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Introduction

Efforts to strengthen the practice and understanding of design through diverse forms of research have led to questions about the nature of “design knowledge.” Is there a distinctive kind of knowledge that characterizes the discipline, and if there is, what is its nature? David Wang and Ali Ilhan address this question in “Holding Creativity Together: A Sociological Theory of the Design Professions.” Applying ideas from Thomas Kuhn’s *Structure of Scientific Revolutions*, Wang and Ilhan argue that instead of an epistemological approach to characterizing design, it may be more appropriate to turn to a sociological approach. To develop this idea they have recourse to a four-component matrix drawn from Kuhn. Their discussion directly challenges many of the current positions on the matter of design knowledge and offers a new perspective at a time when other discussions appear to have lost some energy.

Historical research is a cornerstone of inquiry into the nature and practice of design, and in this issue of the journal Helena Barbosa, Anna Calvara, and Vasco Branco provide an account of design in its most commercial form: advertising. The article, “Portugal’s First Advertising Agency: Raul de Caldevilla and the ETP, 1914-1923,” adds another facet to the complicated story of design and marketing in the twentieth century. That story is significant in part because some scholars have argued that the intellectual discipline of rhetoric first reemerged in our time in the forms of advertising and marketing in the early decades of the twentieth century. The portrait of Raul de Caldevilla reveals a set of important international connections as well as a vital moment in the development to design in Portugal.

A sociological turn in design research may be quietly taking shape. At least, several of the articles in this issue of the journal point in that direction. For example, in the next article, “Witnesses to Design: A Phenomenology of Comparative Design,” Blackwell, Eckert, Bucciarelli, and Earl present a study that focuses on “the experience of being a designer and doing design.” However, instead of presenting another case study that describes individual experience, they compare experiences of designers across a wide range of professional engagements and a wide range of professional practices. Their argument for a comparative method as well as their application of an “Across Design” approach in a joint project involving MIT and Cambridge University encourages a new line of inquiry that is grounded in phenomenology and social interaction. They suggest that such an approach is important not only for design practice but also for design research.

While some researchers try to isolate and characterize “design knowledge,” other researchers focus on emerging forms of design practice and the significance of those forms for social and cultural life. In “Design and the Construction of Publics,” Carl DiSalvo investigates the role of design and designers in collective political action. The sophisticated view developed by John Dewey in *The Public and Its Problems* is a point of departure for DiSalvo. The idea that “publics” are constructed through design action is a powerful antidote to the naïve belief that publics exist without human action. In the theater, for example, there may be many people who pay the price of admission, but a crowd becomes an audience only through the power of a dramatic performance that collectively engages thought and emotion in tracing the fate of characters on the stage. DiSalvo’s argument opens a new pathway for design studies that has theoretical as well as practical implications for the field. It leads to a discussion of two specific design tactics—*projection* and *tracing*—and to a discussion of interesting design projects of the kind that ought to be included in efforts to understand the social role of design in contemporary life. What is more, the article also moves toward establishing grounds for the criticism and assessment of such projects—a matter that has been neglected or avoided for too long in the field.

Though probably not what DiSalvo had in mind, the next two articles present deliberate design efforts to construct publics for design and for their countries. The articles continue an informal series of articles that have occurred from time to time in the journal, focusing on different accounts of important design exhibitions. In “Turkey in the Great Exhibition of 1851,” Gülname Turan tells the story of Turkey’s participation in the Crystal Palace exhibition of culture and industry that is the public emblem of design in the nineteenth century. Her account of the Turkish gallery as well as the critical response to the gallery add to our understanding and appreciation of industrialization in Turkey and the place of Turkey in the development of design. In “Relaxed and Comfortable: The Australian Pavilion at Expo ’67,” Carolyn Barnes, Barbara Hall, and Simon Jackson tell the complex story of emergent modernism in Australia and the development of design. As the authors write, “The nature of the Montreal pavilion was the corollary of wanting Australia to appear modern, and engaging professional designers to supply an appropriate look. The bold move to privilege a certain quality of experience over specific exhibits had some success for Australia.” These articles lead us again to the understanding that design is global in its reach and implications.

The final article in this issue is “Design in Mind,” by Ann Heylighen, Humberto Cavallin, and Matteo Bianchin. Although they acknowledge that it is time to move on from comparisons between design and research—the idea that design is a form of

research or that research is a form of design—they believe that “an ontological and epistemological comparison between the nature of design and that of scientific research” will help to explain the contribution of design to the creation of new knowledge. To this end they discuss philosopher John R. Searle’s concept of intentionality and the “direction of fit” between the mind and objects in the world. One outcome of the effort is to provide arguments for the value of “teaching research methods to design students.”

Editors’ Note

This issue of the journal marks the relocation of the editorial offices of *Design Issues* from the School of Design at Carnegie Mellon University to the Weatherhead School of Management at Case Western Reserve University. Ordinarily, the relocation of a journal requires little explanation. When *Design Issues* relocated from the University of Illinois at Chicago to Carnegie Mellon University in 1994, we found it important simply to reaffirm our editorial policy and the signature elements that make the journal distinctive in the field.

With the current move, we can certainly confirm that the editorial policy of the journal will remain unchanged. Similarly, the mixture of design history, criticism, and theory that has been a signature feature of the journal from its beginning in 1983 also will remain unchanged. This is true, too, of our deep commitment to pluralism. As we explained in our 1994 editorial (Volume X, No. 1), pluralism to the editors is “a belief that the understanding of design is best advanced through the interplay of contrasting perspectives and approaches represented among those who practice design as well as those who study it.” All of these aspects of *Design Issues* fit comfortably within the framework of the Weatherhead School of Management, where the commitment to design today is perhaps stronger than at any other business school in the world. With programs on sustainability, social entrepreneurship, management by design, and appreciative inquiry, the Weatherhead is well positioned to foster the new design thinking that has always been the focus of *Design Issues*. Finally, we are very pleased to acknowledge that our publisher, The MIT Press, has been a strong supporter of *Design Issues* for many years and that our relationship will continue.

Thanks

A successful journal is a model of the community that coalesces around disciplinary interests, professional agendas, and a shared passion for ideas. This community is global in extent and, in the case of *Design Issues*, includes designers, researchers, critics, historians, and specialists from a wide variety of fields. The table of contents for any issue of the journal lists the members of the community who have stepped forward to lead the discussions

prompted by the articles in that particular number. Opposite the table of the contents, on the inside cover page, a second list appears: the editorial staff. Working with the editors, they are responsible for managing the design and production of each issue. With the relocation of the journal from Carnegie Mellon University to Case Western Reserve University, there are some changes to this list. As we initiate a new chapter in the journal's history it is important to acknowledge the contribution of those members of the community who have contributed so much to the success of the journal. The editors wish to thank the following individuals for their service: Diane Stadelmeier (Managing Editor), Mary Catharine Johnsen (Associate Book Review Editor), and Karen Moyer (Designer). For the last fifteen years, this team has worked tirelessly to insure that each issue of the journal meets the highest standards of publishing. We also want to thank the School of Design at Carnegie Mellon University, its faculty, and the many students who were involved with the journal over the years.

Bruce Brown
Richard Buchanan
Dennis Doordan
Victor Margolin

Holding Creativity Together: A Sociological Theory of the Design Professions

David Wang and Ali O. Ilhan

Footnotes for this article begin on page 19.

The literature on the design professions betrays a uniform assumption that a design profession, like any profession, must possess a distinct body of knowledge. Because of this default theoretical position, this literature expends much effort trying to define the putative contents of this distinct body of knowledge. But the results have been unclear, as we show below. Here we propose a different view of the ontology of a design profession: instead of an epistemological starting point, we propose a *sociological* distinctiveness to the design professions which, we argue, is really their key distinguishing signature.

The theoretical underpinnings of our argument derive from Thomas Kuhn's *The Structure of Scientific Revolutions* (1962),¹ specifically, from the postscript he added to the 1969 edition of his book. In this postscript Kuhn first propounded the concept of the disciplinary matrix,² which is comprised of four components: (1) symbolic generalizations; (2) commitment to models; (3) values and (4) exemplars. It is this matrix that helps us map the sociological differences between non-design professions (medicine or accounting, for example) and design professions (architecture or industrial design, for instance). We will define "design profession" more precisely as we proceed.

One might ask why look to Kuhn, since his theory deals with disciplines in the sciences and not in design? The answer is as follows. While Kuhn's 1962 theory indeed explains paradigmatic shifts in scientific knowledge, the components of his 1969 matrix describe how scientific communities *manage* such knowledge. In other words, the matrix made the implicit sociological elements embedded in Kuhn's original theory more explicit. Here we show that, while the components of the matrix in non-design disciplines manage domain-specific knowledge *internal* to a profession, in the design professions the same components of the matrix orient *externally* towards the larger culture, precisely because of the *absence* of explicit bodies of design knowledge. The result is that the components of the disciplinary matrix act as a kind of "sociological wrapping" around the design professions to, as it were, hold them together to achieve social identity and standing.

That the extant literature on the design professions assumes domain-specific bodies of knowledge is probably due to the socio-

logical literature on professions in general.³ (Behind this, as Nigel Cross and others have suggested, exists a general appreciation for the *value* of scientific objectivity vis-à-vis definitions of design;⁴ it is valuable to conceive of a design profession as an objective container of specialized knowledge). The sociologist Keith Macdonald, for instance, argues that the concept of profession itself became historically possible only when knowledge metamorphosed into an independent sociological entity.⁵ Or, for Magali Sarfatti Larson, the codification of knowledge is essential to establishing market presence as well as social prestige for any profession.⁶ These theories assume that, within any profession, knowledge is in fact an “independent sociological entity” which can be “codified.” Lost in the fray of these models is the peculiar way the design professions relate to knowledge. Specifically, we show below that, while they certainly also traffic in knowledge, *there are no “independent knowledge entities” in the design professions.*

Consider a logical conundrum with the view that design professions do have specialized bodies of knowledge. This has to do with the recurring use of the word “interdisciplinary” and its synonyms in the literature on design knowledge. Terence Love puts it this way (italics added): “...many theories and research projects—in the design research literature are more naturally classified under other disciplines. *This is a key point for developing a coherent and unified body of knowledge.*”⁷ And Francis Duffy, in his *Architectural Knowledge*, avers that architectural inquiry, “because of its... inherent integrative and interdisciplinary nature... should be recognized as being at the frontiers of knowledge.”⁸ But here is the conundrum. While correctly discerning the interdisciplinary nature of knowledge useful to designers, these analysts unreflectively assume that interdisciplinary knowledge is nevertheless the “independent knowledge entity” (in Macdonald’s words) residing within the domain of design. But how can inherently interdisciplinary material be at the same time a singular body of knowledge? The error lies in the conflation of a sociological question (what a discipline or profession is) with an epistemological assumption (a design discipline/profession must possess a discrete body of knowledge).⁹ If freed from the epistemological assumption, the sociological factors demarking design professions become clearer. This is where Kuhn’s matrix is useful in that, again, it highlights the sociological wrapping that holds a design profession together for purposes of projecting a coherent professional image to a larger public.

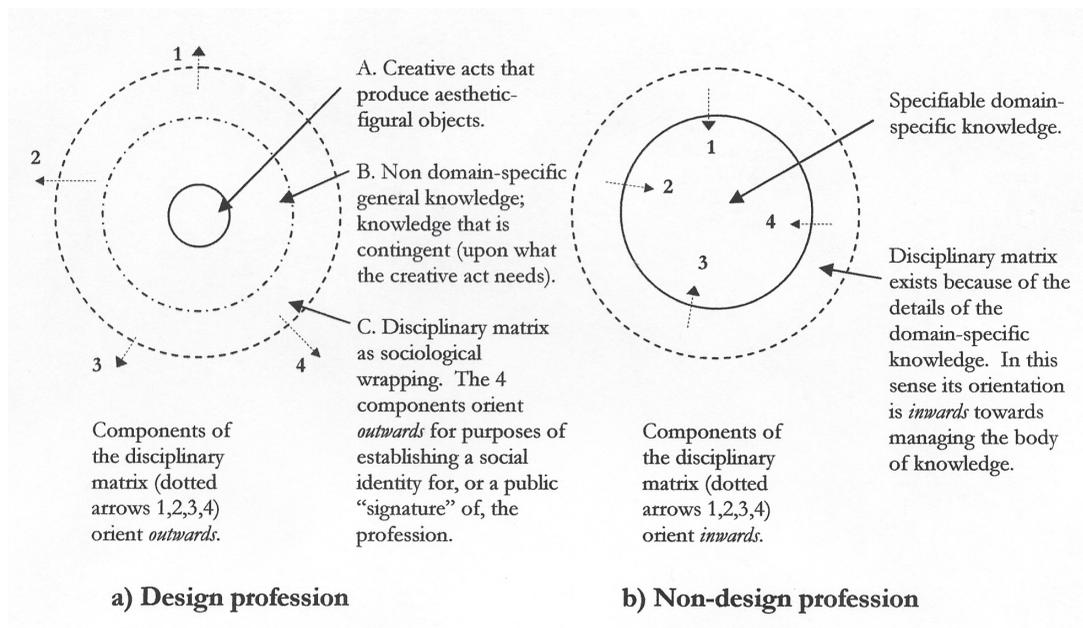
Sociological wrapping around what? Around what we call the “creative act.” Now, the creative act has been addressed in the design literature—for example, by Cross,¹⁰ along with Kees Dorst¹¹ (we will return to both later)—but it is remarkable that extant definitions of design professionalism tend to inadequately account for it. For our part, so central is the creative act to the design professions that we suggest that it is *it*, rather than a distinct body of knowledge, that

resides at the cores of these professions. And this in turn leads to a different ontology for these professions—on sociological grounds. Consider Figure 1. We propose that a design profession (1-a) consists of three regions: (A) creative acts—to be defined; (B) non domain-specific general knowledge; and (C) the disciplinary matrix as sociological wrapping. In design professions, the four elements of the disciplinary matrix (dotted arrows) orient outwards towards the general culture for purposes of establishing professional identity. In contrast, in non-design professions (1-b), the elements of the disciplinary matrix orient inwards in response to the demands of domain-specific bodies of knowledge.¹²

Figure 1 implies that design knowledge is not so much a “third area” of knowledge distinct from knowledge in the sciences and humanities—as proposed by Cross.¹³ Instead, the onus of the problem in defining a design profession lies not in isolating the content of what it knows, but rather in discerning what it does (with any general knowledge that assists in the creative act) in a sociological process of defining itself to the larger culture.

In what follows, we first define a “creative act” and illustrate how it relates to knowledge in three design communities: architecture, interior design, and industrial design. We show that, even though each is at a different stage of establishing a professional identity, all are at the same stage vis-à-vis the absence of a domain-specific body of knowledge. This is one way to demonstrate that knowledge used in the design professions is general rather than domain-specific, and we cite examples of how this general nature of knowledge in the design professions is handled in the extant literature. We then consider in more detail how the four components

Figure 1
Dotted arrows indicate the components of Kuhn’s disciplinary matrix; they are: (1) symbolic generalizations; (2) shared commitments to models; (3) values; (4) exemplars. Inward versus outward orientation is the key.



of Kuhn's matrix orient outwards, as sociological wrapping, in the design professions. We conclude by addressing several limitations of our argument.

Defining "Creative Act" and "Design Profession"

We define a creative act as follows:

A creative act is characterized by the imaginative and original generation—with aesthetic value as a high priority—of utilitarian objects, usually first expressed in figural representations such as sketches, working drawings, physical or computer models, and the like, but ultimately produced (i.e., fabricated, assembled, constructed) because they have cultural value. The provenance of a creative act is essentially unpredictable in nature, if by prediction is meant the ability to reproduce the moment of creation, or the empirical attributes of what is created, by pre-determined formulations or frameworks.

An illustration of a creative act comes from Le Corbusier, the modernist architect of the *Ronchamps* chapel in eastern France. Long before receiving the commission for the project, Le Corbusier was strolling along a beach and found a shell he kept as a memento. Years later, while designing the chapel... that curvy shell was still on his drawing board. The curvilinear roof of the now-famous *Ronchamps* has been traced to this happenstance connection.¹⁴ Such is the unpredictable provenance of creative acts.

Cross and others, looking to methods such as protocol analysis, have attempted to map these creative processes—and Le Corbusier's shell-to-roof solution may be viewed in this literature as an analogical one.¹⁵ But documenting the minute stages of creative processes—what Bryan Lawson calls "events"¹⁶—is not equal to understanding their origins, much less to predicting their outcomes. Cross himself terms it "the creative leap."¹⁷ And Lawson cryptically calls it "some higher quality... of knowledge lying outside and beyond the problem..."¹⁸ The same challenge is also present in Peter Rowe's *Design Thinking*, which provides a broad overview of theories of design generation, at least as applied to architecture.¹⁹ From creativity keyed to mental acts and/or mental pictures, to behaviorist theories, to creativity as information processing, to formulaic design generators (analogy, empirical relations, typologies, formal languages)... behind all of this remains the mystery of creation itself, as distinguished from creative *process*. Concludes Rowe:

In spite of the very real contributions that were made... in almost all cases the step beyond description into a normative realm in which process became pursued as an end in itself resulted in abject failure.²⁰

But by the “creative act” and its unpredictability, we are not championing the idea of design solely as the activity of the romantic artist. Yes, creative acts are mysterious, but by this we do not mean that design communities ought not to professionalize. Our point is this: assuming by default that design professions must have domain-specific bodies of knowledge actually *delays* the process of demarking design professionalism as a distinct domain in its own right. That distinction is the unpredictable creative process and how design professions “hold themselves together” with sociological wrapping to nurture and to safeguard that process.

Now, by design profession we mean the social entity that gives a community of designers a group identity in the larger culture. This group identity is instrumental for purposes of social status, economic gain, legal definition of a designer’s actions, as well as legal delimitation of who can engage in those actions, usually by means of state sanction.

Defined thus, “creative act” and “design profession” are both inclusive as well as exclusive in such a way that serviceably describes a range of design communities currently in the throes of achieving professional identities in the larger culture. The scope is inclusive in that it encompasses everything from the design of pens and pencils to complete city plans. But the scope also excludes certain endeavors that are undeniably creative acts—for example: composing music or writing poetry. These endeavors are often categorized under “fine arts.” Objects of fine art are, first, not necessarily preceded by representative figural schemes and, second, it is arguable whether they have utilitarian value. As a matter of fact, since the eighteenth century when the notion of “fine arts” first emerged in Western ideas, one trait of the category—at least one trait of the appreciation of these sorts of objects—is disinterest, which is to say, a kind of appreciation devoid of any utilitarian considerations.²¹ We elaborate further about this distinction in this endnote.²²

Moreover, our coupling of creative act with design profession cuts sectionally across Richard Buchanan’s theory of general design activity as an emerging “liberal art of technological culture.”²³ Buchanan posits that all design activity involves “signs, things, actions, and thoughts.” This, like other examples cited below, suffers from broad generality. To his credit Buchanan further divides his framework into four areas: symbolic and visual communication (such as book or magazine production, or graphic design); material objects (such as clothing or tools); organized services (such as scheduling human resources); and complex systems (such as architecture or urban planning). Our technical terms clarify these four areas by culling out from them cases of communities which are not only engaged in creative activity, but are also in process of striving for professional identity.

Three Cases: Architecture, Interior Design, Industrial Design

These three cases are instructive when considered side-by-side because, despite being at different stages of establishing their social (read: “professional”) boundaries, all three are at a similar stage in debating the meets and bounds of their knowledge boundaries: What knowledge is in? What knowledge is out? This quandary underlines our view that design communities simply do not have domain-specific bodies of knowledge—no matter what stages they find themselves in vis-à-vis establishing professional identity. It is significant evidence that the role knowledge plays in design professions may just be quite different than the role it plays in non-design ones.

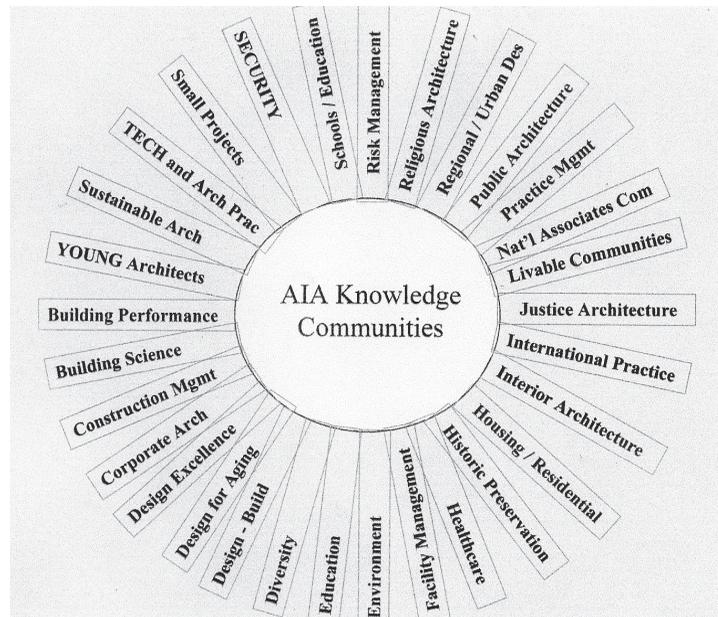
For sake of a clear (but sufficiently large) sample size, we consider our three case communities limited to the United States. Of the three, architecture is the most developed as a profession because all the standard sociological measures for a profession are in place: a professional organization (the American Institute of Architects, AIA); state-enforced licensure by examination; a code of conduct self-enforced by the AIA but recognized by law; and a network of accredited schools offering professional degrees. But despite all of these professional trappings, there is only the illusion of a coherent body of “architectural knowledge.” Recently the AIA fostered this illusion by: (a) establishing an elaborate network of twenty-four “knowledge communities” for its membership; (b) disseminating new knowledge via print and electronic media formats;²⁴ and (c) mandating continuing education as a requirement for ongoing membership. Below is Wang’s map of these knowledge communities as they were configured at the time of the 2003 AIA National Knowledge Conference in Berkeley, California. Each tab is one knowledge community (Figure 2). The foci range from medical to legal, religious to environmental, private to public buildings, and from small to large projects.²⁵ In sum, the tabs illustrate Love’s point, that much of the material: “...are more naturally classified under other disciplines.”²⁶ These tabs underline the fact that, when a project of a certain kind needs knowledge relating to that kind, then that kind of knowledge enters the domain of “architectural knowledge.”

For architecture, then, a well-defined professional identity by sociological measures does little to delineate a well-bounded epistemological domain—because those boundaries are porous to all kinds of knowledge rooted in human experience in general, and not in some definable domain specifically recognizable as architectural knowledge.

Interior design is more in-process than architecture vis-à-vis professional identity. The National Council of Interior Design Qualification (NCIDQ) administers a “regularly updated” professional examination.²⁷ But as of this writing, only twenty-four states “regulate the profession of interior design; many of these states are

Figure 2

Wang's diagram of AIA knowledge communities (as of the AIA Knowledge Conference, Berkeley, CA., 2003)



NCIDQ members.”²⁸ It is not clear what “regulate” means, nor clear why “many” (but not all) of these states have NCIDQ membership. In any event, the linkage between licensure and government restrictions on professional practice is in flux much more than in architecture. As a matter of fact, in a recent paper, Denise Guerin and Caren Martin suggest that without a succinct “body of knowledge” for interior design—one which they aver “had not been comprehensively defined or even partially defined”—legislative progress in support of interior design as a profession would prove difficult.²⁹

But the lack of a specialized body of knowledge may again be because, like architecture, interior design also draws from general knowledge on an as-needed basis. An example of this can be seen in the chapter headings of Stanley Abercrombie’s *The Philosophy of Interior Design*.³⁰ These include: Being Outside; Coming Inside; Color and Light; Art; and Plants. To say no more, these are very general categories of knowledge. The point is clear: even as architecture’s well-defined professional identity continues to grapple with an ill-defined (because general) “body” of knowledge, the less-defined profession of interior design nevertheless shares the same ill-defined (because general) “body” of knowledge. Indeed, the title of Guerin and Martin’s article, “The Career Cycle Approach to Defining the Interior Design Profession’s Body of Knowledge,” implicitly embraces the general nature of this “body” of knowledge. Put another way, to suggest that the body of interior design knowledge more or less equals the totality of the experiences of a life in interior design is an innovative (and certainly more academically attractive) way of saying that a specific body of knowledge may not exist for interior design at all; that instead, all knowledge is contingently relevant for interior design practice.

Of our three cases, industrial design is the least professionalized by sociological standards. Even though the Industrial Designers Society of America (IDSA) is a nationwide organization, its membership of 3,300 pales in comparison to the 48,000 industrial and commercial designers active in the United States (in 2006).³¹ IDSA is not a professional organization backed by government support and enforced by laws. And at present in the U.S., there is no state or government-enforced licensure mechanism for industrial design which can secure for it a monopoly in the labor market.

But again, even as its professional status is different from architecture or interior design, the status of the “body of knowledge” in industrial design is roughly as ill-defined as the “bodies” of knowledge in the other two. Jacques Giard illustrates the state of knowledge in the industrial design community as follows: Unlike members of other professions (who) regularly share their knowledge through conferences and journals, participants at industrial design conferences take back “a collection of color brochures and pamphlets, peruse them, and eventually discard the lot.”³² But following the typical default assumption, Giard asserts that a well defined body of knowledge is essential for industrial design. He calls for a “descriptive knowledge” that “will lead to a better understanding of our context.” And what is descriptive knowledge? Well, Giard has in mind *general* knowledge: “...given the broad spectrum of knowledge areas, the diversity offered by most interdisciplinary universities will make them the most likely venues for professional design education.”³³

All of this suggests that knowledge in relation to design is, by its nature, not domain-specific. Again, this goes largely counter to the view in the extant literature.

The Hint of the Generality of Design Knowledge in the Literature

One symptom of the default assumption that domain-specific bodies of design knowledge exist is the need to call design a “science,” the objections of Cross and others to this tendency notwithstanding.³⁴ Until such a core can be identified, design is merely in a pre-scientific stage. For example, Kees Dorst—who actually models his argument after Kuhn in referring to design research as “a revolution waiting to happen”—puts it this way (*italics added*):

...our explanatory framework about the “why” of design activity is still weak, *making it hard to build up a core of scientific knowledge in our field*. Another criticism that can be leveled at design research is that it is still in a “pre-scientific” stage, because design researchers seem to be happy to develop methods without rigorously testing them, thus again imperiling the knowledge build-up in the field...³⁵

The need to be scientific (at least taxonomic) may be one reason for the many complicated charts in the relevant literature; these all assume that if there are explicit bodies of design knowledge, they can be mapped graphically. Love provides several such charts,³⁶ as do Guerin and Martin,³⁷ as does Wang (Figure 2). The problem, again, is that these “bodies” of knowledge encompass just about everything. Love’s table, for instance, amounts to a table of contents of a university course catalogue: Engineering, all of the Natural Sciences, Geography, Psychology, all of the Social Sciences... all of these, interspersed by curious categories called “research into designing.”³⁸

This feature of generality in models of explicit design knowledge is quite common in the relevant literature. Here is an example from Ken Friedman:

Even though design knowledge arises in part from practice, however, it is not practice but systematic and methodological inquiry into practice—and other issues—that constitute design research, as distinct from practice itself. The elements of design knowledge begin in many sources, and practice is only one of them.³⁹

What are these “other issues” and, specifically, what are these “many (other) sources”? One concludes that Friedman must have quite a general domain in view. Nigel Cross himself also discerns the general nature of design knowledge:

Some of it [design knowledge] is knowledge inherent in the activity of designing. Some of it is knowledge inherent in the artifacts of the artificial world... Some of it is knowledge inherent in the processes of manufacturing the artifacts, gained through making and reflecting upon the making of those artifacts. And some of each of these forms of knowledge also can be gained through instruction in them.⁴⁰

So design knowledge is some of this and some of that from many other domains (which in a way works against Cross’s own view of design as a distinct “third area” of knowledge). Our assessment of this state of affairs is not so much that analysts are failing to define design knowledge. Our assessment is that, actually, there is nothing to define—or, put another way, there is *everything* to define. And everything is hard to define.

Note that non-design professions do not spill much ink wondering what *their* bodies of knowledge are; their professional journals simply document refinements and additions to those bodies of knowledge. Readers can easily refer to the *New England Journal of Medicine*, or *Physical Therapy*, or *CPA Journal*, or *Journal of Electrical Engineering Education*, and so on, to see examples of this phenomenon. By comparison, in an edition of the *Journal of Architectural Education*

focusing on the question of what research in architecture means, one contributor—who taught at the Massachusetts Institute of Technology no less—averred that, essentially, walking around and looking at things constituted research.⁴¹

This kind of generality typifies the disconnect between a designer's intuitive openness in allowing all phenomena to spur creativity, on the one hand, with a certain motivation—perhaps a social need, whether that be in the marketplace, or in academia, or simply in one's neighborhood—to legitimize design creativity as some kind of "mode of inquiry" that has both social as well as economic value, on the other. It is this pressure to be socially relevant and economically viable that motivates design communities to attain professional status. We now turn to Kuhn's disciplinary matrix and explain how it is unreflectively used in the design professions for sociological wrapping to achieve such viability, in the absence of definitive bodies of knowledge.

Kuhn's Disciplinary Matrix as Sociological Wrapping for the Design Disciplines

Again, Kuhn's disciplinary matrix is comprised of four components: (1) symbolic generalizations, (2) shared commitments, (3) values, and (4) exemplars. Even a casual reading of his definitions of these components makes clear that each operates because of the quantifiable knowledge bases that exist at the core of scientific communities. We show here that this is not the case for the design professions.

1. Symbolic generalizations. Kuhn's examples of symbolic generalizations for scientific communities are either quantitative nomenclature such as found in equations (e.g., $f=ma$) or propositional rules (e.g., "action equal reaction").⁴² But in a design profession, there are no such propositional rules rooted in the domain. Certainly an industrial designer may deal in algebraic formulas, or an architect may occasionally use formulas for sizing structural framing. But these formulas are rooted in other domains (mathematics, engineering); architecture long ago ceded structural design to engineers. As for propositional rules, normative practices—such as spacing framing studs at sixteen-inch centers (in the U.S.)—do exist. But again, this practice is rooted in construction practice, a body of knowledge that architecture also has largely ceded to non-architects.

Now, symbolic generalizations do exist in the design professions, but not as propositional formulations of epistemological content, *but rather in the material-aesthetic expressions of style*. The key is the word "symbol," which the dictionary defines as: "An object or name that stands for something else, especially a material thing that stands for something that is not material."⁴³ In scientific communities abstract markings are the material symbols of immaterial but quantifiable principles of knowledge residing within the domain. However, in design communities, material-aesthetic expressions of

style, evidenced not only in the material objects designers create, but across-the-board in the material accouterments designers surround themselves with, coalesce to form symbolic generalizations that connote to a larger culture that designers possess an esoteric and economically valuable expertise available to society. Style as symbolic generalization in the design professions, then, acts as an immaterial meta-narrative expressed in material forms, one that conveys to the outside world the totality of the cultural relevance of design. Understood in this way, style informs not only the created objects designers make, but also what designers wear, what cars they drive, and what their apartment interiors look like. And so style includes both the created object and also the creator of the object, and everything in between, acting in their totality as a symbol of the value of design. This is why, for example, a Pierre Cardin jacket is more than just the jacket. The designer, Pierre Cardin, and by association all of the culture and lifestyle the name symbolizes, is necessarily part of the worth of the jacket. The same is true with the Apple "iPod." It is not only the industry standard MP3 player; it also has become a general symbol of a mode of lifestyle prized all over the world.

2. Shared commitments. The second element of the disciplinary matrix is what Kuhn calls "shared commitments to theoretical models" such as "Heat is the kinetic energy of the constituent parts of bodies," or "The molecules of a gas behave like tiny elastic billiard balls..." etc.⁴⁴ Again, these are propositional models that scientific communities commit themselves to—indeed, Kuhn uses the word "belief."⁴⁵ The models are based on quantifiable knowledge, and demand conceptual commitment on that basis not only from members within the community, but also from those outside of the community.

Now, the lack of such quantifiable models in the design professions raises an observation made by the architect Peter Eisenman, as quoted and commented upon by Sarfatti Larson:

"When the government wants a legal opinion it goes to the Harvard Law School or the Stanford Law School for advice. When there is a question of development or environmental concern, nobody goes to the architecture schools for advice." ... Eisenman's point is that [architects] are not taken seriously because their expertise does not rest on autonomous theory.⁴⁶

What Larson means by autonomous theory are the propositional models (theories) that reside within non-design professions. These quantifiable models (e.g., "...molecules of a gas behave like tiny elastic billiard balls...") demand the respect of outside persons. Design professions do not have such models, and so their membership does not have shared commitments looking inward towards such models. Design professions must have some way of

having the public come to them other than for (non-existent) quantifiable models of knowledge. Again, the key lies with the creative acts design professions *do* have at their cores. And creative acts, although unpredictable, draw from material that general experience furnishes. In architecture, for example, Vitruvius called for the education of the architect to include geometry, history, philosophy, music, medicine, in short, “all departments of learning.”⁴⁷ Thus, an architect is often called a generalist—one who, because of a liberal arts training, is able to draw generally from the domains of knowledge and combine that material with creative powers to produce the objects of his or her domain: a design. In this way, Love’s tables are apropos: a designer must engage with knowledge from all fields represented by a university curriculum; Love is just incorrect to designate all of this interdisciplinary content as a single “body of knowledge” within a design discipline. In actuality, this is general knowledge residing outside of the design professions.

Thus, the design professions position themselves for shared commitments to external inputs of knowledge. The AIA knowledge communities (see again Figure 2 for the 2003 configuration of these communities) form one such framework: each of the communities commit to a domain of knowledge residing outside of the profession, for the purpose of providing that outside domain with architectural services.

3. Values. The third element of Kuhn’s matrix is values, and again Kuhn has internal propositional knowledge in mind: “... the most deeply held values concern predictions: they should be accurate,” and “Quantitative predictions are preferable to qualitative ones...”⁴⁸ Communities in possession of quantifiable models of knowledge with predictive power develop a value system by which competing explanatory frameworks are evaluated: Are they equally predictive? Or are they as elegantly framed?

Again, design communities do not possess these internal models; hence designers’ values form in other ways. It is not difficult to note the external orientation towards social values in design communities. In fact, design communities usually take the lead in clarifying social values for the larger culture. For instance, the recent green building standards developed by LEED (Leadership in Energy and Environmental Design) promote the values of environmental awareness in the larger culture. Architects thus are motivated to obtain LEED certification for themselves as well as for their buildings. Now, it is noteworthy that empirical data comparing LEED-certified buildings with non-LEED buildings—for instance, between quality of life or occupant productivity in LEED versus non-LEED buildings—is surprisingly sparse in the literature. Why? Because “green design” is currently such a well-received social value that certification brings automatic professional credibility—never mind the limited empirical data. Put another way, despite the lack of measurable data based upon specifiable knowledge within

the profession, much effort is expended to wrap the profession externally with the social value of green awareness and environmental responsibility—for purposes of external professional identity and promotion.

4. Exemplars. Kuhn defines exemplars in the following way: By [exemplars] I mean, initially, the concrete problem-solutions that students encounter from the start of their scientific education, whether in laboratories, on examinations, or at the ends of chapters in science texts. To these shared examples should, however, be added at least some of the technical problem-solutions found in the periodical literature that scientists encounter during their post-educational research careers and that also show them by example how their job is to be done.⁴⁹

The similarities with design disciplines are striking. Larson asserts that the architectural discourse is “ultimately based on practice”⁵⁰ and the “canon of architecture consists of beautiful or innovative built exemplars.”⁵¹ Although Larson specifically talks about architecture, her concept of “discourse” can be understood as sociological wrapping that can be extended easily over other design disciplines.

In this context, built or produced exemplars, such as Apple’s iPod or Frank Gehry’s buildings, become shared examples for concrete problem solutions in design discourse. Disseminated through professional publications and honored by awards granted by professional institutions such as IDSA or AIA, such exemplars are promoted in design offices in the marketplace as well as in design studios in academia. Ultimately, these exemplars become iconic in the mind of the general public.

Larson does not note that, in the design fields, the creators of iconic exemplars also themselves become exemplars—in a way arguably more pronounced, as a matter of course, than the esteem awarded significant leaders in non-design disciplines. For example, if John Smith is the best accountant in the world, it is still much more important that a handbag be a *Gucci* handbag than it is for a tax report to be a *Smith* tax report. In design, exemplars as objects conceptually become one with their exemplar-creators. So, again, a Gehry building is a *Gehry* building; an Eames chair is an *Eames* chair. Even the iPod is an *Apple* iPod; the others have the whiff of being imitations of the original. There is a growing body of work in design studies which seeks to analyze the thinking styles of the “great designers.” This underlines the prominence of exemplar-creators in the design disciplines.⁵² The underlying assumption is that, by analyzing the design processes of those exemplars (exemplar-creators and exemplar-objects), some generalizations about innovative “design thinking” processes can be reached which, then, can be useful in design education.

At any rate, creator-object exemplars in the design fields differ from the “problem solution” exemplars of Kuhn’s original definition. Yes, there is no doubt that both kinds of exemplars regulate subsequent action by instilling normative expectations even while they set idealized standards. But the difference, again, is that exemplars reside internally for communities with domain-specific bodies of knowledge. For design communities, creator-object exemplars orient outwards, to give the larger society a professional “face” for the creative activities that reside within design professions.

Conclusion

We have argued that the four elements of Kuhn’s disciplinary matrix behave differently in non-design versus design professions, and that this is the key ontological difference between the one and the other. The outward orientation of the components of the disciplinary matrix—what we have called the sociological wrapping of the design professions—is due to the lack of domain-specific bodies of knowledge in these professions. The wrapping transmits relevant general knowledge external to a design profession into its inner domain for the purpose of motivating and inspiring creative acts. The wrapping also serves to give a design profession a professional identity in the larger culture.

By way of conclusion, here are some limitations to our proposal, or areas for further inquiry it raises. We first emphasize that we mean nothing pejorative by “sociological wrapping”; it is simply a technical term denoting a key ontological trait of the design professions, as we have shown. But precisely because it is a key, more inquiry is needed regarding the specifics of sociological wrapping. For example, how would each component of Kuhn’s matrix work—as sociological wrapping—more *specifically* for architecture, interior design or industrial design?

Second, critics will no doubt question our definition of the creative act: is it as central as we claim it to be for design professionalism? This critique will probably coalesce in two forms. One would be to demand further clarification in light of the work of researchers such as Howard Gardner⁵³ or Mahaly Csikszentmihalyi⁵⁴ on this topic. The other would be concern that we might be returning to an outmoded way of theorizing about design in general. In an age of cybernetic technology, is the creative act indebted to inspiration or to information? We look forward to such future dialogue, but feel that our task here was to offer a clear definition of the creative act (and its importance to the design professions) so that such future exchanges may indeed take place.

Third, there also is the obvious need for clarifying subtler distinctions between design versus non-design professions. We realize we have not identified two silos hermetically sealed one from the other; there are gradations of difference. Consider civil

engineering for example. It would be difficult for anyone to claim civil engineering does not have domain-specific knowledge. And yet civil engineers have designed some of the most aesthetically striking objects we have (bridges, for instance).

Fourth, the distinction between profession and discipline also needs further clarification. For our purposes, we have implicitly understood this difference as framed by Friedman, to wit, that discipline refers to the academic subject of the area that becomes a profession.⁵⁵ But in the design communities, if the elements of the matrix orient outwardly because of the lack of domain-specific bodies of knowledge to draw inward theoretical focus, this raises more fundamental questions about the role of design curricula.

Finally, we return to Cross's proposal of design knowledge as a "third" category of knowledge distinct from scientific and humanities/artistic knowledge.⁵⁶ The proposal is attractive if for nothing else than the putative clarity it promises—if you can't join them, separate from them. But our solution has not been to be segregative, but to be integrative. In other words, rather than (again) isolate design knowledge as a specific epistemological domain all its own, we have suggested that design knowledge actually draws from the general pool of cultural knowledge for purposes of informing creativity. But of course, Cross's consistent contributions to this discourse over the years require that his proposal be systematically considered, and so we urge more in-depth comparison between his theory and ours.

Aware of all these limitations, our view remains that the contribution of this article—an application of the components of Kuhn's disciplinary matrix in a *sociological* appraisal of the design professions—opens new theoretical ground for discerning a unique ontology for these professions, in a way that integrates design with knowledge from all walks of life.

1 Thomas Kuhn, *Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).

2 *Ibid.*, 181–187.

3 In this view, modern professionalism is basically a "set of institutions which permit the members of an occupation to make a living while controlling their own work." Eliot Freidson, *Professionalism, The Third Logic* (Chicago: The University of Chicago Press, 2001), 17. Such a prominent privilege—the right of self-regulation/control—can only be granted by the society if certain occupational groups are believed to possess an esoteric body of knowledge that is directly associated with some major "needs and values of the social system." See Magali Sarfatti Larson, *The Rise of Professionalism* (Berkeley and Los Angeles: University of California Press, 1977), x.

4 Nigel Cross, John Naughton and David Walker, "Design Method and Scientific Method" in *Design: Science: Method: Proceedings of the 1980 Design Research Society Conference*, Robin Jacques and James A. Powell, eds. (Great Britain: Westbury House, 1981), 18–29.

5 Keith Macdonald, *The Sociology of the Professions* (London: Sage Publications, 1995), 9.

6 Larson, *The Rise of Professionalism*, 40–53.

7 Terence Love, "Constructing a Coherent Cross-disciplinary Body of Theory about Designing and Designs: Some Philosophical Issues," in *Design Studies* 23 (2002): 349.

- 8 Francis Duffy with Les Hutton, *Architectural Knowledge: The Idea of a Profession* (London and New York: E & FN Spon, 1998), 168.
- 9 There are reasons for this conflation. Historically, the emergence of the professions was prompted by the need to define marketable specializations in service to industrializing societies. These specializations were special because not everyone possessed the requisite knowledge. It is therefore not surprising that sociological assessments of the professions have taken for granted that knowledge is a fundamental starting point for profession-making. And design analyses of disciplinary/professional domains follow suit in assuming the centrality of a coherent body of knowledge within those domains. Take, for example, again, the citations from Love and Duffy above. Our argument is not with this logic *per se*—although we underline one obvious limitation to this approach: After many attempts at defining a body of “design knowledge,” the boundaries of that domain (as well as its contents) remain tellingly vague. For our part, we suggest that considering where “knowledge” fits into the constellation of factors that define a profession (as opposed to simply assuming it is the key identifying ingredient of any profession) can go a long way toward achieving clarity on the ontological status of design professions.
- 10 Nigel Cross, “Descriptive Models of Creative Design: Application to an Example,” in *Design Studies* 18 (1997): 427–455.
- 11 Kees Dorst and Nigel Cross, “Creativity in the Design Process: Co-evolution of Problem-Solution,” in *Design Studies* 22 (2001): 425–437.
- 12 This does not negate the need for creativity in general in non-design professions. However, in a non-design profession (1-b), success entails handling its domain-specific body of knowledge creatively, and the elements of the disciplinary matrix orient inwards towards this body of knowledge in part for this purpose. But in a design profession (1-a), the elements of the matrix orient outwardly so as to constantly update knowledge generated outside the profession to inform and inspire the creative acts within.
- 13 Nigel Cross, “Designerly Ways of Knowing” in *Design Studies* 4:3 (1982): 221–227.
- 14 Le Corbusier, *Texts and Sketches for Ronchamp*. First published by Jean Petit, 1965. Association oeuvre de N.D. du Haut, Ronchamp. No pagination. This particular fact can be found on page 20 if pagination starts at the first page.
- 15 Cross, “Descriptive Models,” 433, 436–437. Here Cross is citing the work of Rossman and Gero, “Creativity in Design Using a Design Prototype Approach” in *Modeling Creativity and Knowledge-based Creative Design* J. Gero and M. Maher, eds. (New Jersey: Lawrence Erlbaum, 1993).
- 16 Bryan Lawson, *What Designers Know* (Oxford: Elsevier, 2004), 17–19.
- 17 Nigel Cross, “The Creative Leap” in *Designerly Ways of Knowing* (London: Springer-Verlag, 2006), 43–61.
- 18 *Ibid.*, 10. Lawson’s statement in full is even more cryptic (*italics added*): “Our purpose is to show that there is some higher quality depending on some *identifiable body of knowledge* lying outside and beyond the problem that distinguishes architecture from building. Translating this into more generic language requires us to see that design as opposed to mere problem solving requires the application of a *body of knowledge not stated or necessarily even referred to in the brief*.” The tension between Lawson’s insistence that there indeed is an identifiable body of knowledge, on the one hand, and that this body is necessarily unstated, on the other, is unresolved.
- 19 Peter Rowe, *Design Thinking* (Cambridge, MA: MIT Press, 1987 [1992]), 39–113.
- 20 *Ibid.*, 111.
- 21 Kant’s aesthetics, of course, is the source for this point of view. See Immanuel Kant, *Critique of Judgment* (1790), Sections 1–5. Translated by Werner S. Pluhar (Indianapolis, IN: Hackett Publishing Company, 1987), 44–53.
- 22 Some might still take issue with the boundaries we have set for a design profession. For instance, one can point to “professional” organizations that seek to define and defend the rights of artists engaged in producing fine art. One example is ASCAP (The American Society of Composers, Authors, and Publishers), which defends copyright interests for their constituents. But the litmus test of everyday language helps us here: there is no problem in referring to an architect as a member of a profession, but calling a poet a member of a profession, while not unimaginable, would probably not be an everyday description of that person. And it is doubtful whether the poetry writing community would wish to become a profession, even if it could.
- 23 Richard Buchanan, “Wicked Problems in Design Thinking,” in *Design Issues* 8:2 (Spring, 1992): 5–21.
- 24 See, for example, AIA Soloso, a new website for the dissemination of architectural knowledge: <http://soloso.aia.org/eknowledge/index.htm> (accessed: July 15, 2008).
- 25 A list of all twenty-four AIA Knowledge Communities can be found at http://www.aia.org/nav_kc (accessed July 15, 2008).
- 26 Terence Love, “Constructing a Coherent Cross-disciplinary body of Theory About Designing and Designs: Some Philosophical Issues” in *Design Studies* 23 (2002), 349.
- 27 <http://www.accredit-id.org/associations.html> (accessed July 15, 2008).
- 28 <http://www.ncidq.org/who/agencies.asp> (accessed July 15, 2008).
- 29 Denis Guerin and Caren Martin, “The Career Cycle Approach to Defining the Interior Design Profession’s Body of Knowledge,” in *Journal of Interior Design* 30:2 (2004): 8.

- 30 Stanley Abercrombie, *A Philosophy of Interior Design* (New York: Harper & Row, 1990).
- 31 <http://www.bls.gov/oco/ocos290.htm> (accessed July 22, 2008).
- 32 Jacques Giard, "Design Education in Crisis: The Transition from Skills to Knowledge" in *Design Issues* VII:1 (Fall 1990): 26–27.
- 33 Ibid., 26.
- 34 "Attempts to equate 'design' with 'science' must logically be predicated upon a concept of science that is epistemologically coherent and historically valid. This history of the twentieth-century debate in the philosophy of science suggests that such a concept does not yet exist. It would therefore seem prudent for writers on design method to back away from this particular line of argument, at least for the time being..." From Cross, Naughton and Walker, "Design Method and Scientific Method," 23.
- 35 Kees Dorst, "Viewpoint: Design Research: A Revolution-waiting-to-happen," in *Design Studies* 29:6 (2008).
- 36 Love, "Constructing a Coherent Cross-disciplinary Body of Theory about Designing and Designs: Some Philosophical Issues," 350.
- 37 Guerin and Martin, "The Career Cycle Approach to Defining the Interior Design Profession's Body of Knowledge," 9, 11–13.
- 38 Love, "Constructing a Coherent Cross-disciplinary Body of Theory about Designing and Designs: Some Philosophical Issues," 350.
- 39 Ken Friedman, "Theory Construction in Design Research: Criteria: Approaches, and Methods" *Design Studies* 24:6 (November, 2003): 512.
- 40 Nigel Cross, "Designerly Ways of Knowing: Design Discipline versus Design Knowledge" in *Design Issues* 17:17 (Summer, 2001): 54–55.
- 41 Jan Wampler, "Watching," in *Journal of Architectural Education* XXXII:4 (May, 1979): 20–21.
- 42 Kuhn, *Structure of Scientific Revolutions* 182–183.
- 43 Random House, Inc. <http://dictionary.reference.com/browse/symbol> (accessed: April 17, 2008).
- 44 Kuhn, *Structure of Scientific Revolutions* 184.
- 45 Ibid., 184.
- 46 Magali Sarfatti Larson, *Behind the Postmodern Façade: Architectural Change in Late Twentieth-Century America* (Berkeley and Los Angeles: University of California Press, 1993). She cites from "Interview: Gerald Hines and Peter Eisenman," *Skyline* (October, 1982): 21.
- 47 Vitruvius, *The Ten Books on Architecture*, Book I, Sections 5, 7, 8, 10, and 17.
- 48 Kuhn, *Structure of Scientific Revolutions* 185.
- 49 Ibid., 187.
- 50 Larson, *Behind the Postmodern Façade*, 5.
- 51 Ibid., 5.
- 52 Nigel Cross, 2003. "The Expertise of Exceptional Designers," in *Expertise in Design: Design Thinking Research Symposium 6*, N. Cross and E. Edmonds, eds. (Sydney: Creativity and Cognition Studio Press): 23–36. Also, Bryan Lawson provides many examples of designer-exemplars in his book *What Designers Know* (Oxford Architectural Press, 2004).
- 53 Howard Gardner, *Creating Minds: An Anatomy of Creativity as Seen through the Lives of Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi* (New York: Basic Books, 1993).
- 54 Mihaly Csikszentmihalyi, *Creativity: Flow and the Psychology of Discovery and Invention* (New York: Harper Collins, 1996).
- 55 "That is, one studies the disciplines that lead to professional practice—design, law, medicine, etc. Once embarked in professional practice, one is not engaged in a discipline but in a profession or a field. If one goes back for advanced study or to teach, one returns to the discipline." Ken Friedman, "Disciplines, Fuss..." in PHD-DESIGN@JISCMAIL.AC.UK. (Last accessed September 29, 2007).
- 56 Cross, "Designerly Ways of Knowing," 221–227.

Portugal's First Advertising Agency: Raul de Caldevilla and the ETP, 1914–1923

Helena Barbosa, Anna Calvera,
and Vasco Branco

Footnotes for this article begin on page 34.



Figure 1 (top)
Raul de Caldevilla, advertising technician and
founder of ETP, Oporto.

Figure 2 (bottom)
Raul de Caldevilla.

Raul de Caldevilla (1877–1951)

Caldevilla, (Figures 1 and 2) founder of ETP—Escritório Técnico de Publicidade (“Technical Advertising Agency”) in 1914, was born in Oporto and studied business at the Oporto Commercial and Industrial Institute, where he soon developed a taste for commerce. A multifaceted personality, he appears to have gotten involved in advertising for the first time in Buenos Aires (as he suggested to Juliano Ribeiro in an interview),¹ where he undertook a series of advertising campaigns in the Argentinean press.² Full of enthusiasm from this experience, he left Buenos Aires for Paris to get further training in advertising.³ He studied under Octave-Jacques Gérin Laraud at the School of Advanced Commercial Studies in Paris, and was strongly influenced by him.

Upon his return to Oporto, this professional experience in the area of commerce and advertising allowed him to move to the top of the profession very quickly. In May 1914, he gave a lecture at the Atheneu Comercial of Oporto on advertising-related matters. In August of the same year, Caldevilla registered the brand ETP,⁴ which would be mostly connected with the production of posters.

Introducing himself commercially as an “advertising technician,”⁵ Caldevilla demonstrated his unique capacity for publicity in the details of his representations and in his attractive, innovative but also sensible discourse. This combination of talents made him an exceptional character, whose productions had the impact necessary to win over consumers.

For Caldevilla, “There is no Art as commercial as Advertising”⁶ and, in his opinion, only after an exhaustive attention to detail could advertising discourse, however finely wrought, truly arouse the interest of the public. The secret of business success, therefore, lay in advertising, since “business has no life of its own: it only has the life that the businessman gives it.”⁷

His performance in the field of advertising was rapidly recognized by a number of people, who helped him along in his career. These included Octave-Jacques Gérin Laraud, his teacher of psychology and advertising at the School of Advanced Business Studies in Paris. Laraud was a member of the Publicity Board, and

was Honorary President of the Committee of Publicity Directors of Commerce and Industry, founded in 1912. This organization honored Raul de Caldevilla in 1917 for his work in the field of advertising; the first such honor to be bestowed upon a foreigner, with unanimous votes.⁸

At the end of December 1917, you have been appointed, upon my nomination, Honorary Member of that small creative phalanx of consultants and technicians working in the area of advertising. With the foresight that has guided me throughout my life, I had a presentiment of the man that you would become. Today, you do honour to the whole of the French advertising world, my friend, giving me, at the end of my career, an unexpected reward.⁹

In addition to the international recognition that Caldevilla attained, we can see from an interview by Alves Costa with Maria Paulina, Caldevilla's eldest daughter, that her father also liked to do caricatures, drawing them in pencil and china ink. Although he did not devote himself exclusively to drawing, he appears to have adopted this form of expression as a pastime; always continuing to be very original in his production. This explains the scarcity of posters bearing his signature. However, Maria Paulina adds some important details:

... in his time, his advertising campaigns always caused a stir. He always had new ideas buzzing around in his head. Sometimes, when he was in bed, a new idea would come to him and he would leap up to note it down. ... My father would never agree to advertise a poor product. He would try out the article he had been asked to promote, check it out or test it first. He said that advertising should be serious, that it should never "deceive" the consumer, nor mislead him into buying something other than what he supposed the product to be. It should be worthy of the public's trust. He would also refuse to promote a product that was a competitor of another that he had already promoted.¹⁰

After leaving ETP in 1923, Caldevilla continued to work in advertising, taking on occasional jobs and divulging his knowledge of the field at conferences and in interviews. In 1937, he took part in the 3rd World Advertising Conference in Paris. He also conducted a number of international training courses and, upon returning to Portugal, was responsible for the Advertising Course at the Raul Dória School, where he lectured on window dressing, as well as preparing the syllabus, published in the respective Year Book.¹¹ He naturally influenced his students, and anyone else who attended his classes. Caldevilla taught them the principles necessary to attract consumers. These principles are: idea, action, unity, suggestion,

guidelines, originality, opportunity, movement, light, attractiveness, and ... speech.¹²

In addition to his work as a teacher, he continued to operate in the world of advertising, always creating aesthetic and original productions. Caldevilla's activity is distinguished from other productions of the era, and he is easily recognizable as one of the most experienced people in the field.



The Historical Development of ETP

The vast experience that we have acquired in Europe and America, the public proof that we have provided, the glowing testimonies from satisfied customers—all these are more than enough to recommend our services.¹³

Advertising agencies appeared in Portugal somewhat spasmodically. In the first quarter of the twentieth century, one of the most important was ETP – Escritório Técnico de Publicidade (“Technical Advertising Bureau”), (Figure 3) which introduced an innovative visual rhetoric that greatly influenced Portuguese society and artists. Given this influence, it is worth looking closer at the reasons for its success, in order to understand how design gradually became established in Portugal.

By 1914, ETP, based in the city of Oporto, was the most important advertising agency in Portugal. This largely was due to the balance that it managed to achieve between creativity and technology, combined with an aggressive commercial strategy promoted by its dynamic director, Raul de Caldevilla. This success in the area of advertising, and experience in commerce generally, led to its expansion and the formation of a succession of other companies. Determined to make them prosper, Caldevilla was able to exceed market demands at the time, becoming something of a pioneer in his approach to both advertising and commercial strategies.

In 1916, he founded Raul de Caldevilla e Companhia, Limitada together with António de Oliveira Calém¹⁴ and, at the beginning of 1919, set up another company with the same name, this time with Adriano Ramos Pinto.¹⁵ At the end of the same year, he created yet another agency, called Empresa Técnica Publicitária Film Gráfica Caldevilla (“Caldevilla Graphic Film Technical Advertising Company”) (Figure 4), keeping the initials ETP in order to maintain the association with the earlier company. He continued to play a leading role in all of these companies until February 1923.¹⁶

With the appearance of the Empresa Técnica Publicitária Film Gráfica Caldevilla, which had a cinematic dimension in addition to graphic design, ETP entered a whole new field. Although the two branches of the company were geographically separate (the graphic workshops were located in Oporto, and the film studio in Lisbon), Caldevilla tried to ensure that both were as up-to-date as possible. This involved the acquisition of cutting-edge printing technology



Figure 3 (top)
1914-1919 Office interior of ETP, situated at 31 de Janeiro Road.

Figure 4 (bottom)
Exterior aspect of the building called Palácio do Bolhão (Bolhão Palace) situated at Formosa Road, 1919–1923.

and the adoption of international influences on the level of design (as we can see from a report dating from that year). Caldevilla believed that film and design should operate closely together; consequently, the publicity for the Lisbon films was prepared in the graphic workshops¹⁷ in Oporto.

In 1923, a disagreement with the company shareholders about the investments necessary for film production and the construction of the studios in Quinta da Concha in Lisbon led to Caldevilla's resignation from ETP. However, he maintained his connections with the world of advertising on an occasional basis. In the same year, the Raul de Caldevilla's company was taken over by Empresa do Bolhão, Limitada in Oporto.

ETP's Presence in the Portuguese market

To advertise successfully, it is necessary to know how, and not everyone does; that is because advertising is selling and not everyone knows how to sell.¹⁸

ETP became known in Portugal as a trendsetter in the world of advertising, owing to its attempts to keep up with what was happening on the international scene. With Raul de Caldevilla's professional experience, it soon became the most well-known and important advertising agency of the period, making effective use of many different kinds of communication.

Much of ETP's production took the form of posters. Like other graphic artifacts, these always were marked with the company's initials (Figure 5) and a description (Figures 6 and 7), which enables us to distinguish different periods with regard to the various companies that Caldevilla set up over the years.

This was a form of self-publicity for the company while, at the same time, allowing it to explicitly mark its presence on the Portuguese market. Indeed, the quantity and diversity of its production indicates that Caldevilla's ETP was present throughout the Portuguese market in a variety of public spaces, such as on trams, hoardings, enameled plaques, and placards.¹⁹ The diversity of the locations where these advertisements were found demonstrates ETP's organizational capability in supplying specific services in accordance with the needs of its clients. These services varied in accordance with the customer's means, including the preparation of sketches and paintings, the acquisition of licenses from the Council,

Figure 5 (top)
ETP logotype.

Figure 6 (middle)
"Raul de Caldevilla & Company, 31 de Janeiro Road, 165 Oporto.

Figure 7 (bottom)
Description of ETP "Caldevilla graphic, Bolhão Palace," Oporto.



· RAUL DE CALDEVILLA & C^ª L^{da} · R. 31 DE JANEIRO · 165 · PORTO ·

CALDEVILLA GRAFICA · PALACIO DO BOLHÃO · PORTO

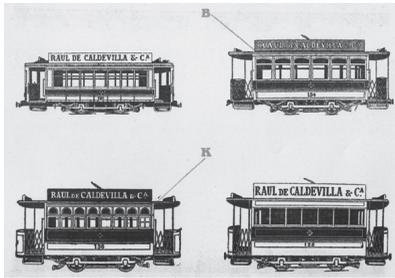
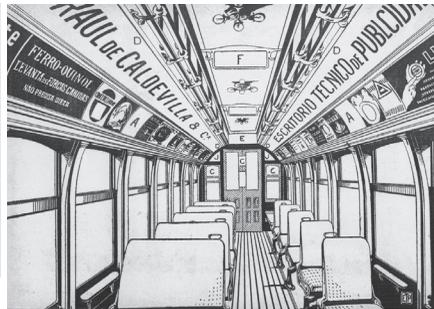


Figure 8 (left and middle)

Exterior and interior of the trams, with identification of the letters and specific parts of the trams, where advertising would be inserted, 1914-1919.



INTERIOR DO CARRO
ALUGUER DE ESPAÇOS
TABELA 33

Tipologia de espaço

Tipologia de espaço	Por um metro e por cada metro	Esc.
Interiores laterais: Cada espaço de 200 milímetros de altura por 30 de comprimento e com o espaço para o condutor e para o condutor por 20 milímetros de altura ao longo do espaço. Inclui o espaço de 100 milímetros para o condutor e para o condutor. Veja página 11 letra B.	..	1500
Interiores laterais: Cada espaço de 200 milímetros de altura por 30 de comprimento e com o espaço para o condutor e para o condutor por 20 milímetros de altura ao longo do espaço. Inclui o espaço de 100 milímetros para o condutor e para o condutor. Veja página 11 letra B.	..	22500
Interiores laterais: Cada espaço de 200 milímetros de altura por 30 de comprimento e com o espaço para o condutor e para o condutor por 20 milímetros de altura ao longo do espaço. Inclui o espaço de 100 milímetros para o condutor e para o condutor. Veja página 11 letra B.	..	2500
Interiores laterais: Cada espaço de 200 milímetros de altura por 30 de comprimento e com o espaço para o condutor e para o condutor por 20 milímetros de altura ao longo do espaço. Inclui o espaço de 100 milímetros para o condutor e para o condutor. Veja página 11 letra B.	..	3500
Interiores laterais: Cada espaço de 200 milímetros de altura por 30 de comprimento e com o espaço para o condutor e para o condutor por 20 milímetros de altura ao longo do espaço. Inclui o espaço de 100 milímetros para o condutor e para o condutor. Veja página 11 letra B.	..	7500

Figure 9 (right)

Rent of the specific parts, their description and price.

stamp duty and conservation, and the creation of advertisements using different methods such as painting, lithography, typography, and even transparent advertisements.²⁰

There are indications that ETP held a leading role in the area of advertising, such as its contract with the Oporto Tram Company for the placement of posters in various locations and using various supports. A form of billboard or hoarding, known as “*tabuletas*,” was patented in 1917 by Raul de Caldevilla & Companhia, Limitada,²¹ and were placed along the railway line between Oporto and Braga. They were 4.9212 X 26.2464 feet in size,²² and there forty-one of them along the route between these two cities, including at stations and crossing points.

Judging by the description, it appears that these hoardings not only had to provide quality in terms of materials and execution, but also had to be sufficiently versatile to function effectively in a number of different situations.

Advertising then extended to suburban circuits, endowing these spaces with a new dynamic, attracting the public’s eye and invading the rural landscape. This innovative initiative made ETP very successful, allowing it to maintain a subliminal presence in the daily life of society. Irrespective of the product being advertised, the fact that it identified its posters was a strategic form of self-publicity, where the initials ETP functioned as a kind of business card for future deals. Another strategy involved the preparation of a small promotional catalogue describing the company’s activities, and explaining the benefits of their services to businesses. The sales pitch was well-organized, and provided useful information including details about the different locations where advertisements could be placed. (Figure 8) For example, the annual prices were given for advertising in specific parts of trams in the exterior and interior side walls (Figure 9).

Another strategy developed by the company in 1917 for the biscuit brand “Invicta” involved the production of a documentary-type film showing two Spanish mountaineers, José Puertollano and his son Miguel Puertollano, scaling the Clérigos Tower in Oporto (Figure 10) When they arrived at the top, the mountaineers drank their tea, ate some Invicta biscuits, and dropped some slips of paper containing on one side a representation of an Invicta biscuit and, on the other side, the message: “You are cordially invited to join the



Figure 10 (above)
Clérigos Tower.

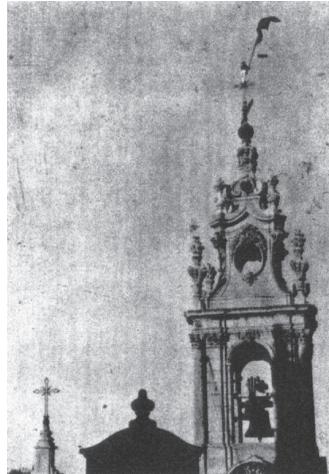


Figure 11 a, b, c
The Puertollano's brothers, climbing the
Basílica da Estrela, 1917. Collection
Cinemateca Portuguesa.

Puertollanos for tea at the top of the Clérigos Tower.”²³ This dramatic event, which took place on a real stage before some 150,000 people, was perhaps the most effective means that ETP could have found to promote not only the product, but also the company itself. Entitled “Tea in the Clouds,” the stunt was a great success. The biscuits sold out²⁴ and Raul de Caldevilla and ETP were forever engraved on the memory of the local residents, not only in Oporto, but also in Lisbon where the stunt was repeated at the Basílica da Estrela (Figure 11).

With the use of various resources ranging from posters for Invicta biscuits dispersed around the cities, and the filming of the episode for subsequent viewing by people who had not been present at the event itself, ETP had clearly found an innovative way of approaching a publicity campaign on that scale. Moreover, the whole campaign served to prolong the memory of both the biscuit brand and ETP itself with the repeated showing of the film over various days in both cities.²⁵

ETP’s client list was impressive. It included A Económica, Lda—Grande Marcenaria a Vapor (Oporto); Livraria Portuense (Oporto); Barbosa & Almeida (Oporto); Termas de Vizela; A. Simões Lopes—Fábrica de adubos chimico-organicos (Gaia); and “Old England” Sarmiento & Ca. (Lisbon); which wrote to Caldevilla to thank him for the results obtained after having used ETP’s advertising services.²⁶ Other important clients included the Companhia Portuguesa de Perfumarias; Carlos Dunkel (Oporto); Cimento Tejo; and Sapataria Operária (Lisbon); and Armazéns Herminios (Oporto).

It should be pointed out, however, that much of ETP’s production was not in fact designed by Caldevilla, but by the creative artists and lithographers working under him. Within the existing collection, his own work is identifiable because it bears his signature in the form of a mark, with the designation “Caldevilla Creation” (Figure 12). Even when this is absent, it may be identified by his distinctive graphic language: he used a design style that was very close to naturalist representations, involving a lot of detail, volume,



Figure 12 (above)
“Caldevilla Creation”



Figure 13 (left)
Raul de Caldevilla, ETP, "Briquetes S. Pedro da Cova – Excellent charcoal for kitchen and fire-place." Collection Biblioteca Nacional de Portugal, 1914–1919.



Figure 14 (middle)
Raul de Caldevilla, ETP, "The HBC fertilizer makes the plants grow". Collection Biblioteca Nacional de Portugal, 1914-1919.

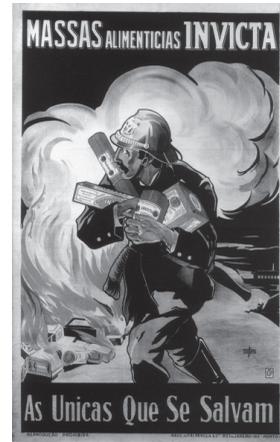


Figure 15 (right)
Raul de Caldevilla, ETP, "Invicta noodles – The only ones to be saved." Collection Biblioteca Nacional de Portugal, 1914-1919.



Figure 16 (above)
"ETP - 1916 – Summer Fashion "Modista Franceza." Collection Biblioteca Nacional de Portugal, 1916.

and tonal gradations; the notion of depth is frequently explored; and the image prevails over the typography, which sometimes appears dissociated from the context in which it is inserted (Figures 13, 14, and 15). The artifacts produced by ETP all reveal the innovative mark of Raul de Caldevilla. The constant presence of these advertisements in dominant sites all over the town²⁷ also functioned as an effective self-promotional strategy, since their graphic style (the result of Caldevilla's experience in Paris) was quite different from other productions. Indeed, this stimulated Portuguese participation in advertising generally, and the poster in particular.

The image was considered as the principal protagonist in the communication of the ETP posters (Figure 16). In fact, this was one way their poster style was recognizable among all the others. Besides the use of the big images that occupied posters in their totality, the considerable number of colors attracted viewers and distinguished the ETP posters. Due to printing technology and big formats, the style of their production was characterized by a more accurate design and variety of forms. Caldevilla's orientation, and the international influences on his work, reveal the elegance and grace of the design; approaching and connecting different areas. These posters present an innovative visual language with the introduction and simplification of the elements: in the first stage more associated with the naturalistic representation of Caldevilla; and in the second stage more related to modernism with Diogo de Macedo (1889–1959), an important figure in Caldevilla's ETP. After obtaining a degree in sculpture from the Oporto School of Fine Art, Macedo occasionally would design posters in order to supplement his income. The presence of Diogo de Macedo in Paris between 1913 and 1916²⁸ was extremely important for the transfer of this graphic rhetoric to the Portuguese context.²⁹ His proximity to these posters was essential for the introduction of new representations into Portuguese posters, from which ETP drew its own benefit. Consequently, a new aesthetic idiom began to be used in Portugal, which enriched its design heritage and contributed to the visual education of society. Macedo's graphic language reveals



Figure 17 (left)
Diogo de Macedo, ETP, "They're the delicious chocolates and bonbons of União." Collection Biblioteca Nacional de Portugal, 1914-1916.



Figure 18 (middle)
Diogo de Macedo, ETP, "Chemise house Elegante." Collection Biblioteca Nacional de Portugal, 1914-1916.



Figure 19 (right)
Diogo de Macedo, ETP, "Bi-Cacau-Chauve." Collection Biblioteca Nacional de Portugal, 1914-1916.

simplified figures, in which volume appears to lose ground to form. Colors are more immediate, without the gradations or diffuse effects that we find in Caldevilla's work. The powerful synthesis of design and color give his work a uniqueness within ETP's production, making it possible to identify his works (Figures 17, 18, and 19).

In addition to Diogo Macedo, ETP's studios also employed a number of other creative and lithographic artists who produced representations for posters and other graphics under Caldevilla's guidance, but who remained anonymous. It is important to understand that mastery of this technique requires collaboration between the creative artist and the lithographic artist, who would try to faithfully reproduce his design. However, the maquettes for the posters largely were done in gouache and watercolor.³⁰ But not all drawings were done in response to an order from a specific client. The fact that there was a collection of predesigned stone tablets reveals a whole different approach to the creative process. These would have served as proposals to be presented to the client and, if accepted, would be reworked to include all the necessary information to identify the product. This is a different form of authorship to the poster designed from scratch.

Caldevilla's experience in promoting Portuguese products internationally, not to mention the positions he had held as Portugal's representative in various areas including the port wine trade, were probably what attracted the Calém and Ramos Pinto wine-producing families to become partners in his companies. Strangely enough, the posters advertising these brands of port, despite involving artists such as António Carneiro, Ernesto Condeixa, and Roque Gameiro, were not produced and printed by ETP. Their language was different, revealing the mark of international figures such as the Italians Matteo da Angelo Rossotti, Leopoldo Metlicovitz, and Leonetto Cappiello, and the Frenchman René Vincent.³¹ Some were even printed abroad in places including Vercasson in France.³²

ETP's Printing Technology

The fact that Raul de Caldevilla's companies had their own lithography workshops provides an indication of their technical independence; enabling them to control production and keep up with the most recent developments in the area of reprography. Raul de Caldevilla e Companhia, Limitada, established in 1916, had photographic, lithographic, and phototype technology in addition to its design studios, which produced maquettes for posters. Before these were presented to the clients for their approval, they were registered and the original remained in the possession of ETP.³³

At that time, lithography involved the manual transfer of the designs to the stone tablets using alignment devices. Since this was somewhat time-consuming, Raul de Caldevilla decided to acquire new technology that would speed up the printing process. Thus, in February 1920, he purchased the photolith system invented by Guilherme Frey,³⁴ which substantially reduced the time needed to transfer the original design onto the matrix. It also distinguished their work from that of their competitors because it produced a high-quality final product that was representationally innovative and allowed photography to be incorporated in the posters. The technology also enabled them to go beyond national borders and export Portuguese prints to the rest of the world.³⁵

The Frey process involved using photography together with the principle colors of yellow, red, and blue.³⁶ Commonly known as the *Procédé multicolor—sans trame Frey*, the process involved photographing the object to be represented, and then placing it onto the primed stone tablets. The representation then would be transferred using light. Thus, a faithful reproduction of the photograph could be achieved without the need for the nets or frames used by earlier techniques.³⁷ The image was transferred directly to the tablet, substantially reducing the time necessary and dispensing with the need for lithographic designers. While these designers had to transfer the inverted or negative design using a mirror to copy the original onto the block, the maquette designer³⁸ needed extensive knowledge of printing techniques to be able to make maximum use of color superimposition, complementary colors, and reserved spaces, thereby avoiding the presence of unnecessary tablets when printing in various colors, continuous tones, etc.

At this time, ETP possessed the largest lithographic machine (37.4015 X 57.0865 inches) in Portugal, as well as two smaller ones (37.4015 X 49.2125 inches), a starch machine and a varnishing machine, two guillotines, a card-cutting machine, two engraving machines, a polishing machine, and 3,349 designed stone tablets.³⁹ Although rotary printing presses already were on the market, ETP did not yet have any, according to Caldevilla. It did, however, continue to specialize in large-format work.

With regard to the designs on the tablets, since these had not been produced in Portugal, they made use of a language very similar

to that used on the international stage. Moreover, by amassing a collection of predesigned blocks, ETP could guarantee quality and reduce efforts in the conceptual area—a distinct advantage given the lack of Portuguese professionals in this field. This collection aroused the curiosity of a London-based printing company, Faulker & Co., which, in the last quarter of 1922, showed an interest in making reprints of them. However, the deal did not go through owing to disagreements over the price, which meant the loss of the English market, and other international markets, preventing the export of a lithographic industry to which Caldevilla had so aspired.⁴⁰ Caldevilla's strategy also involved winning over Frey's French, Italian, German, and English clients⁴¹ while, at the same time, trying to bring the quality of national graphic production up to international standards, usually through the imitation of foreign models.

Caldevilla's concern with creating a "model studio"⁴² and ensuring graphic quality in his representations led him to seek out an experienced artistic director. For this, he looked abroad. First, he contracted the Swiss Guilherme Frey,⁴³ from 1920 to the beginning of 1923; then, after his departure, he contracted another Swiss, Hans Muller also for a period of three years.⁴⁴

Caldevilla's investment in printing technology and artistic quality, as represented by the contracts he entered into with Frey and other countries (such as the London-based lithography firm belonging to the Hudson brothers, Ed, William, and Henry; which had obtained the rights to this technology), demonstrates his strategic vision in the area of printing and his desire to keep up with international standards.⁴⁵ In his 1923 address to the company's shareholders, he mentioned the contract with Frey and the procedure for acquiring new technology. However, the predesigned lithographic blocks and the whole process of acquisition of this technology did not arouse the same enthusiasm in the shareholders as in Caldevilla.⁴⁶ It seems that, after having purchased the equipment and celebrated the contract with Frey, he fell out of favor with the shareholders, and eventually left the company.⁴⁷ The technology does not appear to have been used and, in 1923, Caldevilla suggested to the shareholders that it be sold.⁴⁸ We do not know if Frey's revolutionary process was ever applied, nor whether the archive of 3,349 blocks was used and, if so, under what circumstances. Nor do we know if the shareholders sold the Frey process, the printing machinery, and the blocks. The only clue that we have with regard to the equipment acquired by ETP concerns the large-format printing since, at that time, Caldevilla owned the largest machine in the country. Since this generally was used for printing posters, comparison with the production by other graphic workshops may allow us to reach a conclusion as to whether or not the equipment was actually used. With regard to the stone tablet archive, we do not know if the designs had been drawn directly on the tablets, or if they were included in the Frey process.

ETP's Production and Authorship

Touch a soul here and there, attract a glance, call the attention of a passer-by.⁴⁹

Schools of design were late in coming to Portugal (1975), compared to other countries. This perhaps was due to a lack of awareness on the part of the ruling class, whose entrenched mindset tended to impede the development of new movements. Hence, it was the painters, sculptors, and architects, and even some amateur practitioners, who introduced into their formal language aspects of design acquired in Portugal and abroad. Moreover, the approximation of participants, who were in some way directly related to the production of artifacts of this nature, also helped to stimulate the appearance of new artists.

The question of authorship in design thus was intimately bound up with certain aspects of the particular context, which prevented it from being properly valued and developed, as was happening elsewhere. Instead, Portuguese design ended up carving out its own path, drawing inspiration from visual languages used in other countries to form its own unique blend, endowed with a very particular identity.

Before the advent of lithography, the technical limitations of the available processes were manifested by the disproportionate amount of typography present in posters from that period and the noticeable lack of drawings (Figure 22). Although images could be reproduced, the process was very time-consuming and expensive for such an ephemeral genre as the poster. Consequently, few posters containing drawings actually exist. Perhaps owing to the influence of other kinds of publications from the period, such as notices and placards, posters often had a paginated appearance. Typically, they are small in size, monochrome, and with margins; and the composition tends to be symmetrical, with the title always at the top, surrounded by ornaments and vignettes, as in other kinds of publications (Figure 23).

Figure 22 (bottom left)
Poster advertising tissues. Printed by
Typografia de Viuva Alvarez Ribeiro & Filhos,
Oporto. Collection Biblioteca Nacional de
Portugal, 1829.

Figure 23 (bottom right)
"Ointment for use on hoof horses." Printed
by Imprensa Nacional. Collection Biblioteca
Nacional de Portugal, 1860.

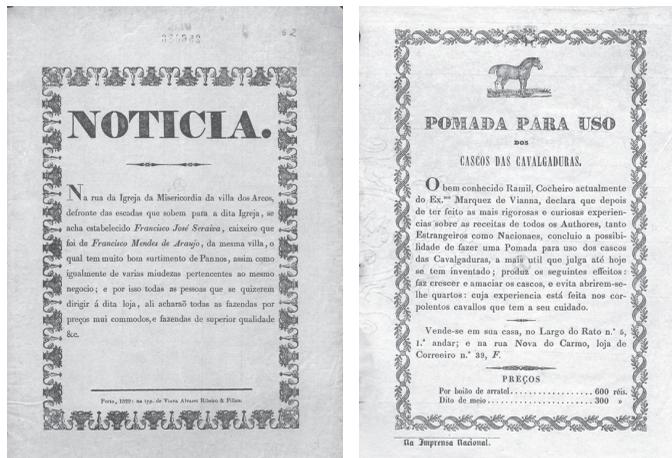




Figure 24 (top)
Poster advertising books. Printed by
Lithografia da Companhia Nacional Editora,
Lisbon. Collection Biblioteca Nacional de
Portugal, 1901.

Figure 25 (bottom)
ETP, "Books for all over the world – Editorial
Portuguese Company". Collection Biblioteca
Nacional de Portugal, 1914-1919.

These parallels are important and enable us to understand how the publication's layout, especially the cover, influenced the poster. Later, when lithography appeared, another component from publication—illustration—was introduced. Posters of this era show a mixture of text-based information, similar to that used in the notice, alongside an illustration to contextualize the contents, the discourse of which is not unlike that used in books. Later, book covers and titles also were adopted as representational resources for posters (Figure 24). But it was, above all, the introduction of chromolithography that revolutionized representation in posters. The ease with which this technology allowed drawings to be reproduced led to the appearance of new graphic forms, which looked to painting as a source of inspiration. Consequently, the textual messages were released from the rigidity imposed by typography and drew closer to the language of the image; setting up a representational symbiosis between the two (Figure 25).

Graphic language acquired enormous importance from then on, becoming indispensable in the poster. Indeed, it soon became the method of choice for communication.

Public spaces now acquired a new dynamic with the presence of posters full of images. The street became a kind of non-elitist museum, accessible to all, where visitors could freely appreciate the visual discourse taking place around them. As posters gradually became a common feature of communication in public places, they also began to acquire greater importance as artifacts, becoming objects of interest for collectors.

In Portugal, it still was rare for anyone to devote himself exclusively to the creation of posters. Normally, posters were produced by people who worked in printers' workshops, and who had mastered the art of drawing, whether or not they had any formal artistic training. Alternatively, they might also be produced by artists. The quality of these artifacts, therefore, would depend upon the producer's knowledge and experience in the field. The poster was considered a minor art form, ephemeral and accessible to the public in the streets, unlike "real" works of art, which were unique and therefore had an entirely different status. Artists sometimes would produce posters as a kind of extension of their work and, while operating within the constraints imposed by the form, might manage to introduce their own graphic language, thereby contributing to the transformation of the genre. Moreover, international influences present in the languages of these posters also served as models for the stylization of forms, which is what happened in Portugal from 1910 onwards, with the onset of modernism. International posters became more stylized as superfluous decoration gave way to simpler, more synthetic lines. This new style of poster, with starker images that made the message stand out (be it for a product or event), contributed to an aesthetic learning process, and had an educational effect upon artists and the general public, as Caldevilla pointed out

Figure 26
Theater advertising, 1910-1920.



in his lecture at the Atheneu Comercial of Oporto in 1914.

The ETP, under Caldevilla, broke completely with the usual kinds of representations found on posters, with their strong typographic component. This brought about a shift away from the dull mimetic monochrome that until then had occupied the surfaces of public spaces (Figure 26).

Conclusion

ETP was unprecedented as an advertising agency, controlling the market of the period and distinguishing itself in its particular field, largely due to the strategies developed by Raul de Caldevilla. Indeed, it has remained an important name in the Portuguese collective memory, as a means by which brands could achieve unprecedented visibility. Its great relevance for Portuguese advertising and the contribution it made to the divulgation of design is revealed by the fact that the name ETP subsequently was adopted by future generations of designers in Portugal (such as José Rocha's Estúdio Técnico de Publicidade or "Technical Advertising Studio" set up in Lisbon in 1936 with the participation of Carlos Rocha and Fred Kradolfer). ETP, led by Raul de Caldevilla, undoubtedly played a vital role in the construction and comprehension of the history of design in Portugal.

Acknowledgment

This article presents the results of the research undertaken for my doctoral dissertation. I would like to express my thanks to Victor Margolin for his assistance in structuring this document, and to my supervisors, Anna Calvera and Vasco Branco, for all of the guidance and support they have given me throughout the course of my Ph.D.

- 1 Juliano Ribeiro, *Montras—Interview com Raúl Caldevilla, Técnico de Publicidade* (Porto: n.p., 1941), 1920.
- 2 M. Félix Ribeiro, *Filmes, Figuras e Factos da História do Cinema Português* (Lisboa: Cinemateca Portuguesa, 1983), 144.
- 3 *Ibid.*, 144.
- 4 The company name was registered on August 12, 1914 under entry No. 17,571 in the Ministry of Development. Tiago Ribeiro Ramos Baptista, *Sobre Alguns Cartazes da ETP de Raul de Caldevilla* (Lisboa: n.p., 1998), 33.
- 5 ETP, *Anúncios que dão na Vista* (Porto: ETP, 1914), 3.
- 6 Juliano Ribeiro, *Montras—Interview com Raúl Caldevilla, Técnico de Publicidade*, 18.
- 7 *Ibid.*, 22.
- 8 José Cardoso Júnior, *Raul Caldevilla* (Porto: Núcleo de Iniciativa Nacional, 1943), 25–26.
- 9 Alberto Bramão et. al, *O utilitário de Raúl de Caldevilla* (Porto: n.p., 1943), 8.
- 10 Alves Costa, *Raul de Caldevilla* (Lisboa: Cinemateca Portuguesa, 1963), 37.
- 11 Juliano Ribeiro, *Montras—Interview com Raúl Caldevilla, Técnico de Publicidade*, 11.
- 12 *Ibid.*, 12–13.
- 13 ETP, *Anúncios que dão na Vista*, 11.
- 14 Port-wine producer. Still exist as a commercial brand known as "Porto Cálem."

- 15 Port-wine producer. Still exist as a commercial brand known as “Ramos Pinto.”
- 16 Raul de Caldevilla, *Serenamente ...* (Porto: n.p., 1923), 8.
- 17 In an interview, Caldevilla explains that the “graphic workshops” not only produced advertising material for other brands, but also publicized the films made by ETP. However, there are few examples of graphic objects related to film production. Alves Costa, *Raul de Caldevilla*, 8.
- 18 ETP, *Anúncios que dão na Vista*, 2.
- 19 *Ibid.*, 10.
- 20 *Ibid.*, 10.
- 21 Tiago Ribeiro Ramos Baptista, *Sobre Alguns Cartazes da ETP de Raul de Caldevilla*, 13.
- 22 *Ibid.*, 15.
- 23 M. Félix Ribeiro, *Filmes, Figuras e Factos da História do Cinema Português*, 146.
- 24 “One month later, the biscuit stocks ran out across the entire country; an effect that had never before been caused by advertising.” Joaquim Vieira, *Portugal século XX: Crónica em Imagens 1910–1920* (Lisboa: Círculo de Leitores, 1999), 148.
- 25 M. Félix Ribeiro, *Filmes, Figuras e Factos da História do Cinema Português*, 146.
- 26 ETP, *Anúncios que dão na Vista*, 17.
- 27 “Editions of 500 and 1,000 copies were produced to be affixed in general stores and, later, in the streets.” Theresa Lobo, *Cartazes Publicitários: Coleção Empreza do Bolhão* (Lisboa: Edições Inapa, 2001), 6.
- 28 *Ibid.*, 41.
- 29 The modernist influence on poster production of the period is visible in the poster advertising the tea *Flor da China*, which is an almost complete transposition of another poster by Ludwig Hohlwein (Figures 20 and 20a). This specific example proves the importance of foreign representations in the Portuguese context, and shows how they served as models to inspire Portuguese artists. The same can be seen with the Macedo’s signature, which consists of the use of the initials MD, represented in a very similar way to the signature of Albrecht Dürer (Figure 21).

- 30 Theresa Lobo, *Cartazes Publicitários: Coleção Empreza do Bolhão*, 19.
- 31 José Augusto França, *Ramos Pinto 1880–1980* (Gaia: Ramos Pinto, 2000), 13–27.
- 32 This was a Paris-based printer that specialized in poster reproduction. It also functioned as a commercial agent, mediating between businesses that wished to advertise their products and the creative teams that could do the work; and contracting artists such as Jean d’Ylen, Leonetto Cappiello, and René Vincent.
- 33 Tiago Ribeiro Ramos Baptista, *Sobre Alguns Cartazes da ETP de Raul de Caldevilla*, 13.
- 34 Raul de Caldevilla, *Serenamente ...*, 29.
- 35 “This is not just one more lithographic system. Without wishing to belittle any of the others that presently exist, this kind of lithography offers absolute quality, using the most modern and efficient printing processes. Given the excellence of the work produced, it may serve the country by becoming a large and important export industry. ... I believe that export industries are the future. In this case, for the first time ever, we will be able to distribute our lithographic specimens around the world ...” *Ibid.*, 10–11.



Figure 20 (above left)
Diogo de Macedo, ETP, “Flower of China – Tea – Coffee – Exquisite Chocolates.” Collection Biblioteca Nacional de Portugal, 1914-1916.

Figure 20 a. (above right)
Ludwig Hohlwein, 1909.



Figure 21 (above)
The initials of Albrecht Dürer and Diogo de Macedo.

- 36 *Ibid.*, 23.
- 37 *Ibid.*, 23–25.
- 38 “The 1917–1918 archives show that maquettes were made for some two hundred tramcars.” Theresa Lobo, *Cartazes Publicitários: Coleção Empreza do Bolhão*, 16.
- 39 Raul de Caldevilla, *Serenamente ...*, 17–20.
- 40 *Ibid.*, 14.
- 41 “... bring it here with the same artistic direction as over there, and start to produce in Portugal the same beautiful things that we import from abroad, while at the same time extending our sales to foreign markets, gradually expanding production.” *Ibid.*, 28.
- 42 *Ibid.*, 11.
- 43 “... what I wanted to bring to this company, ... based solely upon the prodigiously inventive technical talent of a man called Guilherme Frey, who acquired his merit and acclaim in lithography in Europe and North America, and is now a venerated and respected name, whose skill cannot easily be matched with any authority.” *Ibid.*, 12.
- 44 Tiago Ribeiro Ramos Baptista, *Sobre Alguns Cartazes da ETP de Raul de Caldevilla*, 23.
- 45 Raul de Caldevilla, *Serenamente ...*, 12–13.
- 46 *Ibid.*, 29–31.
- 47 “Having discussed the proposed purchase of the Frey company in Zurich, which he had raised in 1919, the Board decided in February 1920 to acquire it. ... So, if that company was sold three years ago for 800.000\$00 escudos, how much is this one worth, discounting the enormous stock of blocks and the Frey process, which having lain unproductive in a corner of the workshop, was not certainly its own fault, poor inanimate thing?” *Ibid.*, 29–33.
- 48 “You are undoubtedly unaware, Sirs, that the Company may sell the secret of the Frey process to Spain, Brazil, and Portugal.” *Ibid.*, 33–34.
- 49 Interview with Raul Caldevilla. Juliano Ribeiro, *Montras—Interview com Raúl Caldevilla, Técnico de Publicidade*, 10.

Witnesses to Design: A Phenomenology of Comparative Design

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This research is concerned with describing the experience of being a designer and doing design. Many case studies have described individual experiences, both of designers reflecting on their own work, and academic studies of expert design work as performed in a professional context. Such studies are an important component of design research, and provide an essential foundation and sounding board for design theory. Traditionally, this research has concentrated on practice in a particular industry or company, generalizing to an industry sector or designing at large, from a relatively small number of cases. We depart from the common practice by comparing the experience of designers across a very wide range of domains, reported outside of its normal professional context, and in comparison to other design contexts.

We report on a series of research workshops, each including several professional designers, initiated with the specific objective of making a comparison across design disciplines. At each workshop, designers presented case study illustrations of their practice for discussion with designers from other disciplines. This paper describes the motivation, methodology, and results of this project. We also propose a novel theoretical basis for our comparative approach, and the implications that this might have for other design research.

The nature of our research and findings naturally is quite different from research that focuses on specific design activities. Previous comparative research more often has aimed to establish general criteria for defining concepts and theories, relating core concepts in research and theory-making to designing and designs¹ Our aim is not to produce generic findings applying to all cases of design in all circumstances, but rather to develop a rich understanding of recurring behaviors across different domains, even though these might not apply to every process. As a result, comparative design is complementary to research on specific design practice, as well as research that aims to describe design in generic terms.

Prevailing Approaches to Descriptive Design Research

Most design research is not comparative at the outset, but grounded

1 T. Love, "Constructing a Coherent Cross-disciplinary Body of Theory about Designing and Designs: Some Philosophical Issues," *Design Studies* 23 (2002): 345–361; and I. M. M. J. Reyman, "Improving Design Processes through Structured Reflection: A Domain-Independent Approach" (Ph.D. thesis, 2001, Technische Universiteit Eindhoven, Eindhoven, The Netherlands).

in specific design disciplines and, indeed, often is conducted by researchers educated in a particular design tradition. That perspective is emphasized in research accounts by a natural concern for specific products or contexts in which a functional account of design work will be applied. Types of theoretical reflection vary considerably between design domains, often gaining structure from the structures appearing in the work itself. A natural structuring principle is to account for the diversity of products designed by a profession; perhaps according to their internal complexity, cost, or users. Craft design traditions such as jewelry or fashion also may be concerned with classifications and descriptions of the materials to which designers have access. The tools used in design and manufacture might structure theory, especially in design professions in which tools are still under development, and are theorized as an aid to innovation.² Finally, design research grounded in reflective practice will inevitably be concerned with the processes of design, and the implications of professional work.

Because design research (like medical or engineering research) has an academic literature closely associated with professional practice, it is often normative in its aims. Contemporary schooling encourages professional disciplines to employ academia in a service role, providing theorized conceptions of the profession alongside technical skills and aspirations of best practice. Whatever the actual achievements of design education in terms of professional preparation, the intellectual influence on a profession of normative theory is undeniable. Analytical professions such as engineering have a strong normative tradition, with education emphasizing the scientific and mathematical underpinnings of the field rather than the individual acquisition of craft skills. Where there is emphasis on craft-based training, for example in fashion design, theory may be contributed by outside observers such as cultural historians or sociologists.

Design research supplies normative accounts of design disciplines on the basis of observation and analysis. In fields with strong academic traditions, such as architecture, senior designers wishing to exert practice-based influence on theory often engage in design research. Further normative influences can come from the developers of computer tools that define a mode of working, or through consultancies that formulate industry standard norms. Designers in fields with less-well-established academic traditions might influence peers by publishing their work in exhibitions, books, or written accounts.

We believe all of the above to be laudable activities of design research, and natural ways for academics to engage with a profession. A comparative design agenda is complementary to such research, stepping aside from the structures and normative accounts of any one discipline to provide an alternative perspective. We believe this perspective brings value in itself as designers see

² A. F. Blackwell, "The Reification of Metaphor as a Design Tool," *ACM Transactions on CHI* 13:4 (2006): 1–41.

their own professional practice reflected in cases from other fields, encouraging reflection on their own ways of working, and drawing attention to aspects of their work which may be clearer in other contexts.

Our Comparative Approach—Scope and Interests

The practical implications of a comparative design strategy have been, for us, the need to make broad comparisons across many different fields. Our primary focus has not been on specific designed pieces although, of course, we find it important to ground our discourse in tangible products or projects. Furthermore, we do not treat any one design profession as providing a normative description of the nature of design. Instead, we have looked for patterns of professional experience, as understood by design professionals themselves. We wished to offer designers an opportunity to reflect on the nature of their own work, but in a context in which they were thrown together with others from different specialist backgrounds, both practitioners and researchers. This allowed us to draw on patterns of experience within one professional specialism, extending these perspectives into other fields in which the same patterns may be secondary or buried. This work initially was developed by a research team with backgrounds in clothing, architecture, typography, engineering, and software. In the course of our research, we cast our net wider still, as described below. Our ultimate objective has been to build a coherent comparative description based on commonalities and marked differences that have arisen through the resulting series of interdisciplinary encounters.

Why Is a Comparative View Necessary?

There are several practical motivations for comparative study across multiple design disciplines. The first of these is that many products require design input from a variety of different fields; not just a single discipline. Improved performance in multidisciplinary design teams depends on the quality of collaboration among members of the team. Design teaching and research should help us understand the similarities and differences between disciplines, if it is to prepare students for professional life. Furthermore, identifying best practices in design process may provide opportunities for the transfer of competence across disciplines. We might expect to find that different professions are particularly strong in their approaches to areas such as evaluation, project management, or ideation—often in response to risks that are especially salient in their domain. Comparative approaches also can be of value when novel tools and methods are developed, and the results used to assess the potential for innovation across a wider range of applications.

In addition to these practical advantages, there are also academic grounds to motivate a comparative approach. Design studies as a discipline can clearly benefit from comparison across

a broader range of activity, complementing studies grounded in specific professional work. While there is undoubtedly great diversity in design activity, some generic behaviors are observed in many different contexts. It is often the case that the specific and generic are observed at different granularities of action, or level of detail in articulation of the designed artifact. Comparative study allows us to identify the relative level of detail at which behavior starts to diversify. Our own approach therefore was motivated by both practical and theoretical concerns.

A Theoretical Stance for Comparing Diverse Experience

Our comparison of different kinds of design focuses not on a comparison of different products (materiality, function, usage, interpretation, etc.), but on the process of designing. We hoped that designers would offer, rather than factual accounts of process for us to interpret from our own perspective, richer descriptions allowing us to understand the perceptions, priorities, and judgments they bring to their work. This ambition is epistemologically problematic in the sense that individuals' experiences are not directly accessible, or even directly comparable, to the experience of others. Indeed, if design expertise arises from sources that include nonverbal experience of craft skill, material products, or creative ideation, then the resulting knowledge may not be expressible even by the most expert designer. Of course, while designers might not be able to articulate how they achieve ideas and decisions, they can rationalize and articulate parts of their process—and do so regularly as part of professional practice.

The philosophical questions arising in comparative design research also arise in other comparative fields, such as comparative literature or comparative religion. By looking at these fields, methodological guidance can be brought to comparative design research. To illustrate, consider the academic enterprise of comparative religion, which aims to understand and contrast experiences that are not only fully expressible and, indeed, when described, might be literally contradictory. The ambition remains objective, as defined by Sharpe: "The serious and, as far as possible, dispassionate study of material drawn from all the accessible religious traditions of the world [...] as phenomena to be observed, rather than as creeds to be followed."³ Originally derived from the philosophical traditions of comparative linguistics, comparative religion has since moved further toward a phenomenological stance for reasons that we will explain below.

Establishing an analogy between comparative design and comparative religion allows us to be aware of the intellectual temptations and tendencies that have been problematic or unproductive in the context of religious studies. We then can be appropriately cautious when the same temptations appear in our own study. In particular, the comparative approach to the study

³ E. J. Sharpe, *Comparative Religion: A History* (London: Duckworth, 1975).

of religion aims to avoid the relatively well-trodden paths of “syncretism” (adopting beliefs and practices from other religious traditions); “apologetics” (the defense of true religion against false creeds); and “Unitarianism” (the attempt to construct a single belief system to supplant others).

Each of these alternatives to the comparative stance has analogs in encounters between design disciplines. As an example, a popular collection of essays on “Bringing Design to Software”⁴ includes evidence of syncretism (e.g., the notion of the “software architect”), some degree of proselytizing (e.g., the implication that software was not previously designed), and perhaps also evidence of Unitarian tendencies (e.g., the notion that design practices such as studio teaching might apply outside of their traditional context to all kinds of design). Such encounters, of course, can be a source of creativity. The evolution of dynamic new religious movements from encounters between traditions might be positively regarded. Nevertheless, interventions of this kind are not the primary aim of comparative religion, and need not be the aim of comparative design.

If these potential temptations of research in comparative religion have analogs in design, then the methodological and theoretical precautions against them that have been developed for the comparative study of religion are also applicable to comparative design. This confirms the strategic policy to focus on the professional experience of specific design disciplines, as reported by individual practitioners, rather than attempting to formulate generic or universal principles of ideal design practice, whether syncretistic, apologist, or Unitarian. It also enables a comparative stance that is relatively independent of disciplinary design practices as they are conventionally studied or taught. However, we also need to be cautious with regard to two further intellectual tendencies that have regularly appeared in the study of religion. One common motivation for undertaking comparisons of different religious traditions is the promotion of an evolutionary doctrine called “dispensationalism” in Christian theology, which seeks an escape from the primitive conditions of the past either through revelation or self-improvement. Another tempting position that may be found both in comparative religion and comparative design is the relativist abdication of “agnosticism,” in which comparisons are used in order to demonstrate that serious intellectual discourse is either impossible or immoral. In design studies, one can observe frequent examples of both evolutionary dispensationalism (e.g., in engineering design literature which prescribes modifications to best practice for future product success), or pragmatic agnosticism, which glosses over the details of the creative process on the grounds that creativity is not describable.

Students of comparative religion are aware that evolutionary or agnostic conclusions will not be recognized as valid by the people

4 *Bringing Design to Software*, T. Winograd, ed. (Boston: Addison-Wesley, 1996).

whose beliefs and practices are being studied, and that adherents might, in fact, regard such research as academic attacks on their own beliefs and practices. This problem is taken seriously in comparative religion, and also should be in comparative design. In particular, an evolutionary view requires that some “ranking” of more and less evolved practices or beliefs be established within a design domain, if not across domains. The researcher’s response to this—a response that we advocate for comparative design—is a phenomenological stance in which it is the reports of religious experience that are taken to be the object of study, rather than any attempt to uncover truths that might stand independently of such reports by the practitioners of religious belief. Therefore, we have chosen to engage with design practitioners as witnesses for professional peers, rather than simple data sources to construct or confirm our own theories of design.

The goal of modern comparative study is not, therefore, to develop a reductive account that might capture the essentials of experience (in contrast to the past efforts of psychological, political, and anthropological commentators on religious traditions such as Freud, Marx, or Durkheim). Instead, common elements such as symbols or myths may be observed and characterized as components of a richer account of human experience. The goal of phenomenology in comparative religion is to develop a typology of phenomena, rather than a description of essences. Its method is first to assign names to appearances; second, to interpret and experience those appearances; third, to withdraw and contemplate; fourth, to clarify and comprehend; and finally to testify to that understanding.⁵ This is our own goal and method: undertaking a thematic comparison of the particular, rather than a prescription of universals.

One problem with comparative and phenomenological discourse is the way in which we shift discussion from “a religion and its plural” to “religion” as a phenomenon⁶ in terms that might not be acknowledged by any one practitioner. The same issue has a classic analog in design studies, when commentators talk in terms of “design” abstracted from the design of any particular thing. Our objective in using the term generically has been to establish a broad community of design professions supporting public policy interventions, and advocating the value of professionalized design work and research. This abstract shift introduces the methodological problem of what phenomena should qualify for consideration as design experiences. In the phenomenology of religion, in which that problem is constant, one of the few proven working definitions is that a religious experience chosen for study should be drawn from the class of experiences that religious people hold to be religious. In the same way, we recommend that, if some activity is recognized as being a design activity by practitioners of design, then it is a reasonable object of study for comparative design. Cantwell Smith says that we do not study “religion” but “religious persons.”⁷ In the same way, comparative design should not attempt to define (or

5 G. Van der Leeuw, *Religion in Essence and Manifestation* (1933/1938).

6 Cantwell Smith, *The Meaning and End of Religion* (New York: McMillan, 1962).

7 Ibid.

redefine) design, but only make a comparative study of “designers.” This might include consideration of the attitudes that one design profession might have with regard to others.

The Across Design Method

The project in which we developed and applied this comparative approach, called “Across Design,” was a joint venture between Cambridge University and MIT, with collaboration from design researchers and educators elsewhere. Our fundamental concern was to bring together both designers and design researchers from many disciplines in order to negotiate a shared analytic framework—the assignment of names to common appearances, as in the phenomenological methodology of van der Leeuw.⁸ The work was undertaken in a series of two-day workshops, initially involving a diverse team of design researchers, then extending to design professionals who were invited as witnesses to the project.

The scope of our attention was initially negotiated at a workshop meeting of the collaborating researchers, drawing on our personal experience of professional design, and giving considered weight to our competences within the community of conventional design research. Rather than attempt a disinterested or abstract analytic stance, we endeavored to capture the breadth of our prior interest and expertise in particular research topics (for example, the use of design representations, or collaborative methods and processes). These prior interests were organized into an outline framework offering common terminology across our domains of interest. In many ways, it was the negotiation of common terms that was the critical outcome of this phase. The structure of the framework was later de-emphasized, reducing it to broad visual groupings. The existence of this representation allowed us to set it to one side as a research concern (with no more debate over interpretation and categorization), while also presenting it to our future informants in order that they might anticipate the kinds of vocabulary that we researchers used, and the kinds of topics in which we considered ourselves expert.

The remaining activities of the project consisted of six further workshops, to each of which we invited between three and five professional designers from very different disciplines. We extended our invitations to a range of professions that exhibited the kind of activities identified in our draft framework, with the intention of covering as wide a range as possible of contemporary professional design activity. This strategy led us to include some professions that might normally be excluded from the traditional scope of design research (for example, a computational chemist responsible for “designing” new chemical compounds for the pharmaceutical industry).

We recruited twenty-four professional designers, working from contacts in our respective research fields to identify those

8 Van der Leeuw, *Religion in Essence and Manifestation*.

recognized by their peers as leading practitioners. All were highly experienced designers in their field, many with twenty or more years of experience. A frequent consequence of these selection criteria was that the designer often had some form of academic affiliation themselves, for example, as a guest tutor in a design school. These witnesses to professional design practice included two fashion designers (a couturier and a pattern designer), three architects (one designing public housing, one private housing, and one public assembly spaces), two engine designers (jet engines and diesel engines), two product designers (one medical products and train interiors, and one consumer products and car styling), two engineers (a conceptual designer of cars and a medical device designer), two multimedia designers (university courses and websites), two software designers (large government systems and single-user programming languages), as well as a drug designer, a civil engineer, a filmmaker, a graphic designer, a food product designer, a packaging designer, an electronic product designer, and a furniture designer.

Our prior experience of interdisciplinary academic work⁹ suggested that encounters between different disciplines are compromised by privileging any one perspective or disciplinary vocabulary at the outset of a meeting (although the composition of our research team and the balance of participants brought a slight bias towards engineering design). In addition to the design witnesses, workshops were restricted to approximately eight design researchers and observers. These were drawn from our team of research collaborators, a few of our students (operating recording equipment), and one or two invited guests.

Data Characterization and Analysis

The framework that we have described justifies a wider field of view than is normally the case in design research, one that values the individual experience as much as the instrumental methods of designing. We therefore considered the testimonies that we were given from a perspective outside of the normal context of design discourse; consciously treating our informants as witnesses rather than objects of study. In the course of the workshops, designers at one and the same time spoke personally about the challenges they faced and sometimes overcame, while describing in a disinterested way the techniques of design process and the working of design tools. Our own concern was to find consensus and recognition at each workshop and, in particular, to find recognition of good practice that is accepted voluntarily rather than imposed on designers as an attempt at prescription by academics (whether on the basis of evolutionary replacement or normative theory).

Each workshop was recorded throughout on audio and video tape. Most witnesses came with prepared presentations, and we made copies of these. Many also brought artifacts to display,

9 A. F. Blackwell, "Designing Knowledge: An Interdisciplinary Experiment in Research Infrastructure for Shared Description" (Cambridge University Computer Laboratory Technical Report UCAM-CL-TR-664, 2006).

including examples of finished products, public display pieces (for example, a cross-section of a jet turbine blade), or process exhibits such as prototypes and drawings. All of these were photographed by the recording team. After each workshop, the audio recordings were transcribed and distributed to the research team. Finally, members of the team visited many of the witnesses following each workshop, interviewing them in the context of their own workplace. These interviews primarily were motivated by the need to capture more detail of the case studies for use in design education, and by the need for suitable illustrative material that could be used in teaching and in subsequent publications.

What arose from this material was a developing understanding, not so much of analytic commonality, but of what had been special about each of the testimonies we heard. The fact that this understanding was grounded in specific products, specific projects, and personal experience meant that it regularly demanded novel research emphases beyond those we had brought to the project at the outset. Members of the research team were able to use data collected during the project to throw light on their existing research interests,¹⁰ but the principal research outcome has been the new kinds of comparative understanding developed out of reflection on specific experiences and case studies. This has resulted in rich new perspectives on the variety of design experience, allowing us to contribute to design education,¹¹ to the understanding of design as a genus of human work,¹² and to illustrate the diverse ecology of design for its own sake.¹³ Furthermore, all contributors to the Across Design workshops left with new experience of comparative reflection on their own work. For many, this was such powerful experience that we considered sustaining the series purely for the benefit experienced by workshop participants, even if no further academic analysis was done.

Illustrative Findings

The findings from the Across Design project have been rich and diverse, with an extensive report to be published in a forthcoming book.¹⁴ In the current paper, whose purpose is to present the philosophy and methodology of the project, we include only a small sample to illustrate the potential of this approach for future research.

The most striking finding over all six research workshops was the recognition by our witnesses of the commonality in their experience. This was not because they expected uniformity, having regarded design as a generic abstract endeavor. We observed appreciative surprise from designers realizing the degree to which the experience of other professionals, who they might not have considered as natural peers, did in fact extend across design. It was striking that all designers seemed to have no problem understanding their colleagues' presentations. Terminology was

10 See, for example, C. M. Eckert, C. F. Earl, M. K. Stacey, and P. J. Clarkson, "Risk, Across Design Domains," *Proceedings of the 15th International Conference on Engineering Design* (The Design Society, Melbourne, Australia, August 2000); and C. M. Eckert, A. F. Blackwell, M. K. Stacey, and C. F. Earl, "Sketching across Design Domains," *Visual Communication* (in press).

11 C. F. Earl, *T211 Design and Designing* (Open University course notes reader, 2004).

12 A. F. Blackwell, "The Work of Design and the Design of Work" to appear in Levin, Laughlin, and de la Rocha, *Handbook on the Interdisciplinary Study of Work* (Cambridge, MA: MIT Press).

13 C. M. Eckert, C. F. Earl, and L. L. Bucciarelli, from a book to be published by MIT Press describing the Across Design project.

14 Ibid.

rarely a problem, and clarified easily when questioned. Even if they were unfamiliar with the domains, and thus the terminology; the context disambiguated the details, and participants described subjective comprehension of each other's major concerns.

General themes developed from triangulation—recurrence of particular concerns in multiple workshops, accompanied by rich description, discussion, and recognition by participants. We briefly describe three themes to illustrate the nature of the findings. We have chosen themes that also suggest some analogy to the experience of religion, a novel perspective that happened to intrigue us because of our cognate methodological stance. However, we should emphasize that this is not a necessary result of the method, and that our purpose is not to suggest that design is like religion. It is the method of comparison that we transfer from the study of comparative religion to comparative design, which does not require any further analogy between the methods of religion and design.

What Does It Mean to Be a Good Designer?

A common concern of religion is the question of what it means to live a good life. For the individual believer, this often involves a tension between ideal prescriptions and personal achievements, resolved differently as prescribed by different traditions, whether involving resignation, struggle, or acknowledgement of failure. Discussion of personal aspirations and achievements at the Across Design workshops often considered the question of how a designer assesses the quality of his or her work. We were surprised at the diversity of criteria by which designers evaluated their work and motivated their professional activities. For many, it was recognition by their community of design peers that motivated them, rather than the opinion of customers or employers.

Relationship of the Designer to the “Customer”

The variety of relationships that professional designers maintain is extensive—comparable to the relationships that priesthoods have with their various constituencies. Some withdraw from society; while others engage broadly in ministry or social service. However, in all cases, they define a social role. The professional designers we met in Across Design have surprisingly little contact with the end-users of products. The design brief might be founded on market research, including surveys of the eventual users or customers, but it was unusual among our sample for the designer to meet these users. Instead, projects involved collaboration between teams of specialists, extending over months or years, with the numbers varying from a graphic designer working alone to a jet engine design project involving thousands of people.

Education and the Professions

Religious traditions must be centrally concerned with sustaining

themselves, otherwise they would never have become traditions. The same is true of design traditions, and indeed of all professions. The “great” religious traditions tend to be founded or maintained in scriptures in which education is central to their doctrines and practices. We did not anticipate this as a common concern of the Across Design workshops, but found that witnesses were deeply concerned with the structure of their profession, and with the future continuity of their professional communities. Their work often included the education of young designers, and lobbying public policy or professional organizations in the interests of their peers. This was particularly apparent in fields for which international competition was devaluing traditional design values, or technological change resulted in the loss of traditional skills.

Implications for Design/Research

The Across Design project is one in which all participants have found great value, with diverse potential for professional practice, policy, and education. We believe that our methods and theoretical stance offer a novel direction for design research, and that future research will continue to be productive. Phenomenological approaches to comparative religion have been refined over thirty years of investigation, and offer a rigorous theoretical foundation for comparative design. Furthermore, Coyne recently has described the need to shift the ground of design problem-solving from a positivist stance to a phenomenologically informed stance, more fully recognizing the rich human and social context of professional design.¹⁵ Our own work demonstrates that this attitude is applicable not only to design activity, but to the enterprise of design research.

After our workshops, we became aware of parallels to the Scriptural Reasoning (SR) approach to interfaith encounters.¹⁶ SR takes advantage of the fact that Abrahamic¹⁷ faiths share sacred texts and traditions of textual analysis. SR meetings involve members of different faiths working through contemporary disputes by sitting together to read and interpret their own and each other’s texts. Common practice in the use of texts, and mutual respect for the exhibition of skilled reading, help participants understand and appreciate the varying perspectives of their collaborators. The most significant value of an SR meeting is in the meeting itself, rather than any product. This could be true of Across Design meetings, where the “texts” are the designed products that demonstrate mutually respected skill. Just as in SR, where each scripture offers a degree of authority to the adherent of that faith, but is open to reading and exposition in the company of others, a designed product is also open to interpretation and discussion by other design traditions, while clearly affording a privileged interpretive platform for the designer who made it.

Our main objective in this work has not been to establish a general analogy between design and religion, but to adopt a

15 R. Coyne, “Wicked Problems Revisited” *Design Studies* 26 (2005): 5–17.

16 J. W. Bailey, “New Models for Religion in Public: Interfaith Friendship and the Politics of Scriptural Reasoning,” *Christian Century* (2006).

17 An inclusive term for the Jewish, Christian, and Muslim faiths; referring to their common origin.

comparative stance and methodology that will be of value to design and design research. As it happens, awareness of this analogy also encourages reflection on the ways that design professions are like religious professions, but that is a side effect rather than central to our method. We wished to draw away from describing universals of design; instead identifying aspects of design experience that recur across domains, and whose features offer a productive basis for confirmation or contrast when described by design researchers. The Across Design method gives designers a warrant to contribute to design research as peers, and indeed as the primary interpreters of their own experience. The academic setting and context of the workshop encourages critical reflection on case studies, such that expert practitioners are stimulated to pursue the comparative implications of their work. Academic workshop conveners are not interrogators, but facilitators and witnesses of this reflection. However, the designers themselves also act as witnesses—witnesses to the truth of their own experience in a sense that reflects the way we share and contrast human experience of diverse practices and beliefs.

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Design and the Construction of Publics

Carl DiSalvo

In his 1927 book *The Public and Its Problems*,¹ John Dewey sought to address the possibilities and inhibitors of collective political action in then contemporary times. Characteristic of his pragmatic thought, Dewey was interested in addressing the question of how a public is constituted, and how the constitution of a public is thwarted, in order to expound a set of propositions delineating the potentialities and conditions of collective political action. For Dewey, the philosophical investigation of the public could not be divorced from the “facts” of everyday life, or the need and desire to accomplish change in the civic arena. His treatment of the public as a philosophical subject thus was grounded in the concrete situations, experiences, and materiality of everyday life. As such, *The Public and Its Problems* stood as a robust inquiry that countered abstract discussions of “the state,” and articulated the opportunities and challenges of participatory democratic practices.

Indeed, although *The Public and Its Problems* is nearly a century old, it is still relevant and productive today, particularly in the context of design studies. It is relevant because it links with contemporary world conditions through its pluralistic stance, endorsing a public that is broad, inclusive, and multiple. It is productive because it provides numerous points of intersection with both design theory and professional design activity that suggest novel courses for thinking about and doing design. Specifically, within *The Public and Its Problems* are leads to investigating and understanding the ways in which the products and processes of design intersect with publics. Of these leads, the notion that publics are “constructed” is perhaps most salient to contemporary design because it prompts a consideration of the means by which publics are assembled; begging the question: “How does, or might, design contribute to the construction of publics?”

Beyond academic inquisitiveness, this question is significant with regard to the renewed interest in the intersection of technology, aesthetics, engineering, and politics; which surfaces “design” and “the public” as fundamental topics requiring address. Since the late 1990s, there has been a proliferation of projects that examine and experiment with the capability and role of design (broadly construed) in increasing societal awareness, and motivating and enabling political action. This is evident in a diversity of endeavors, ranging from comprehensive exhibits such as *Massive Change*² to the

1 John Dewey, *The Public and Its Problems* (Athens, OH: Swallow Press Books, Henry Holt & Company, 1927).

2 The documentation for the exhibition *Massive Change* can be found online at www.massivechange.com, last referenced on November 26, 2007. A book, also entitled *Massive Change*, accompanied the exhibition. See, Bruce Mau and Jennifer Leonard, *Massive Change* (London: Phaidon Press, 2004).

work of individuals such as Natalie Jeremijenko³ and collectives such as Futurefarmers.⁴ Making visible and known the complex situations of contemporary society, so that people might take action on those situations, is a common objective among many such projects, echoing (if not always referencing) Dewey's concerns in *The Public and Its Problems*. Indeed, Bruno Latour and Peter Weibel's exhibition and accompanying book project *Making Things Public: Atmospheres of Democracy*⁵ began an inquiry into this subject. Invoking Dewey, Latour, and Weibel asked the question: "How are things made public?" The complimentary question, "How are publics made with things?" remains unaddressed—but it is exactly this question that also should be asked as the products and processes of design are increasing politicized and used for political ends.

The notion that publics are constructed, and that the products and processes of design might contribute to the construction of publics, provides a valuable theme to conceptualize, describe, and critique a range of contemporary projects. The purpose of this essay is to articulate one way design might contribute to the construction of publics; and from that articulation, provide grounds for future scholarly criticism and assessment of such projects and activities. This articulation serves two purposes. First, it provides a means for scholars in design studies to better understand and respond to one course of the possible relationships between design and collective political action. Second, it provides the opportunity to contribute to an emerging, reinvigorated discourse on the public occurring across the arts, humanities, and social sciences; and to offer a position from design studies that expresses a distinctly intimate knowledge of the made and the making of things.

The Deweyan Public

This inquiry into design and the construction of publics begins with a more thorough understanding of the Deweyan public. The assertion that publics are not a priori existing masses is central to the notion of the construction of publics. The public is not something that has been and always will be. It is neither universal nor an abstraction. Rather, for Dewey, the public is a specifiable and discernible entity that is inextricable from its conditions of origin. More precisely, for Dewey, the public is an entity brought into being through issues for the purpose of contending with these issues in their current state and in anticipation of the future consequences of these issues. This notion of the public is repeated throughout *The Public and Its Problems*:

The public consists of all those who are affected by the indirect consequences of transactions to such an extent that is it deemed necessary to have those consequences systematically cared for.⁶

3 Natalie Jeremijenko's work has been widely recognized throughout the art, design, and engineering worlds. Her project *Feral Robot Dogs* was included in the 2006 Cooper-Hewitt Design Triennial, *Design Life Now*, and is documented in the exhibition catalog curated and authored by Barbara Bloemink, Brooke Hodge, Ellen Lupton, and Matilda McQuaid, *Design Life Now: National Design Triennial 2006* (New York: Cooper-Hewitt Museum, Smithsonian Institution, 2007). For an overview of Jeremijenko's work, see her Website at: www.nyu.edu/projects/xdesign, last referenced on November 26, 2007.

4 Futurefarmers work has been recognized in numerous exhibitions, most notably in the 2003 Cooper-Hewitt Design Triennial, *Inside Design Now*, and is documented in the exhibition catalog curated and authored by Barbara Bloemink, Brooke Hodge, Ellen Lupton, and Matilda McQuaid, *Inside Design Now: National Design Triennial 2003* (New York: Cooper-Hewitt Museum, Smithsonian Institution, 2004). For an overview of Futurefarmers work, see their Website at: futurefarmers.com, last referenced on November 26, 2007.

5 Bruno Latour and Peter Weibel, *Making Things Public: Atmospheres of Democracy* (Cambridge, MA: MIT Press, 2005).

6 John Dewey, *The Public and Its Problems*, 15–16.

and

Those indirectly and seriously affected for good or for evil form a group distinctive enough to require recognition and a name. The name selected is "The Public."⁷

and

Indirect, extensive, enduring and serious consequences of conjoint and interacting behavior call a public into existence having a common interest in controlling these consequences.⁸

The bond of a public to its conditions of origin is an inevitable outcome of the situatedness of publics. Publics arise from, and in response to, issues that are qualified by the context in which they are experienced. This has the effect of producing multiple publics from a single issue. For example, as Jason Corburn describes in *Street Science* (an ethnography of the intersections of local knowledge and community health planning), Hasidic Jews and Latinos in the same Brooklyn neighborhood facing the same environmental injustice responded very differently to the circumstances and consequences due to differences in cultural attitudes concerning the open discussion of health matters.⁹ Each of these groups would, for Dewey, be a different public, and this scenario exemplifies how a single, even shared, issue might result in a multiplicity of publics. In the same book, Corburn also discusses the relevance of different visual treatments of maps and spatial data, and how these different visual treatments impacted the construed efficacy of the artifacts by novice cartographers and professional health researchers.¹⁰ The diverse readings of the same artifact reveal differences in cultural assumptions of knowledge and truth, and consequently, multiple publics, which are delineated by their different interpretations of a shared representation.

In addition to the notion that publics are situated and multiple, an important characteristic of Dewey's public, which distinguishes it from other theories and refreshes its potency today, is that the Deweyan public is not exclusive to a particular class or social milieu. A Deweyan public avoids having to manage the negotiations between a bourgeois and proletariat public required in navigating the work of Habermas¹¹ and Negt and Kluge;¹² arguably the other theorists whose work on the public has had the most significant impact on contemporary discourse. Although, in spirit, Habermas shares much with Dewey; the "public sphere," as Habermas depicts it, is more structured and confined than a Deweyan public. Indeed, the many and often contestational public spheres of Negt and Kluge are closer to the Deweyan public. The benefit of Dewey is that this tension between the bourgeois and proletariat is avoided through his stance of pluralism, which does not discriminate among the wide-ranging possible places of and actors within a public.

7 Ibid., 35.

8 Ibid., 126

9 Jason Corburn, *Street Science* (Cambridge: MA: MIT Press, 2005).

10 Ibid.

11 Jurgen Habermas, *Structural Transformation of the Public Sphere* (Cambridge, MA: MIT Press, 1989).

12 Oskar Negt and Alexander Kluge, *Public Sphere and Experience: Toward an Analysis of the Bourgeois and Proletarian Public Sphere* (Minneapolis, MN: University of Minnesota Press, 1993).

The Constructed Public and Its Problems

Publics are constructed in the sense that they are brought together through and around issues. But the issues themselves do not exhibit the agency to assemble people. Rather, it is the actions and effects of others communicating issues and their consequences, that prompt a public to come into being. This act of communication is both a problem for the construction of publics and a place where design contributions occur.

For Dewey, the problem of the public was not a problem of definition—it was a problem of action. The question of *what* constitutes a public served to highlight the concern of *how* a public is—or is not—constituted. The challenge of public action is traced to the inability of a public to form: before a public acts it must come into being. This inability to form, or form effectively, is not because of a lack of issues, but rather because the issues resist identification and articulation, leaving publics unformed and tentative. As Dewey states:

An inchoate public is capable of organization only when indirect consequences are perceived, and when it is possible to project agencies which order their occurrence. At present, many consequences are felt rather than perceived; they are suffered, but they cannot be said to be known, for they are not, by those who experience them, referred to their origins. It goes then without saying that agencies are not established which canalize the streams of social action and thereby regulate them, Hence publics are amorphous and unarticulated.¹³

Perceptive of Dewey in 1927 and of profound relevance today, particularly in the context of design, is the effect of technology on the formation of publics.

But the machine age has so enormously expanded, multiplied, intensified, and complicated the scope of indirect consequences, have formed such immense and consolidated unions in action, on an impersonal rather than community basis, that the resultant public cannot identify and distinguish itself.¹⁴

Little seems to have changed since 1927, except perhaps that the conditions of concern expressed by Dewey have been amplified, or at least seem to be more broadly “felt” to use his terminology. The reach and effects of technology are so pervasive and complicated that the untangling of source, course, and consequence has become a daunting imperative. It is precisely within this contemporary socio-technical mess of people, technologies, and objects (a mess that Dewey’s theory of the public is quite apt for negotiating) that this inquiry into design and the construction of publics is situated.

By understanding the role of issues to publics and their

13 John Dewey, *The Public and Its Problems*, 131.

14 *Ibid.*, 126

formation, we may now more precisely inquire into design and the construction of publics. Following from Dewey, a fundamental challenge in the formation of publics is making the conditions and consequences of an issue apparent and known. One way that design might contribute to the construction of publics is by the application of designerly means to this task. But what are these means, and what about them makes them designerly?

Identifying Design Tactics

Design tactics are designerly means directed towards the construction of publics. Tactics, in this case, references the work of de Certeau and his discussion of tactics and strategies in *The Practice of Everyday Life*.¹⁵ To de Certeau, strategies are expressions and structures of power exerted by institutions (broadly construed) that attempt to prescribe behavior and courses of action. In contrast, tactics are means developed by people to circumvent or negotiate strategies towards their own objectives and desires. In a strict sense (that is, adhering closely to de Certeau), these designerly means are both strategies and tactics.¹⁶ But emphasizing their tactical qualities is valuable for producing fitting descriptions. Framing the designerly means directed towards the construction of publics as *tactics* broadens the scope of who participates, how, and in what contexts, because design tactics may be used in projects outside of what we commonly consider design, by people other than we commonly consider designers. While design tactics draw on familiar design activities and forms (that is, they reference strategies), they are not the rote application of existing techniques. More often, they are adjustments to, appropriations, or manipulations of design products and processes to accommodate purposes beyond the common, often historically and professionally constrained, purposes of design.

Two such design tactics can be readily identified. These are the tactics of “projection” and “tracing.” Each speaks to Dewey’s concern for making the conditions and consequences of an issue apparent and known such that a public may form. In addition, while each tactic is grounded in the activities and forms of design, each interprets and extends the familiar products and processes of design, producing novel artifacts and events contributing towards the construction of publics.

The Tactic of Projection

Within the context of the construction of publics, the tactic of projection can be defined as the representation of a possible set of future consequences associated with an issue. Projections are based in facts (or least information considered fact)—they are not fictions. Projections are an advanced indication of what might be, informed by knowledge of the past and present, and rendered by means of a skilled supposition of how the “yet to come” might occur and to what effect.

15 Michel de Certeau, *The Practice of Everyday Life* (Berkeley, CA: University of California Press, 1984).

16 For some, labeling these designerly means as tactics may seem to be a misuse of de Certeau’s theory. Admittedly, these designerly means often are produced from within or in conjunction with institutions of power, thus conflicting with de Certeau.



Figure 1 (left)
Poo Lunchbox, from the exhibit *Is This Your Future?* Photo courtesy of Anthony Dunne and Fiona Raby, © 2004.



Figure 2 (right)
Poo Scenario from the exhibit *Is This Your Future?* Photo courtesy of Jason Evans, © 2004.

The tactic of projection is grounded in the established design practice of scenarios. But in the context of the construction publics, projections are not developed to suggest or direct possible courses of action, as is often is the purpose of scenarios and similar techniques. The purpose of a projection is to make apparent the possible consequences of an issue. In a recent essay, Margolin makes a useful distinction between predictive and prescriptive scenarios.¹⁷ While predictive scenarios suggest what *might* happen, prescriptive scenarios “embody strongly articulated visions of what should happen.”¹⁸ Within Margolin’s framework, the tactic of projection is closest in spirit to a predictive scenario. In addition to the nonprescriptive quality of a projection, the tactic is further characterized by the proficient use of design to express the range and complexity of possible consequences in an accessible and compelling manner. It is the particularities of this proficiency that qualify the projection as a design tactic, as opposed to a strategy or technique of planning or marketing.

The exhibit *Is This Your Future?* developed by Anthony Dunne, Fiona Raby, and Onkar Singh (with photographs by Jason Evans) is an exceptional case in point of projection. As designers and educators, Dunne and Raby are well known for their development of “Critical Design,”¹⁹ which they regard as an alternative to mainstream design in that the goal is the use of design to expose and explore the conditions and trajectories of contemporary design rather than the utilitarian problem-solving or surface-styling that has historically characterized design (particularly industrial design). They have advanced this agenda through a series of books and

17 Victor Margolin, “Design: The Future and the Human Spirit,” *Design Issues* 23:3 (Summer 2007).

18 *Ibid.*, 6.

19 See Anthony Dunne and Fiona Raby, *Design Noir: The Secret Life of Electronic Objects* (Basel: Birkhäuser Press, 2001) and Anthony Dunne, *Hertzian Tales: Electronic Products, Aesthetic Experience, and Critical Design* (Cambridge, MA: MIT Press, New Edition, 2006).



Figure 3
Teddy Bear Blood Bag, from the exhibit *Is This Your Future?* Photo courtesy of Anthony Dunne and Fiona Raby, © 2004.

high-profile projects, as well as curriculum developed as part of the Design Interactions program at the Royal College of Art. Recently, Dunne and Raby have begun to use the phrase “Design for Debate” to describe their work. This does not signal a move away from a critical stance, but provides a useful elucidation of their approach and intentions.

In 2004, Dunne, Raby, and Singh mounted an exhibition at the Science Museum of London examining possible future courses and outcomes of energy research and the role of individuals in the everyday production of energy. The result was surprising. Entitled “Is This Your Future?” Dunne, Raby, and Singh developed three scenarios grounded in contemporary scientific research that projected unconventional and yet imaginable futures. In “Hydrogen,” people are responsible for the production of their own sources of energy, for example hydrogen. In “Human Poo,” children are expected to save their bodily waste as a source of energy (Figure 1 and 2). And in “Meat Eating Products,” energy is harvested from the killing of pets (Figure 3). As Dunne and Raby state in their project documentation, while each of these scenarios may at first seem outlandish, they are in fact no more outlandish than the more typical “Wonderful World of Tomorrow” exhibits which tell a tale (perhaps more unrealistic) of the glorious opportunities of biotechnology:

The exhibit is aimed at children between the ages of 7 and 12. Everywhere they look they will see images showing how bright our technological future will be once we embrace new energy sources like Hydrogen. But things are not so simple with every new technology there are of course other consequences—economic, cultural and ethical. With this project, we wanted to encourage children to think about the implications of three different technologies, all real, but some more likely to happen than others.²⁰

The scenarios in *Is This Your Future?* exemplify the tactic of the project in that they employ design to express possible outcomes of pursuing current themes in the science and technology of energy production. Considering them within the conceptual frame of the tactic of projection provides a means for understanding, or at least inquiring into, how they contribute to an increased perception of the issues of energy production and, more broadly, biotechnology. One particularly relevant feature of the projections is that they present the interwoven spread of possible consequences, each of which, in turn, may become an issue in and of itself. For example, although one may be in favor of fossil fuel alternatives, the prospect of using living organisms for energy may be repugnant: in this case the issue of alternative energy intersects with, or gives rise to, issues pertaining to the treatment of animals. Thus, a more nuanced read of these projections, beyond a simple emotional response to the abjectness of the scenarios, surfaces future ethical quandaries

20 Excerpted from an interview with Anthony Dunne and Fiona Raby by Regine Debatty for We-Make-Money-Not-Art. Available online at: www.we-make-money-not-art.com/archives/009389.php, last referenced on November 29, 2007.

within energy production and biotechnology, prompting awareness of and reflection on what might be considered in Dewey's terms the "indirect consequences"²¹ of an issue.

The specifics of how design is employed in this project are significant. The scenarios constructed by Dunne, Raby, and Singh are striking exemplars of the tactic of projection because of the thorough and expert use of design skill in interpreting and extrapolating current scientific and technological research. Each is presented through a set of well-crafted product models, staged photographs of use, and accompanying text (See Figures 1, 2, and 3 again). The thorough and expert use of design skill suggests a defining characteristic of a designerly approach to the construction of publics: the activity of making apparent is pursued with sophisticated attention to the aesthetic characteristics of possible future conditions. The products models are made to appear realistic and alluring. The formal qualities of the models and photographs—the choice of materials, colors, shapes, and composition—are deftly fashioned. The projection is plausible and persuasive because the representations are so easily consumed in the present (they are visually striking) and imaginable to be consumed in the future (they appear like we envisage such "real" products would appear). It is in this sense that the use of the phrase "rendered by means of a skilled supposition" is so appropriate to describe the tactic of projection. The design tactic of projection is distinct by its application of the ability of representation and also by the thorough knowledge of the processes and trends of making designed things. It is through the intimate understanding of how complex ideas are transformed into products, services, and artifacts that the designer is able to persuasively infer what that future might be like.

The Tactic of Tracing

As a tactic, tracing takes on dual meanings. First, tracing is a following back to what Dewey calls "the origins of an issue."²²Inherent in tracing is the activity of revealing, of exposing the underlying structures, arguments, and assumptions of an issue. Second, tracing is an activity of "mark-making." To trace is to follow and record the presence and movement of an artifact, event, or idea. Within the context of the construction of publics the tactic of tracing can be defined as the use of designerly forms to detail and communicate, and to make known, the network(s) of materials, actions, concepts, and values that shape and frame an issue over time.

Communication design, inclusive of information and graphic design, is the most immediate place for locating the tactic of tracing within established design fields. Popular authors such as Tufte and Wurman have highlighted the pervasiveness of communication design in contemporary society; and scholars such as Buchanan, Kauffer, and Tyler have examined the rhetorical strategies and uses

21 John Dewey, *The Public and Its Problems*, 131.

22 *Ibid.*, 131.



Figure 4 (top)
Workbook packet from the *Zapped!* project.
Photo courtesy of Preemptive Media.

Figure 5 (bottom)
Documentation of *Zapped!* workshop. Photo
courtesy of Preemptive Media.

of communication design.²³ The tactic of tracing builds upon these discussions and activities, adapting them toward the construction of publics and, in the process, opening them to new contexts and effects. More specifically, the tactic of tracing is characterized by the use of designerly forms to creatively express the histories, discourses, and techniques that constitute an issue; in ways that foster knowledge through engagement. Increasingly, these forms reach beyond the common artifacts of communication design. In this way, tracing both connects with and extends contemporary design, particularly the areas of participatory and service-oriented practices that embrace forms of engagement and exchange beyond the traditional object.

The project *Zapped* by the collective Preemptive Media is a striking example of the tactic of projection. In part, it is striking because it exemplifies the ways design tactics are being used effectively, even furthered, outside of what we might commonly think of as a design project, thus reinforcing the notion of a tactic as an adjustment to, appropriation, or manipulation of design products and processes. As a collective, Preemptive Media is more aligned with art than design. However, the work of Preemptive Media demonstrates the blurring of contemporary practices between art and design, particularly in the context of socially-engaged work. This blurring results in a productive confusion between art and design in that it makes it easier to exchange forms, methods, and effects. Such exchanges are particularly fruitful to design, because arts practices and discourse have made much more significant inroads into the issues and sites of the public over the past several decades than has been witnessed within design.

Zapped is a project to raise awareness concerning Radio Frequency Identification (RFID), an emerging technology that allows objects and people to be tracked by means of low-cost digital “tags.” RFID has been, and continues to be, a contested technology; perhaps useful for the tracking of palettes through the industrial distribution system, but problematic when applied to the tracking of school children as was proposed in California in 2004.²⁴ According to Preemptive Media, the goal of *Zapped* is to enable others “to learn about and respond to”²⁵ RFID. To these ends, the project is comprised of multiple artifacts and formats including a keychain RFID detector, a workbook, an informational video, and a workshop that integrates these artifacts as well as providing an overview presentation on the history and current use of RFID, and an opportunity for hands-on engineering activities (Figures 4 and 5).

Each of these artifacts and formats presents information about RFID, often through complementary means. For example, through both the keychain RFID reader and the workbook, the basic operating requirements for RFID are explained and diagrammed. The workbook includes an illustrated timeline outlining the development and use of RFID, a brief taxonomy of relevant terms, and a simple game in which participants try to identify which

23 See Edward Tufte, *Beautiful Evidence* (Cheshire, CT: Graphics Press, 2006); Richard Saul Wurman, *Information Anxiety 2* (Indianapolis, IN: Que Publishing, 2000); Richard Buchanan, “Design and the New Rhetoric: Productive Arts in the Philosophy of Culture” in *Philosophy and Rhetoric* 34:3 (2001); David Kaufer and Brian Butler, *Rhetoric and the Arts of Design* (Mahwah, NJ: Lawrence Erlbaum, 1996); and Anne Tyler, “Shaping Belief: The Role of Audience in Visual Communication,” *Design Issues* 9:4 (1992).

24 In 2004, a California school proposed using RFID to track students. For a general overview, see Kim Zetter, “School RFID Plan Gets an F” in *WIRED* [Website] February 10, 2005, available online at: www.wired.com/politics/security/news/2005/02/66554, referenced on December 13, 2007.

25 See the *Zapped* project Website at: www.zapped-it.net/, last referenced on November 28, 2007.

Figure 6
RFID Fob from the *Zapped!* project. Photo
courtesy of Preemptive Media.



common household products are embedded with RFID. Through and across these artifacts, the applications of RFID in national security agendas, industrial operations, and consumer products are detailed, highlighting how they overlap and influence each other. Each artifact can be considered a separate trace, produced by Preemptive Media through research and production, that reveals and records the distinctive networks of influence that give RFID its known form. Each artifact is a separate “made-mark,” capturing and expressing the dynamic multifaceted existence of RFID as a technology and idea, and perhaps most important, capturing and expressing RFID as an issue.

The workshop format employed by Preemptive Media is particularly significant because it extends the revealing and recording of the trace into a novel format. The workshops utilize the artifacts to direct participants in an event that allows them to participate in the process of tracing through hands-on activities. For example, the keychain RFID detector is made by a simple modification of an existing key “fob” which participants in the workshop make themselves (Figure 6). Through the workshop, *Zapped* produces a unique moment of engagement with RFID as an issue, bringing together, but also extending the artifacts and processes of tracing into an event.

The *Zapped* project is exemplary of the tactic of tracing because of its use of a span of designerly forms to detail and communicate the expansive and interrelated histories, discourses, and techniques that structure RFID. On a simple level, these forms are designerly in that they draw from design artifacts such as information graphics and engineering prototypes. But in a more nuanced fashion, we can consider them designerly because they make an issue known by making it experientially accessible. The workbooks, videos, and prototypes allow us to read, see, touch, interact with, and even

manipulate RFID. The network(s) of materials, actions, concepts, and values that shape and frame the issue are not intellectualized and distanced: they are made tangible and at hand. The fact that *Zapped* may not be a traditional design project does not negate or lessen the ability or value of examining the project through the frame of a design tactic. The design tactic of tracing is not defined by context, but by method and intent; by the crafted transcription of complex information into comprehensible forms that appeal to our senses. These forms designed and developed by Preemptive Media attempt to make known a complex subject matter, in this case RFID, in such a way that it can become an issue; that is, in such a way that “the immense and consolidated unions”²⁶ that simultaneously muddle and define RFID are made perceptible and understandable.

The Temporal Stance and Discovery: Relational Grounds of Projection and Tracing

In addition to describing projection and tracing as tactics distinct from one another, it also is worthwhile to probe and discuss them in relation to one another. Understanding their relations better enables comparative descriptions of the tactics and projects, expanding the grounds for future scholarly criticism and assessment. There are two immediately identifiable relational grounds shared by projection and tracing: the temporal stance and discovery.

The Temporal Stance

The tactics of projection and tracing can be understood and described with regard to the temporal stance of each; that is, the way they orient towards the past or future. Projections begin in the present and then look to the future, making it visible. In contrast, tracings begin in the past and then bring that past to be experientially known in the present. These differing orientations reflect Dewey’s dual concerns with “the origins of an issue”²⁷ and its “indirect consequences.”²⁸ Such differing temporal orientations provide a clear basis for comparative descriptions. But in describing and critiquing these tactics, it also is important to understand that the temporal stance is not a static pose. Rather, it is an active dialectic referencing the past or future in order to attend to issues in the present.

Tactics reference the past or future because such reference provides the contextualization to current conditions necessary to identify and cast these conditions as issues. A condition is an issue in part because of its historical obfuscation or indeterminate future effect. So, to depict the present alone would be insufficient. Likewise, while projection and tracing respectively glance forward and back, it also would be a mistake to characterize them as practices of forecasting or history. Both are rooted in the now. The objective of a contribution to the construction of publics is to aide in making something occur in the present, not to provide the props for a future happening, or simply illuminate the past. Because issues are situated, the framing and presentation of an issue is reflexive of the current

26 John Dewey, *The Public and Its Problems*, 126.

27 *Ibid.*, 131.

28 *Ibid.*

conditions. Projections are an image of the future given what we know today, and tracings make the past relevant to a contemporary context. Thus, projections and tracings require a balance and flow between the past, present, and future to maintain the temporal stance. Descriptions and critiques of projects that employ these tactics should examine this balance and this flow as grounds for evaluation and judgment.

Discovery

Tactics also share the activity of discovery as the basis for contributing to the construction of publics. Issues are rarely given, and if they are given, tend to be so in the broadest of terms, still requiring research and elucidation to make them apparent and known. Through the process of discovery, issues are recognized and explored, and their factors and effects are articulated. Although Dewey does not address discovery in *The Public and Its Problems*, we can look to another work, *Logic: The Theory of Inquiry*,²⁹ to frame discovery in a Deweyan perspective. Discovery occurs through the process of inquiry, which Dewey defines as “the controlled or directed transformation of an indeterminate situation in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole.”³⁰ The indeterminate situation is the conditions of the issue, in their “expanded, multiplied, intensified, and complicated”³¹ form. Discovery is thus characterized by controlled and directed research, analysis, reflection, and synthesis, that produces a whole that is able to be made apparent and known.

The specific procedures of discovery are influenced and differentiated by the temporal stance and the audience, providing yet further grounds for comparative descriptions. Both projection and tracing begin with an investigation of the current state of knowledge, activities, and technologies in a given field or subject. But projection also requires investigation into how that knowledge, activities, and technologies change and progress over time, so that plausible anticipations of future effects might be made. For example, the projections created by Dunne, Raby, and Singh in *Is This Your Future?* required an understanding of the current state of research in the area of biotechnology, specifically bioenergy production and use. Furthermore, it required an understanding of the patterns and trajectories of product development within biotechnology. Tracing, in contrast, requires investigation into how a current state of affairs came into being and operates, in order to produce a thorough contemporary mapping of an issue. One way this is achieved is by cataloguing the varied discursive, material, and cultural factors that give shape to an issue. The tracings within *Zapped* exemplify this, since they capture and reflect the interplay of security, industrial, consumer, and engineering forces present in RFID.

Of course, the audience also plays a fundamental role in the process of discovery towards designerly contributions to the

29 John Dewey, *Logic: The Theory of Inquiry* (New York: Holt, Rinehart and Winston, 1938).

30 *Ibid.*, 104—105.

31 John Dewey, *The Public and Its Problems*, 126.

construction of publics. Given that tactics are designerly means for the identification and articulation of issues; such that they might be known enough to enable a public to form around them; a central concern is to discover what forms of expression are most appropriate and compelling for the those people and institutions the tactic is intended to communicate with. This process is familiar to design, and there is a wealth of scholarship to address the endeavor, particularly in the research literature concerning human-centered communication design.³² But the lessons available from art also should be brought to bear on the topic of discovery. Particularly since the mid-1970s, artists have developed innovative ways of communicating and engaging with the public. Documentation and discussion of these activities can found in the scholarship concerning public art, as well as the recent discussions of relation and dialogical aesthetics³³ The role of art in discovering expressive forms that might bring a public into being was not lost on Dewey for, as he stated, “Artists have always been the real purveyors of news, for it is not the outward happening itself which is new, but the kindling by it of emotion, perception, and appreciation.”³⁴

Within design, discovery is certainly not limited to the construction of publics. Discovery appears under many guises in design practice, but is most often cast as a component of “problem definition,” in which the designer expresses to a client what the designer has determined is the most pressing matter to be solved or remedied through design. While there are similarities between simple notions of problem definition and discovery, it is important to disambiguate them as activities. Within the context of the construction of publics, the issue—that thing which is discovered—is not necessarily presented in a manner that asks for a solution or remedy by design. Its discovery does not *de facto* imply that design be a component of addressing the issue. In contrast, problem definition often is a self-serving, self-perpetuating activity to solidify the current position and extend the reach of professional design practice. Problem definition, as commonly conceived, implies the identification of a matter that *can* and *should* be addressed by design. However, within the context of the construction of publics, the role of design may stop at the discovery and articulation of the issue—identifying and expressing the issue does not necessarily perpetuate the role of design and the designer. For example, the exhibit *Is This Your Future?* does not suggest that design be employed to do anything to thwart or enable the possible future states depicted. It is sufficient and complete for the projections simply to be proffered.

Establishing the Grounds for Criticism and Assessment

The tactics of projection and tracing name and outline how designerly means might be applied in the identification and articulation of issues, such that those issues might be known enough to enable a public to form around them. But more than identifying and

32 For example, see Jodi Forlizzi and Cherrie Lebbon, “From Formalism to Social Significance in Communication Design,” *Design Issues* 18:4 (Autumn 2002).

33 For recent overviews of public art, see W. J. T. Mitchell, *Art and the Public Sphere* (Chicago: University of Chicago Press, 1992) and Tom Finkelpearl, *Dialogues in Public Art* (Cambridge, MA: MIT Press, 2001). For a discussion of relational and dialogic aesthetics, see Nicolas Bourriaud, *Relational Aesthetics* (Paris: Les Presse Du Reel, 1998) and Grant Kester, *Conversation Pieces: Community and Communication in Modern Art* (Berkeley, CA: University of California Press, 2004).

34 John Dewey, *The Public and Its Problems*, 184.

describing such projects, a goal of this essay is to provide the grounds for criticism and assessment in order to support and foster scholarly inquiry. This criticism and assessment begins within design studies with an investigation of the tactics and those features that make them designerly, but also extends to include other disciplines that might comment on the efficacy of design in the political realm.

Projects first can be examined against the given definition of each tactic as a start for criticism. For example, for the tactic of projection, relevant questions to begin a critique would be: "How and how well are the aesthetic characteristics of possible future conditions portrayed?" and "Do the projections evidence an intimate understanding of how complex ideas are transformed into products, services, and artifacts?" Given the tactic of tracing, corollary questions would be: "How and how well are designerly forms employed to make known the network of histories, discourses(s), and techniques that shape and frame an issue over time?" and "Were structures, arguments, and assumptions of a given issue newly revealed and made more accessible?" Beyond review and appraisal of individual projects, answering the question of "How" would reveal shared rhetorical devices and themes employed toward the construction of publics, which could be further critiqued and assessed across projects and subject matter.

Projects also can be critiqued and assessed by closely examining how the process of discovery, in terms of both the content and the mode of expression, is reflected in the work. For example, as previously noted, the projections in *Is This Your Future?* required an understanding of the current state of research in bioenergy production and use. One course of assessment would be to ask if the projections evidenced this understanding, that is, if the reference to the current state research in bioenergy production and use could be located within the projections. In the case of *Is This Your Future?* the answer is yes. The projection "Meat-Eating Products" directly references recent research into the use of animal matter as a power source for robots.³⁵ Another course of assessment would be to ask if the form of expression was appropriate to the audience. Again, in the case of *Is This Your Future?* the answer is yes. Though adults may find the exhibition unduly grotesque, numerous researchers in childhood education have argued that such approaches are wholly appropriate and valuable to support learning among youth, who were in fact the audience.³⁶ While such examinations of *Is This Your Future?* are plainly too abrupt as examples, they suggest how such critique and assessment of the content and form of expression in the context of discovery might progress.

Integrating and collaborating with other fields and perspectives would broaden and bolster the inquiry, particularly towards genuinely assessing the effect of design. Assessing the effect of design requires asking the challenging question: "Does the contribution of design to the construction of publics really

35 For example, the Ecobot project at the University of Bristol Intelligent Autonomous Systems Laboratory has developed a robot that is powered by dead flies, and another that is design to capture and subsist on slugs. For an overview, see the Ecobot project Website at: www.ias.uwe.ac.uk/Robots/slugbot.htm, last referenced on December 11, 2007.

36 For a popular overview of this position, see Gerald Jone, *Killing Monsters: Why Children Need Fantasy, Super Heroes, and Make-Believe Violence* (New York: Basic Books, 2003).

matter?" and, if so, "When?" and "How?" To address these questions requires expertise outside of what is commonly found in design studies. But numerous fields with existing ties to design, such as the learning sciences, science and technology studies, and public policy, are well-equipped theoretically and methodologically to take up these questions. Assessing the effect of design tactics is particularly important in determining what "works" and what counts as "working" (i.e., how do we know that a specific intervention or engagement has had an effect, or what effect it has had). For example, without summative assessment, we cannot comment on the actual effect of the projects *Is This Your Future?* or *Zapped* we can only offer a reflective critique. Beyond evaluating, and potentially improving, the efficacy of design tactics, assessment is valuable because it informs broad arguments in design studies. Specifically, through assessment, claims made concerning the effects of design are made accountable; enabling broader arguments to be made, or refuted, regarding the value and place of design in increasing societal awareness, and motivating and enabling political action.

Conclusion

This article served to begin an inquiry into design and the construction of publics by describing the Deweyan public, identifying and describing two design tactics, and establishing initial grounds for scholarly critique and assessment. As both a subject of scholarly concern and practical activity, the construction of publics is increasingly pertinent to contemporary design studies, warranting ongoing inquiry. As has been illustrated above, a Deweyan notion of the construction of publics serves well as a framing concept to support the description and analysis of a diversity of designerly activities and forms. Through a discussion of diverse tactics and common grounds, we can begin to ask, and answer, the question of how the processes and products of design might serve in discovering and articulating the issues that spur a public into being.

There are several issues and limitations within this essay that should be acknowledged now, with the hope of prompting future research. One limitation is the number and kinds of projects chosen for examples. Admittedly, these projects are highly aestheticized and contained. The choice of these projects was not arbitrary, but calculated to ease into the inquiry. Grounding the discussion in relatively familiar design objects that were visually strong and conceptually provocative provides an accessible and compelling beginning. In addition, the scale of these projects illustrate that contribution to the construction of publics need not be a mammoth endeavor. Small interventions and engagements are possible and productive, and worthy of scholarly attention. Nonetheless, to develop a more robust understanding of design and the construction of public projects it is necessary to examine projects that are less aestheticized and are expansive in terms of time, breadth of audience,

and range of contexts. A pertinent example is the “Design of the Times” program directed by John Thackara that seeks to use design as a means to spark discussion and action concerning alternate relationships with the environment on a regional scale.³⁷

Ethics is another issue requiring attention. The explicit and intentional use of design processes and products towards the construction of publics is certain to raise concerns. Visions of visually sophisticated and experientially sculpted fascist states, propaganda, and misinformation come to mind. By the contributions of design, will publics inherit problematic qualities of being “engineered” or “commodities”? Such concerns are legitimate and substantial. The subject of design ethics should go hand-in-hand with the construction of publics, and have a significant place in future discourse.

Finally, there is the question of action: is facilitating action part of the subject and activity of the construction of publics? Certainly, providing the means for taking action is an important objective of design, and there are many examples of projects in which enabling social or political action is the central purpose. But perhaps the facilitation of direct action should be considered as a separate endeavor, in both theory and practice, from the construction of publics. Bringing to awareness (i.e., making apparent and known), is a significant objective and task itself, deserving thorough consideration. This is not to shirk responsibility or abandon opportunity for taking action, but rather to give the construction of publics as a framing concept and activity the acute attention necessary to develop thorough research and scholarship.

37 For more information on *Design of the Times*, see the project website at: www.dott07.com/, last referenced on December 11, 2007.

Turkey in the Great Exhibition of 1851

Gülname Turan

Introduction

The nineteenth century international exhibitions were “great new rituals of self-congratulation”¹ celebrating economic and industrial progress.² They were important showcases for modernization and industrialization advances, and served to display the riches and luxury of certain countries beyond the realm of the industrial revolution.

Exhibitions on an international level evolved gradually as a cultural phenomenon.³ National exhibitions have been held in Paris since the end of the eighteenth century. In 1847 and 1848 in England, a series of national exhibitions including the first “Great Exhibition” were held under the patronage of key figures such as Prince Albert and Sir Henry Cole. The evolution of exhibitions from the national scene into the international area was a by-product of the internationalization of modernization. The Crystal Palace itself, where the first international exhibition was held in London in 1851, has been described as the first embodiment of a commodity culture and the first modern building, marking the origin of industrial design and even the advent of modernity.⁴ The Royal Committee decided that the 1851 Exhibition was to be at an international level embracing foreign production. The eastern half of the Crystal Palace was given to foreign countries,⁵ and the western half to Britain and the British Empire. The Turkish court was in the eastern part of the palace, in the north transept on the ground floor, next to Egypt, Persia, and Greece.

Since the second half of the eighteenth century, Turkey was undergoing a phase of new structural development in terms of military, monetary, and governmental systems. As a result of the reformations of 1839, known as “*Tanzimat*,”⁶ and the commercial treaties of the first half of the nineteenth century, “change” rapidly replaced “inertia” in the industrialization and commoditization of Turkey in the modern Western sense.⁷ Many of the new central institutions of the second half of the nineteenth century led the way to the establishment of the Turkish Republic, and still are impacting on the social institutional structure.

At the end of the eighteenth century and in the beginning of the nineteenth century, commercial trade with Middle and Eastern Europe in Turkey was more important than with Western Europe.⁸

Footnotes for this article begin on page 77.

The capacity of the overseas and foreign trade of Turkey was no more than one to two percent of the total production of the Turkish Empire.⁹ The tableau was in a rapid change during the hundred-year period between the end of the Napoleonic wars in Europe and the First World War. Commerce between Western Europe and Turkey grew stronger through commercial treaty conventions. The Ottoman economy was exporting raw materials, foodstuffs, and alimentary products; while importing manufactured goods and certain other alimentary products. One of the characteristics of Ottoman exportation was “the variety of goods”; none of the goods exported were more than twelve percent of the total, so no product was superior to another. More than the half of the imported goods were manufactured.¹⁰ Some examples of manufactured Ottoman goods worth noting were handwoven rugs, carpets, and some small furniture items.

Britain had the privilege of exporting her products into the Ottoman market with very low tariffs after the “Balta Limani Commercial Treaty” was signed in 1838. The Ottoman market as a foreign, liberal trade arena started to develop faster after the Crimean War,¹¹ and the local market was bombarded with English cotton. As it is today, one of the main Turkish industries was textiles. The local weavers started using low-cost English fibers and yarns, resulting in a decrease in the spinning industry in provincial Anatolia. However, the change in the origin of cotton fibers did not affect the existing weaving industry. English designs were not attractive to local people, who went on consuming domestic fabrics with their own local taste.¹² The number of the looms increased rather than decreased in the wake of this liberal foreign trade.¹³ This arguably was due to the traditional consumption habits, allocating certain amounts of the market to local manufacturers with the domestic market in mind. A reflection of the textile tradition was evident at all of the international exhibitions involving Turkey in the nineteenth century.

Turkish Organization for the Great Exhibition

The Sultan who guided Turkey into the Great Exhibition was Abd-ul-Mejid I.¹⁴ Foreign affairs were in a critical state when he became the ruler, because the Ottoman Empire already had started falling apart under pressure from nationalist movements. Furthermore, Abd-ul-Mejid was known for his close relations with Queen Victoria. The warm relationship between Britain and Turkey, fortified by the changes in the institutional structure after the reorganization of 1839, enabled Turkey to be one of the officially invited participants at the world’s first international exhibition.

According to a governmental declaration in *Ceride-i Havadis*, an official newspaper, the objective of the Ottoman Empire in exhibiting at the exhibition was to show the productivity of the lands owned, to demonstrate the industrial and artistic ability of the Empire, and to display the endeavor of Sultan Abd-ul-Mejid in the

development of the country.¹⁵ Abd-ul-Mejid, himself, was a key actor in Turkish participation in the Great Exhibition. During his reign, Westernization accelerated. He was the first prince to be educated under Western norms. It is known that he subscribed to many European periodicals and newspapers, including the French *Débas* and *Illustrations*. The 1839 and the 1856 reformations of Abd-ul-Mejid echoed both throughout Turkey and abroad. The resulting changes transformed the face of Istanbul into a more cosmopolitan city, and attracted the interest of the European countries to the changing spatial meaning of Istanbul. The Sultan's attitude towards women and their position in society also was modernist compared to that of previous sultans. Ottoman women, especially in Istanbul, started to go out alone and mingle with the rest of the society, concomitant with minorities mingling with the Turkish population. Non-Muslim Ottomans and foreigners benefited from the reformations which created equality regulations on possession laws. They were the leading groups in the Westernization of everyday life, since they were involved in domestic and international trade.

The change in everyday routines, a tendency toward luxury, and a demand for new artistic expression led to changes in furniture, music, fine arts, and decoration, all in the Western sense. Abd-ul-Mejid's personality, his educational background, and the desire for modernization he inherited from his father had a strong supportive function in all these changes. He totally changed the everyday life in the palace, although he showed his respect for his ancestors in official ceremonies by observing traditional protocols. The changing consumption habits of foreigners and non-Muslim minorities of Istanbul also were a strong catalyst in the new local consumerism spreading through even middle-class Ottoman families. Another important factor in changing everyday routines was the luxurious and consumerist lives of families who left Egypt because of the opposition to reforms and modernization there.

Abd-ul-Mejid advanced the progress of industrialization with two important factories inaugurated during his reign. These were the Imperial Beykoz Porcelain and Glass Factory (*Beykoz Fabrika-i Hümayun*) and the Imperial Hereke Rug Factory (*Hereke Fabrika-i Hümayun*). The Imperial Feshane Garment Factory (*Feshane Fabrika-i Hümayun*) had already been in production since 1833 during the reign of Mahmud II, his father. Sultan Mahmud II made it obligatory to wear uniforms and fezzes for certain soldiers in an attempt to renovate the army. The Feshane Factory was under the direction of European experts, and it had been manufacturing fezzes and garments both for the army and the public.¹⁶ Feshane was one of the longest surviving imperial factories, whose products had to compete with the private sector and foreign products in the marketplace. This is one of the reasons why it could partially survive into the 1980s. Thus, it is not surprising that Feshane products had their place in the nineteenth century international exhibitions.

From the beginning, there was uncertainty about what facets of industry the Great Exhibition would epitomize: finished decorative products, finished goods regardless of their decorative qualities, or the production processes. Finally, the British exhibits were classified into four main categories: "raw materials," "machinery," "manufactures," and "fine arts"; and then into several sub-categories covering thirty classes. Turkish administrators in Istanbul; and especially Ismail Pasha, who was responsible for the organization of the collection as the Minister of Commerce and Agriculture; were keen on the way the Turkish exhibits were classified. The classification system of the British exhibits imitated and honored the manufacturing process: raw materials were taken by heavy machinery in order to manufacture works of industry.¹⁷ The representation of the production process cannot be traced in the Turkish exhibits, which were classified into two main groups, and then into several sub-divisions of "natural products" and "manufactured goods." Natural products included raw materials, minerals, foodstuffs, and agricultural products; while manufactured goods included both handmade and industrial Turkish production. The classification of natural products took place under the direction of the mineralogist Pauliny. The manufactured objects were classified under the direction of the English agent Charles Lafontaine.¹⁸ The success of the classification system of the Turkish exhibits was highlighted in the illustrated catalogue of the exhibition published by *Art Journal*:¹⁹

The inductive system thus adapted by an Oriental people, might have been worthily imitated by other nations. This serious [attempt] can be read with facility, and instructive are the tongues of the trees and the sermons of the stones of the Ottoman Empire. The dye woods are numerous. The grains and other vegetable produce are varied; and their balsam, resins, and pharmaceutical preparations of considerable value. ... The systematic arrangement adopted proves, however, that the Turk might become an apt student in inductive science; and it is not improbable but that the interest felt in the city of Sultan in this gathering under the auspices of the consort of the Queen of England, may have its influence in leading back to the East that kind of learning which has had a general bearing towards the Western regions of the earth.

The Turkish articles were decided by the committees formed by the local administration and officers, and the selected pieces were labeled with names and prices, in order to be sent to the Ministry of Commerce.²⁰ Labels were mostly the names of the producers or makers, the same for most of the products that were in the official catalogue of the Great Exhibition.²¹ In order to encourage people to take part, it was announced that the items exhibited would be

on sale in London, and this was a chance to export products. The Turkish exhibit, collected from seven hundred manufacturers, included more than three thousand objects, of which one thousand three hundred were manufactured items.²² There had been an official correspondence between the ministry in Istanbul and the provinces, according to the documents at the archives of the Prime Ministry of Turkish Republic (PMTR), in order to collect the articles for London. In one of the royal commission meetings for the exhibition in March 1850, Prince Albert pointed out the exhibition regulations to an audience of mayors with an attempt to incite them to establish a local committee, and these regulations were translated into French, German, Italian, Turkish, and Arabic, and sent to various national organizational committees.²³ The Ministry of Commerce informed the provinces on the basis of these regulations. Halep and Filibe,²⁴ Tirhala,²⁵ Saida and Tripoli,²⁶ Erzurum,²⁷ Konya,²⁸ Cyprus,²⁹ Yanya,³⁰ Eflak,³¹ Vidin,³² Edirne³³ and Jerusalem³⁴ were among the provinces that Istanbul corresponded with for the exhibition.³⁵ The Turkish Government, without considering any religious distinctions, had asked manufacturers to ship their products first to Istanbul and then to London without charge in order to encourage local industry participation in the exhibition.³⁶

The Istanbul Grand Gallery Exhibition

Before the final shipment to Southampton, the collected items were displayed to a group of people including statesmen, ambassadors, artisans, and tradesmen in the Grand Gallery of the Ministry of Commerce in Istanbul.³⁷ Abd-ul-Mejid visited the exhibition, together with his chamberlains and officers, on March 22, 1851. The princes Murad Efendi and Abd-ul-Hamid Efendi, along with the majestic mother of the Sultan, visited the gallery afterwards. The Sultan was fond of the organization and the system of classification. In the gallery, he carefully examined the natural products, spent a long time in front of the mineralogy collection, and he was particularly interested in garments.³⁸ All of Turkish industry, from the grandest to the modest, aroused the Sultan's curiosity.

The idea of "exhibition" was not unfamiliar to Ottoman rulers. A tradition of exhibiting craftsman's ability in parades on important days had existed long before. The craftsmen practiced their ability in front of the Sultan in a certain order, which also was a sign of their importance. The Istanbul Grand Gallery Exhibition, was different compared to former exhibitions in the system of exhibiting, and was important in distinguishing and imparting the maker from the product. The Sultan's personal visit to the gallery is evidence of his attitude of encouraging Turkish people to become modernized.

Abd-ul-Mejid personally attended the openings of new institutions. He registered his children in one of the new schools with a Western curriculum, and publicly made it known.

The exhibits were loaded onto the steam-powered frigate *Feizi Bahri* on April 5, 1851,³⁹ which arrived in Southampton on April 26, and was the first Turkish steamship to visit England.⁴⁰ Although provinces were told to send the items by the end of February, and despite all the efforts of Ismail Pasha, the ship could not reach Southampton on time. Turkish products were put into the exhibition right after the opening of the Crystal Palace.⁴¹ The collection was accompanied by a group of official representatives from Turkey, including officers from the ministries of commerce and agriculture: Hisan Bey, Emin Bey, Nessip Bey, Vehbi Efendi, and Rifat Efendi; interpreters Yorgaki and Gadban; advocates, bankers and entrepreneurs such as members of the Camondo Family; professors from military and medicine schools; architects and engineers including Arakel and Mardiros Dadian; and Ambassador Mussurus Pasha.⁴² A group of the Ottoman representatives traveled all around Europe after their visit to London.⁴³ One member of the Balian Family, the son of the Imperial Architect Carabet, acting as the art advisor to Sultan Abd-ul-Mejid; and Cemaletdin Pasha, the brother-in-law of the Sultan, also were on board.⁴⁴ Besides the official representatives, there also were prominent members of the general public including artisans from different guilds.⁴⁵ Among them was Eflaki Ahmed Dede Efendi, who was financially supported by the government to exhibit the clock he made and then to go on to Paris to study industry.⁴⁶ Kostaki Mussurus Pasha, a member of the Mussurus family of Fener of Greek origin, would be one of the key figures in attendance at the following international exhibitions. The Dadians later acted as the head of the Tophane Artillery Factory in Istanbul, where they designed and manufactured several military items. *The Times* reported that the English people were surprised when they saw the way the Turks on the steamship were dressed. None of the members of the Turkish group on board wore anything resembling traditional Turkish costumes.⁴⁷

The Turkish Court in the Great Exhibition

What “industry” meant in 1851 is critical in interpreting the displays of the nineteenth century international exhibitions. “Industry” in the first half of the nineteenth century meant something quite different from what it means today. Both the classification system of the Great Exhibition and the Turkish exhibits overlap the term “industry”; described as organized economic activity concerned with the manufacture, extraction, and processing of raw materials, or construction.⁴⁸ Today, industry also is described as “a branch of commercial enterprise concerned with the output of a specified product or service.”⁴⁹ In parallel with this contemporary approach, Cole began his introduction to the “Official Descriptive and Illustrated Catalogue” of the Great Exhibition of 1851 by declaring that the activity of the day chiefly develops itself in “commercial industry”; and it is in accordance with the spirit of the age that the

nations of the world have then collected together their choicest productions.⁵⁰ He did not limit “productions” to goods manufactured by machines, and used the broader phrase “commercial industry” to include any product of commercial value. Europe was at peace for almost forty years, and the Great Exhibition was a tribute to what could be accomplished if natural resources and mankind’s thinking were not devoted to war, but peace and commerce. Therefore, the exhibits were objects of all sorts of “productions with a commercial value,” and the products of exceptional craftsmanship were positioned next to products made by machines. Revealing the choices people had, the Great Exhibition did not prove that one form of production was better than another.⁵¹ Rather, it appreciated the progress made by industry and the intelligence of man in rendering useful raw materials, and molding its productions into forms of beauty as was stated by Hunt in his “The Science of the Exhibition.”⁵²

The Turkish Court was on the ground floor, in the Eastern Wing, next to Egypt, Persia, and Greece. It was close to the southern entrance and the Crystal Fountain, which was one of the attractions for visitors.⁵³ The space was organized under the direction of Zohrab and Major;⁵⁴ and was designed by the architect Gottfried Semper.⁵⁵ Semper was in London as a refugee from the 1848 revolution in Germany,⁵⁶ and he also was in charge of other courts including Egypt. The Turkish Court was an attempt by Semper to merge architecture and the exhibits to form an aesthetic unity that would clarify the ethnographic features of the products, and make the total entry more attractive to the general public.⁵⁷ Most of the exhibits were hung on the walls and placed on tables covered with fabric, resembling a Turkish Bazaar that lets the admirer touch what he sees. There also were robes, precious textile works, and fragile items displayed in plain showcases of glass and on wood panels. (Figure 1)

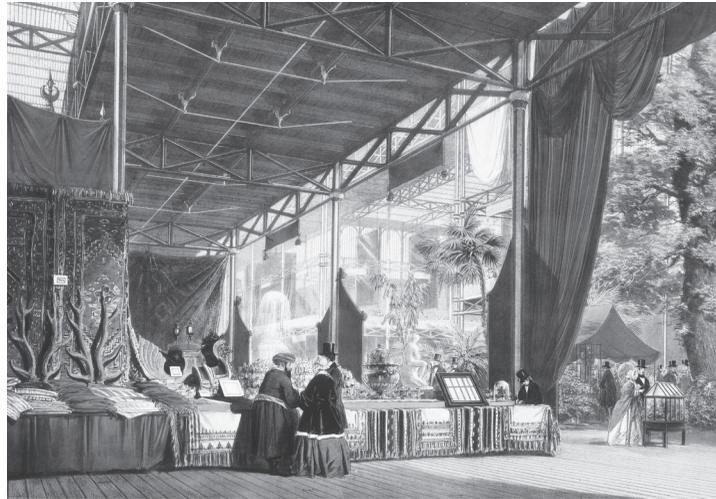
The main exhibits of Turkey were raw materials. Manufactured products included glassware, earthenware from

Figure 1
General view of the Turkish Court facing north.
From *Dickinson's Comprehensive Pictures of the Great Exhibition* (London: Dickinson Brothers, 1854). © V&A Images/Victoria and Albert Museum, London.



Figure 2

Corner view of the Turkish Court facing the North Transept. From *Dickinson's Comprehensive Pictures of the Great Exhibition* (London: Dickinson Brothers, 1854). © V&A Images/Victoria and Albert Museum, London.

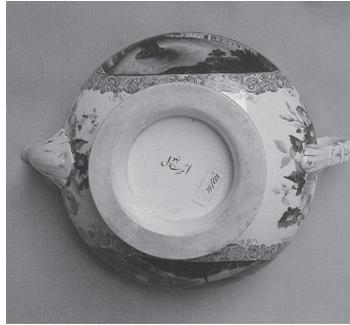


Kütahya and Tophane, copperware, woven and nonwoven fabrics, ready-to-wear clothing from Feshane, leather products, various embroidered garments, soft furniture, mattresses, cushions, rugs and carpets from western Anatolia, and baskets woven in various forms. Other items included silver and goldsmiths' products of different techniques and forms; along with metalsmiths' products such as gardening tools, hand tools, scissors for specific purposes, money safes, pistols, swords and scabbards, and Turkish bath and barber sets.⁵⁸ The process of manufacture did not constitute any part of the Turkish exhibition, although raw materials and end products were on display. The lack of "process display" may be related to the fact that "process" and "product" distinction of nineteenth century Western manufacturing was not established in Turkish industry. Turkish production was not based on rationalized and systematic knowledge. Therefore, "manufacturing process" did not constitute a separate category other than the product: production basically was based on traditional tacit knowledge, and had only begun to change. (Figure 2)

The exhibits depicted the product range and material artifacts of Turkish daily life, although some of them were custom-designed products involving great skill which were not in use by ordinary people. The craft productions were privately manufactured items, while a significant part of the products were manufactured by state-owned factories. The glass and porcelain-ware manufactured in the Beykoz Imperial Factory were exhibited in every nineteenth and early twentieth century exhibition attended. Prior to this factory, there were small workshops spread throughout Istanbul. These workshops were joined under one umbrella with the support of the Sultan in order to manufacture higher quality products. From then on, rationalization and process control became important. The Beykoz porcelain and glassware were manufactured with an "*Eser-i Istanbul*" stamp meaning "artwork of Istanbul," which was accepted as a guarantee of quality and was under official protection. "*Eser-i*

Figure 3

"Eser-i Istanbul" stamp on a porcelain teapot of the late nineteenth century in the Topkapı Palace Museum, Inventory No: 34/649.



Istanbul" was one of the first Turkish trademarks. Beykoz porcelain and glassware of were designed in the Vienna and Saxony styles blended with Turkish taste, which generally were luxurious objects affording decorative functions. In addition, the Beykoz product range included designs for both specific and ordinary daily living habits and rituals. On the other hand, the ready-to-wear clothing of the Imperial Feshane Garment Factory is worth noting because of its rational manufacturing system using standardized sizes and plain designs for use by the Turkish public and soldiers. The manufactured items collected from all over Turkey were generally in use by wealthy people, while a small portion of these items included products within the reach of the ordinary man. (Figure 3)

Victorian heavy top, floral, and naturalistic ornamentation was one of the important elements of style widely represented by the countries in the Great Exhibition. Dense ornamentation also was one of the characteristics of nineteenth century Turkish products. A new style of ornamentation could be read in most of the manufactured objects and also the architecture of Turkey since the eighteenth century, mingling the Ottoman and Islamic tradition with the revivals and naturalism of the West. This new sense of ornamentation in the Turkish exhibits was not easily recognizable by foreign critics. Turkish products were portrayed as perfect, while they were criticized for being the result of a slow-gathered experience.⁵⁹ Turkey also was criticized for being far from science, for exhibiting "little or nothing adapted to the support and comfort of the masses"; and for being too "rich and aristocratic" together with China, Italy, and Austria in contrast to "those nations which are more free and have proportionally more articles on exhibition that are of service to the common people."⁶⁰

At the end of the exhibition, certain products received awards based on their "novelty, ingenuity, economy in cost and maintenance, durability, excellence of workmanship, fitness for purpose, new application of old principles, improved beauty of form, accuracy and certainty of performance, and beauty of design in form and color with reference to utility."⁶¹ Some of the Turkish products and institutions that received awards were the high-quality agricultural products and many handcrafted products such as home textiles and

the products of the Imperial Beykoz Glass and Porcelain Factory.⁶² The prize list also included the names of the makers, manufacturers, and workshops; enabling one to learn the individual producers of the time.

Reflections and Consequences of the Great Exhibition of 1851

From the very beginning, the Great Exhibition was accepted as a milestone, although the resulting stories it triggered could not be foreseen. The introduction to the illustrated catalogue of the Exhibition accepts it as the planted seed, of which the future is to produce the fruit.⁶³ In the meeting that launched the Great Exhibition of 1851, where a structural framework around which the exhibition could be organized was established, Prince Albert suggested “exhibition, competition, and encouragement” as the three reasons for organizing “a great collection of the works of industry and art in London.”⁶⁴ Turkish industry was far from being competitive in terms of manufacture, while the exhibition encouraged free trade, entrepreneurship, and new governmental regulations afterwards. The *Journal de Constantinople* reported that it was unfair to pretend that Turkey had to hold a rank superior to those countries of advanced industry in the Exhibition. However, the reporter anticipated that Turkey would benefit greatly from the efforts in entering such a new appeal to her.⁶⁵

Understandably, the reflections of the Exhibition had important consequences in Turkey. As already pointed out, a preexhibition was organized in Istanbul. This was the first “Turkish National Exhibition of Industry,” with certain visitors becoming entrepreneurs in the following years. According to the *Journal de Constantinople*,⁶⁶ more than a year before, Ismail Pasha already had planned to organize a national exhibition, but the circumstances were not favorable. This exhibition aimed to encourage the industry and commerce of Turkey with prizes for “beauty, perfection and, above all, *le bon marché*” to be given to those exhibits chosen by certain juries. After the exhibition in the Ministry of Commerce, Ismail Pasha again proposed the organization of yearly national exhibitions like the ones in France. But this time the main intention was exhibiting the beauty and the perfection of the whole production of the Empire to the entire public.⁶⁷ Limiting the audience to certain people in the Istanbul Grand Gallery Exhibition may have been related to the limited space and the shortage of time for the shipment to London. Ismail Pasha proposed that a forthcoming national exhibition had to be open to the public so that arts, agriculture, and industry could advance more rapidly. Combining the idea of progress with the concept of exhibition, in this case, can be counted as an ideal toward development in the Western mentality.

Turkey went on participating in the following European and American international exhibitions, and accelerated its industrialization and modernization. By the time of the European interna-

tional exhibitions that took place after the Great Exhibition of 1851, the Sultan Abd-ul-Mejid and later Sultan Abd-ul-Aziz had moved from the old Topkapı Palace to the Yıldız and the Dolmabahçe Palaces, respectively, which were Western in style and all dressed up with late nineteenth century infrastructure. During the reign of Abd-ul-Mejid, the Dolmabahçe Palace was not fully furnished.⁶⁸ A full shift to the use of Western furniture and products in daily palace life took place after Sultan Abd-ul-Aziz visited the Paris Exposition in 1867. Some of Abd-ul-Aziz's consultants already had visited the Great Exhibition, and were aware of the industrial novelties. In Paris, Abd-ul-Aziz ordered art pieces, furniture, and other products to decorate the new palaces. Afterwards, replicas, interpretations, and redesigns of these products according to the needs of the Turkish lifestyle were put into production in the workshops of the palace. In addition, consultants from Germany and England were employed in the imperial factories.

The Great Exhibition was a competition not only between products, but also among values.⁶⁹ Turkey was enthusiastic about exhibiting, since just participating in the exhibition was an important step in "Westernization." The cultural self-definition of Turkey during the nineteenth century is particularly interesting because of the struggle to balance Western modernization with traditional values. Many Muslim nations accepted European supremacy and attempted to remodel their institutions according to Western precedents. They were also in search for cultural identity under the strong impact of European paradigms. Because Europe represented the technologically advanced, "scientific" world, its "record" of another culture carried authority.⁷⁰ Cultural identity was much debated during the intense period of socio-cultural transformation that Turkey was experiencing. Two main issues were in dispute: first, maintaining the old cultural forms while adopting Western technology by incorporating new elements into local culture, and thereby creating an "evolutionary bridge" between the old and the new; or to evaluate and fundamentally redefine their self-identity according to Western views, and thus create a "revolutionary rupture" between the old and the new. The architectural representations of Turkey mostly belonged to the latter trend.⁷¹ On the other hand, the products used in daily life were divided into two opposing classes in the sense of "evolutionary" and "revolutionary" even in the discourse of everyday people: the "*alla Turca*" style represented the former, and the "*alla Franca*" style the latter. *Alla Turca* resembled "the traditional but the uncomfortable," and *alla Franca* "the Western and the comfortable," as the author Ahmet Mithat Efendi pointed out in his novel *Felâhât-ı Bey ve Râkım Efendi*. This essential contradiction was one of the main subjects of the new Turkish literature. Authors at the time developed characters of two opposite poles, surrounded by opposing cultural materiality in conflict with each other. Either the modern or the traditional character, and his life among his material

surroundings, were immoral according to the author's point of view. So the main debate was not the style, form, material, or design of products, but the tangible view of life, values, and meanings with which they were associated.

For a long time, Istanbulites went on living in an amalgam of "alla Turca" and "alla Franca." For example, the custom of taking pillows, mattresses, and other traditional soft furniture when moving seasonally to the Bosphorus now included Western consoles, armchairs, and sofas. There were one-month breaks in the use of alla Franca pieces during Ramadan. This is important in analyzing how people related the use of a certain artifact to certain meanings. The exhibits from Turkey were far from depicting these polarity struggles within Turkish Society. On the contrary, beyond such social issues, the image that the Sultan wanted to present was exclusively the wealth and courage of the Turkish Empire.

Reports in the Turkish press at the time refer to the Great Exhibition as "the Universal Exhibition," "the Glass Palace Exhibition," "the Crystal Palace Exhibition," or "the Clear Palace Exhibition." The local daily newspapers went on publishing articles about the preparations of both Britain and Turkey, the opening ceremony, and the exhibiting countries. The news was not only about people, countries, and the exhibits, but also about the building of the exhibition.

No word in the meaning of "design" can be found neither in the Turkish official documents nor press reports related to the exhibition. But beauty, perfection, shape, style, form, ornament, workmanship, craftsmanship, science, technique, and industry were terms that stood next to the comments on the exhibits in the local narratives.⁷² The Turkish crafts and products had incremental novelties in the way they were produced, and part of Turkish production comprised new material applications of old principles, while the mass manufacture of the imperial factories encompassed up-to-date systems of mechanization. But whether handcrafted or not, the conceptualization of production was far from questioning the relationship between art and industry, which was one of the central themes of the Great Exhibition. It is necessary to point out that, while the craftsmen were the designers and the makers of their products, the case in the imperial factories and workshops was a totally different story. High-craft products were appreciated within Turkish society. Mussurus Bey, the Turkish Ambassador in London, was ordered to sell the ordinary exhibits such as cereals even below the label prices, and to send back the authentic, handcraft products because British patrons could not understand their true value.⁷³

One of the aims of the Great Exhibition was to serve the reforms in the British design schools that Cole was in charge of, and also the vision he and Prince Albert shared which was unifying arts and production.⁷⁴ The last category of fine arts was mainly the result of these efforts, and it did not fit to the system of classifi-

cation symbolically representing the manufacturing process. Turkey did not exhibit any fine arts in the Western sense, although Sultan Abd-ul-Mejid himself was a calligraphy artist and a musician. Architectural drawings, oil paintings, photography, and sculpture, as well as natural history collections and archaeology from Turkey were exhibited for the first time in the 1867 Paris Exposition.⁷⁵

The Great Exhibition served well for participants to gather their wealth of nations and collect others as well. The governments of Britain and France, the Russian Czar, and the Turkish Sultan allocated considerable funds with which to buy educational specimens for the future national museums of industry, technology, and applied industrial art.⁷⁶ In fact, the Turkish minerals and natural products collection exhibited, together with the one bought in London, were to be submitted to the museum which the Ministry of Commerce proposed to found under the School of Agriculture.⁷⁷

Conclusion

The Great Exhibition of 1851 had significant impact on the early industrialization regulations and subsequent policies of the Turkish government. The Great Exhibition materialized in Turkey as the first public national exhibition of industry.⁷⁸ This first public exhibition took place in 1863 in Sultanahmet Square in Istanbul, and was known as "*Sergi-i Umumi Osmani*," meaning "The Public Ottoman Exhibition." The aim of the exhibition was to display the quality, range, variety, and the prices of the Turkish products, to diagnose the problems the manufacturers and producers faced, and to reward the successful ones. The first local tourism activities in Turkey were the organized tours to Istanbul to visit this exhibition.⁷⁹ The Istanbul Exhibition of 1863 was followed by others in Edirne, Bursa, and Izmir, which were important trade centers of Turkey.

According to the anthropologist Burton Benedict, human displays at the world's fairs were organized into national and racial hierarchies. Benedict summarized the classification of human types at the fairs as follows: (1) people as technicians, with a technician acting as part of a machine on display; (2) people as artisans, with an emphasis on tradition and ethnicity, as well as the "handmade" qualities of the products; (3) people as curiosities or freaks, with an emphasis on abnormal physiology and behavior; (4) people as trophies, most typically the conquered displayed by the conqueror in special enclosures; and (5) people as specimens or scientific objects, the subjects of anthropological and ethnographic research.⁸⁰ According to this classification scheme, the Turkish exhibits mostly were the products of artisans falling into group two, while the people of the industrial revolution such as Britain, Germany, and France formed the first group. At the time of the exhibition, the difference between "British" and "the other" was expressed regularly in the British press from different points of view. The English, celebrated for their industry, fell into Benedict's first group; while the Indians were

described as poor and simple; and Turks as a fine and handsome race of people, very grave and sensible except when they were angry.⁸¹

As it is to other exhibiting countries, the 1851 Exhibition was a beginning to create “the concept of displaying a nation” on the international level. Turkish representation at this exhibition, compared to its exhibits at the following nineteenth century European international exhibitions, was weak in terms of underlining the participation of Ottoman culture in world civilization. In the following European and American nineteenth century international exhibitions, the universal qualities of Ottoman architecture were emphasized to show how they might be incorporated into the repertoire of contemporary architecture; and artistic and industrial products often were presented with a similar intent: to link the Turkish Empire to the European community.⁸²

Finally, Turkey’s participation in the first international exhibition in 1851 was an inevitable and a remarkable event, both for the imperial family and Turkish society. From a foreigner’s perspective, it highlighted not the new Western dimensions of the Turkish society, but only the country’s craft tradition and her desire to become industrialized. From a domestic perspective, the exhibition provoked critical self-examination and reassessment, both in terms of production systems and the products of industry, and the national identity.

1 Eric Hobsbawm, *The Age of Capital, 1848–1875* (London: Abacus, Time Warner Book Group, 2004), 47.
2 These exhibitions were a medium of national expression, and were known in Britain as Great Exhibitions; in France as Expositions Universelles; and in the U.S. as World’s Fairs. See, Paul Greenhalgh, *Ephemeral Vistas—The Expositions Universelles, Great Exhibitions and World’s Fairs, 1851–1939* (Manchester: Manchester University Press, 1988), 215.
3 *Ibid.*, 3.
4 Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display* (New Haven and London: Yale University Press, 1999), 1.
5 The exhibition was really a success in its time in terms of being the first “international.” Governments were invited to take part through diplomatic channels. See Greenhalgh, *Ephemeral Vistas*, 12.

6 The term means reorganization, resembling a period of reformation that lasted from 1839 to 1876.
7 The ultranationalist economic approach to Ottoman history always has blamed the nineteenth century commercial treaties signed with European powers as the reason for the “underdevelopment” of the “dependency.” This scenario, with its xenophobic hint and backed by the dependency paradigm of Marxism as well as nationalist historiography, has been looking for a scapegoat for modern Middle Eastern history in the commercial treaties of the mid-nineteenth century, and mainly the 1838 Anglo-Ottoman Commercial Convention. For further background, see Zafer Toprak, “The Ottoman Realities and Economic Mind in the Age of Nation State (1839–1914),” (The University of Athens Doctoral Program in Economics Monday Economic History Seminars 2004/2005), (accessed August 18, 2006 at www.econ.uoa.gr/UA/files/811318924.pdf).

8 The Empire extended to the Balkans, Anatolia, Syria, Tunisia, and Egypt at the end of the eighteenth century. Greece already had her independence in 1832, although some regions that belong to Greece today were still under the rule of the Ottomans; such as Thessalonica, where many manufacturers from there exhibited their products.
9 Sevket Pamuk, *History of Economics Ottoman-Turkey in 100 Questions, 1550–1914* (Istanbul: Gerçek Press, 1988), 151–160. (Turkish)
10 *Ibid.*, 160–185.
11 The Crimean War lasted from March 1853 until April 1856, and was fought between Imperial Russia on the one side and an alliance of the United Kingdom, Ireland, the Second French Empire, the Kingdom of Sardinia, and the Ottoman Empire on the other. Most of the conflict took place on the Crimean Peninsula in the Black Sea, with military engagements also occurring in western Turkey, the Baltic Sea region, and in the Pacific Ocean.

- 12 Sevket Pamuk, *History of Economics Ottoman-Turkey in 100 Questions, 1550–1914*, 151–185.
- 13 Zafer Toprak, "The Ottoman Realities and Economic Mind in the Age of Nation State (1839–1914)": 4.
- 14 Abd-ul-Mejid; 31st sultan of the empire, son of reformist Mahmud the Second, and Bezmialem Sultan; ruled between 1839 and 1861. He is the father of the last four Ottoman sultans.
- 15 *Ceride-i Havadis*, September 1, 1850 (24 Za 1266). The dates in parenthesis in the endnotes are the original dates on the documents, according to the calendar used in Turkey until 1925.
- 16 The fez is a red felt hat in the shape of a truncated cone, and popularized in the Turkey in the nineteenth century.
- 17 *Ibid.*, 92.
- 18 *Journal de Constantinople*, March 9, 1851.
- 19 Robert Hunt, "The Science of the Exhibition," *Art Journal, Illustrated Catalogue of 1851* (London: Published for the proprietors by Georg Virtue, 1851): I-XVI, p.XIV.
- 20 *Ceride-i Havadis*, September 1, 1850 (24 Za 1266).
- 21 See Nikolaus Pevsner, *High Victorian Design: A Study of the Exhibits of 1851* (London: Architectural Press, 1951), 61.
- 22 Robert Hunt, "The Science of the Exhibition," and *Times* (April 24, 1851) reports that the Turkish shipment included 4,870 items.
- 23 Pieter van Wesemael, *Architecture of Instruction and Delight—A Socio-historical Analysis of World Exhibitions as a Didactic Phenomenon (1798–1851–1970)* (Rotterdam: Uitgeverij 010, 2001), 699.
- 24 Document A.MKT.MHM 56-29, January 21, 1851 (18 Ra 1267), at the archives of the Prime Ministry of the Turkish Republic (PMTR).
- 25 Doc. A.MKT.NZD 30-98, April 1, 1851 (28 Ca 1267), at PMTR.
- 26 Doc. A.MKT.MHM 26-46, December 27, 1850 (22 S 1267), at PMTR. This document is about a letter that informs Dersaadet (Istanbul) about the collection of the exhibits for London, sent from the Governors of Saida and Tripoli to the Ministry of Commerce. Another document about Tripoli ref. numbered A.MKT.MHM 27-34, January 16, 1851 (13 Ra 1267) at PMTR, orders the governors to send the collected items immediately before February.
- 27 Doc. A.MKT.MHM 26-77, January 3, 1851 (29 S 1267), at PMTR.
- 28 According to the letter written to the Governor of Konya, the exhibits collected there were to be sent immediately to Dersaadet (Istanbul), Doc. A.MKT.MHM 27-53, January 20, 1851 (17 Ra 1267), at PMTR.
- 29 Doc. A.MKT.MHM 27-80, January 24, 1851 (21 Ra 1267), at PMTR.
- 30 Doc. A.MKT.MHM 28-24, January 31, 1851 (28 Ra 1267), at PMTR.
- 31 Doc. A.MKT.MHM 29-14, February 17, 1851 (15 R 1267), at PMTR. This document is about a letter from Eflak Governor Esteri Bey, written in French, that says the shipment of the items is complete, and the items are to be delivered by the Head of Commerce.
- 32 Doc. A.MKT.MHM 29-81, March 17, 1851 (03 Ca 1267), at PMTR.
- 33 Doc. A.MKT.MHM 28-68, February 10, 1851 (08 R 1267), at PMTR.
- 34 Doc. A.MKT.MHM 27-76, January 23, 1851 (20 Ra 1267), at PMTR.
- 35 Today, Halep is in Syria, and Filibe is the Turkish name for Plovdiv in Bulgaria. Tirhala is the Turkish name for Trikala in Thessaly, and Yanya refers to Janina, a city of Epirus; both in Greece today. Saida is in Lebanon and Tripoli in Libya. Eflak was the name for southern Romania, and Vidin is a town on the southern bank of the Danube in northwestern Bulgaria.
- 36 *Journal de Constantinople*, March 9, 1851.
- 37 *Ceride-i Havadis*, March 24, 1851 (21 Ca 1267), *Journal de Constantinople* (March 24, 1851).
- 38 *Ibid.*
- 39 Doc. A.MKT.MHM 29-64, March 5, 1851 (01 Ca 1267), and doc. A.MKT.NZD 43-70, 05/03/1851 (01 Ca 1267), at PMTR.
- 40 *Times* (April 27, 1851).
- 41 Rifat Önsoy, "The Exhibitions the Ottoman Empire Attended and 1863 Istanbul Exhibition," *Belleten: Turkish History Journal* 197:185 (1983): 195–235 (Turkish). See also Semra Germaner, "Attendance of the Ottoman Empire into International Exhibitions and Its Cultural Results," *History and Society* 95 (1991): 290 (Turkish).
- 42 Mussurus Pasha was the London ambassador of the Ottoman Empire in 1851. See Ilber Ortaylı, *The Longest Century of the Empire* (Istanbul: İletisim Press, 1999), 229.
- 43 Doc. A.MKT.NZD 30-101, March 28, 1851 (24 Ca 1267), and Doc. A.MKT.MHM 29-13, 20/02/1851 (18 R 1267), at PMTR.
- 44 Carabet's other son Sarkis, who is an important architect of the nineteenth century Istanbul, participated in the second Great Exhibition of 1862 with a steam machine and a pressure caldrone with safety vent for which he holds British patents. See Pars Tuglacı, *The Role of the Balian Family in Ottoman Architecture* (Istanbul: Yeni Çığır Bookstore Press, 1990), 42.
- 45 Doc. HR.MKT. 83-47, August 16, 1854 (22 ZA 1270), at PMTR.
- 46 Doc. A.MHT.MHM 32-100, May 30, 1851 (28/B/1267), at PMTR.
- 47 *Times* (April 27, 1851).
- 48 See John Black, *Dictionary of Economics* (Oxford: Oxford University Press, 2002) and Graham Bannock, *The Penguin Dictionary of Economics* (London and New York: Penguin Books, 1992).
- 49 *Ibid.*
- 50 *Great Exhibition of the Works of Industry of All Nations, 1851: Official Descriptive and Illustrated Catalogue* (London: Spicer Brothers, 1851), 1.
- 51 Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display*, 125.
- 52 Robert Hunt, "The Science of the Exhibition," *Art Journal, Illustrated Catalogue of 1851*: I.
- 53 See Artemis Yagou, "Facing the West: Greece in the Exhibition of 1851," *Design Issues* 19:4 (Autumn 2003): 86.
- 54 Semra Germaner, "Attendance of the Ottoman Empire into International Exhibitions and Its Cultural Results": 290.

- 55 Pieter van Wesemael, *Architecture of Instruction and Delight—A Socio-historical Analysis of World Exhibitions as a Didactic Phenomenon (1798–1851–1970)*, 176.
- 56 Nikolaus Pevsner, *High Victorian Design: A Study of The Exhibits of 1851*, 32.
- 57 Pieter van Wesemael, *Architecture of Instruction and Delight—A Socio-historical Analysis of World Exhibitions as a Didactic Phenomenon (1798–1851–1970)*, 176.
- 58 See Semra Germaner, *Official Catalogue of the Great Exhibition*, Robert Hunt, and *Ceride-i Havadis*, etc.
- 59 Robert Hunt, “The Science of the Exhibition”: XIV.
- 60 William Allen Drew, 1798–1879 *Glimpses and Gatherings During a Voyage and Visit to London and the Great Exhibition in the Summer of 1851* (Augusta: Homan & Manley; Boston: Abel Tompkins, 1852), 356–359.
- 61 Charles Harvard Gibbs-Smith, Victoria and Albert Museum: The Great Exhibition of 1851 (London: Her Majesty’s Stationary Office, 1981), 17.
- 62 *Ceride-i Havadis*, November 11, 1851 (17 M 1268).
- 63 Preface, *Art Journal, Illustrated Catalogue of 1851* (London: Published for the Proprietors by Georg Virtue: 1851), viii.
- 64 Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display*, 14–23.
- 65 *Journal de Constantinople* (March 9, 1851).
- 66 *Journal de Constantinople* (March 24, 1851).
- 67 *Journal de Constantinople* (March 24, 1851).
- 68 Necdet Sakaoglu, “Lives in the New Palaces” in *MS History, Culture, Art and Architecture* (Ankara: TBMM Press, 1999), 26–47. (Turkish)
- 69 Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display*, 94.
- 70 Zeynep Çelik, *Displaying the Orient* (Los Angeles: University of California Press, 1992), 10.
- 71 *Ibid.*, 57.
- 72 The word “sanayi,” which has the same root as “artifice,” meaning “industry.” “Sanayi” included arts, artifacts, and the artificial world.
- 73 Doc. A.MKT.MVL 49-39, January 8, 1852 (15 Ra 1268), at PMTR. To reduce transportation expenses, instead of sending the shipment on a ship of the Empire, the ambassador was told to send them on the ships that were traveling to Istanbul.
- 74 Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display*, 23.
- 75 Gülname Turan, “A Gaze into Turkish Participation in the International Exhibitions and Universal Expositions of 19th Century Europe,” *Pride and Pre-Design: The Cultural Heritage and the Science of Design*, Proceedings of the 2nd International Meeting (Lisbon: IADE - Instituto de Artes Visuais Design e Marketing, May 2005): 389–394.
- 76 Pieter van Wesemael, *Architecture of Instruction and Delight—A Socio-historical Analysis of World Exhibitions as a Didactic Phenomenon (1798–1851–1970)*, 203.
- 77 *Journal de Constantinople* (March 9, 1851).
- 78 The Great Exhibition often triggered national exhibitions. See the case for Greece in Artemis Yagou, “Facing the West: Greece in the Exhibition of 1851”, 90. See also Timo Sarpaneva, *Finnish Design 1875–1975: 100 years of Finnish Industrial Design: Finnish Society of Craft and Design* (Helsinki: Otava Publishing Co., 1975), 21–29.
- 79 Zafer Toprak, “Tourism Endeavors in Istanbul” Ottoman Bank Achieve and Research Center Lecture Days (accessed October 24, 2006 at www.obarsiv.com/etkinlik_vct_0304_zafert_turizm.html) (Turkish).
- 80 Burton Benedict, “The Anthropology of World’s Fairs” in *The Anthropology of World’s Fairs*, (London and Berkeley: 1983), 2 and 43–45, quoted in Zeynep Çelik, *Displaying the Orient*, 20.
- 81 See Jeffrey A. Auerbach, *The Great Exhibition of 1851: A Nation on Display*, 167.
- 82 Zeynep Çelik, *Displaying the Orient*, 12.

Relaxed and Comfortable: The Australian Pavilion at Expo '67

Carolyn Barnes, Barbara Hall
and Simon Jackson

Expo '67, Montreal, was the first international exhibition Australia had attended since the 1939 New York World's Fair. In New York, Australia promoted its export industries in timber and wool in an annex next to the British pavilion. In Montreal, Australia contributed its own major pavilion, a simple, rectangular box of glass and steel. Inside, the pavilion contained few actual exhibits. The main feature of its spacious interior was a salon-style arrangement of two hundred and forty lounge chairs created by the Australian designers Grant and Mary Featherston from an idea by the exhibit designer Robin Boyd. Visitors sat in the chairs to activate short, taped interviews with prominent Australians on aspects of Australian life and achievement, delivered through stereophonic speakers in the chairs' headrests. Occasional tables stood nearby, bearing books on Australian society and ashtrays of a modern Australian design. One wall of the main exhibition hall featured a row of modernist paintings by leading Australian artists. Natural light streamed into the pavilion through its glazed north and south faces, which provided sweeping views across the exhibition site. Quality Australian wool carpet covered the pavilion's floors and some internal walls, muffling incoming noise and adding to the general feeling of repose.

Aspects of the pavilion's interior suggest a range of architectural types: a hotel lobby, a corporate foyer, a gallery of modern art, and the living room of a large, modern home. The priority of modern design over specific symbols of Australian nationhood was unprecedented, its origin was in the government's newfound eagerness to stress Australia's modernization. Such progress was emphasized in Prime Minister Harold Holt's four-minute interview on industrialization as a significant but little known feature of contemporary Australia. When questioned on the scale of Australian manufacturing in comparison to its more familiar rural sector, Holt described employment in industry as roughly equivalent to the USA, and higher than other recognized industrial nations such as Canada, France, and Japan.¹ He identified Australia's automobile, electrical, engineering, petroleum, mining, and steel industries as all experiencing rapid growth since 1939, and being "much more advanced and sophisticated than most people would realize."²

The Prime Minister highlighted Australian inventions such as transistorized aviation beacons, radio telephone equipment, a

1 "Expo 67 Sound Chair Scripts. Notes for Interview with Prime Minister—Final Reading Text," undated, National Archives of Australia (NAA): A463/1966/2141: 1.

2 *Ibid.*, 3.



Figure 1 (left)
1 Hostess with model of the Parkes Radio Telescope, Australian Pavilion, Expo '67, Montreal, NAA: AA1982/206, 44. Reproduced with permission of the National Archives of Australia.



Figure 2 (right)
Interior view of main exhibition hall, Australian Pavilion, Expo'67. Montreal, NAA: AA1982/206, 45. Reproduced with permission of the National Archives of Australia.

pilotless jet aircraft, and antitank and antisubmarine guided weapon systems as evidence of Australia's production of items "associated only with the most highly developed industrial economies," noting that all had been sold overseas, including to Britain and the United States.³ He made reference to the Woomera rocket range where, in 1967, Australian scientists and engineers were collaborating with Britons on new missile technology. Large-scale models of the Parkes radio telescope and the Snowy Mountains hydroelectric scheme supported the idea of Australian technological advance (Figure 1). The majority of the "facts" on Australian industrial, scientific, and social development, however, were delivered aurally, through the Featherston "sound chairs." Sir Valston Hancock, Australian Commissioner-General of the Australian Exhibit Organization (AEO) for Expo '67, saw the chairs as the most important medium for telling the Australian story.⁴ Yet, as Robin Boyd explained in a press interview, they told this story "quietly" once the visitor "sank down to take his ease" (Figure 2).

The pavilion associated Australian modernity with a particular quality of life and subjective experience invested via design in the embodied relations, material presences, object forms, and high level of comfort throughout the pavilion. While wanting to appear modern, apprehension about how Australia would measure up internationally made the government choose to present a small, appealing target, harnessing professional designers' fundamental investment in modernist style. An outdoor enclosure of kangaroos, wallabies, and eucalyptus trees, and some indigenous bark paintings and "sunburned country" photographic images inside the pavilion provided visitors with more familiar Australian content, but as a promotion of Australia, the pavilion's overall message was oblique, its modernist styling seemingly contradicting the expression of a

3 Ibid.
4 Correspondence of Sir Valston Hancock to Robin Boyd, July 28, 1967, Grounds, Romberg, Boyd Records, State Library of Victoria (hereafter GRB), Box 87/1 (d).
5 T. C. Bray, "Expo 67—The Greatest Show on Earth," *The Courier Mail* (July 21, 1967): 2.

distinctive national identity. For the exhibits designer, Robin Boyd, giving expression to Australia through modernism represented his aspiration for Australian society, continuing a lifetime's advocacy of modern design. The pavilion was a product of his experience in producing a totally designed environment, and highlights the emerging role of professional design services in Australia in managing corporate and institutional identity and public opinion.

Australia, International Exhibitions and Modernity

As a British settler society, Australia is clearly a product of the European modernizing project, but Australian history reveals complex, conflicted relations with the "molder." Perceiving itself as a "young" nation remote from European civilization, the prospect of attendance at international exhibitions often sparked Australian defensiveness about its place in the world. For much of the twentieth century, Australia was a sporadic and reluctant participant at official international exhibitions, favoring events linked to Britain's imperial ambit. When it did attend, its emphasis was on staple goods and nature, and pastoral imagery consciously divergent from other nation's exhibitions promoting human progress in industrial modernity. Within Australia, the emphasis on abstraction and universality in modern art and design was seen as opposed to an authentic Australian experience, and an unwelcome manifestation of the alienating effects of European modernity. The image of a country with unique plants and animals, and robust rural traditions and industries, suited Australia's largely complementary economic relationship with Great Britain. Until the mid-1960s, Britain was the main market for Australia's principal exports of food and natural resources, and its chief source of low-cost manufactures and investment funds. But Britain's first, unsuccessful application to join the European Economic Community (1961–1963) signaled a permanent change in the actual and sentimental relations between the two nations. Australia's increasing exposure to world economics and politics created a unique context for consideration of Canada's invitation to exhibit at Expo '67.

Australian Participation in Expo '67

The Australian government received the first of five invitations to Expo '67 in January 1963, but did not actually commit to participation until July 1965, making it one of the last participating nations to respond. The deliberations involved diplomats, cabinet ministers, and senior public servants from the departments of External Affairs, National Development, Trade and Industry, Treasury, the Prime Minister's Department, and the News and Information Bureau. The protracted and equivocating nature of the discussions reflected deep-rooted Australian reservations about the cultural orientation of international exhibitions. Australia did not attend the 1958 Brussels international exhibition: the government was unwilling to bear

the expense when it could not see any direct potential for trade promotion.⁶ But then Australia also stayed away from the 1964 New York World's Fair, claiming that event was compromised by commercialism and its lack of official status.⁷ Some parties to the discussions surrounding Expo '67 now criticized these decisions as lost opportunities to promote Australia internationally, and probably a justified expense. Even so, in June and December 1964, the Australian Cabinet twice formally declined Canada's invitation, the Department of Trade and Industry maintaining the estimated £1 million price was too high since most visitors would come from northeast America, considered an inconsequential destination for Australian exports given previous performance.⁸

Australia's reluctance to attend Montreal also reflected doubts over its capacity to present a pavilion with the necessary attractions and disposition to attract the attention of other nations. It was regarded as inevitable that the British and United States pavilions would eclipse any Australian exhibit. An official from the Australian News and Information Bureau claimed, "Our very normality is against us."⁹ The Canadian Government, however, continued to pressure Australia to attend, Australia ultimately feeling obliged to support Canada, a fellow member of the old British Commonwealth," especially when Expo was being staged to mark the 100th anniversary of the Canadian Confederation. With other Commonwealth countries including Britain, India, and Pakistan accepting Canada's invitation, it became virtually impossible for Australia to stay away.

The Canadian Universal and International Exhibition, Montreal, 1967

Developed around the theme "Man and His World," Expo '67 attributed an essential, eternal, and universal form to humanity, describing "Man" as "fundamentally the same... throughout the world and through centuries of time."¹⁰ Essential man was characterized as a "stubborn visionary," a "dedicated craftsman," "producer," "explorer," and "developer."¹¹ Design figured largely in the expression of these qualities, a press release asserting, "The ingenuity and originality of participating nations will tell the theme story in a kaleidoscope of architectural genius. Each nation will present its most precious contribution to the wealth of Man's civilization."¹² Such aspirations sought to restore a sense of idealism to international exhibitions. This was in contrast to the widely perceived disappointment of the 1964 New York World's Fair. Australia's exhibit designer Robin Boyd had himself written a lengthy, considered critique of the New York World's Fair for *The Australian* newspaper, which addressed its lack of a coordinated vision and rampant commercialism¹³ though, as Roland Marchand has argued, the event in fact highlighted the rise of the corporation in the international economy.¹⁴

6 "Minutes of Interdepartmental Meeting to Discuss Australian Participation in the Montreal World Fair," February 27, 1964, NAA: A1838, 563/3/2/1 Part 1: 1.

7 "Minutes of Interdepartmental Meeting": 1.

8 Ibid.

9 Ibid., 1–2.

10 Author unknown, *Man and His World: The Canadian Universal and International Exhibition* (Montreal: Canadian Corporation for the 1967 World Exhibition, 1967), 4.

11 Ibid., 4.

12 "News Release from the Canadian Corporation for the 1967 World Exhibition," NAA: A1838, 563/3/2/1 Part 1, undated: 1.

13 Robin Boyd, "The Fair That Never Was," *The Australian* (July 27, 1964): 9.

In contrast, Expo '67 sought to raise important ideas about the built environment, and to initiate a dialogue about innovative living spaces, transport systems, and urban planning.¹⁵ To this end, a highly anticipated feature of the event was Habitat 67, to be designed by the Israeli architect Moshe Safdie to exemplify the exhibition's sub-theme of "Man and His Community." Habitat 67 was conceived to be an ultramodern housing complex providing a new high-density, residential area for Montreal post-Expo. Like the exhibition site itself, which was largely located on recovered and man-made islands in the St. Lawrence River, Habitat 67 was intended to complement Montreal's new urban plan and underground rail system developed by the international architects Vincent Ponte and IM Pei.

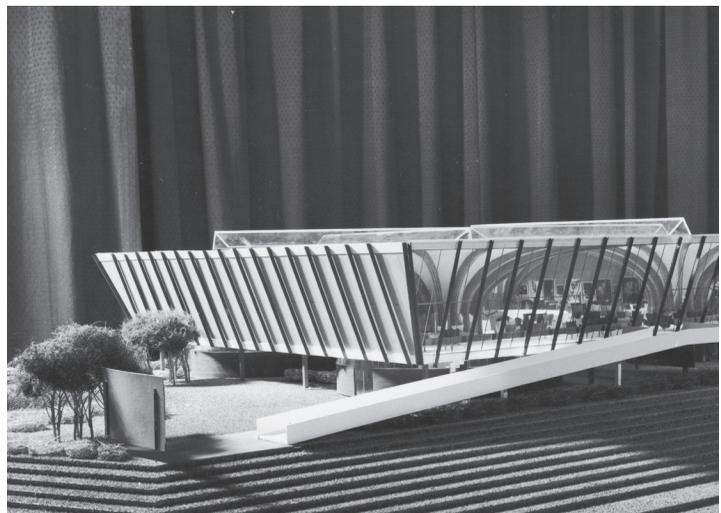
The Australian Pavilion: An Incidental Architecture

When the Australian government finally committed to exhibit in Montreal, it resolved to put sufficient financial resources into the project to make it an effective international promotion. Expo '67 also now was framed as an important symbolic undertaking for the Australian nation. R. Neil Truscott of the Department of External Affairs described it as "a valuable exercise in working out a composite image of Australia."¹⁶ The challenge and subtlety of this task were not ignored. A memorandum from Australia's High Commission in Canada reminded all involved that Expo '67 was "not a 'trade fair,' and that participation cannot be expected to show short-term benefits of a commercial nature," being "primarily a prestige and cultural exhibition."¹⁷ However, a year and a half of government indecision over whether to attend now required swift decisions to be made about the design of the pavilion if the building were to be completed on time, making a number of decisions somewhat impromptu.

For example, the important role of Pavilion Architect fell to James Maccormick as a result of his position as Principal Architect for

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- 14 Roland Marchand, "The Designers Go to the Fair, I: Walter Dorwin Teague and the Professionalization of Corporate Industrial Exhibits, 1933–1940" in Dennis Doordan, *Design History: An Anthology* (Cambridge, MA: MIT Press, 1995), 89–102.
- 15 Author unknown, "Expo 67: Origin and Status & Multilevel City," *The Architectural Review* (August 1967): 87–88.
- 16 "Minutes of Interdepartmental Meeting to Discuss Australian Participation in the Montreal World Fair," February 27, 1964, NAA: 563/3/2/1 Part 1: 1.
- 17 D. O. May, "Montreal World Fair 1967 E.A. No. 97/64," NAA: 563/3/2/1 Part 1: 1.

Figure 3
Model of James Maccormick's design for the Australian Pavilion, Expo '67. Montreal, NAA: AA1982/206, 45. Reproduced with permission of the National Archives of Australia.



the Commonwealth Department of Works, Canberra. Shortly after the then Prime Minister Sir Robert Menzies confirmed Australia's participation in Expo, Maccormick was asked to provide the Cabinet with "a notional design" to demonstrate "what an Expo building could be like."¹⁸ Before joining the Commonwealth Public Service in 1963, Maccormick was an associate of the leading Melbourne architectural practice Grounds, Romberg and (Robin) Boyd, where he worked on a range of major public and commercial projects. In a matter of weeks, Maccormick produced an indicative pavilion design, conceived around four large, wood-ribbed pillars that doubled as light and ventilation wells; fusing form and function in a way typical of his work in providing a rational face to government (Figure 3). The government had planned to brief a private architect to design the actual pavilion, but Maccormick's simple, generic design impressed the Cabinet, and he was appointed Pavilion Architect.¹⁹

The Cabinet minutes describe Maccormick's pavilion as "exciting without being freakish, and one which could take its place in company with the pavilions being provided by other countries."²⁰ Such easy acceptance belies the long hostility towards modernism from the conservative side of Australian politics typified by Prime Minister Sir Robert Menzies, who saw modern art as subversive and alien to Australian society. In 1937, while Attorney General, Menzies had established the Australian Academy of Art to promote nationalistic landscape painting as the true Australian art. As late as 1958, he was active in blocking modernism from official overseas exhibitions of Australian art.²¹ Yet when the Cabinet met on January 25, 1966 to select the Montreal pavilion design, Menzies raised no objections to modern architecture being used to represent Australia, even though he still expected that Australian visual art express national uniqueness and historical continuity.

Menzies personally nominated Robert Campbell, director of the National Gallery of South Australia and a member of his Commonwealth Art Advisory Board (AEO), to select the art works for Expo '67, assuming Campbell would make conservative choices. Working closely with Robin Boyd, Campbell chose works by established Australian modernists as a complement to the character of the pavilion. Some in the art world found the selection too cautious, believing works more on the edge of contemporary art should have been chosen.²² Alternatively, in a note to the AEO that could have been written by Menzies himself, Valston Hancock wrote that he viewed Campbell's selection "with dismay," believing Australians, like everyone else in the world, had "been 'spoofed' by the form of modern art."²³ But cultural positions were in flux in Australia in the mid-1960s, and Campbell's selection of modernist paintings went to Montreal.

Australia, Urban and Urbane

Homi K. Bhaba describes the nation as a narration, with national

18 James Maccormick, letter to Geoffrey Serle, April 2, 1996, Personal Archive of James Maccormick (hereafter AJM), Brisbane.

19 James Maccormick, letter to Geoffrey Serle, AJM.

20 "Cabinet Minute Decision No. 1472 (Hoc) 9, 1965," NAA: A58285: 1838381: 4.

21 See Sarah Scott, "Imaging a Nation: Australia's Representation at the Venice Biennale, 1958," *Journal of Australian Studies* 79: 53–66, 225–229.

22 Mervyn Horton, "Australian Art at Expo 67," *Art and Australia* 4:4 (March 1967): 269.

23 V. B. Hancock, "Note for File," July 4, 1966, NAA: A463, 1965/5070.

identity emerging through the terms and discourses used to express it.²⁴ Built environments and material artifacts play a role in this process. Neil Leach described them as “objectivated cultural capital.”²⁵ In imaging Australia, James Maccormick described the Australian pavilion as “a place of relaxation and extreme comfort, a quiet haven of tranquility away from the hustle and bustle of the Fair.”²⁶ This was to be achieved through “a simple, functional, restrained enclosure... elevated above the ground and thereby isolated from all other distractions, with air-conditioning, generous seating, and thick carpets.”²⁷ (Figure 4) The architecture proved a challenge for Robin Boyd as exhibits designer because its open-plan interior, extensive use of glass, and plentiful light made it difficult to employ dramatic staging or incorporate a great number of exhibits within the pavilion. Boyd nevertheless accepted the idea of the pavilion as a refuge from the noise and activity of Expo and worked with it.²⁸

The linking of contemporary Australian nationhood with a sensibility of modern, urban ease broke with the grounding of Australian identity in an idealized, rural past, but was more in keeping with Expo '67's orientation towards urbanism. The struggle between city and country is, of course, a central tension in modernity. As early as 1848, Marx described the modern as a specific spatio-temporal model in which the urban, driven by market forces, was supplanting the rural across the world.²⁹ In Australia, the connection of authentic culture with the land, rural enterprise, and the pioneer period neglected the substantially urban and suburban character of Australian society. Boyd addressed this anomaly. The inclusion of a model of Canberra, Australia's purpose-built capital, which was then being extensively developed along the lines of Walter Burley Griffin's 1925 designs as an exemplary garden city, suggested the redevelopment of the Australian landscape on modernist principles. Similarly, through a display of twenty photographs of Australian architecture, Boyd sought to show a consistent development from the colonial to the modern period, the contemporary examples all being modernist in conception.³⁰

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- 24 H. Bhaba, “Introduction” in *Nation and Narration*, H. Bhaba, ed. (London: Routledge, 1990), 1–9. We were reminded of this argument by Guy Julier, “Urban Designscapes and the Production of Aesthetic Consent,” *Urban Studies* 42:5/6 (2005): 871.
- 25 *Ibid.*, citing Neil Leach, “Belonging: Towards a Theory of Identification with Space” in *Habitus: A Sense of Place* J. Hiller and E. Rooksby, eds., (Aldershot, UK: Ashgate, 2002): 283.
- 26 James Maccormick, “Australian Pavilion, Expo '67—Design Report,” January 9, 1967, *AJM*: 2.
- 27 James Maccormick, “Australian Pavilion”: 2.
- 28 Robin Boyd, “Report by Exhibit Architect, Mr. Robin Boyd, F.R.A.I.A.,” NAA: A463, 1965/4715: 4.
- 29 See David Cunningham and Jon Goodbun, “Marx, Architecture and Modernity,” *The Journal of Architecture* 11:2 (2006): 174.
- 30 Robin Boyd, “Report by Exhibit Architect.”

Figure 4
Hostesses and Featherston ‘sound chairs’, Australian Pavilion, Expo '67. Montreal, NAA: AA1982/206, 28. Reproduced with permission of the National Archives of Australia.



Robin Boyd

Robin Boyd is a towering figure in post-war Australian society, despite a career cut short by his early death at 52 in 1971. A significant public intellectual and member of one of Australia's foremost artistic families, Boyd's biographer describes him as "the leading Australian propagandist for the International Modern Movement."³¹ Boyd played this role as an academic, an architect, and a writer. In partnership with Roy Grounds and Frederick Romberg, he was noted for his innovative domestic architecture, being involved in the design of 220 buildings.³² These included diverse forms of residential, commercial, and public architecture, both large and small, extending to experimental designs for exhibition. Boyd's work alternated between international modernism and a regional variant employing vernacular materials such as stone and wood. Of particular relevance to his design work for Expo '67 are the typologies of space and materiality of built construction in his commercial projects such as the Capital Motor Inn, Melbourne (1962–4), and the Stegbar Office and Showroom, Springvale (1962–4).

After WWII, Boyd became director of the Small Homes Service, an initiative of the Royal Victorian Institute of Architects and *The Age* newspaper, for which he wrote weekly press commentaries on modern architecture, design, and planning. His advocacy of modernism in print is perhaps his greatest contribution to its promotion, and saw him contribute to international debates about contemporary design through his writing in *The Architectural Review* and other publications. The suburban home often was the focus of Boyd's thinking, writing, and criticism, his monograph *Australia's Home* (1952) providing the first substantial interpretation of Australia's architectural history through the exploration of this seemingly humble topic.³³ Boyd wrote a total of nine books during his lifetime advocating modernism and Australian design. Notable was *The Australian Ugliness* (1960), which castigated the Australian public and designers for their lack of design awareness.³⁴ For Geoffrey Serle, however, these criticisms always "sprang from patriotism and ambition for his country," Boyd being ever hopeful that Australian society and design would mature and develop.³⁵ This position can be seen as consistent with the image of Australia projected by his exhibition schema for Australia's pavilion in Montreal.

Boyd was an experienced curator and exhibition designer, a byproduct of his promotion of modern design. The *Modern Home Exhibition*, held at the Royal Melbourne Exhibition Buildings in late 1949, was an early attempt on Boyd's part to encourage an awareness of "good design," and saw more than seventy Australian companies and designers present trade stands devoted to their products.³⁶ Such efforts to promote a modern lifestyle were part of a larger nation-building enterprise in the immediate post-war period. In the late 1940s, many intellectuals were eager that Australia transcend the conservatism and parochialism of its colonial history to become a

31 Geoffrey Serle, *Robin Boyd: A Life* (Carlton, Victoria, Australia: Melbourne University Press, 1995), Preface.

32 Vanessa Bird, Helen Stuckey, Conrad Hamann, Philip Goad, and Neil Clerehan, "Chronological List of Works by Robin Boyd," *Transition* 42 (1992): 193.

33 Robin Boyd, *Australia's Home: Its Origins, Builders and Occupiers* (Melbourne, Victoria, Australia: Melbourne University Press, 1952).

34 See especially *Victorian Modern* (1947), *Australia's Home* (1952) and *Great, Great Australian Dream* (1972).

35 Geoffrey Serle, *Robin Boyd: A Life*, passim.

36 For a full list of Australian-manufactured goods featured in this important exhibition, see Simon Jackson, "From Britain's Farm to America's Junior Partner and beyond: Post-WWII Exhibitions of Design in Melbourne," *Journal of Design Research* 5:1 (2006): passim.

dynamic, outward-looking, modern nation. For Boyd, the modernization of the Australian home was fundamental to creating a modern nation with modern attitudes, although he knew that it was not a vision shared by mainstream Australian society. Describing the genesis of the *Modern Home Exhibition*, he expressed some regret over the exhibition's sub-theme of "Yesterday, Today, To-morrow," explaining:

The idea was to take the 1890s as "Yesterday," and to poke fun at its floral toilet fittings and unlikely-looking black iron equipment. "Today" was to show, impartially, a representative collection of currently available products. "To-morrow" would be applied to outstanding designs in the various fields. ... But the pity of it was there was so little of value from which the jury could select.³⁷

By the 1960s, however, the quality and availability of Australian design had vastly improved, and Boyd commonly specified products by Australian designers such as Frances Burke, Grant and Mary Featherston, Clement Meadmore, Fred Lowen, and Kjell Grant as an extension of his architecture work.

Boyd's Curatorial Program and Exhibition Design

It is a sign of Boyd's public stature that his role at Expo '67 was not restricted to giving visual form to displays, but encompassed the total conceptual schema of the Australian exhibit. He was given a broad scope to commission new design work, notably the Featherston sound chairs with their many technical and manufacturing challenges, using the exhibition to extend the range of Australian design. Boyd's extensive international travel made him alert to the difference between fact and myth where claims about Australian achievement were concerned. The books made available for visitors to read included serious works of sociology and social comment.³⁸ In a letter to Bill Worth, coordinator for the Expo project at the AEO, Boyd insisted that items only be included in the pavilion if they were truly exciting "in themselves."³⁹ Conversely, a life as an advocate of modernist design as a key component and attribute of a modern nation saw Boyd conceive the pavilion—especially those areas where important international guests were hosted—as "a showcase for the best in Australian design and manufacture in arts, crafts, and industry."⁴⁰ Achieving this involved a huge effort on Boyd's part, which he undertook with his typical enthusiasm and dedication. However, although it was important work, he largely was forced to take it on to support his architectural practice, which was experiencing financial difficulty.⁴¹

Boyd felt Maccormick's pavilion design made it difficult for him to mount a dramatic display, especially in preventing the use of artificial lighting to draw attention to specific exhibits.⁴² He thus resolved to develop the idea of the pavilion as a "very restful

37 Robin Boyd, "Modern Home Exhibition Melbourne," *Architecture* 38: 1 (January 1950): 19.

38 "Cabinet Minute Decision No. 1472 (Hoc)": 4.

39 Robin Boyd, "Letter to William Worth," November 30, 1965, NAA: A1209/84, 1967/708.

40 Robin Boyd, "Report by Exhibit Architect, Mr. Robin Boyd, F.R.I.": 1.

41 See Geoffrey Serle, *Robin Boyd: A Life*, passim.

42 "Cabinet Minute Decision No. 1472 (Hoc)": 4.

sort of building.”⁴³ Commenting to a reporter, Boyd highlighted the importance of the Featherston chairs in this respect, in enabling people to sit in one place to receive information instead of having to walk about for it.⁴⁴ Throughout the pavilion, a sensibility of relaxed living, a certain ambience, taste culture, and general design consciousness were intended to serve as a barometer of the achievement of Australia society and the nature of the Australian lifestyle. Boyd was fanatical about the detailing of the pavilion, and spent endless hours sourcing the components of the pavilion from Australian designers, artists, and craftspeople. Everything had to be Australian, right down to the dinner service and cutlery in the pavilion’s private dining room. Australian timbers featured throughout, as did fine Australian wool.

In Australian exhibits at earlier exhibitions and trade fairs, export materials typically were presented in their unprocessed state to indicate the bounty of the country. In Montreal, design application demonstrated the quality and adaptability of Australian products. A good example is the use of Australian wool, which ranged from the luxurious but hard-wearing wool carpet run throughout the pavilion, the sheer wool curtains, and the hostesses’ bright-orange uniforms. A limited number of “superior Australian objects”—crafts, industrial products, packaged goods, coins, banknotes, and stamps—were housed in self-contained plastic display units to demonstrate the scope and quality of Australian manufacturing and product design.⁴⁵ However, it was more the combination of the pavilion’s architecture, interior design, furnishings, and lighting—complemented by the appearance and personalities of the well-drilled hostesses—that created the true sense of Australia. Neither the Featherston sound chairs nor the display units, the latter conceived by Boyd to look more like furniture rather than exhibition stands, interrupted the continuity of the pavilion interior.⁴⁶ No three-dimensional display was greater than table height, and all were rounded in form to allow easy pedestrian circulation. The number of people admitted into the pavilion at any time also was restricted to preserve the quality of the experience.

Boyd’s ambition for Australian design can be seen in his preparedness to work with local furniture designers and small manufacturers in developing prototype furniture, and not simply specifying existing, perhaps even imported, products. Terence Lane notes that Australian designers and manufacturers experienced many difficulties working in a recently industrialized nation, far from international manufacturing centers, and with a small domestic population of buyers. Facing high tooling and manufacturing costs, Lane argues that many Australians attempted to “reproduce the effects” of international furniture designs, but only achieved a certain crudeness caused by less-sophisticated production processes as exemplified by plywood chairs with flatter profiles and “Scandinavian-inspired” furniture made from less suitable

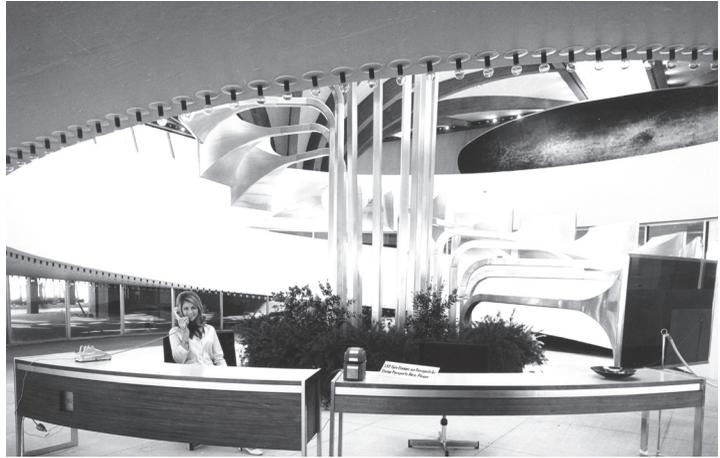
43 “Talking Chairs Tell of Australia . . .,”
The Sun (Melbourne) (April 9, 1966),
NAA: Expo 67—Press clippings,
463/1965/5745.

44 *Ibid.*

45 Robin Boyd, “Report by Exhibit Architect”:
4.

46 *Ibid.*: 2.

Figure 5
Reception area, Australian Pavilion, Expo '67,
Montreal, NAA: AA1982/206, 44. Reproduced
with permission of the National Archives of
Australia.



Australian wood.⁴⁷ The Featherston sound chairs, in contrast, aimed for genuine innovation and sophistication. Built from upholstered, molded plywood on an aluminum base, they were fixed to the pavilion floor to enable them to be wired into the pavilion's sound system.

For almost a year, dozens of government technicians and scientists, coordinated by the Department of Civil Aviation, developed the sound equipment for the pavilion and the chair's headrest, some working full-time on the project. In the pavilion, the taped conversations were managed via a large bank of electronic equipment in the pavilion's basement. The idea of the chairs was to enfold the pavilion visitor in comfort and sound, an observer describing the chairs as looking like the "bole of a gum tree with a branch fallen out."⁴⁸ Manufactured by Aristoc Industries, the chairs were never commercially successful, even after the technology in the headrests was simplified. Other furniture in the pavilion, however, represented commercially viable designs available on the Australian market. The Fler Company provided secretarial, visitor, and executive chairs in Tasmanian blackwood for the downstairs and private areas of the pavilion (Figure 5).

A Modernist Mise-en-scene

The openness of the pavilion enabled Boyd to include evocative juxtapositions within the display, all elements serving relational rather than absolute roles. The use of artwork in the arrangement was an important index here, linking Australia's display to the ideal of an authentic, value-driven culture. In recent decades, interest in the role of consumer and design objects in identity-formation in everyday life has grown with their increasing social importance. In the mid-1960s, however, artworks were more reliable in signifying a truly cultured space. Boyd presented the group of Australian paintings according to the hanging techniques of the modern art museum, enunciating what Mary Anne Staniszewski has called "a modernist, seemingly autonomous aestheticism."⁴⁹ Elsewhere in the

47 Terence Lane, *Featherston Chairs* (Melbourne: National Gallery of Victoria, 1988): 1.

48 "Talking Chairs Tell of Australia"

49 Mary Anne Staniszewski, *The Power of Display: A History of Exhibition Design at the Museum of Modern Art* (Cambridge and London: The MIT Press, 1998), 61.

Figure 6
Indigenous bark paintings, Australian Pavilion,
Expo '67, Montreal, NAA: AA1982/206, 44.
Reproduced with permission of the National
Archives of Australia.



pavilion, Boyd commissioned Australian artists to create large panels as original creative works to articulate key aspects of the display. The model of the Parkes radio-telescope, for example, sat beneath a panel by the Australian artist Donald Laycock that depicted the night sky of the southern hemisphere in a painterly, abstract style.

Alternatively, the vibrant designs, simple execution, and raw materiality of aboriginal bark paintings contributed a different sense of cultural authenticity to the exhibit (Figure 6). Initially, the government had not wanted to include indigenous art or performers, a press report hinting they were regarded as out-of-step with “the picture of a modern, growing nation” that Australia wanted to project.⁵⁰ Ultimately, Boyd included them, suggesting how meaning within the pavilion was not invested in single objects, but in distinctions and relations between them in the aim of representing Australia in a more complex and comprehensive way. Art, design, science, and technology all attested in their own way to the growing sophistication of Australian society. If in the mid-1960s the principal uptake of modernist art and design in Australia was by government, corporations, public institutions, and educated professionals, a ten-meter-high display of large, back-lit photographs of everyday Australian activities that spiraled up through the pavilion’s central, circular walkway suggested modernism’s adjacency to everyday lifestyles and practices (Figure 7).

Conclusions

In the mid-twentieth century, Robin Boyd was at the forefront of efforts to further design activity in Australia. His concern for mass taste and desire to promote modernism to the Australian community strongly informed the interior of Australia’s Montreal pavilion. Design was the substance and framework for Australia’s claims to cultural capital, the overall exhibition schema and assembled artifacts effecting a purposeful reconstruction of Australian national identity under the influence of the nation’s changing external circumstances. Such historical change was not novel to Australia. The decade of

50 Author unknown, “Australian ‘Image’
Aborigines Left Out of Display” *The Sun*
(Sydney) (February 17, 1966): GBR 85/1(b)

Figure 7

Central ramp to main exhibition hall, Australian Pavilion, Expo '67, Montreal, NAA: AA1982/206, 45. Reproduced with permission of the National Archives of Australia.



the 1960s was one in which modernization forces spread out over the world; but the priority of a modern aesthetic as a representation of contemporary Australia disturbed the expectation that national pavilions be visibly tied to the identity of their home countries.

There is no evidence that the Australian government had a specific interest in promoting Australian design in itself. The nature of the Montreal pavilion was the corollary of wanting Australia to appear modern, and engaging professional designers to supply an appropriate look. The bold move to privilege a certain quality of experience over specific exhibits had some success for Australia. One Canadian journalist wrote:

I congratulate the Australians.... Their pavilion is a small miracle of good taste and very restful after a day of footslogging. One comes gratefully to the Aussies' great room with its restful lambswool carpet and sits down in one of the deep green chairs. The chair begins to talk, but it is a subdued message, a very soft sell, with just a wistful note of the down-under accent. One... goes out to the patio and... watches the kangaroos at play. All very soothing in an otherwise busy day.⁵¹

In the mid-1960s, however, not all Australia was that comfortable with design modernism. In early 1966, the New South Wales state government brought international opprobrium to the country by forcing the resignation of the Danish architect Jørn Utzon from the Sydney Opera House project.

Robin Boyd submitted a trenchant article against the decision to *Architectural Forum*.⁵² Providentially, the resignation came before Boyd had finalized the exhibits for Expo '67, since he had intended to include an image of the Sydney Opera House under construction by the eminent Australian photographer Max Dupain. Utzon's adventurous design would have provided a strong symbol of Australian progressiveness. Unfortunately, political interference turned the project into a debacle.⁵³ Although many Australians

51 Walter O'Hearn, "Fred, Fiancée and the Fair," *Montreal Star* (May 1967): GBR, Box 85/1(b).

52 Robin Boyd, "Utzon: The End," *Architectural Forum* 124:5 (June 1966): 90.

53 See Bent Flyvbjerg, "Design by Deception: The Politics of Megaproject Approval," *Harvard Design Magazine* (Spring/Summer 2001): 52–56.

expressed their outrage, the project was taken from Utzon, and he left the country. Boyd wrote to Dupain, "With great regret I don't think we can use this (photograph) now. The less said the better about the SOH in Australian propaganda."⁵⁴ Somewhat surprisingly, Boyd and Maccormick encountered no such resistance in conceiving Australia's Expo '67 pavilion, eschewing typical signifiers of national identity bound to Australia's colonial history and economic dependence on staple goods and natural resources for a modernist design vocabulary that represented contemporary Australia as international in outlook and as comfortable with modernity as the relaxed atmosphere of its modernist pavilion interior.

54 Robin Boyd, GRB: Box 87/1 (d).

Design in Mind

Ann Heylighen, Humberto Cavallin,
and Matteo Bianchin

Footnotes for this article begin on page 104.

Research on the relationship between design and the creation of knowledge is a relatively recent phenomenon. In architecture, for instance, it was not so long ago that designers tended to view knowledge with disdain, as a hindrance to unfettered creativity or an encapsulation of “freeze-dried prejudices.”¹ Recently, however, the American Institute of Architects (AIA) devoted the December 2004 issue of its *AIA Journal* entirely to the theme of knowledge, which strongly suggests that times are changing.

Increasingly, the act of designing is considered to be or involve some kind of knowledge production.² This directly follows from the type of knowledge designing relies on, which is practice-based and tacit,³ (i.e., embedded within the very act of designing).⁴ On the other hand, it is possible—at least in a rough and ready way—to appreciate the distinction between the aim, or intention, of producing knowledge and other aims,⁵ such as designing an object or a building. To state it a bit more bluntly, a client typically hires an architect to design a building, not to produce knowledge.

Why then is it so difficult to set clear boundaries between design and scholarly research? Questions about the relationship between both are far from new. According to Nigel Cross, they reappear about every forty years,⁶ and have been written about by many authors before. Already in 1973, Horst Rittel and Melvin Webber pointed out the difference between the kind of problems designers and planners deal with and those that scientists handle.⁷ More recently, Johannes Eekels and Norbert Roozenburg made a methodological comparison of the structures of design and research in engineering, and concluded that both are strongly interwoven and mutually dependent, yet fundamentally different.⁸ Although it seems time to move on from making all sorts of comparisons between design and research, this paper tries to shed more light on the issue from a conceptual and psychological point of view. To this end, it calls in the philosophy of mind—rather than the philosophy of science, as is usually the case⁹—and more precisely the notion of intentionality. Instead of considering design as a mix of knowledge creation and application, the process is decomposed into distinct yet interacting mental acts, in which designers establish relationships with (objects in) the world. A detailed analysis of this relationship forms the basis for a nuanced, yet fundamental, comparison with

the relationship researchers establish with the world and may help address the question about design's contribution to the creation of new knowledge.

After introducing the notions of intentionality and direction of fit as advanced by philosopher John Searle,¹⁰ the paper analyzes in detail the directions of fit involved in design both as hypothesized by theoretical models, and as experienced by design practitioners. This nuanced, yet fundamental, analysis of the nature of design should enable us to start addressing the question whether and how design has a role to play in the creation of new knowledge.

Intentionality

The notion of intentionality stems from late-nineteenth-century German philosophy, and refers to mental activities that are *directed at* objects or processes in the world. These activities result in beliefs, hopes, and desires that are *about* the world but not, strictly speaking, physical properties of the world. Intentional states thus have a first-person ontology (i.e., they exist only because some individual exists who enjoys mental phenomena). In this sense, intentional psychology is not entirely reducible to physics, even though it is rooted in the biology of some sort of natural entities (human and nonhuman animals). As we will point out, this makes for some peculiar traits of mental facts, such as their holistic nature, subjectivity, normativity, and individuation by content.

Searle defines intentionality as a property of individual mental states.¹¹ The individuation of these states is bound to two factors: the type of state (e.g., a belief is not a desire; perception is not memory), and how the object or state of affairs is presented to the mind (e.g., you can think of Venus as the morning or evening star: the object is the same, but the states have different contents because the object is conceived in different ways). The individuation of intentional states thus depends on content, not just on the object they intend to direct their mental activity to. Moreover, a state's content depends on its being interlocked in a network of other beliefs, hopes, desires, etc., and backed by a set of nonrepresentational capacities. This is why the mental is holistically organized. In order to entertain an intentional state, it is necessary to entertain many others: there may be no such things as a mind with only one belief or desire. In order to believe that Bush is President of the U.S., you need to believe many other things about government and representation. Thus, when analyzing mental events and processes, we should not expect to find simple states occurring in series, independently of other states being tacitly entertained or, in the case of background abilities, being active.¹²

Within the context of this paper, it may be useful to distinguish between "directedness" as a property of intentional states, and "aboutness" as the relation between intentional states and the objects in the world. The former indicates that every intentional

state intends or means something: for every desire there is something desired, for every belief something believed, etc. Sadly enough, however, not every intentional state reaches its target: we believe false things, desire inexistent states of affairs, etc. Thus, although intentional states are *directed at* something, they are not always *about* something, since they may as well be about nothing. Furthermore, they may be about something and represent it falsely—as being in a way it is not. That is, there may be no actual referential relation between the mind and the world, as when the object intended does not exist; and there may be a mismatch between the two even when reference is attained, so that a state of affairs is represented which does not exist. As a result, any theory of intentionality must allow for the possibility of misrepresentation. This implies that intentionality is a normative notion, since it is characterized by the way a state's representational content is to fit with the world in some way or another, and tokens of intentional states are evaluated in terms of success under this respect. For example, the content of your desire to eat an apple is the representation of an action, and the content of your belief that Berkeley is sunny is the representation that Berkeley is sunny. These contents represent the condition under which the intentions are fulfilled.

Thus far, it looks as if an intention can be evaluated with respect to a norm of adequacy. Yet this standard bifurcates for cognitive and conative states. According to Searle, intentional states have one of two possible “directions of fit.” Beliefs, for instance, which can be true or false, have a “mind-to-world” direction of fit, while desires, which cannot be true or false but rather fulfilled or unfulfilled, have a “world-to-mind” direction of fit.¹³ As Veikko Rantala puts it:

In a sense it is the responsibility of a belief to match the world in order to be true or satisfied (since the world is what it is). If it does not match the world, it can be changed so as to match it. Instead, if desires are not fulfilled, the world is responsible, since the desire is what it is and cannot be changed to match the world; rather the latter is to change.¹⁴

Thus cognitive and conative states are asymmetrical with respect to how the content determines their condition of satisfaction. The content represents the condition under which a state would be satisfied when matched with the world. To satisfy cognitive states, they must fit the world as it is; while, to fulfill conative states, the world must adapt to fit them. In other words, whenever you discover you have a false belief, you may want to change your belief in order to make the representation fit how the world is; but whenever a desire is unfulfilled, you rather may want to change the world. Suppose you believe you live in a penthouse, when in fact you live in a basement. If you are rational and have full information about your

apartment, you eventually will abandon your former belief and start believing that you do not live in a penthouse. But if you desire to live in a penthouse, while you live in a basement, the desire will not disappear as you discover the truth, nor will you develop the desire not to live in a penthouse. The only way to satisfy your intention is by moving. It looks as if truth and falsity do not apply to, or have an impact on, conative states.¹⁵

The point about truth is particularly relevant in the context of this paper. We may say that cognitive states such as belief aim at—or are committed to—truth; while conative states such as desire and will do not. In these latter cases, it is appropriate to say that the aim is the satisfaction of the desire (or will). Of course, in both cases, the conditions under which the aim would be reached are *represented* in the content of the state as the state of affairs that would make the belief come true or satisfy the desire; but the aim is different. In the first case, one is committed to the existence of a state of affairs that is obtained independently. In the second, this is not the case; nor does the state of affairs represented need to be actual. If you believe that tomorrow will be a rainy day, you are ready to abandon the belief in case it turns out to be sunny. However, if you desire that tomorrow will be rainy, you are not necessarily ready to abandon the desire in case it turns out to be sunny: you might, but you are not irrational if you do not.

Directions of Fit and the Activity of Designing

What does it tell us about design, and about its contribution to the creation of new knowledge? The activities of a designer, like those of a researcher, are directed at or about objects in the world. However, when looking at the direction of fit between the mind and (these objects in) the world, both differ considerably.

Across the board, the mental activities of a scientist are characterized by a mind-to-world direction of fit. Researchers seek knowledge as an end in itself, “because it is better to know than to be ignorant.”¹⁶ The beliefs and insights they produce may be true or false, and it is their responsibility to match the world in order to be true and therefore successful. This may be obvious for the natural sciences, yet perhaps less so for the humanities or social sciences. Without entering the debate about the differences or similarities between these fields, we would like to point out that social scientists engage in mental activities with the same direction of fit as those of natural scientists, by calling in Searle’s distinction between ontological and epistemic subjectivity/objectivity.¹⁷ While the phenomena studied in the humanities and social sciences can be seen as ontologically subjective (when we human beings no longer exist, these phenomena cease to exist, too), this does not imply that social scientists cannot expect to have epistemologically objective knowledge about them.¹⁸ In other words, social scientists also have the responsibility to produce knowledge that matches the world—

albeit a world that is ontologically subjective—so their mental activities display a mind-to-world direction of fit.

In contrast, a designer's mental activities seem to be dominated by a world-to-mind direction of fit. Designers are concerned not only with what is, but with what should be. Their attention is focused on possibility: "the search for new or better solutions to problems encountered in everyday living."¹⁹ Thus, even if design contributes to the creation of knowledge, the knowledge created usually is a by-product of an activity with another aim. Moreover, the solutions designers produce cannot be true or false. As Rittel and Webber posed it, in the case of design and planning problems:

There are not true or false answers. Normally many parties are equally equipped, interested, and/or entitled to judge the solutions, although none has the power to set formal decision rules to determine correctness. Their judgments are likely to accord with their group or personal interest, their special value-sets, and their ideological predilections. Their assessments of proposed solutions are expressed as "good" or "bad" or, more likely, as "better or worse" or "satisfying" or "good enough."²⁰

Furthermore, if and when these "good" or "bad" ideas are effectively turned into an object, this object changes the world so as to match the designer's ideas. As Richard Buchanan points out, "Change has always been an essential part of design, because designers are concerned with creating new possibilities in human experience, mediated or facilitated by human-made products."²¹

So far, it looks like design and research fundamentally differ in terms of both ontology and epistemology. When having a closer look at what designers and researchers do, however, the story becomes more intricate. Design and scholarly research are activities rather than states of mind. Moreover, because both are highly complex in nature, they both involve various kinds of mental acts. The following sections will zoom in on the micro-level of these acts.

In Theory

In the case of design, the intrinsically complex nature has inspired the advancement of various theoretical models which attempt to capture steps or stages designers go through while designing. For the purpose of this paper, we put under the microscope two different approaches to design: design as a staged process, and design as a transformation process. These two examples should provide an idea of how directions of fit may vary towards the inside of a design process.

Starting with the work by Morris Asimow,²² several models dissect the design process into a sequence of stages, roughly boiling

down to “analysis-synthesis-evaluation.”²³ This coarse model of how designers think progresses in recurring loops throughout the design process. Asimow described the design process as being composed of two structures: a vertical one that involves a sequential phasing of activities—from the definition of needs, feasibility study, and preliminary design over detailed design and production planning to actual production—and a horizontal one in the form of an analysis-synthesis-evaluation-communication cycle, common to all phases.

When analyzing this formalization of the design process in the light of Searle’s theories of intentionality, the *analysis* stage may be characterized by a mind-to-world direction of fit: designers collect information that enables them to know more about the design situation at hand. Subsequently, designers transform this information through a process of *synthesis*, which switches the direction of fit. The ultimate goal of this stage is to come up with a design proposal that, when realized, changes the world such that the needs defined are addressed. Once a proposal has been produced, the *evaluation* stage tries to assess to what extent the needs will indeed be addressed. Because what is evaluated does not exist yet, but has to be actively imagined by the designer, this stage may be considered to have both a world-to-mind (imagination) *and* a mind-to-world (evaluation) direction of fit.

In a similar vein, Bruce Archer proposed a model of the design process that emphasizes a linear sequence of activities, with numerous feedback loops between them.²⁴ An updated version of this model by Gero and Kannengiesser considers the staged process from an information process perspective.²⁵ It assumes the existence of three classes of variables, which are transformed into one another through design: function, behavior, and structure. According to this model, the purpose of designing is to transform the function into a design description in such a way that the structure or artifact being described is capable of producing this function.²⁶

This transformation extends the analysis-synthesis-evaluation sequence with three extra steps: formulation, reformulation, and documentation. “Formulation” (or “specification”) is the first step in the sequence, and transforms the function into behaviors of the structure that are expected to enable this function. When structures are being synthesized and evaluated, however, they may produce their own behaviors, which occasionally may lead to the “reformulation” of the structure, expected behavior, or function. Finally, “documentation” transforms the structure into a design description.

Table 1 lists the different stages of this transformational model and their corresponding directions of fit. The equivalent stages of analysis, synthesis, and evaluation have directions of fit identical to those of Asimow’s staged process. The additional phases—formulation, reformulation, and documentation—all display the world-to-mind direction of fit. When formulating a

Table 1Directions of fit for the transformational model of the design process²⁸

Stage	World-to-Mind	Mind-to-World
Formula or Specification	↑	
Analysis		↓
Synthesis	↑	
Evaluation	↑	↓
Reformulation	↑	
Documentation	↑	

problem, designers and/or their clients dissect the world according to their values and necessities, thus defining what is considered a problematic situation. Such situations do not present themselves in the world. Designers must make sense of them by imposing their viewpoints and values. In this process, designers act by imposing conditions of satisfaction in a direction of fit that goes from their minds to the world, splitting and grouping objects to define the problematic situation.

This world-to-mind direction of fit also characterizes the documentation process. Documents produced in this stage do not intend to represent the world “as is,” but to communicate to other actors how to change it. In the documentation stage, designers produce drawings intended to support the communication of their ideas to others, who eventually should enable them to change the world such that these ideas are materialized.²⁷

In Practice

Having analyzed design from a theoretical perspective, the question arises as to how design occurs in practice, and whether our ontological and epistemological assumptions still hold in this realm.

Judging from in-depth interviews with “star”²⁹ and “local”³⁰ designers, some practitioners seriously consider their activity a form of research. Several interviewees admitted to having a personal agenda of interests, which they explore through the projects they design. This agenda may pursue quite specific objectives, as the work of Santiago Calatrava illustrates.³¹ His repertory can be seen as one big exploration of the phenomenon of dynamic equilibrium. Specific design projects are used as places for experimentation, for trying out and developing design knowledge. In fact, a distinction can be made between the project design task itself and a more general design process, or rather research process, which affects

and is affected by each design project. The latter process may transcend the immediate urgencies of a single project, and pursue quite specific objectives (exploring potential design concepts, investigating the possibilities of a site or, in case of Calatrava, studying a structural issue). Nevertheless, its course is seriously influenced by the specific projects themselves. Often it is only afterwards, when reconsidering several projects, that one can extract a supposable “research” program.

Two aspects can be analyzed using the categories previously described. First of all, each project is characterized by a world-to-mind direction of fit, because ultimately the building (or other object) being designed must match the designer’s ideas. However, inside this bigger frame, other sub-activities take place which may either conserve or reverse this direction. Indeed, during the sub-activities involving experimentation, the designers’ ideas about the world may need to be reshaped based on the nature of the world itself as perceived by them, rather than vice versa.

As explained above, intentional contexts have a holistic organization: mental states do not exist in a vacuum, but depend on many other states being tacitly entertained which, in turn, depend on an active background ability. This kind of complexity is found in design as in every human activity. As far as a design project is planned, the design process may be described as the planning of an action or series of actions: some end is targeted and means are searched in order to realize it. Obviously, this planning not only has to do with values from the design domain, but also with what designers know about the world and with examples of “good” design that influence the content of their values. What is considered good design may depend on a tacit knowledge of the world, which has a mind-to-world direction of fit and will be imbued with interpretations of examples that contribute to what we mean by “good” or “bad” design. A modernist architect, for instance, may find deconstructivist projects puzzling in a way that results from the unintelligibility of post-modern values and practices. One may ask what learning process led architects educated in a modernist context to develop such projects, and the answer may be very complex. On the one hand, changes in architectural values can depend on some piece of knowledge about the world (e.g., that contemporary society shows differentiation and fragmentation in a way that may not be synthesized in a modernist narrative). On the other hand, examples coming from these new contexts may suggest new interpretations of these very same values.

In such cases, the content of the intentional states with a world-to-mind direction of fit that directs the design process may depend on representations and pieces of tacit knowledge that have a cognitive character (i.e., a mind-to-world direction of fit). Moreover, this raises a troubling question about the relationship between the cognitive contents and direction of fit in design processes. If we

see design as a case of (very complex) action planning, we should attribute this to the intentional states involved a world-to-mind direction of fit. But now it looks like the representation of the ends targeted may reflect intentional states that have a cognitive character, and thus a mind-to-world direction of fit (e.g., intentional states expressed as the belief that deconstructivist buildings *are* valuable, or beautiful, etc.). For instance, one can imagine an ex-modernist explaining her change of mind as follows: "I was persuaded that architecture should respond to functional values, but then, in the late-1980s, I came to realize that this was no longer working well enough and to *believe that* a building should resonate a meaning..." What is central is that the change of mind is expressed in cognitive terms as something that is literally true of the world although it refers to values. That is, it seems that, in explaining design practice, values are envisioned as facts one can be right or wrong about according to how the world is.

It is important to notice, however, that such complexity does not invalidate the principled distinction between research and design. Indeed, the way in which cognitive states are recruited in the design process is coherent with this distinction: they all are means to an end, which is not cognitive but productive in nature. It is a desire rather than a belief that prompts designing, although cognition is involved in the representation of the state of affairs to be produced in order to satisfy the desire and of the way to make it real. As mentioned earlier, intentional states are individuated in terms of contents, but they are differentiated as kinds of psychological attitudes in terms of aim or direction of fit. So the fact that cognitive acts are involved in every activity of design should not tempt us to see design as a kind of cognition or as a way to produce beliefs and knowledge. Cognition is rather presupposed by design in two important ways: as providing the means to navigate the world in order to reach a goal, and as providing the conceptual tools, the knowledge, and the vision necessary to represent the goal.

Taking Stock

If we consider design as characterized by the kind of mental states that dominate it in the sense of governing the activity, cognitive states may serve design processes without being part of the very nature of design. That is, they may occur at many levels in the design process, and be incorporated in more or less complex ways, but they do not contribute to its very nature.

This may help clarify the intuitive distinction between design and scholarly research. Both are activities rather than states of mind, but the aims they pursue is different: in the first case, knowledge of truths, and in the second, the production of artifacts. Since both are complex activities, both typically involve very different kinds of acts. One may have to design a research project or a series of experiments in order to obtain some results. Similarly, research may

be needed for designing an artifact, and may be part of the actions taken in a design process, but it is not what design is about. Different aims govern the activities, ordering their acts in a means-to-an-end reasoning: knowledge is a means to design, while it is an end for research. So the way in which design may depend on cognitive states of mind is instrumental: beliefs and knowledge are necessary, but they are necessary as the means to an end which is defined independently. However, the nature of research is the pursuit of truth: to believe truly is not a means, but the end which is constitutive of such activity.

Discussion

The main aim of this paper was to develop an ontological and epistemological comparison between the nature of design and that of scientific research, the underlying assumption being that, once you get the ontology straight, the answers to questions associated with the contribution of design to the creation of new knowledge follow automatically.

For this analysis, we have called in Searle's notions of intentionality and direction of fit, which allowed us to compare the activities of designers and researchers in terms of the relationship they establish with (objects in) the world. However, we should not be excessively concerned with the precise terms characterizing this relationship. What is more important here is using these or other terms to identify the central issues that occupy our attention (i.e., to what extent design can contribute to the creation of new knowledge).

Based on its relationship with the world, design in itself does not seem to be a kind of scholarly research. Complications arise, of course, but overall the results of our analysis play in favor of the presence of a cognitive component that can play a role in design, yet cannot be articulated or elaborated by design. In other words, design as such is not a form of research, but may incorporate concepts that need elucidation through research—precisely because their source is not so much design practice, but a much more complex network of reflective thinking or implicit cultural learning. These concepts are part of the tacit knowledge designers use as a kind of cultural know-how, or even make explicit in a kind of know-how. Yet making these explicit is not part of the design process. Or rather it can be considered as part of it, but it does not work in the same way. It is a form of theoretical reflection incorporated in the process, but it has and follows its own logic. Thus, one may say that knowledge is *incorporated in* a design project, but not *the aim of* a design process, precisely because it has the opposite direction of fit. In fact, it is something that is produced otherwise and can influence design as a piece of information (e.g., about what is “good” or “bad” design; or, more radically, about what is a design and what is not).

By consequence, very different logics of discovery may be at work in design practice, and the way they are mixed varies from one case to another. However, this variation cannot be used to question the fundamental distinction in principle between design and research. For whatever the mix, you still need a theory to account for what happened, and this is something that just continuing designing will not be able to give you. You need some theoretical model, concept, strategy, or the like to come to grips with what has or has not worked, and to explain why. In more technical words, you need an explicit interpretation of what constituted the tacit understanding just displayed by your practice.

In this respect, the relevance of our analysis for the discussion on design's contribution to the creation of new knowledge seems twofold. It has attempted to set straight the limits of knowledge creation through design, as well as provided strong arguments for teaching research methods to design students. These serve to establish a fundamentally different relationship with the world than the methods typically learned in the design studio.

1 Joseph Press, "Soul Searching: Reflections from the Ivory Tower," *Journal of Architectural Education* 51:4 (1998): 233–242.

2 For examples, see the recent discussion on the doctorate by design.

3 Michael Polanyi, *The Tacit Dimension* (Garden City: Doubleday, 1976).

4 Donald Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983). Schön even suggested that, since research is an activity of practitioners, triggered by features of the practice situation, and immediately linked to action, there is no need to undertake research outside the immediate context of practice. Exceptions to this rule include four kinds of research that may enhance practitioners' capacity for reflection-in-action: frame analysis, repertoire building, research on fundamental methods of enquiry and overarching theories, and research on the process of reflection-in-action.

5 Alan Chalmers, *Science and Its Fabrication* (Milton Keynes, UK: Open University Press, 1990).

6 Nigel Cross, "Designerly Ways of Knowing: Design Discipline versus Design Science," *Design Issues* 17:3 (2001): 49–55.

7 Horst W. Rittel and Melvin Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973): 155–169.

8 Johannes Eekels and Norbert F. M. Roozenburg, "A Methodological Comparison of the Structures of Scientific Research and Engineering Design: Their Similarities and Differences" *Design Studies* 12:4 (2003): 197–203.

9 The philosophy of science reflects on issues such as the variety and coherence of the sciences, the different methods of knowledge acquisition, the relationship of (scientific) knowledge to the daily practice, on the one hand, and philosophical assumptions on the other. In contrast, the philosophy of mind deals with fundamental questions about the nature of the human mind in the foundations of philosophy, cognitive science, and psychology: What is consciousness, and how can it be caused by brain processes? How does it function causally in our behavior? How do we represent reality to ourselves in our mental processes? What is the nature of perception, memory, knowledge, and action? How exactly do our mental processes underlie society and our construction of social institutions?

10 John Searle, *Intentionality: An Essay in the Philosophy of Mind* (Cambridge: Cambridge University Press, 1983).

11 *Ibid.*, chapter 1.1.

12 John Searle, *The Rediscovery of Mind* (Cambridge, MA: MIT Press, 1992), 175 ff.

- 13 John Searle, *Expression and Meaning: Studies in the Theory of Speech Acts* (Cambridge: Cambridge University Press, 1979); and Searle, *Intentionality: An Essay in the Philosophy of Mind*, chapter 1.2. In some exceptional cases, the traffic between mind and world is not one-way. The expression: "You are fired!" for instance, creates a state of affairs by representing that state of affairs as existing. Such speech acts or intentional states are said to have *both* directions of fit.
- 14 Veikko Rantala, "Environmental Experience: Beyond Aesthetic Subjectivism and Objectivism," *The Thingmount Working Paper Series on the Philosophy of Conservation*, TWP 99–104 (Lancaster, UK: Lancaster University, 1994), 6.
- 15 Ruth Millikan, *White Queen's Psychology and Other Essays for Alice* (Cambridge, MA: MIT Press, 1996), 66–75; and Michael Smith, *The Moral Problem* (Oxford: Blackwell, 1994), chapter 1. There may be room for negotiation, however, since you can develop adaptive desires for your basement; but this is another story. See Jon Elster, *Sour Grapes: Studies in the Subversion of Rationality* (Cambridge: Cambridge University Press, 1983), chapter 4.
- 16 Richard Buchanan, "The Study of Design: Doctoral Education and Research in a New Field of Inquiry" in *Doctoral Education in Design*, Richard Buchanan et al., eds. (Pittsburgh: The School of Design, Carnegie Mellon University, 1998), 1–29.
- 17 John Searle, *Rationality in Action* (Cambridge, MA: MIT Press, 2001).
- 18 Already since Max Weber, a classic theme in the social and human sciences is that, precisely because they have subjective phenomena as their object, the subjective view cannot be eliminated since it is part of what science is about in these cases. To explain Oedipus's deed, for instance, you need to look at Oedipus's mind. From a detached perspective, he just married his mother, yet the story can be explained only if you know that he desired to marry Jocasta, and did not know she was his mother. So scientific objectivity here presupposes grasping subjectivity, and that does not mean that the scientific aim is compromised. Just the contrary, it would be poor science (poor psychology, poor history, poor anthropology, etc.) to contend that Oedipus married his mother, period, since this is not what happened in fact.
- 19 Buchanan, "The Study of Design: Doctoral Education and Research in a New Field of Inquiry," 1–29.
- 20 Rittel and Webber, "Dilemmas in a General Theory of Planning," 155–169.
- 21 Buchanan, "The Study of Design: Doctoral Education and Research in a New Field of Inquiry," 1–29.
- 22 Morris Asimow, *Introduction to Design* (Englewood Cliffs, NJ: Prentice-Hall, 1962).
- 23 Geoffrey Broadbent, *Design in Architecture: Architecture and the Human Sciences* (London: David Fulton Publishing, 1988 (1973)); and Herman Neuckermans, "The Relevance of Systematic Methods for Architectural Design," *DMG-DRS Journal* 9:2 (1975): 140–144.
- 24 Bruce Archer, "Systematic Method for Designers" in *Development in Design Methodology* Nigel Cross, ed. (Chichester, UK: John Wiley & Sons, 1984), 57–82.
- 25 John S. Gero, "Design Prototypes: A Knowledge Representation Schema for Design," *AI Magazine* 11:4 (1990): 26–36; and John S. Gero and Udo Kannengiesser, "The Situated Function-Behaviour-Structure Framework" in *Artificial Intelligence in Design'02*, John S. Gero, ed. (Dordrecht: Kluwer, 2002), 89–104.
- 26 Gero, "Design Prototypes: A Knowledge Representation Schema for Design," 26–36.
- 27 In this respect, the documentation stage differs from earlier stages in the design process, where architects produce documents first of all to communicate with themselves and other members of the design team. By sketching and drawing, designers see what they think, and what they see makes them think. Because the drawing reveals more than was invested in its making, it becomes an active agent in producing ideas. (See Nelly Marda, "Visual Design Thinking," *STOA Architectural Review of EAAE* 2 (1997): 42–53). It provides new perceptual cues, and supports not only verification but also extraction of design characteristics (Balakrishnan Chandrasekaran, "Multimodal Perceptual Representations and Problem Solving" in *Visual and Spatial Reasoning in Design* John S. Gero and Barbara Tversky, eds. (Sydney: Key Centre of Design Computing and Cognition, University of Sydney, 1999), 3–14. Moreover, throughout the design process, sketches and drawings have been observed to change from being treated frozen, and hence unavailable for change; to fluid, open, and dynamic. See Jennifer K. Whyte, Boris Ewenstein, Michael Hales, and Joe Tidd, "Visual Practices and the Objects Used in Design," *Building Research & Information* 35:1 (2007): 18–27.
- 28 Searle always tends to use very simple metaphors. In this case, he imagines the mind as floating above the world, and thus symbolizes a world-to-mind direction of fit by an upward arrow (↑) and a mind-to-world direction of fit by a downward one (↓).
- 29 Bryan Lawson, *Design in Mind* (London: Butterworth Architecture, 1994).
- 30 Ann Heylighen and Herman Neuckermans, "Design(ing) Knowledge in Architecture" in *Recherche et Architecture/Research and Architecture* Stéphane Hanrot, ed. (Leuven: EAAE, 2000), 231–241; and Ann Heylighen and Herman Neuckermans, "Are Architects Natural Case-Based Designers? Experts Speaking," *The Design Journal* 5:2 (2002): 8–22.
- 31 Lawson, *Design in Mind*.