THEORETICAL, METHODOLOGICAL, AND ETHICAL FOUNDATIONS FOR THE RENEWAL OF DESIGN EDUCATION AND RESEARCH

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A new world view?

Even the most cursory look at the recent literature and production in design reveals that the general landscape is anything but serene. So there is nothing original about claiming that we are going through a period of necessary change, be it in design education, practice, or research. Although the reasons invoked in support of this diagnosis may vary considerably, they are generally considered to reside within the field of design itself. For instance, the paper that Hugues Boeckraad and Joost Smiers wrote for our seminar[1] refers to 'the disturbing effect of product engineering and marketing on design and the visual arts' as the main issue to be addressed. This problem is without doubt a central concern today, but it is a symptom of a wider issue confronting all the professions - engineering, medicine, education, social work, law, and so on - suggesting that contemporary practical philosophy is in a crisis that is rocking its very foundations. So we are forced to conclude that the reasons for the current situation in design are mainly external to design. This explains the very general - and to some extent quite ambitious and possibly pretentious - title of my paper.

I do not think it necessary to dwell on the diagnosis of our current situation. Let me just say that I tend to endorse the view that we are in a paradigm shift, although I do not necessarily agree with all the analyses and reports that have been made on this rather controversial topic. Our current paradigm (by which I mean the shared beliefs underlying our educational, political, technological, scientific, legal, and social systems, beliefs that we rarely, if ever, question, discuss, or even explain) may be - and indeed has been - characterised in various ways. In my view, its main features are the materialistic nature of its underlying metaphysics, its positivist method of inquiry, and its agnostic, dualistic world view.

There is no reason why the disciplines of design should escape the influence of this general framework. Indeed, all the drifts we are witnessing in design today can be attributed to one or all three of these main features: the effect I mentioned above of product engineering and marketing on design, i.e. the determinism of instrumental reasoning, and the central role of economic factors as near-exclusive criteria for evaluation; an extremely narrow philosophical anthropology that regards users as mere customers or, at best, as human beings defined in terms of ergonomics and cognitive psychology; an outdated implicit epistemology of design practice and intelligence, inherited from the 19th century; an overemphasis on the material product; an esthetics based almost exclusively on physical shape and qualities; a code of ethics originating in a culture of business contracts and agreements; a cosmology restricted to the marketplace; a sense of history conditioned by the concept of material progress, combined with a sense of time limited by the cycles of fashion and technological innovations or obsolescence. All these aspects must nonetheless be considered as necessary to the historical development of design; as such, it would be facile to condemn them today, as if they could have been avoided. However, there is no reason to resign ourselves to them any longer.

In this paper, I will address three issues: 1) What theoretical model of design could be used as a basis for education? 2) What is an appropriate epistemology of design practice and its significance for design methodology? 3) How can the issue of ethics in design be resolved? Needless to say, the propositions that follow should be looked at as an attempt to create new foundations for design education and research within a non-materialistic, non-positivist, and non-agnostic, non-dualistic world view.

Updating the Bauhaus heritage: a model for design

Gropius's catch-phrase for the 1923 international exhibition held in Weimar - 'Art and technology: a new unity' - was one of the most famous of the Bauhaus slogans. This is the theoretical model in which the philosophy of the Bauhaus was grounded. The distinction between *Formlehre* and *Werklehre* in the curriculum is the most visible confirmation of this fact. Yet it is not what was originally planned in the 1919 program Gropius had included in the famous leaflet containing the Feininger woodcut of the cathedral and the founding manifesto. The program read as follows:

> Instruction at the Bauhaus includes all practical and scientific areas of creative work [...]. Students are trained in a craft (1) as well as in drawing and painting (2) and science and theory (3).

Thus instead of the polarised structure of art versus technology, a threefold structure based on technology, art and science was

originally planned to support the curriculum. In Dessau, a new curriculum was printed that mentioned the following areas of instruction: 1) practical instruction; 2) form (practical and theoretical); and supplementary subjects. Once again the basic structure was a polar one, in this case practice versus theory, in which esthetics (*Formlehre*) played the role of theory.

When Moholy-Nagy opened the New Bauhaus in 1937 in Chicago, his aim was to remain faithful to the original philosophy. However, some changes were introduced in both the structure and the content of the curriculum. For the structure, he relied heavily on the philosopher Charles Morris, one of the main representatives of the Vienna Circle in the US and co-editor of the *Encyclopedia of Unified Science*. Morris, who was then working on his general theory of signs or semiotics, taught a course in 'intellectual integration' at the New Bauhaus, in which he attempted to articulate what he believed to be the three main dimensions of design: art, science, and technology. In short, Morris considered the act of design to be a kind of semiosis, and he drew a parallel between the syntactic, semantic and pragmatic dimensions of a sign and the artistic, scientific and technological dimensions, respectively, of design. For various reasons, this ambitious and highly original philosophical project was never satisfactorily put into practice.

The Hochschule für Gestaltung (HfG), founded at Ulm in the early 1950s, laid explicit claim to the heritage of the Bauhaus. After a while however, its directors distanced themselves from this historical reference and declared that 'these ideas [had] now [to] be refuted with the greatest vehemence as well as with the greatest objectivity' (Maldonado, 1958). Maldonado also proclaimed that 'A new educational philosophy is already in preparation; its foundation is scientific operationalism'. In consequence, the artistic dimension of the original curriculum declined in importance, while its scientific content was expanded and emphasized, taking in the human and social sciences. 'Science and technology: a new unity' could well have been the new slogan at Ulm. The notion of design as **applied esthetics** had been replaced by a new theoretical model, viewing design as **applied human and social science**, but the underlying epistemological structure remained the same in Weimar/Dessau and in Ulm.

This somewhat condensed overview of the evolution of the Bauhaus tradition leads to the following conclusion. It seems that the optimal, archetypal structure of a design curriculum within the Bauhaus tradition would be a threefold articulation of art, science, and technology (fig. 1). The three examples I briefly described could be depicted as in fig. 2, where we can see that none of them managed to actualise the ideal model. The problem lies both in the presence of all three dimensions, and in their adequate articulation.

Today, there is general agreement on the need to include art, science, and technology in a design curriculum. But disagreement will soon arise as to their relative importance, and their function, the way they should be articulated. A third and highly critical aspect will inevitably provoke even stronger disagreement, and this is a factor without which no curriculum, however many theoretical courses, workshops, studio work etc. it contains, will ever achieve coherence: the overall purpose of design education and practice. This is indicated in figs. 1 and 2 by the large circle traced in a dotted line. The questions we should ask are the following. To what meta-project (anthropological, social, cosmological, etc.) does an educational program in design contribute? To what end is design a means? Can design find its *raison d'être* within its own field and remain autonomous? All these questions are related to the ethical dimension of design, which I will discuss later.

Epistemological and methodological dead ends
From 'applied to 'involved' science

Our inquiry into the historical development of design theory reveals that the discipline has adopted two major paradigms to account for the logic (or epistemology) of design thinking: **applied art** and **applied science**. Both have their roots in the 19th century and must be considered outdated today.

Applied art was the very first model according to which design operated, in the long tradition of the decorative arts, sometimes called the industrial arts. The word 'applied' refers to the utilitarian aspect of the artefacts, the other being the artistic aspect. The Bauhaus modified this model slightly, in that the artistic component began to take on a scientific coloration, for instance in the 'theoretical' courses taught by Kandinsky and Klee. Influenced by 19th-century scientism, the Bauhaus saw design more or less as artistic or esthetic theory applied to practice.

Applied science follows the same structure: here, instead of art, it is science that plays the role of referent, i.e. of the 'fundamental discipline' to be applied in practice. There is an implicit deductive link between theory (science) and practice (technology). The underlying theoretical model of design at the HfG was similar: there was a tendency to see design as applied science, mainly human and social science.

As a result, a common precept in design schools is that if a problem is well formulated (that is, if the preliminary scientific inquiry has been conducted properly and the functional criteria precisely established), the solution will follow almost **automatically**. The widely accepted (and applied) logical structure of the design process is still the following:

1) a need or problem is identified: situation A
2) a final goal or solution is envisaged and described: situation B
3) the act of design is the link that transforms situation A into situation B.

Only recently has the idea that technology is nothing but applied science been challenged by historians and philosophers. Contemporary models accept the fact that the history of technology has followed a relatively independent path from that of scientific development, and therefore claim an autonomous epistemology for it. Furthermore, Herbert Simon, by separating human knowledge into two main sectors, the 'sciences of the natural' and the 'sciences of the artificial', asserts the originality of design thinking. Systems and complexity theories have further contributed to a radical transformation of the mechanistic model of the design process. This imbues the concept of **project** with a far more theoretical status. Instead of 'applied' science, I propose to speak of 'involved' or 'situated' science. Such a model assumes that the scientific inquiry and attitude are **brought to** (rather than applied to) the project and practice, so that the former are modified by the latter, and vice versa. Donald Schön's concept of 'reflection in action' is thus transferred from the mainly methodological to the epistemological realm. More strongly, the distinction between the methodological and epistemological realms is no longer necessary or even possible.

So we arrive at the following new logical structure of the design process:

1) instead of a problem, we have a system in state A
2) instead of a solution, we have the system in state B
3) the designer and the user are part of the system (stakeholders); the designer's task is to understand the dynamic morphology of the system, its 'intelligence'; one cannot act **upon** a system, only **within** a system; one cannot act against the 'intelligence' of a system, only encourage a system to keep going its own way or discourage it from doing so; state B of the system is, among various possibilities, the one favoured by the designer and the user given their general set of values; state B is only a transitory, relatively stable state within a dynamic process, never a solution; the production of a material object is not the only way to transform state A into state B; since the designer and the user are involved in the process, they end up being transformed too, and this learning dimension should be thought of as part of the project.

Visual intelligence and complexity theory

In an article published in 1947, Walter Gropius asked: 'Is there a science of design?' Although he affirmed the irreducibility of the creative aspect of design, he nevertheless proposed to ground the design process in an 'objective' scientific context, namely the psychology of visual perception, thus emphasizing visual intelligence. The problem with such a proposition, as the later development of design has amply demonstrated, is that it emphasises the visual appearance of the material object. For his part, Moholy-Nagy seems to have been more aware of what we would now call the complexity of the design process and project: in his view, '**the** key of [their] age [was to be able] to ***see everything in relationship'*** (*Vision in Motion*, 1947; his emphasis). Whereas an object has a visible presence, relationships are in essence invisible. Therefore the kind of visual intelligence needed in this respect is of a different quality.

If we accept the epistemology and methodology described above for the design process, it is easy to understand why a different kind of visual intelligence - similar to the one intuited by Moholy-Nagy - will be required from the designer, and therefore taught to students. Future visual intelligence is bound to depart from its traditional connexion with the material world and its artefacts, otherwise, as Goethe wrote in 1817, 'one faces the danger of seeing and yet of not seeing'. Everyone will recall Oskar Schlemmer's diagram showing a person running, surrounded by a complex multidimensional cosmos. This is an apt image to serve as the basis for future visual intelligence in design, since any design project evolves between the two poles of anthropology and cosmology. The underlying anthropology of design is usually reduced to anthropometrics, ergonomics, and consumer psychology and sociology, but users are more than the statistical 'being with needs and desires' seen by the designer. Likewise, the designer him/herself is more than the rational computer depicted by contemporary cognitive psychology and produced by design education. A contemporary anthropology must take into account the complex interplay of the various layers and subsystems that make up the inner world of the thinking, feeling, and 'willing' human being. Conversely, the outer world is much more than what environmentalists and environmental

psychologists call the environment, usually reduced to its biophysical aspects. Here too, we are dealing with various interrelating subsystems, which function and evolve according to very different modes of logic: the technical or man-made world, the biophysical world, the social world, and the symbolic world or 'semiocosm'. These inner and outer worlds interact with each other. In consequence, before launching any project within such a complex situation, a designer must make sure he/she has an adequate grasp of the system's content, structure and evolutionary dynamics, as well as its trends or *telos*. Thus future visual intelligence must be capable of penetrating the invisible world of human consciousness (thoughts, motivations, purpose, fear, needs, aspirations, etc.) and into the intricate ecologies of the outer world.

How will this intelligence of the invisible be taught? I do not consider the mathematical or formalistic approach to systems science relevant to such a task, because of its manipulative, 'objective' nature. A system, especially a human system, is best understood from within, through a qualitative, phenomenological, approach. **Basic design**, if properly reconsidered, will be the best tool for teaching such an approach. Insofar as a system resembles a complex living morphology, I believe that esthetic education is one of the best ways to approach such complexities. Furthermore, the appreciation of the relative stability of a system, and of the instability induced by the action of a designer within the system are also the concern of esthetics. As a matter of fact, I think that Moholy-Nagy was aware of this when he designed his preliminary course in Chicago; didn't he claim that this course was perfectly suited to any professional education, not just for designers, but also for lawyers, doctors, teachers and so on? As we shall see shortly, such a basic design education would not only increase the designer's understanding of complex systems (the gnosiological aspect), but also enhance his/her professional responsibility when dealing with systems (ethical aspect).

Design ethics and the purpose of the design project

At the University of Montreal's School of Design we carried out a research project on the issue of design ethics and the responsibility of the designer (1989-92). This project, called 'Prometheus enlightened', proceeded on the assumption that the professional code of ethics was no longer appropriate to contemporary conditions, and that a new code was necessary. Our main conclusions were the following:

1) In order to be able to define professional responsibility (i.e. not only competence), a debate on the **purpose** of design is necessary.
2) Priority should be given to the reform of design **education,** rather than practice.
3) There can be no responsible design without a responsible designer, i.e. education should focus on the development of an **individualistic ethics**.

The third point in particular is essential, since without it any general discussion of ethics, morals, ethical theory, deontic/utilitarist ethics, etc. becomes virtually meaningless. So this section will be very short.

Within the Bauhaus tradition, the general purpose of design has undergone an evolution. Fig. 2 indicates the major themes within the three periods I have considered: 'A new world', 'A new "man"', 'A new culture'. Note that each was viewed as a goal to be attained with a technicist approach, i.e. according to the modernist logical structure of the design process described above. In other words, it was believed that if the necessary means, tools, actions, and decisions were put together, these goals could be attained. From the new perspective I am proposing, however, the purpose of design must be looked on as a horizon, a guiding set of values, an axiological context to which one must always refer when taking a decision or evaluating a proposition within the design project, and not as an ideal goal to be reached in the foreseeable future.

What would be a worthy goal for the next few generations to work towards? Obviously, the environment should be a central concern. But the current emphasis on the degradation of our biophysical environment tends to overshadow another degradation, that of the social environment, or human condition. I would therefore suggest that design should not only contribute to a sustainable natural world, but should adopt as its purpose something along the lines of: ´A balanced humanity in a balanced world`, thereby stressing anthropology and cosmology as the two polar complementarities around which the content of a design curriculum could be constructed.

The epistemological/methodological shift I suggest above will affect 'design responsibility' in another important respect. In effect, the systemic view implies that the making of an artefact, usually regarded as the normal outcome of a design project, is no longer taken for granted. Within these complex systems, designers are expected to **act** rather than to **make**. In other words, making (*poiesis*) must be seen only as a special instance of acting (*praxis*), to the extent that not making is still acting. In philosophical terms, one would say that

design pertains to practical, not to instrumental reason, or else that the arena of the design project is ethics, not technology. In existentialist terms, this could be stated as follows: design responsibility means that designers should always be aware that each time they engage in a design project, they recreate the world.

As to the question of individualistic ethics, the issue is almost too simple to need stating: some kind of moral education must be included in the design curriculum, so that every student's moral consciousness is expanded.

Where do we stand?

Although my purpose in this paper was to lay some foundations for the renewal of design education and research, it is still too early to draw conclusions. All I am trying to do is to indicate some directions further research and constructive work could take. Let me sum up the principal points I have made.

An archetypical model of a curriculum for design education has been described in the form of a three-part structure made up of art, science and technology within the framework of a general purpose for design (fig. 1). In order to determine the content of these three components and how they should be articulated, it is necessary to establish an epistemological/methodological model for the design process or project. If we further accept the fact that the canonical linear and instrumental model is no longer adequate to describe the complexity of the design process, we are invited to adopt a new model whose theoretical framework is inspired by systems science, complexity theory and practical philosophy. The structure of this new model could be as follows. Instead of science and technology, I will use perception and action, the first term referring to the concept of visual intelligence and the second indicating that a technological act is always a moral act. As for the reflective relationship between perception and action, I consider it governed not by logic, but by esthetics.

The second aspect we must consider is the specific training necessary if students are to deal adequately and consistently with perception, action, and the relationship between them. I believe that visual intelligence, ethical sensibility, and esthetic intuition can be obtained through some kind of basic design. However, instead of having this basic design taught in the first year as a preliminary and prerequisite course as in the Bauhaus tradition, it would be taught in parallel with studio work from the beginning to the end of the course of study. Moholy-Nagy used to say that design was not a profession, but an attitude. In the same vein, Pierre Hadot reminds us in his writings that ancient philosophy was not a speculative occupation as it is today, but a way of life ('a mode of life, an act of living, a way of being'), and he describes the 'spiritual exercises' that were designed to achieve a transformation of one's vision of the world – which is what a paradigm shift is really about – and involved all aspects of one's being: intellect, imagination, sensibility, and will. I suggest that we endeavour to construct our basic design in the form of a series of such spiritual exercises, whose nature and content would be adapted to our contemporary world and future challenges. Moholy-Nagy's pedagogical work as a teacher at the New Bauhaus/School of Design/Institute of Design in Chicago would be a good starting point for such an enterprise.

This program may seem too ambitious and somewhat foreign to the design professions as we know them today. To the charge of ambition, I would reply that if design does not wish to become or remain ´a branch of product development, marketing communication, and technological fetishism` (Boeckraad, Regouin, Smiers, ELIA Conference, 1996), if it is not to continue behaving **reactively**, it will need to become **proactive**. In other words, it will have to propose 'new scenarios for the future' (Manzini). To the second charge, I would reply that the profile of design professions need not – indeed should not – remain what it is today, otherwise these professions might well disappear. It is therefore our responsibility to imagine the future profile of our professions, an area in which I have tried to contribute here.

NOTES

l. The following contextual information is necessary in order to situate the present paper. At the 1996 ELIA Conference in Lisbon, Hugues Boekraad and Joost Smiers read a statement entitled 'The New Academy. Uniting visual intelligence with ethics and research. The disturbing effect of product engineering and marketing on design and the visual arts'. This working paper, which was published in this journal (vol. II, 1, Nov. 1998, p. 60-65), was then sent to 15 scholars and practitioners of design with an invitation to a working seminar and workshop to be held at the Escola Massana in Barcelona in October 1997. Each participant was asked to prepare a paper in response to the Lisbon statement, and a collection of these papers (known as the 'Yellow Brochure') was used as the main working document of our seminar. The present paper is my contribution to this document. The conclusions of the Barcelona meeting were presented at the 1998 ELIA Conference in Helsinki and

published by Alain Findeli in a booklet entitled *This is not a manifesto! Ceci n'est pas un manifeste!* The New Academy project is still under way, and a major publication is currently in preparation under the editorship of Hugues Boeckraad and Joost Smiers.

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