Design values, designing values and valuing designing: three scenarios for values in design education

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Abstract: This paper discusses the importance and role of values in design education. As design scenarios constantly change, so do values pertaining to design. Design education should be ahead of those changes, however the theoretical development of design has not given values the same importance as other issues. This paper presents a theoretical framework to help understand the role of values in current design learning. It provides a general comprehension of how values affect both designing and design outcomes, thus aiming to offer arguments that strengthen the awareness and importance of ethical and moral issues in design education.

Keywords: Values, ethics, moral, learning.
Introduction

This paper is divided into two sections: The first will outline four scenarios in which design and values are interrelated, distinguishing three of them as key to understanding values’ role within design education.

The second section will examine the role that values have in design education, exploring the implications of three main perspectives: design praxiology, design axiology, and teaching and learning to design.

Finally, it will draw conclusions and outline future challenges.

1 Four scenarios for values and design

Values and design are reciprocally embedded in one another. Design discovers, proposes and questions, features products, projects or services, it encompasses attributes of inner worth. However, most literature is ambiguous, because it does not distinguish the frame of reference from which values are drawn. This creates confusion, since values can be many things (beliefs, aspirations, attributes, moral precepts, ethical rules, etc.), so when we refer to values in design, what values are we talking about? In addressing this question, this paper will begin by outlining four possible scenarios for values and design in order to characterize their particular perspectives, and then go on to discuss those that are related to design education.

In English, one of the common problems that design theory faces is that the term design is polysemous, being noun, verb and adjective. As a noun, design refers to either the profession or the discipline, as well as its outcomes (products, services), whilst as a verb it refers to the design process (designing) (Lawson 2005). Besides the previous alternatives, design as an adjective is used to describe the attributes of something, e.g. “designer jeans” or “design hotels”. In theoretical discussions – due to such particularity - the term design induces frequent errors, since it conveys different meanings with neither grammatical nor syntactical alterations to the word. Ludwig Wittgenstein believed that philosophical problems occur when “the language goes on vacation” (cited in Echeverría 2011), although it seems that in the case of the word design, it enjoys a permanent holiday.

A similar situation occurs with the word values, which conveys different significances depending on the context in which is being used, so that the combination of design and values becomes hazy and a difficult concept to grasp.

Aiming to facilitate understanding, a simple diagram encompasses an explanation (see Fig.1). Both design and values are each shown as verb and noun, thus tracing out four scenarios. Each scenario encompasses a particular understanding of the joining of design and values according to syntactical and grammatical combinations, they are:

- Design values (the values of design)
- Designing values
- Valuing design (the value of design outcomes)
- Valuing designing (the value of the design process)

1 Some researchers will disagree with this consideration; however, aiming to simplify the discussion, the term “discipline” will be used to name the field in which design operates.
2 Design as adjective has not been considered because it results in applied characteristics of the subject, which are exogenous to it, e.g. designerly values.
3 A scenario can be understood as a particular situation in which design operates.
Design values, or the values of design, refers to principles embedding either the field of study or the design profession. In these domains, the term design values refers to the axiological study of design (Archer 1976), which is the philosophical study of the ethics and aesthetics of design. However, as we will see, based on the perspective presented by Dewey (1936), design values stand rather closer to the moral than to the ethical.

On the other hand, designing values alludes either to the constituent principles present in the design process and/or to the action of perceiving or developing attributes of worth in such a process. The study of these principles involves the application of scientific methods, mainly in the research domain, which would constitute design science, which is the study of design practice, or “the scientific study of design” (Cross 1999), implied by the design term praxiology. In this sense, designing values rests mainly on the ground of ethics, since it accounts for professional codes of fairness and justice.

Professional practice and design education are both topics within the study of design praxiology, which has been mainly related with decision-making in design; Trimingham (2008) proposes a taxonomy encompassing two kinds of values in decision-making: external and internal values. However – for the purposes of this paper – a clearer distinction – between subjective and objective values (Prall 1929) – is preferred based on the precision that the terms convey. Subjective and objective values belong to different epistemological domains. Subjective values rest on human interpretation, so they are relative and hence represent a constructivist stance (designing values), whilst objective values are independent of human interpretation, they are absolute and hence representative of a positivist approach (design values).

Subjective values are susceptible to evaluation; as Lawson asserts, “For such an item there is no right answer since different purchasers are likely to place different values on factors such as manoeuvrability or reliability” (Lawson 2005, 78). On the other hand, objective values are prescriptive, as Mayal notes: “...I decided to identify a
number of principles in design which are as appropriate to the design of an aeroplane as they are to that of an armchair” (Mayal 1979, 5), illustrating that positivist laws are not a matter of interpretation, they are simply obeyable.

Valuing design alludes to the process of measuring the assets present in products or services, which may or may not be tangible. In this sense this activity has its place in both the design engineering and design management domains. For management scholars, valuing design has been a main concern because of the difficulty of finding an adequate framework to evaluate design different aspects; as Lockwood rightfully claims, “Design may enhance performance, but unless there are metrics to gauge that benefit, the difference it makes depends on conjecture and faith” (Lockwood 2007, 90). Although some authors include “the worth” delivered by design within the term design value, what they are really addressing is a valuing design perspective. This is truly a confusing issue in design theory, since the same syntactical structures may signify two different things.

Finally, valuing designing applies to the task of assessing the processes of conceiving, developing and delivering new goods, projects or services (e.g. Total Quality Management (TQM), Total Quality Control (TQC), Benchmarking, Reverse Engineering). Even though some companies develop methods for evaluating those processes, with special attention to efficiency and quality, such as Motorola with Six Sigma in 1986 (Tennant 2001), it seems that there is a mismatch between evaluation and development. Lawson (2005) notes that there is not enough evidence for how the contribution of scientific tools to design assessment improves design standards.

Alternatively, the practice of valuing designing seems to be particularly relevant in design education, where students’ judgement skills are being shaped and enhanced. In most cases, design education is performed based on a model of practice inherited from the beaux arts, based on masters and apprentices, which has spread worldwide as “studio” (“atelier” in French, “taller” in Spanish, “Werkstatt” in German). Lawson and Dorst note that when looking at the education of architects and industrial or urban designers, “remarkably similar patterns” can be seen (Lawson and Dorst 2009, 16). In fact, learning to design has been developed via what is actually known as “scaffolding”, a process in which students are closely assessed with special regard to their judgemental skills.

Based on the previous classification, three main perspectives – designing values, design values and valuing designing – have to be considered in relation to design education. The first conveys the development of design praxiology, it deals with values that arise in design practice; the second, design axiology, is concerned with values attached to the disciplinary sphere, and the third relates to teaching and learning to design. Each perspective will be analyzed to show its main characteristics and implications for design education.
Design values, designing values and valuing designing

Three perspectives for understanding values in design education

1 DESIGN PRAXIOLOGY: DESIGNING VALUES

During the 1960s, the Design Methods Movement\(^4\) established the theoretical foundations that allowed the improvement of design praxis\(^5\) understanding through rationales that could explain the design process. Some years after, Archer made claims for the development of Design Praxiology, that he defined as “the study of design techniques, skills and judgement applied in a given area” (Archer 1976). His definition points towards the development of this specific branch into the broader field of design studies initiated by John Chris Jones and Christopher Alexander.

In general, the Design Methods Movement’s aim was to outline a universal design method, a kind of model that could fit every situation, or a general design procedure that might tackle any design problem. Their research explored the procedures that can be observed in the design process, aiming to find the answer in design practice. In this approach, values were ascribed to the method, in other words they were method-centred. However, the understanding of design methods has changed radically since that time, being now regarded no longer as an end but as a mean to an end. So, what is the role of values in current design practice and how do they influence design learning? To answer this question, two main roles are devised:

1. Ensuring answer uniqueness: Learning to design means exercising design practice (designing values), where decisions are led by judgements that create a distinction between one designer and other; as Lawson asserts:

“This knowledge is predictive but uncertain and laden with values. It is clear that the application of such knowledge is a highly selective process and therefore inevitably results in designers making their own unique interpretation of design problems.” (Lawson 2004, 14)

Lawson’s assertion also explains why computers do not design (they just optimize). The same components, ideas, requirements and constraints programmed into different computers result in a common answer: the optimal, since computers’ decisions are value-free. Apocalyptic films in which machines take control of the world base their arguments on this fact. In contrast, inherent to human decisions, values are a key issue in design answers. Design processes emerge from singular interpretations and decisions that each designer makes, either for framing the problem or for finding the answer, making different and unique proposals.

Furthermore, design theories have concentrated the explanation of such uniqueness in spheres like singular abilities: “Great design does not come from great processes; it comes from great designers” (Brooks 2010); personal expertise (Lawson and Dorst 2009; Cross 2011); background or context of practice (Scandinavian, Italian, British “heroic” designers). Alternatively, Trimingham sees design decision-making as related to values, observing that “an initial literature review found that the role of values within decision-making had been largely unexplored” (Trimingham 2008, 38), thus providing a useful framework to understand values in design. Trimingham classifies values into two groups:

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\(^4\) 1962-1972 approx.

\(^5\) Practice, as distinguished from theory (Oxford 2012).
1. External values:
   - Societal values;
   - Identified stakeholder values;
   - Economic system values;
   - Values embedded in design;

2. Internal values:
   - Perceived societal values;
   - Perceived identified stakeholder values;
   - Perceived economic system values;
   - Embedding values in design;
   - Designer’s personal values;
   - Meta-values.

Moreover, this framework is also useful for explaining a second role of design values.

2. Fostering a design answers understanding: As noticed, Trimingham’s classification can be better understood by replacing external and internal values by subjective and objective values, as previously noted by Prall (1929). Furthermore, both subjective and objective values each host sub-types of values: those embedded in “something” (design, stakeholders, technology), and those which are society-based. Accordingly, Lewis proposes a framework accounting for three kinds of values: intrinsic, extrinsic and inherent. He affirms that:

“The intrinsically valuable is usually described as that which is good in itself or good for its own sake; the extrinsically valuable, as that which has value as instrumental to something else”, and “ ...inherent mean to suggest that the value in question is one which is found or findable in the object itself to which the value is attributed.” (Lewis 1950, 380, 391)

In this sense, Lewis’s proposal may conform to an axis based on opposing intrinsic and extrinsic values, while inherent values can be place equidistant from the previous two concepts (see Fig.2). Adding Lewis’s referential axis to Trimingham’s categorization results in four areas, representing four different epistemological perspectives, and hence four different ways of perceiving knowledge. Identifying the values in each one may improve our understanding of their nature and, accordingly, our design decisions. For instance, distinguishing personal values from technical or cultural values may lead to selecting more suitable methods for either research or to evaluate ideas associated with them.

Accordingly, some researchers believe that personal values are the result of societal values, e.g. Norman (2008) who sees design knowledge as something that is inherited from society, whereby personal beliefs are influenced by external values. He supports his opinion with Cross’s viewpoint: “Designers have the ability to both ‘read’ and ‘write’ in this culture...” (Cross 1982), conveying the idea that designers are sensitive to cultural influences, yet able to contribute to the creation of culture too. Both root their understanding of design value in social constructionism, in which design is the result and expression of culture.
Design axiology: Design values

Before the 20th century, most philosophical theories comprising axiological issues were merged with metaphysical and epistemological topics (Hart 1971). By the beginning of the 20th century, Lapie coined the term *axiology* in his seminal work *Logique de la Volonté* (Lapie 1902), after which many other philosophers, such as Ehrenfels, Meinong, Prall, Scheler, Hartmann, Moore, Ross, Dewey and Lewis, developed different understandings of the term. Axiology deals with the philosophical study of values, and although values may be regarded as abstract entities lying far beyond our daily life, they coexist in most of our common actions, as Hart lucidly asserts:

“The concept of value permeates our life in every step. We prefer one thing to another, we shift our attention from one event to another, we praise one behaviour and condemn another, we like and dislike, and whenever we do it we value.” (Hart 1971, 29)

For Hart then, valuing is an everyday activity, yet his assertion implies an implicit fact: we evaluate with regard to something – i.e. to value. In this sense, judgements presuppose a frame of reference against which every thing, action or behaviour is assessed. Echeverría states that whenever we evaluate, we must confine our assessments to specific domains of action (Echeverría 2011), such that values reside in domains. In the case of design for instance, efficiency – as an outcome – is accounted for as a value in the domain of mechanical design, but it is not necessarily included in toy design or in the design of ceremonial places.
Hence, in which domains must design values be found? Addressing this question, Archer considers axiology to be “the study of goodness or value in design phenomena, with special regard to the relations between technical, economic, moral and aesthetic values” (Archer 1976, 14). However, in Archer’s definition, design domains seem to be too broad; according to the previous diagram (Fig. 2), technical values are positivist and economic values reside in sociological positivism, whereas moral and aesthetic values are perceived from a social constructivist perspective.

Trimingham also considers values in the broad sense of the term, comprising either values that meet society’s needs, wants, feelings, aspirations and demands, or desires which do not necessarily relate to the sense of goodness previously accounted for by Archer. Dewey was particularly interested in this particular dilemma, aiming to make a distinction between genuine and spurious values. On Dewey’s thoughts, Hart asserts that “Statements of what we like, desire, are no proper value judgements. They merely record what we like or dislike” (Hart 1971, 37). Hart explains that Dewey’s search for genuine values is attached to the concept of morality, in which social well-being acts as the guiding norm. So, following Dewey’s search for genuine values, do genuine values in design exist?

The key distinction provided by Dewey is to relate values to morality, instead of ethics or mere assessment frames. Moral deals with goodness and rightness, whereas ethics involve behaving in a fair and honest way according to a code of conduct, especially in relation to a profession. In this sense, if ethics relates to praxis, it relates to decision-making too, so design decisions have ethical implications; however, ethical decisions should not be confused with “like” judgements made at lower decision-making levels.

However, generalizations around the concept of value in design decision-making do not necessarily imply an absence of Dewey’s genuine values in design. Alternatively, those values may have emerged via design-related fields, like sustainability and usability. In this sense, Dewey’s ideas can be good criteria for discerning genuine design values.

Another characteristic of design values is their positivist character. Since design deals with the world to be created, good or bad design decisions affect people’s lives, as well as their environments. Bad design decisions may result from bad design processes, but also from a lack of proper guiding principles or values. The famous designer Richard Dreyfuss referred to that as “the five-point formula” when he declared:

“We have a yardstick in our office for good industrial design. It represents twenty-five years of experience, and we apply it to every design problem. It has five points: 1) Utility and safety, 2) Maintenance, 3) Cost, 4) Sales appeal, 5) Appearance.” (Dreyfuss 2004, 178)

Dreyfuss’ principles comprise a mix of moral values (utility and safety) and technical, economic and aesthetic values (the remainder), developed from experience, which supposes their refinement through failure and success. In this case, values act as precepts (existing before concepts), becoming positivist principles even before they were built in practice (rooted in constructivism). However, referring to principles might indicate the rightness of some ideas over others; as Lawson warns: “…there are dangers there. The comfort of a set of principles may be one thing, but to become dominated by a doctrinaire approach is another” (Lawson 2005, 162). In fact, the
problem with values and principles is that — as a matter of routine, time or power — they may blind our judgement, subjugate our design freedom.

Furthermore, encompassing the philosophical problem of defining values is the linguistic problem (again Wittgenstein) of releasing them from their pronouncement; for instance, the Evolving manifesto for eco-pluralistic design states: “the thoughtful designer of the 21st century will design with integrity, sensitivity and compassion”, then adding as its first point: “Design to satisfy real needs rather than transient, fashionable or market-driven needs” (Fuad-Luke 2009, 15). Indeed, the first sentence accounts for some values expressed as a law (mandatory), while the second phrase does not describe values, yet it conveys them tacitly in the form of guidelines. Furthermore, the book Universal Principles of Design presents one hundred concepts that their authors introduce, commenting: “broadly referred to as “principles” consisting of laws, guidelines, human biases, and general design considerations” (Lidwell, Holden, and Butler 2010, 10), although many of the principles accounted for, such as accessibility, affordance or forgiveness, rest on values deeply rooted in Universal Design, where compassion and equality are leading moral ideas.

However, the linguistic problem of discerning values from grammatical structure can be solved by using a non-grammatical criterion, such as the one introduced by Dewey. In this sense, the confusion created by concepts such as axioms, principles, postulates, premises, surmises, rules, norms, maxims, protocols, canons, precepts, laws or guidelines can be overcome by assessing the worth they convey to social well-being.

3 Teaching and learning to design: valuing designing

Actually, design training aimed at achieving professional degrees is taught in higher education institutions. In that context, values can be placed on two levels: at school in the form of institutional principles, policies and strategies, and at the individual level.

Values at the school level operate as macro orientations, providing a frame of reference based on principles that shape the ethos6 of identity of the academic community, for instance: “use design thinking, to inspire multidisciplinary teams” (Stanford) or “Compassion: we strive to alleviate others’ suffering by assisting them in realizing their values and visions” (KAOSPilot). While the first example deals with teaching-learning strategies (community values) inclined towards the concept of competency, the second deals with moral values linked to responsibility.

Findeli – accounting for the outcomes of a research project about ethics at the School of Design of the University of Montreal – asserts: “There can be no responsible design without a responsible designer, i.e. education should be directed to the development of an individualistic ethics” (Findeli 2001). His concern deals with designer values at the project level. Projects, either group based or individual, convey discussions about personal preferences and convictions into design answers. Responsibility is then related to either the ethical or moral compromises that designing involves, or in other words the awareness that design process decisions affect the world, encompassing positive, neutral or negative consequences.

This issue was largely addressed by Papanek in his 1970s book Design for the Real World which, in a chapter entitled “Design Responsibility”, states: “Today the myriad objects of daily use are mass-produced to a utilitarian and aesthetic standard often completely unrelated to the consumer’s needs” (Papanek 1971, 220). Papanek critiques

6 The characteristic spirit of a culture, era, or community, as manifested in its beliefs and aspirations (Oxford 2012).
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the absurd disconnection between supply and demand that gives rise to overproduction, thus disregarding such consequences as waste, pollution, the overexploitation of natural resources and cheap labour issues, among many other problems. Today, forty years after Papanek’s claim, in a world dominated by market forces, his claim seems to remain valid regarding the aggravation of those problems. In that sense, Findeli asserts: “design responsibility means that designers always should be conscious of the fact that, each time they engage themselves in a design project, they somehow recreate the world” (Findeli 2001). Assenting to Findeli’s opinions, the author believes that responsible design is an urgent discussion to be developed in design education. However, both ethical and moral values are a thorny matter and the most obvious question arising is how we define what is valuable and what is not, or what the values are that design should embrace. This question is not new, as Coles and Norman quote: “Cross says of education, deciding what is worthwhile is “Obviously value-laden and problematic”” (Cross 1982, 222), raising the concern that teachers’ questions about what values have to be taught are already affected by teachers’ own values.

Furthermore, values at the school level are also conveyed by means of learning strategies. For instance, Buchanan describes the implementation of a new design course – at Carnegie Mellon University – via a metaphor that compares two distinct perspectives in literature: rhetoric and grammar. He states:

“The relationship of these two approaches is perhaps evident if one observes that the last chapter of a school grammar book is usually a chapter devoted to “how to write an essay”. In contrast, the last chapter of a school rhetoric book is a chapter on grammar style.” (Buchanan 2001, 13)

Carnegie Mellon’s new course is based on “the rhetoric of design”, replacing a traditional one based on “the grammar of design”. Buchanan argues that giving students reasons to design, instead of providing them with the tools for that, is what primarily triggers students’ motivation. His assertion illustrates a change of focus from teaching “something” (instructive) to teaching to “someone” (formative). In fact, the grammar approach resides in the belief that particular issues should be taught before general ones, creating a sort of technical base (that can be ethical too) that will help students to take decisions when designing. Accordingly, schools based on that vision will privilege the delivery of content over individual motivation, and hence the body of content that every student must know to become a designer has to be defined a priori. That represents a kind of positivist education, in which practice has to be performed within the limits of a theoretical frame of reference – values included – as occurs in many engineering design schools. In this context, values might take the form of positivist axioms, such as “less is more”, “truth to materials” or “form follows function”, accounting for aesthetic values, or ethical values, such as those accounted for in the Principles for Responsible Management Education:

“We will develop the capabilities of students to be future generators of sustainable value for business and society at large and to work for an inclusive and sustainable global economy.” (United Nations 2007)

In contrast, the rhetoric model conveys a flux from general to particular knowledge, so that learning is grounded in understanding design problems instead of knowing predetermined bodies of content. The belief that design problems are so vast and diverse that no design course is able to teach the whole scope of matters to deal with
those problems supports this strategy. So what this stance comprises is a way of approaching problems, or what Cross calls “designerly ways of knowing” (Cross 2007). In this understanding, it is the general framing of a specific problem that demands particular knowledge according to the nature and scope of that problem. In addition, the rhetoric model builds on students’ ability and values, encouraging them to act – framing problems and solutions – according to their own principles.

Alternatively, values placed at the individual level in design learning mainly correspond to personal decisions over design projects, which can be perceived as being reflected in learning outcomes. Traditionally, learning outcomes were related to the results of cognitive operations converging in the concept of respondency, the ability to be able to give an answer whereas, regarding values, learning outcomes relate to responsibility, defined as “the state of having a duty to deal with something”, but also “a moral obligation to behave correctly toward or in respect of” (Oxford 2012). The first definition of responsibility points to “being in charge” of, while the second to a duty to act according to a frame of values.

Kimbell and Stables propose the concept of capability, as a merging of competency and responsibility. Regarding knowledge just as a medium to act on the world, for them, to act goes beyond mere intervention, it is making such intervention count, as they assert:

“Whilst some might prioritise knowledge, understanding and scholarship as the cornerstones that mark out the “educated” person, we hold a somewhat different view. We prefer a view of education that celebrates qualities that empower people to make a difference in the world.” (Kimbell and Stables 2008, 13)

At the present time, one of the main criticisms that can be made of traditional education (rooted only in the acquisition of knowledge and mainly concentrated on demanding learners’ answers) is that neither procedural nor theoretical knowledge is commonly paired with ethic or moral virtues, whereas the overvaluation of knowledge as a key issue in education has mistakenly turned itself into a goal, as Kimbell and Stables state: “knowledge is a resource, a means to an end, not and end in itself” (ibid.; 36). By the same token, it is questionable why neither ethical nor moral principles have been widely taught, as they should be. Furthermore, the belief that values underlie shared cultural observances and thus are automatically acquired (Cross 1982; Norman 2008) encompasses the inaccuracy of considering values as a sack containing societal needs, wants and cultural standards, or what Dewey calls “spurious values”. Moreover, that vision represents a social constructionist vision in which values are shaped by the community, whereas considering values as immutable ruling principles constitutes a positivist stance. However, as Hartmann notes: “the values themselves do not change. Their nature is timeless, super historical. But the consciousness of them evolves” (Hartmann 1926), denoting a link between positivist and constructivist perspectives.

Moreover, both visions are necessary in design. Issues such as corruption, ecological damage, disregard of social needs and human rights show that knowledge is not always coupled to ethical or cultural values either. The United Nations Global Compact document “The Principles for Responsible Management Education” (2007) is an example of how management has addressed that concern through protocols that summarize consensus among practitioners, researchers, academics and stakeholders.

In design education, principles or values can also provide the design project’s raison d’être, or what Buchanan (2001) calls “reasons for designing”. In this sense, personal values act as drivers of learning, creating fertile conditions that stimulate students’
engagement and enhance their ownership of the process. In fact, contemporary educational theories consider students as protagonists in the learning process (the so-called learner-centred model), regarding individual ability and a particular learning pace as initial conditions for the student’s development. Accordingly, educational goals are no longer related to what a person knows, but to what a person can do with their knowledge instead. Therefore, the learning process becomes a competence in itself, as Kimbell and Stables note, quoting Oxman: “a form of education that is oriented to “knowing rather than to knowledge” (Oxman 2001, 282), conveying the belief that education should be grounded in developing learning ability rather than content. So learning to learn is then seen as a core ability, but then what role do values play in knowing and where are they supposed to be developed?

Regarding this question, two perspectives can be outlined: the first relates to cognitive processes and the second to domains of practice.

As a basic distinction between cognitive processes, Ryle distinguishes between “know that” and “know how” (Ryle 1949). In basic learning stages, knowing that – mainly centred in the world of facts – learning outcomes are appraised by simply retrieving taught ideas (Marzano and Kendall 2007). On the other hand, knowing how involves more complex cognitive operations – comprehension, analysis, knowledge utilization – (ibid.) involving procedural learning, the reason why Coles and Norman (2005) note that some researchers associate know-how (in French savoir-faire) with skills (Polanyi 1962; Hicks 1982).

However, according to learning progression, Marzano and Kendall propose a taxonomy – based on Bloom’s improvement – that separates values from cognition and places them within what they call the “self system”, described as:

“The self system consists of an interrelated arrangements of attitudes, beliefs, and emotions. It is the interaction of these attitudes, beliefs, and emotions that determines both motivation and attention.” (Marzano and Kendall 2007, 55)

The relevance of this proposal is that it establishes two categories of values in which ethical/moral value judgements are independent of technical principles; and, moreover, the first commands the second. In fact, know-how is confined to the “cognitive system”, where decision-making and problem-solving occur, whereas values are placed within the “self system”, which rules the whole. This change of paradigm implies that both knowing that and knowing how are now taught, bearing in mind “the being’s” development as a whole instead of just individual operative skills.

Finally, both knowing that and knowing how conform to the identity of every profession, establishing domains of knowledge and associated practices in each case, but furthermore an outline of disciplinary values. For instance, in Industrial Design, knowing that and knowing how deal with materials, production technologies, ergonomics and user experience issues, to name but some (Norman 2008). However, the dominion of such ideas in design practice is led by judgements (which create the distinction between one designer and other as already accounted for), but also each specific matter has inherent values, such as comfort and adaptability in ergonomics.

**Conclusions**

Values in design education have seen meagre theoretical development in comparison to other design areas. That may reflect the lack of importance that design educators assign to values. At the same time, the indistinct use of the term value has
resulted in theoretical misunderstandings in which is not clear to what the term really refers. This paper has presented a model that, in the main, shows that values in design can be understood from three different perspectives. The first considers values within design practice, in which decision-making articulates values’ emergence as frames of reference for assessing design decisions. In this understanding, values’ role is neither ethical nor moral, but “referential”.

The second considers the values attached to design practice, in which design methods will confirm the framing of a code of practice that will outline ethical implications. In this sense, as Cross proposes, design praxiology is the “study of the practices and processes of design” as an elemental and necessary field for design research (Cross 1999, 6). Since design practices are dynamic and constantly being developed, this claim is justified.

The third perspective regards values as constituents of a disciplinary field that explains them in relation to moral issues. Particularly relevant is Dewey’s point of view, that relates “goodness” to social well-being.

Related to values in design education, all these perspectives are valid and useful, however their differentiation is essential for a better understanding of them.

Actually, the shift in paradigms (Kuhn 1962) in education and in the design field prompted a repositioning of values at the core of design education. An understanding of values can nurture design education by providing a new foundation for design courses. At the beginning, in the design profession, technical and aesthetic skills conformed to key capabilities for designing. Lately, those abilities have been enhanced by the mastery of design methods, extending design expertise from the factory to the consumer’s realm. At the present time, however, the sum of economic, environmental and social crises encompasses a new scenario for designing that is neither technical, aesthetic nor methodological, but moral. If design is about acting on the world, it seems inexcusable to consider first whether those actions are either necessary or worthy, and to develop a deep understanding of design responsibilities and the implications of designing. Design education should not be grounded only on providing design answers; current world circumstances demand questioning of these answers too. This demands the development of design axiology and design praxiology as bodies of knowledge to nurture design education, and to envisage the future of both practice and learning in design, going beyond the current boundaries of wealthy countries’ comfort zone.

The implementation of such knowledge in design education is however thorny, since the bases of most Western economies where design has flourished are deeply rooted in consumption, thus topics such as ethics and moral matters are mostly subjugated to profit-related issues. Besides, design is not immune to the inertia of tradition either. However, where there is a problem, there also lies an opportunity for design. Moreover, design has demonstrated itself to be a powerful tool for developing new strategies in which the traditional structures of business can be re-thought, as well as in any other field to which design may be related.
The challenges related to the implementation of values in design education are now in the sphere of design theory, and it is the author’s belief and hope that, in forthcoming years, design education will school not only skilled but wiser designers.

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