one for each semantic field. We call them $M_{utility,}$ $M_{operation,}$ etc. If P is a set of

10 See Ezio Manzini, *Visioni di mondi possibili e design* (Presentation at the Visions of Possible Worlds Conference, Triennale di Milano, Italy, November 28–29, 2003).

11 See Stefano Marzano, "Chocolate for Breakfast" (Keynote address to the 18th ICSID Congress, Glasgow, 1993), ICSID News (June 1993), International Council of Societies of Industrial Design, Helsinki.

products under consideration, then the input and output types of the meaning functions are $M_{utility} : P \rightarrow S_{utility}$ for the first meaning function, $M_{operation} : P \rightarrow S_{operation}$ for the second, etc.

In Sec. 4, we describe and analyze a concrete design: an electric bicycle. F. Meinel and P. Reinspieß, both professors of industrial design at the University of Art and Design Halle, designed it with a concern for sustainability. The analysis will be conducted as a case study of the formal framework focusing on the product semantics (not on the technical design). The semantics are based on the original designer's explanations, shedding light on the sign creation process (*ratio difficilis*). The intended semantics need not coincide with the user's readings; verifying intended and perceived semantics is outside the scope of this article.

4. Case Study

4.1 Product Description

In the discourse of sustainable mobility, the contradiction between cars and bicycles is often treated. While cars have a broad acceptance in society, bicycles normally are recognized as sports and leisure time appliances, but not as alternatives to individual motorized personal transport (although the situation differs per country; e.g., in the Netherlands, bicycles are more accepted as regular transportation means than in Germany). The aim of the development leading to the "e-bike" was to give the electrically supported city-bicycle its own expression, positioning it as an alternative to the car in urban transport. The first problem was to position the additional components such as motor and accumulators not in spaces where luggage normally is stored and carried. The second problem was to give the electrical power components a powerful meaning. This results in an arrangement of the components around the hub of the wheels.

The position of the electrical drive components near the hubs results

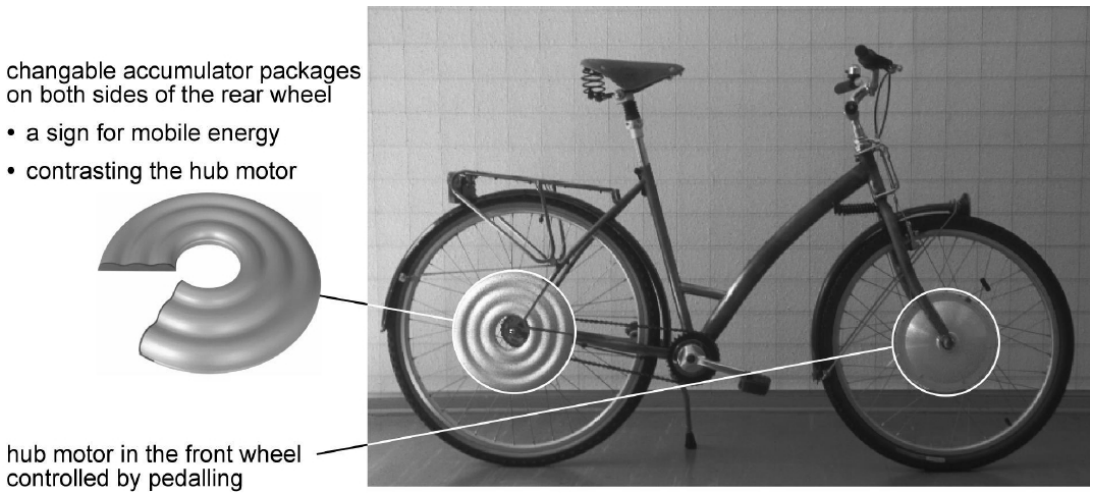


Figure 8
Arrangement of electrical power components.
Photo by F. Meinel, Halle, 2003.

Figure 9
The electric bicycle in action.
Photo by Th. Richter, Halle, 2003.

in a low center of gravity. This gives better comfort for city application, but has disadvantages in rural regions because of the unsprung suspension of the driving masses. The shape of the accumulator package should support the character of powerful object, visualized by concentric waves or a breathing image. This means charging and discharging of electrical energy, as well as recharging from the mains, and during accelerating and breaking, when energy is fed into the accumulator back. What is not visually perceivable is how the energy flow is controlled. The driver of this kind of bicycle will only be electrically supported while pedaling. The pedal force controls the hub motor so that muscle energy is effectively doubled. This feature is hard to visualize. The example shows the limited abilities of product design to code meanings in complex products using new control technologies and hidden drives. Virtual simulation techniques, instruction videos, or promotional tours are needed to convince potential costumers of the product's innovative qualities.

4.2. Formal Analysis of the Electric Bicycle Semantics

4.1 was written by one of the designers of the electric bicycle, the second author of this article, after an introduction to an earlier version of the formal framework. Sec. 4.1 reflects the original ideas of the electric bicycle designer concerning the messages he wanted to

code, and how he did it. Sec. 4.1 is taken as a starting point; we give the explanations of Sec. 4.1 a place in the formal framework.

We describe the levels of meaning in a bottom-up fashion, working from a detail level towards the product level, where the meaning of the bicycle as a whole is at stake. At the lowest level, the product has "features," by which we mean technical details, style elements, material choices, or construction elements that are easily identified and recognized.[12] These features act as signs. Most features have a clear location in the bicycle's structure (we found this even more clearly in the chair case study). Other features, even when not pinpointed by location, are clearly recognizable properties. Each feature codes a simple message, usually a direct technical, economic, or ergonomic consequence of the feature. Therefore, we assume the existence of another meaning function C that maps features to simple messages (consequences). Let F be the set of features and C the set of possible technical, economic, or ergonomic consequences of features. We write $C : F \rightarrow C$ to express the input-output type of this meaning function. These consequences can be grouped in a natural way according to utility, manufacture, operation, and environment. The other three product functions are not considered in this case study (they are important, but the analysis is sufficiently interesting and complex without them). So we assume a grouping, assigning one of utility, manufacture, operation, environment to each feature. For example, if "comfortable" is a consequence, then this belongs to utility. The combined effect of the consequences for one product function is a message about that product function.

The product-level meaning functions such as $M_{utility} : P \rightarrow S_{utility}$ are understood as a three-step process; the product has features, the features have consequences, and the consequences belong to product functions. If there are several consequences for one product function, we must consider their combined effect. Since the product is an element of P, and since a message related to a product function (e.g., utility is an element of $S_{utility}$) we see that indeed we find a meaning function mapping from P to $S_{utility}$. Note the order: only after we have found the consequence of a feature we know to which product function it belongs.

For the set P of *products* under consideration, we consider all possible bicycles with auxiliary motors, either electric motors or small combustion engines. Still, this is not a proper mathematical definition of a set, but we prefer to be pragmatic in these matters.

The next question is: What are the *features* for this electric bicycle? The following table gives an overview. The first column shows the feature in a visual form, mostly taken from figure 8. The second column describes the feature in a text form. The text form is either a direct translation of the visual/tactile form, or otherwise it is based on the textual description and the explanation given in Sec. 4.1. For the time being, we treat the elements in the first column as

12 If F denotes the set of all products under consideration and F the set of features, then the fact that each product has a set of features can be expressed mathematically by assuming a function F from F to sets of features. As a formula, $F : P \rightarrow 2^F$. The notation $C : F \rightarrow C$ means that C is a function that gives a consequence for each feature.

a kind of synonym of the corresponding second-column element. The pictures of the rear luggage carrier and the open-frame structure above the front wheel serve as a visual of the feature "normal luggage space." This is based on the designer's remark that: "The first problem was to arrange the additional components like motor and accumulators not in spaces where luggage normally is stored and carried."

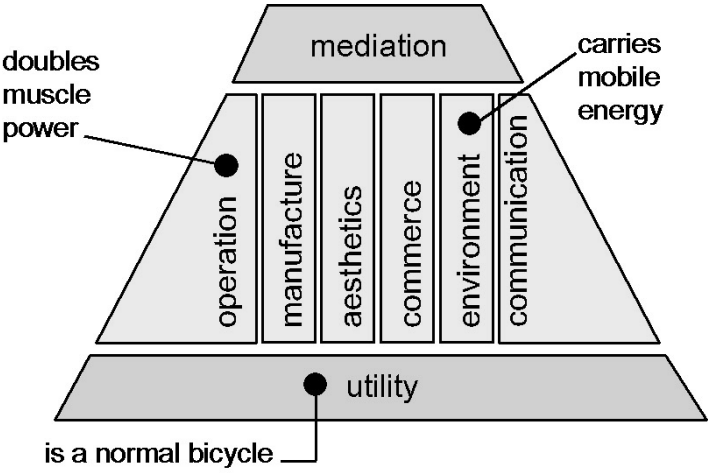
Sign (visual)	(textual)	Meaning
	Changeable accumulator package	This bicycle carries mobile energy
	Hub motor contrasting to the rear wheel accumulator package	This is a normal bicycle
 	Normal luggage space	This is a normal bicycle
	Pedal force controls the hub motor	This bicycle doubles muscle power

The first two columns give the result of the function *F* applied to the electric bicycle. As a formula: *F* (electric bicycle) = {changeable accu-pack, hub motor contrasting rear wheel accu-packs, normal luggage space, pedal force controls hub motor}. For the meaning function *C* that maps features to consequences, we have equations:

C (changeable accu-pack) = "carries mobile energy"
C (hub motor contrasting rear wheel accu-packs) = "is a normal bicycle"
C (normal luggage space) = "is a normal bicycle"
C (pedal force controls hub motor) = "doubles muscle power"

The grouping of the consequences is given in figure 10.

Figure 10
Product functions for the electric bicycle.



Finally, we discuss the top-level messages. The message this bicycle mediates about the user is "sportsmanship"—at least it does so much better than many other electric bicycles or mopeds. The message is told by the attractive balance in the bicycle's form. The message also is told by the fact that the electric bicycle doubles muscle power (the user still has to work the pedal). Concerning sustainable development, it is a statement that attractive electric bicycles can be developed that don't make the user appear weak.

4.3. Codes for Electric Bicycles

Now we set out to identify some of the codes of bicycle features. We need several tables, one for each position or function. We assume that bicycle functions have typical positions. For example, the function "storage" typically is positioned above one of the wheels.

First, we deal with the changeable accumulator-package. What things should it be compared to? Its position is near the rear wheel's hub, which is where most motorized bicycles have their engine (although engines sometimes appear at other places, such as in the classical "Solex"). Bicycles usually have either brakes or gear-wheels at this position. It is a typical position for things related to transmitting power.

The code table is given below. The issue of hiding or not hiding technicalities is important. For the freewheel with derailleur, for example, the technicalities are not hidden, which makes the bicycle say that the user is sportsmanlike (this is an example of a mediated message). If the technicalities are hidden, as done by the chain cover, no sportsmanship is expressed at all. As soon as there is an engine, the situation is completely reversed. The small combustion engine reveals that the user lacks power to drive the bicycle on his or her own, so it tries to minimize the engine's visibility.[13] The electromotor already is better hidden. The changeable accumulator-package is quite distinct from the other signs in this code. Although the internals are hidden, no attempt has been made to make the accumulator-package itself invisible.

13 Note that, in this section, we discuss the traditional code. For the electric bicycle analyzed in this case study, we have attempted to work around the visibility issue. Instead of hiding the motor and the energy carrier completely (which usually fails), signs of balance and breathing have been introduced..

Sign (visual)	(textual)	Meaning
	Freewheel and derailleur	This is a bicycle with changeable gear-ration, showing technicalities.
	Chain cover	This is a normal bicycle, hiding technicalities
	Combustion engine	This bicycle has a moped engine
	Electromotor	This bicycle has an electromotor
	Changeable accumulator package	This bicycle carries mobile energy

Next, we deal with the luggage space. We compare it to the things that could otherwise occupy the typical luggage positions. Along the same lines, it is possible to set up a code table in which the hub-motor appears; in view of the size of the article, these are not included. The luggage space code table is below.

Sign (visual)	(textual)	Meaning
	Normal luggage space (front)	This is a normal bicycle
	Engine near front wheel	This bicycle has a small auxiliary motor above the front wheel
	Normal luggage space (rear)	This is a normal bicycle
	Tank near rear wheel	This bicycle has some unavoidable space-consuming storage device

4.4. Analysis of the Electric Bicycle Sign Production

In this section, we address the question: Where do the signs of the bicycle come from? The normal luggage space is an index. There is a direct physical connection with the luggage that fits. The hub motor resembles an electrical motor as known from similar electric bicycles, but it also somewhat resembles normal brakes. Together with the changeable accumulator-package, it gives the bicycle a certain balance. The sign of balance mainly emerges by contrast to other electric bicycles which are particularly heavy on one side, such as the "Spartamet" (rear) or the "Solex" (front).

The most intriguing sign is the changeable accumulator package. It is clearly a case of *ratio difficilis,* since it is an innovation into the code tables of bicycles. Whether it is understood and eventually becomes, by convention, an element of the common code tables for bicycles is another matter. Only the future can tell. The accumulator-package is meant to convey an abstract idea: that it can be charged and recharged. The source of the chosen form seems mostly based on a similarity with air-breathing objects. Examples are bellows, a harmonica, an inflatable chair, an air pump, a male torso (see figure 11).

Figure 11
Air-breathing objects as sources for the accumulator-package sign.

5. Concluding Remarks

The framework developed so far can be evaluated against the requirements formulated in Sec. 1. As the references and the examples show, the framework really is rooted in the theory of signs. It can deal with real designs and their physical elements, as demonstrated by the examples of figures 1–5 and by the case studies. The framework can deal with messages of a personal or ideological nature, too; modeled as a limited form of mediation. The framework is supposed to be usable as a tool for analyzing products. The case studies done by Feijs and Meinel confirm this expectation. Two chairs have been analyzed, including the STAX® of Compwood™ by Meinel and an electric bicycle by Meinel and Reinspieß. To limit the article's length, only the latter case study is discussed here.

Although we do not aim for completeness, we mention two alternative frameworks. Guenand and Capell Zapata[14] [Guenand et al.] investigated experimental methods to evaluate product semantics. Van Breemen et al.[15] developed a methodology for design for aesthetics. They set out to identify rules describing how physical attributes, composition, and shape express aesthetic characteristics.

Options for future work: Next to doing more case studies, it can be seen that the theoretic framework needs extensions for dealing with multisensory interaction. Some work in this direction already has been done by Feijs and Overbeeke[16] and Djajadingrat et al.[17] Another reason why the framework needs extension is that future products will be combined with complex services; some products could even be dematerialized by virtual technologies. This means that the study of semantics shifts to the system level.

Acknowledgments

The authors wish to thank Tom Djajadingrat and Kees Dorst for providing ueful comments on an earlier version of the manuscript.

14 See Anne Guenand and Feran Capell Zapata, *A Performance Aid in Creativity and Capitalization for Designers and Semiologists: A Reference System of Semantic Characterization of Products Based on an Ontology* (Presented at the Sixth Asian Design International Conference, Tsukuba, Japan, 2003).

15 See E. Van Breemen, I. Horvath, W. Knoop, J. Vergeest, and B. Pham, "Developing a Methodology for Design for Aesthetics Based on Analogy of Communication" (submitted to ASME '98 Design Theory and Methodology, http://dutoce.io.tudelft.nl/~jouke/docdb/docs/isatat_98_knoop.pdf.

16 See Loe Feijs and Kees Overbeeke, "Design Science: Meaning, Action, and Value" (Presented at the Sixth Asian Design International Conference, Tsukuba, Japan, 2003).

17 See J. P. Djajadiningrat, C. J. Overbeeke, and S. Wensveen, "But How, Donald, Tell Us How?" N. Macdonald, ed., in *Proceedings of DIS2002* (2002): 285–291.

DDR4 (Designing Design Research 4) Event Review and Reflections

Owain Pedgley

Introduction

Every once in a while, it is useful to take time out, away from the technicalities and intricacies of one's own research, and to reestablish a sense of perspective and purpose alongside the goals of the wider research community. Such has been the purpose of the "designing design research" (DDR) events in recent years, organized by Alec Robertson of De Montfort University, UK.[1] The fourth installment (DDR4), subtitled "reflecting, refreshing, reuniting, and renovating," largely took the form of a one-day question-and-answer session at the Royal College of Art, London, on March 20, 2004. A series of provocative questions were provided as a subtext: Where have we been? Where are we now? And where are we going?

As one would expect, the event proved a worthwhile opportunity for opinions to be heard, values to be aired, and for perspectives on the future role and shape of design research to be contrasted. Some familiar themes emerged during the event, which will be revisited shortly: the motivations for design research, the differences between design activity and research activity, and the need for a robust context for all research. Indeed, delegates could be forgiven for sensing déjà vu as the event unfolded. The fact that each of these themes continues to surface shows that, as a community, many of the fundamentals still need to be consolidated and communicated. At times, conversation headed towards the rather banal and unhelpful polarization of "research as academia" and "practice as commerce." This polarization—along with related issues—already has been discussed long and hard, and occupied much intellectual airtime (albeit through disparate channels).

What appeared to emerge most strongly from the day was a need for a concise summation of the state of play, particularly for novice researchers; and to follow, an illustrated and united front on the practical worth of design research and the benefits it can bring. An edited work with contributions from invited authors would be a timely and valuable resource. The danger, otherwise, is that insecurity will persist, meta-level discussions will turn cyclic, and to outsiders the design research community will appear to be perpetually concerned with introspection rather than action and results.

1 See: www.dmu.ac.uk/ln/4dd.

Motivations for Design Research

The motivation for design research appeared unified among delegates. Within the sphere of the design professions, research should be directed at improving material culture to better human experiences. Approaches may be taken directly or indirectly. With direct approaches, researchers can redress shortfalls in products, systems, services, or plans, where such shortfalls are effectively attributable to poor specifications whether, for example, technical, aesthetic, social, or ethical in nature. With indirect approaches, researchers can provide designers with, for instance, improved tools, techniques, strategies, and information for going about their work, with the intention of demonstrating a link between "improved" design activity and "improved" design outcomes. In either case, it is unlikely to be meaningful or useful to separate the activity or process that is designing, from the outcomes or deliverables that are designed.

An ever-present undercurrent to design research, and detectable at the DDR4 event, is the extent to which designing is identifiable (a) as a generic expert activity (i.e., transferable to the design of many different things), and (b) as a fundamental human capacity, which is not the preserve of individuals with design training, or who would profess to be "designers." For the latter, it has yet to be established that designing indeed is a fundamental human capacity, rather than, more modestly, a combination of elevated other human capacities including imagining, drawing, and making. These issues lie at the heart of research into design activity and design education.

The proposition that humans possess a fundamental capacity to design is certainly both engaging and liberating, and possibly one of the most "saleable" avenues open to the design research community. But how much of this capacity is attributable to nature, and how much to nurture? The idea of transferability of design expertise does not sit comfortably with the practical observation that, in the twenty-first century, the professional practice of design is highly segmented into specialist areas of application and learning (e.g., automotive, consumer products, Internet, printed matter, etc.). One suspects that it is through harnessing the phenomena that comprise design "intelligence" (e.g., cognitive modeling, designerly forms of knowledge, designerly ways of knowing, and the nature of design decision-making and synthesis) that the strongest case for a "capacity to design" can be made. As a community, we could do better in promoting the importance of both design intelligence and design expertise, especially to organizations that ordinarily would not turn to designers for assistance.

Differences between Design Activity and Research Activity

Tensions again surfaced between the activities of researching and designing. Both activities share a common goal to generate, communicate, and extend human ideas and experiences. Furthermore, both activities draw heavily upon investigative techniques. Designing and

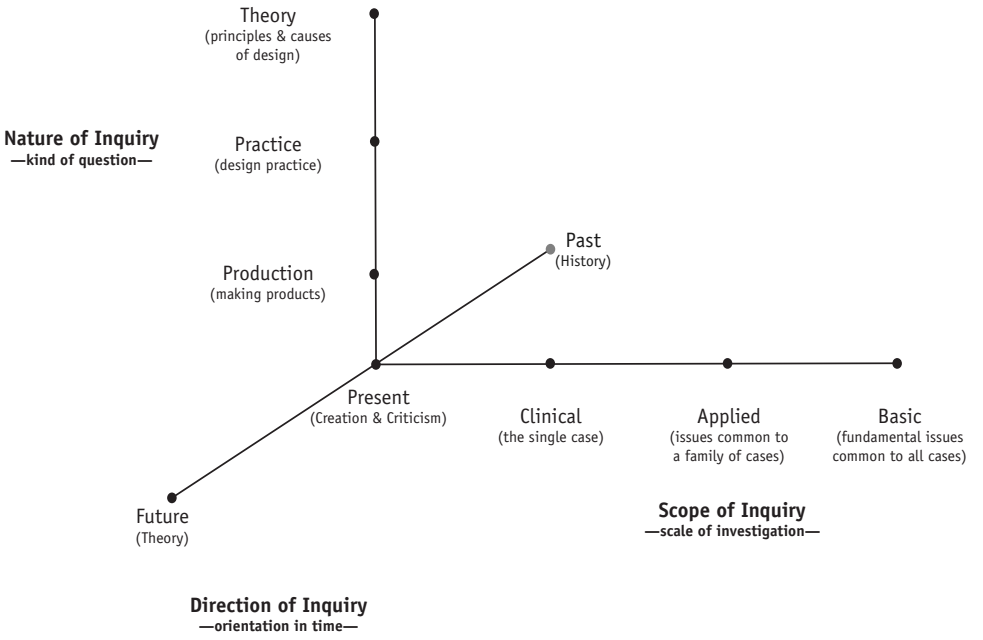


Figure 1
Buchanan's matrix of inquiry for design research

researching indeed can be very similar endeavors. But research activity has conditions attached (e.g., systematic and intentional inquiry, documented and repeatable methods, evidence-based analysis, communicable results, contributions to identified communities and bodies of prior art, and significant findings) that need not be met through—nor be relevant to—design activity. For example, in the words of Bruce Archer (who attended the evening session of the event, and whose contribution to the design research field was acknowledged with a DRS award), design activity can be measured quite differently from research activity.

> The legitimacy and efficacy of a design result resides in the demonstrability and appreciation of its appropriateness to purposes rather than in the clarity of understanding of the principles governing the production of the result.[2]

The conditions attached to research activity led to a dualist position being raised during the event: that designing and researching remain separate and distinct activities. This, however, is too simple a view, with theories and case studies of how designing and researching can coexist, or even combine as a discrete activity, now emerging. Yet it is worth reminding ourselves that if standards of endeavor associated with research are to be upheld, then the aforementioned conditions must be met. The conditions clearly differentiate research from non-research.

2 B. Archer and P. Roberts, "Design and Technological Awareness in Education" in *Studies in Design Education, Craft, and Technology* 12:1 (1979): 55–56.

A Robust Context for Research

The value of making available the results of previous "pioneering" research, often overlooked or inaccessible to contemporary researchers, was stressed during the event, particularly to remind researchers that "designing design research" has been a subject of debate for decades. One idea forwarded was to publish pioneering research electronically and at a single location—the DRS website was proposed as a suitable hub. However, in doing so, it might be beneficial to go beyond mere logistical consolidation. Such a collection would deserve proper assimilation and an informed running commentary—and, of course, an editorial consensus on what to include and what to leave out.

To conclude the event, delegates were invited to reflect upon the context of their own work in relation to a "matrix of inquiry for design research" (figure 1), developed by Richard Buchanan (2003). The ability to place one's own work into a broader research context, and to envision ways of progressing from clinical and applied research (presently the majority of cases) through to basic, fundamental research of a non-transitory nature (presently, relatively few cases) was stressed. As a community, we certainly would benefit from a resource providing examples (say between 50 and 100) of completed work and work-in-progress that are variously positioned within the matrix. This would provide an excellent base on which to organize DDR5, an event that would benefit from much less introspection and much more reporting and celebration of achievements.