

The relationship between Strategic Design and Metadesign as defined by the levels of knowledge of design

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Abstract

The literature offers various interpretations for the concept of metadesign, expressing the richness of such a theme. These interpretations are frequently elaborated using the pioneer work of Andries van Onck. The authors suggest that the characteristic levels of scientific language make it possible to understand the concept. Thus, using the theoretical principles of structural linguistic and strategic design, this article aims at identifying the design levels and defining that of metadesign. To achieve such a goal, the method proceeds by describing the levels of scientific language proposed by Greimas, deriving the levels of design by symmetry, and, finally, defining the level of metadesign and the processes of displacement from and to such a level.

Keywords: metadesign, levels of knowledge, structural linguistic design, strategic design, principle of displacement.

Introduction

Studies in design demand from researchers the critique of design practices and creative processes. Among the varied relevant developments, one of them is metadesign, a process which presents the necessity of reflection on the levels of knowledge because the movement between them allows for the materialization of the dynamic relations of the design processes.

The first evidence is the co-occurrence between the terms *metadesign* and *metaproject*: in this text, the authors give priority to the term *metadesign*, which is more commonly used in English. Metadesign refers to a methodological approach widely used in neo-Latin speaking countries, especially in the traditions of Italian and Brazilian design. It is expressed in the work of van Onck (1965), Polinoro (1993), Collina (2005), Celaschi and Deserti (2007), Verganti (2009), de Moraes (2010), Vassão (2010), Reyes (2012) and Scaletsky (2016).

The literature presents different interpretations for approaching metadesign, resulting from the meaning attributed to the prefix that such a term incorporates. The aggregation of the prefix *meta-*, translated by the prepositions, besides, among, with, after, amongst others, implies the idea of change, transformation, succession, transcendence or reflection, which brings a complementary order of polysemy: not only is the prefix vague *per se*, but its use also produces effects of even greater vagueness. Therefore, this juxtaposition is not sufficient to anchor the proposed discussion because it gets lost in its generality or polysemy.

The relationship between strategic design and metadesign is also poorly defined. Some of the authors quoted

(Celaschi and Deserti, 2007; de Moraes, 2010; Reyes, 2012; Scaletsky, 2016), allude to a relationship, though not formally expressed, between the two concepts.

The intention here is to centralize the discussion in the comprehension of metadesign as a process of displacement which operates, according to Greimas' proposal (1973), through the levels of knowledge. This perspective organizes the totality of human knowledge in critical levels of various sizes, which demand, for their configuration, greater theoretic-methodological effort. As a result, the work outlines the levels of knowledge of design, defines that of metadesign and develops the relationship between such a level, the level of the strategic design method and the trend of the level of contemporary epistemological currents towards complexity. In his work on method, Morin (1999, p. 28) indeed affirms that all knowledge needs of self-reflection, acknowledgement, localization, interrogation, and that there should not have any knowledge without knowledge of knowledge. Pictured like this, the deployment of knowledge in a successive, reflexive and self-referenced chain, follows a path between the various levels of knowledge.

It is believed that the ambiguity of the concept of metadesign and the multiple visions with which it is correlated should be interpreted as course for future theoretical and practical development, and as a challenge for Design researchers. However, following the rigorous logic proposed by Greimas and accepting the methodological suggestions by Morin, here metadesign precisely defines a second level of knowledge with reference to the one in which usual design practices are situated. This further metadesign level enables the critique of design practices and connects them to the methodological prin-

principles and developments. The principle which rules these movements is denominated as the “principle of displacement” (Franzato, 2014).

As a process and not as a result, design could be understood by its own nature as a metadesign process. It needs the metadesign level and the movements that such a level allows to characterize the dynamics of design. From this point of view, all the design processes are critical-reflective and heuristic, capable of responding to the complexity of thought and human cultural production. Strategic design processes particularly demand metadesign, as, without it, strategic design would be merely operational and not strategic action.

Levels of knowledge

Human beings have within their languages (languages of linguistic nature or non-linguistic systems of representation) their way of being in the world. As a human expression, science uses languages as an indispensable mean. Among scientific areas, Linguistic has a special relation with language because language represents not only the mean of Linguistics, but also its end. To avoid any confusion, linguists, thus, have had to find clear ways for distinguishing the language they are studying from the scientific language they are using, that is, the metalanguage. This is also very helpful for facing the problems of polysemy, which characterize natural languages, such as English. Thanks to this important work of Semantics, Linguistics has become the inevitable source to work on the levels of knowledge.

Among the authors of Linguistics, Greimas (1973) and Hjelmslev (2009) concerned themselves in equating relevant questions related to signification. The discussion between perception and meaning considers processes, rather than their results, demanding a subsequent epistemological perspective. In turn, the studied object, e.g. the studied language, demands terms which are capable of describing its sensitive qualities, almost like operational concepts; it demands a metalanguage elaborated on an immediately higher level, the methodological one. It is in this context of movement and dialogue that this approach anticipates correlations or classifications and which recognizes the processes or, in other words, a set of necessary conceptual means sufficient for describing and interpreting the studied object. Following this path, a hierarchy is established between the levels and between the different, interrelated instances of investigation, allowing operation of translation between the process terms.

Within this perspective, it can be said that the conditions of knowledge can only occur by the reciprocal presupposition and by the internal cohesion between various metalanguages, or between various levels of metalanguage. It is possible to identify three languages, situated in three levels of existence: the descriptive, the methodological and the epistemological. From this reflective view point, there are two provisos: (a) although the origin refers to the experiences with circumscribed objects, this comprehension is not limited to this possibility; (b) despite the acknowledgement of the theoretic-practical gap between the model and manifestation, the deductive and inductive premises are considered.

Chart 1 represents a model of the levels of knowledge. The so called language object or term object, corresponds to the passage from the live reality, the “res” in which our day-to-day cognitive processes flow autonomously, to the plan of the investigation. The notation “res”; a Latin expression, between inverted commas, has the task of remarking what is not referring to the previous appropriations of reality by the subject or from a given culture. On the contrary, the reference is to a “res” which is still not considered and which, moreover, is neither specified or designed by natural language. Because it is not yet designed, we can barely use this linguistic artifice. It therefore explicitly defines a difference of scope: the language object, although related to the “res”, it is not the same “res” and neither an equivalent, in a logical sense.

Following the explanation, the aggregation of *meta*-can start when a language object is considered. The critical-reflexive process begins by setting a first level of metalanguage (or metalinguistic level), which makes it possible to translate the language object by the matrix provided by a further second level of metametalanguage (or methodological level).

Similarly, this metametalanguage presupposes a third and last metametametalanguage level (or epistemological level), that provides the perspective and the bearings for the methodological work.

It is necessary to say that: (a) these levels are recurrent between themselves and are self-referenced; and (b) the movement between these diverse levels is not exclusive to scientific language but also occurs with common language. The difference between them is that scientific investigation is tied up with terms, methodologies and epistemologies identified by the researcher and recognizable by the specialist community; whereas natural metalanguage (termed as natural in opposition to scientific one, according to Greimas, 1973), freely occurs in the flow of speeches, discourses and conversations within a social context.

This intellectual discipline in search of univocity, demanded in scientific texts, is no less than the explicitness of the meaning with which the terms are used so that the critique can be understood and that the formal and systematic knowledge can advance. This process of knowledge production is released by operations that occur in the metalinguistic, methodological and epistemological levels. It must be said, however, that such a process needs to follow a path along with the successive, reflexive and self-referenced chain, encompassing the various levels of knowledge. If the path remains at the metalinguistic level, it will result in a synonymic network of equivalences, as occurs in the every-day processes of communication. A process of this type soon becomes redundant and loses

Chart 1. Levels of knowledge.

(3) Epistemological level	(Meta Meta Meta)
(2) Methodological level	(Meta Meta)
(1) Metalinguistic level	(Meta)
(0) Language object level	(X)
Reality	(“Res”)

relevance, demonstrating that the critique finds its best expression by approaching from a different level.

In this direction, the term *metadesign* places the discussion on the first level of knowledge and announces the design practices as its language object. For the realization of a valuable critique of design processes, metadesign demands the selection and the practice of a precise design method. Additionally, it demands the acknowledgement of the epistemological matrix related to such a method, and even its practice.

As anticipated, this work relates metadesign with the strategic design method, ergo it assumes the epistemological trends by which it is ruled, those which advance in the direction of theory of complexity. The level of metadesign is necessary to allow for the displacements between the epistemological and methodological levels, and that of design processes. Following this, the levels of knowledge will be discussed from the highest, the epistemological, passing to the methodological and finally to the level of metadesign.

Epistemological level: Paradigms of knowledge towards complexity and evolution of the concept of system

Studies on design have been directed from various points of view, either focusing on products or on processes. Such diversity is favoured by transdisciplinary nature in the area and by the diversity of its practices. These viewpoints can be complementary and not contradictory and are characterized by a dynamic of transformation that has ruled the area over the last few years. In one way, it contemplates the cumulative and provisional nature of knowledge, which today responds to an order of critical rationality.

It can be considered that the creative processes of design respond to a hybrid paradigm in which structuralisms, pragmatism and its corollaries communicate in the direction of the construction of theories and methods which explain their nature and function, towards a consistent theory of complexity.

In general terms, Deleuze (2010) so defines various criteria of thought practiced by the various forms of structuralism, in obedience to the principle of contemporary rationality. Among them, the *symbolic* is highlighted, being understood as an indispensable source for live interpretation and creativity. This position of symbolic order is irreducible to the order of reality and to the order of the imagined, and is broader than them. In design, this symbolic dimension is at the core of the construction of the effects of the meaning, of the production of discourse and conversation. The manners of producing ties between actors and actants, and the same resulting ties extrapolates what is recognized as real (denotation, also denominated as referential representation). They are recognized as symbols (of connotation, also denominated as connotative representation), which work by associations and figurative analogies, bestowed with more potential by the dimension of the intangible, which is so important in design.

The criterion of *place or position* is also interesting for design because it corresponds to the notion that the elements of a relational structure do not even have extrinsic designation or intrinsic signification. In other words, they

only have one unique and necessary meaning of position. The places correspond to things and to real beings which come to occupy them, and to the roles and events which necessarily appear when they are occupied. Scientific ambition, from this viewpoint, is not quantitative but topological and relational. For design, the relevance of this criterion is in the fact that it does not operate with dichotomies such as within and without or internal or external. All the elements and constitutive relations of the artefacts are pertinent to the artefacts and responsible by what they are. If this were not the case, they would be dispensable, because they would be irrelevant. This comprehension alters the meaning of the context, usually considered as what is external and as something that has to be explored and known. This notion of position, therefore, reinforces the importance of the levels, because of the concepts that the level host expresses different relationships according to the level of knowledge in which they are found.

The *serial* criterion considers that its operator should be the differentiation which is a questioning *per se* and, for this reason, it is potentially serial and multi-serial. This potential can be translated as virtual or, in other words, it can be unravelled in other relationships. The series have autonomous development because they are derived from terms and relationships which they organize, and the organization of the constitutive series is a creative activity that demands initiative. The possible movements within the same series or from a series to another, are guaranteed by two orders of significant factors: the metaphor, by analogy, and metonymy, by substitution.

Structuralism gives an important contribution for understanding the creative, virtual, multi-serial, immanent and symbolic nature of design processes. Moreover, on examination of this set of criteria, it is possible to affirm that structuralism represents a crux for the transformation of the concept of system because it renews the signification of the temporal dimension of causation by proposing synchrony, besides diachrony, in the comprehension of time. Synchrony permits to understand the network of relations of the whole, while diachrony makes it possible to collate and compare synchronies. Structuralism also brings the idea that the dynamics of the elements which make up a system depend on the relationships among them, as well as the consideration that there is a formal general system of relationships which virtually contains the totality of the possible relationships.

On the other hand, the pragmatic perspective (Forrester, 1971) works with the idea that the structure of natural systems has produced complex physical systems which are intended to be like a set of parts which function articulately to achieve a common aim. Causation had been the main law to understand the functioning of a system, until chance and irrationality emerge as possible factors of a complex system. In a certain way, the difficulty has been in identifying universal principles to explain the success or failure of the known systems. From this perspective, the chance and irrational causes should be considered as relevant to establish new relationships and dynamics within the system.

Despite not being the central theme of this text, it is interesting to refer to the paradigm of *design science*, the main aim of which is to develop knowledge from and for the conception and development of artefacts (Van Aken,

2004). This kind of knowledge results from a transdisciplinary approach in the attempt to resolve complex problems. In this direction, Simon (1996) was concerned about the design of artefacts with given properties and which were able to pursue given objectives. In “the science of the artificial”, he encompassed all the scientific developments about all that was, are and will be invented or in some way intervened with by man. Therefore, machines, organizations, economy, amongst other cultural or techno-cultural instances, can be considered examples of the artificial. There is a pragmatic current search for postulating a thorough knowledge and its validation, that is a science, dedicated to develop artefacts with given properties, besides valuating the best resulting solution to solve existing problems. The epistemology which sustains design science has pragmatic inspiration and abductive vocation, and aims to produce applicable and prescriptive knowledge.

Design has received the heritage of structuralism and pragmatism and their concepts of system. Aligned with the ideas proposed by the theory of complexity, contemporary strategic design considers design processes within creative ecosystems (Franzato *et al.*, 2015). Following this perspective, the social-cultural ecosystems are understood as metaphors of natural ecosystems. As in natural ecosystems, socio-cultural ones generate non-linear dynamics that could start creative processes by autopoiesis.

It is considered that the theories are only tentative approximations and are not sufficient for knowing reality. Besides this, the interpretations that theories suggest form a group of artefacts whose transformation follows a flow of relevant convergences, as in the case of processuality, systemic vision, revised empiricism, scientific rationality, or the same concept of truth, for example. Theoretic elaboration is, therefore, a continuous movement and even the most solid constructs are always under construction and susceptible to interpretation. The movement of strategic design towards complexity occurs along with the formulation of a method for investigating cultural and social innovation. The perspective of complexity, in fact, is stimulating for the approach to questions of social and cultural innovation because of its heuristic potential. From such a standpoint, there is an epistemological turn about, for which instability and uncertainty are relevant factors in the constitution of the systems. According to Morin and Le Moigne (2000), complexity affirms three main principles: dialogic, recursive and hologramatic. The first principle seeks to unite the opposing forces; the second, aside from *feedback*, considers the internal movement in which the products and effects are themselves considered in the causal relationship. Finally, the third principle shows that not only a part is in the whole but that the whole is in the part. In other words, it is the actual idea of the *holos*, a totality whose principles and codes are self-replicable.

The comprehension of the complexity brings radical changes to the order of rationality and inaugurates a paradigm able to produce innovative knowledge. Based on Prigogine’s development of physics (2011), this theory recognizes the complexity of the real and the presence of the principle of haemorrhagic degradation and disorder. It also discovers that “the cosmos is not a perfect machine, but a process of simultaneous organization and disorganization”, and a way to see the living world not as a substance but as a “phenomenon of extraordinarily complex

self-eco-organization that produces autonomy” (Morin, 2008, p. 6). Such premises create the necessity of proposing conceptual and methodological tools to work with the paradox of the one and the multiple, that is, disjunction without disjoining and the association without identification, or reduction or, in other words, the whole organized by a dialogic and translogical principle. Therefore, according to Morin (2008, p. 10), to place the notion of system in the centre of the theory is to understand it as: (a) a complex unit and not a discrete one, neither just the sum of its parts; (b) as an ambiguous notion, not purely formal, neither real; and (c) as a transdisciplinary concept, that can be understood both within the unity and differentiation of sciences, and which is interesting because of the complexity of the phenomena of association and organization, not because of the material nature of its objects.

In the attempt to present the formulations central to this line of thought, the following considerations are made: (a) “the systems organize their closure (that is to say, their autonomy) in and by their opening” (Morin, 2008, p. 11), the consequences of which are the presence of disequilibrium in the laws governing reality (including the organization of life), and the consciousness that the intelligibility of the system has to be found in the system itself and in its relationship with the environment, both components of the system and guided by self-organization processes; (b) the sense of complexity implies a sense of autonomy and solidarity; (c) the world can only be elaborated by the thinking subject, the final development of the self-organizing complexity; (d) the complexity requires a strategy; and (e) the organization organizes itself in its relation with the referred environment, that is, from an ecosystemic perspective, every organization is a self-eco-organization.

The paradigms hereby referred appear in Figure 1. They are represented over a continuous time line: the first indicates the causation movement, the second represent the sequence of synchronies; the third line wipes out the graphic time line to express the various possibilities of organizations produced by the vision of autopoietic complex systems.

The paradigms of knowledge refer to the scientific viewpoints which allow for the identities of the known designs to take on a more orthodox or more flexible form. The re-signified theories interpret and are interpreted by

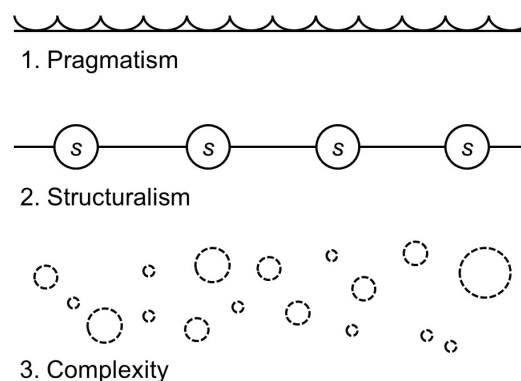


Figure 1. Epistemological paradigms.

the creative processes which characterize the design. Theories and processes therefore form an indissoluble chain.

Methodological level: Strategic design

In the paradigm herewith unfolding, the research about design has as its aim the creative processes, which lead designers to critically anticipate future developments of society in such a way as to be able to create artefacts which can affect it, in the perspective of qualification of the contexts of life. The ways in which designers perceive the world through their aesthetic and poetic sensibilities or scientific abilities carry the specific forms of designing. Designers practice a qualitative and interpretative reading of reality and try to identify the elements which will be the basis for solutions which, aside from the economic value, include aesthetic, cultural and social values. Designers are also committed to the construction of scientifically relevant methods and to their critique.

To guide the comprehension of the method of strategic design, it is primarily necessary to introduce the definition of "design as a creative process, which aims at the development of social-technical devices for the transformation of the world", presented in an earlier essay (Franzato *et al.*, 2015, p. 179, authors' translation). As part of this proposal, it is considered that design creative processes are characterized by the following constituents: (a) *creativity*, understood as the human capacity to create, imagine, dare or subvert, in the context of the autopoiesis and the self-regulation of the systems; (b) *immanency* attributed to design at the metadesign level. It constitutes a par with manifestation, which is certainly important for design visibility but not obligatory as long as the mere state of immanence is also productive; (c) *prospectivity*, a condition which confers an abductive character to the processes of design in search of possible transformations of the world, especially of social-cultural ecosystems. More than forecasting the future (anticipation), it allows for a qualitative comprehension of evidence of the past (recollection) and of the present (representation), searching for insights of the future; and (d) *transitivity*, defined by the necessity of a device, as an interposed agent, for realizing the transformation of the world. Even if the considered processes search for such transformation, they are not necessarily tied up with possibilities of application and other pragmatic concerns. Their inventiveness has familiarity with the artistic processes as well as allowing for conditions of differentiated forms of expression and innovation.

As part of a system without orders, vectors or pre-determined temporalities, the relationship between the constituents of the creative processes in design are in constant displacement or transformation. From this systemic energy come resultant reciprocities and singularities, differences and similarities, associations and separations, which are powerful by the continuous change they announce, or, to put it another way, by the materialization of their autopoietic potential.

As was anticipated in the previous section, strategic design considers the characteristic creative processes of design from an ecosystemic perspective or, in other words, conceiving them among the multiple and intricate processes elaborated by creative ecosystems. From

this point of view, design processes lose their sense if separated from the other processes that contribute to the organization of creative ecosystems. An empowering process equivalence of dynamic and self-generating artefacts is therefore established, which materializes the inseparability between creative processes and ecosystems. This network of relations and processes refers to the organizational concept but not in the sense of a given structured order but in the sense of a structuring and or structurable one which ensures the desired movement. It is also from this perspective that the concept of design-orienting strategies gains relevance, as it reinforces the search for ecosystemic innovation and sustainability. It should be highlighted that these theoretical formulations, among others, correspond to the movement towards complexity, explained at an epistemological level; they organize the methodological level, here corresponding to strategic design and, as operational concepts, integrate themselves with the level of metadesign.

Among these other formulations referred to above are those resulting from the resignificance which is given to the organizations in the sense that they integrate an ecosystem, the components of which include society, the market and the environment. In the context of society, one of the most active components, designers integrate themselves to a network of actors or actants who perform in a collaborative manner. They are people or components in interaction in the design process, forming a collective for a collective construction, the ecosystemic processes of which guide them towards a convergence in the diversity. This collective also favours transdisciplinary practice for the construction of knowledge, which reveals different areas of knowledge and joins together to stimulate and provoke the questions which guide the design processes. Also, through the equilibrium/re-equilibrium/disequilibrium that is constructed collectively, the ideal is a practice of sustainability; it is in the complementarity, an expression more intrinsic than dialogue, that the various areas of knowledge converge, and in them that the creative skills can find specificity. It is in fact a scientific investigative attitude, either technical or cultural, with the potential for configuring ecosystemic creative processes.

Strategic design, from this ecosystemic perspective, re-signifies the values of the social groups, the organizational structures and the social-cultural contexts, besides re-signifying technologies and networks; this development occurring in a sustainable fashion for the benefit of all the social strata, regardless of their skills or interests. This process of re-signification confers onto design the role of protagonist in the construction of new "ways of living to start from now onwards on this planet within the context of the acceleration of technical-scientific mutations and of the considerable demographic growth" (Guattari, 2001, p. 8, authors' translation), without considering the effects of a predatory consumer society, social inequality, disregard for the integrity of nature and endemic waste. It is this agentivity which also re-signifies design in the context of other areas of knowledge.

From this consideration point, it is possible to identify the relevance of relating strategic design with the ideas of complexity. Within this framework, a group of conceptual traces are aligned as methodological catego-

ries (level of method) which, as a consequence, reverberate at the metadesign level. Therefore, inspired by the concepts hereto established, it becomes possible to identify other constituents of strategic design creative processes, which integrate the already cited creativity, immanency, prospectivity and transitivity: (a) plurality of actors in co-operative and collaborative action; (b) tangibility/intangibility in the creative paths; (c) inclusivity in the exogenous and endogenous circumstances; (d) multi-diversity in the proposed relations; (e) openness for the development or not of a given element; and (f) systemacity in the relationships between all the terms involved. These terms, from the point of view of complexity, will be interpreted by the empirical systematic vision of self-regulation, dissipation, generation and totality, all these conditions for dialogue with the challenges brought by the notion of autopoiesis. The affirmation of such parameters leads to the following synthesis: design, in responding to the challenges of creation and innovation, requires the recognition of the importance of permanent flow, oscillations between chaos and order, of systemic ruptures; all these jointly occurring with interferences of other ecosystems, interactions of interface and significant operations by chance.

These methodological categories proposed by strategic design influence the creative processes at the metadesign level (metalinguistic), enabling the consideration, critical discussion and evolution of design practices – these in action and, thereby, unrelated to the subject of levels – from an ecosystemic perspective.

Metalinguistic level: Metadesign

The focus now of this present text will be the denomination of metadesign level, initially using the viewpoint of van Onck (1965), a pioneer in the proposal of metadesign, who underlines the work of a number of Italian and Brazilian researchers. He is a designer and designer theorist, originating from Holland. At the beginning of his career he went to Italy to work with Ettore Sottsass at Olivetti. In 1965, his intellectual and teaching activities took him to Brazil to run a course on metadesign at FAUSP (Faculty of Architecture and Urbanism at the University of São Paulo) and at FIESP (Federation of Industries of the state of São Paulo). At that time, the magazine “Produto e linguagem” of ABDI (Brazilian Association of Industrial Design) published an article in which van Onck presented his precursory vision of metadesign (1965). His vision was developed in the historic period in which pragmatism reached its apex, marked by the great confidence in technology, especially in computing, and by the hope of success in the opportunities opened by the new rationality. The technological areas, including design, were crisscrossed by the desire for scientification, which provoked a deep reflection on design methods (Jones and Thornley, 1963). The methods began to be deployed in phases, the phases in stages and the stages in activities and, for each activity, the use of specific tools was recommended. As a result, the methods were represented graphically through procedural models which were more and more sophisticated (Cross, 2008).

But van Onck did not follow this path because he still believed that design lacked rationality and lacked identifi-

cation because of the absence of objectivity in the criteria practiced in evaluation activities of design competitions (such as the Belgian “Signe d’Or” or the English “Duke of Edinburgh’s Prize for Elegant Design”), in the educational activities (for example, along with the elaboration of the design school curricula), or in the activities of critique operated in the other forums of design area). In the search for a solution to these problems, the recommendation was to guide these activities towards aspects of communication of the products. In the opinion of van Onck, there should exist a visual-formal language which would allow for dialogue between the design, production and destination of the products, a language whose signs-expression (as opposed to content) would be the very products and their details. The designers should study this language in schools and practice it in their professional lives. Exactly this capacity to use it should be the criterion for evaluating the quality of their projects.

Although van Onck has not developed his proposals, his intuition about the importance of creating a visual-formal language was relevant for design. There is a new question: if a language system were developed, it implies the necessity of constructing and understanding it in the paths between all the levels of knowledge. It would, therefore necessitate the definition of the metalanguage, the metametalanguage or methods and the metametametalinguistic or epistemology in such a way that only at the close of this cycle of reflection would the relevance of this project become evident. It imposes the need of not only doing, practicing and applying, but also of describing, analysing and criticising the processes constituting the knowledge to be shared among professionals, students, professors and design critics. There would therefore be created a field of knowledge with its own language.

Returning to van Onck, he quoted the work of designers such as Antonio Gaudí, Gerrit Rietveld and Max Bill. Concerning the latter, he refers to the description of Bill’s process to configure the form of a bathroom mirror. In this specific process, van Onck makes the comment, “varying the dimensions of arcs and radiuses, it would be possible to arrive at other infinite forms of the same family of forms of mirrors” (1965, p. 28). Bill did not exactly design the form of a mirror, but an instrument for the configuration of the form of a mirror and “with this instrument he had in his hand the control of various forms” (van Onck, 1965, p. 28) he could control a repeatable and communicable experience. The communication process needs a language compatible with the founding premises of this design process. After the analysis of the work of these three designers, van Onck affirmed that they all work from a conceptual base, which allows for dialogue and operation, and which precedes the design process, transferring it to a higher and more abstract level.

It consists of design of the parameters of a system visualized by a mechanism composed of elements in movement, being either these points, lines and planes or materials [...]. Within the limits of the possible configurations of the elements, the designer chooses the variation, which he finds correspond better to the demands of a particular case. The design of this visual-formal language is what we call metadesign. This is in analogy with the

metalanguage, understanding the metalanguage as the language which we use speaking about the language (van Onck, 1965, p. 28).

From the viewpoint of van Onck, the metadesign process maintains a design nature. Certainly, Max Bill *designed* his instrument for the configuration of the form of a mirror. In all, since it works on the design process itself, metadesign should shift to a level which transcends design, a level in which it is possible to work on design. The main methodological principle which van Onck proposes is essentially this level displacement. Due to this principle, the concept of metadesign starts to make sense along with the other levels as well. Moving from design to metadesign, it does not change the design nature of the process, but it changes the level, the object of the process (the design itself), and the results. Metadesign does not aim at developing new finite and static products, which quietly lay as in a state of "bracketed movement" (van Onck, 1965, p. 29). On the contrary, metadesign aims at developing ongoing and ever-changing processes; it is interested by the movement in movement, or in other words, by the transition, provisional and mutable. It is interested in the ungraspable possibility to come and be, not by the possible tangible states of being. It is therefore identified as a system which is favourable to the project but which transcends it.

The formulations of van Onck still resonate in recent publications by Brazilian researchers (de Moraes, 2010; Vassão, 2010). He placed metadesign on a level distinct from design. According to the author, at this level the definition of the main technical and aesthetic principles occurs, which guide the configuration of the industrial products. De Moraes (2010) and Vassão (2010) untied metadesign from product design, seeing in it a strategic possibility for facing the challenges of complexity, that is, in the same path of strategic design.

De Moraes proposes metadesign as a method and as model of intervention within today's growing complexity (2010, p. 13). The author relates metadesign with the contribution of design for the development of organizational scenarios and strategies, besides the elaboration of design processes with the full awareness of their potential. Following the model of the levels of knowledge proposed in Chart 1, if the term *method* is interpreted literally, metadesign should be on the methodological level. This diverges from the present proposal that considers strategic design as a method and places it on the methodological level, as was seen in the previous section, while considering metadesign at a lower level, the metalinguistic one, as is seen in the present section. Actually, the author proposes "metadesign as a support for the old design methodology" (De Moraes, 2010, p. 26, authors' translation), which reduces and hardens design potential, such as the prescriptive methodological procedures of the more pragmatic branches of industrial design. In this second interpretation, it is possible to see metadesign being placed on a higher level than design, that is, as a process of critique of ordinary design practices, with a connection to an even higher methodological level and, thus, elaboration of new design practices.

In regard to the relationship between metadesign and method, Vassão affirms that metadesign could be

understood as the study of methods or as the study of specific design methods, even if "metadesign deals with a broader field that comprehends the various methods as much as their study" (Vassão, 2010, p. 62, authors' translation). Following the model of the levels of knowledge proposed in Chart 1, however, the study, discussion and critique of methods, including design ones, is the core of epistemology. In any case, Vassão excludes that metadesign would be a method, even if he establishes a clear relationship between the two terms and states: "as a part of the metadesign activities, designers can perform a creative activity of proposing more or less formal procedures, testing and developing them along with their professional careers" (Vassão, 2010). Therefore, also in Vassão, it is possible to recognize metadesign at a higher level than design, as a link with methodological level. Moreover, the author demonstrates his search for a "second order design" (2010, p. 20), that becomes even more important within complexity.

It is, therefore, possible to stress a possibility of dialogue between the visions of De Moraes and Vassão and the one proposed in this paper. This proposal, however, clearly excludes considering metadesign as a method. It considers metadesign as a level of knowledge that hosts the conceptual processes of reflection and critique of design creative practices towards their comprehension and evolution. It is defined in relation to the superior methodological level and, through this, to the highest epistemological level. Its operations work with information from design practices, so that metadesign serves as a link between design method and practices. Thus, it is a very dynamic level, since it enables the continuous displacements between the levels of knowledge of design, which are necessary for the development of fully aware, committed, creative processes of design.

This definition of metadesign helps to understand why metadesign is frequently seen like a process for structuring contexts in which it is possible to develop design processes. The need for such contexts grows with the growing of the ecosystemic complexity faced by collaborative design networks of actors or actants.

According to the same van Onck, through the metadesign process, the designer discovers and explores the field of design possibilities among which he can find the best one to work with in design process. In the case of Max Bill, the use of an instrument defines the field of the multiple possibilities for a form of a mirror.

De Moraes' affirms that metadesign could be considered "knowledge platform" (2010, p. 26), and the design scenarios result as a space for the members of an organization sharing their visions, discussing and designing.

Also Vassão moves in the direction of the opening of the design context and processes, for enabling multiple actors to have free access and participate in collaborative practices, so expressing their subjectivity. For Vassão, metadesign would therefore refer to "a collaborative decentralized and distributed vision of design and creation" (2010, p. 23). Among the inspiring examples he proposes, from all the branches of design culture, e.g. industrial, architectural or urban design, there is the movement of free architecture, inspired by that of the free software. As a starting point of free software, a base code/source code is

available of a programme to enable study of it, perfection of skills, redistribution and free use (Free Software Foundation, 2013). According to Vassão (2010, p. 93-97), this freedom is fundamental for ensuring access and collaboration in participatory processes. For this principle, it would be possible to build an open system where the processes can take place and, this way, free architecture should be understood as “a field of action, a design space, a context in which and how design can happen” (Vassão, 2010, p. 94, authors’ translation). Metadesign should be the equivalent of such productive action of free architecture.

In this direction, Giaccardi (2005) also highlights a relationship between metadesign and the creation of contexts for designing. The author operated with a wide revision of the literature about the concept of metadesign within the scientific domain, design and art, demonstrating the applicability of metadesign for interactive, and generative processes of creation, besides the participatory ones treated by Vassão.

Interactive design processes are oriented towards a meaningful experience along with the interaction between users and designed artefacts (Moggridge, 2007). In fact, the use of any artefact demands interaction between them, resulting in an interpretative process with great creative potential (Lévy, 1992, p. 73-74). To use the artefact, the user must interpret. Moreover, using it, the user continuously reinterprets and discovers new possibilities of use, including those which initially were not envisioned by the designers.

Generative design processes lean towards the definition of a series of operations and rules – frequently algorithmic, the application of which allow for the creation of artefacts. Normally, such operations and rules are based on parametric models and are performed by a computer. When the machine receives determined parameters, it starts the design process and finally returns the responding artefact. The number of parameters, operations and rules, as well as the interactive entanglement which occurs between them, makes it possible to obtain artefacts with features which would have been difficult to predict. Besides this, in some examples of more sophisticated generative design, the process depends on the situation of realization incorporating rhizomatic and fractal logic. Its execution, therefore, allows for the evolution of unique processes which are not repeatable and are potentially limitless; thus, their final results are not predictable. Similarly, Soddu (1989) associates generative design algorithms with genetic codes of living organisms.

Observing participatory, interactive and generative processes of creation, both in art and design, Giaccardi proposes metadesign as “an emerging design culture” (2005), yet little studied but which appears determinant to consent to design the condition of facing the challenges of complexity. This opens, therefore, the possibility of transformation with the new forms of creativity and sociability. According to the author:

Metadesign deals with the creation of context rather than content; it is a mode of integrating systems and setting actions in order to create environments in which people may cultivate “creative conversations” and take control of the context of their cultural and aesthetic production (Giaccardi, 2005, p. 343).

Moreover, Giaccardi associates metadesign with the design processes of a higher order, like the interactive and generative design processes in which, as already seen in Soddu (1989), it is necessary to elaborate a code, the elaboration of which can, finally, lead to interaction and generation. Giaccardi, however, prefers the metaphor of the seed, instead of that of the code. As a point of fact, if it is appropriate when metadesigning under the methods of informatics, genetics and even generative design, the term *code* sounds rigid and prescriptive, that is, not suitable for metadesigning under methods such as strategic design, which has immanency, plurality, inclusivity, multi-diversity or openness among its constituent categories. Here, more than designing a code, metadesign represents a possibility of seeding open and never-ending creative processes within society and for the well-being of society (Giaccardi, 2005; see also Ascott, 1995).

Complementing this same direction of thought, like Vassão, Giaccardi also identifies in metadesign a methodological possibility of ensuring the opening of design processes and favours the participation and collaboration of the actors for whom the processes open. As clarified before, this paper does not consider metadesign as a method. The opening of design processes is one of the most characteristic principles, means and/or ends of methods such as participatory design, strategic design and, above all, open design. However, also as a level of knowledge the concept of metadesign seems to be very helpful in this scope because it is the level in which a plurality of actors, not only design professionals, can converge for discussing, criticizing and evolving design practices. This section ends with the treatment of such an opportunity that metadesign offers. Even if the concept of openness is the core of open design, such a concept is very important for strategic design, besides being important for all design methods that presuppose the ecosystemic perspective.

If Vassão derived the concept of free architecture from free software, the concept of open design derives from open software. According to the Free Software Foundation (2013), the adjectives *free* and *open* are similar but not identical. This foundation prefers the first term, *free*, because, from an ethical position, it more clearly evokes the concept of freedom. At the same time, however, from the epistemological point of view proposed here, the term *open* is relevant because it is a characteristic of the system considered by complex thought, system whose intelligibility “has to be found, not only in the system itself, but also in its relationship with the environment, and that this relationship is not a simple dependence: it is constitutive of the system” (Morin, 2008, p. 11). Thus, openness appears as a conceptual category that founds open design, strategic design, the other design methods inspired by complexity, and also the possibility, even before the liberty of their practice.

Thus, openness can be taken as a conceptual category that underlies open design methods and design strategy as well as the other methods inspired by complexity. It also gives grounds for the possibility and liberty of practicing such methods.

As a complement, it is possible to cite the “Open Design Now” project (Van Abel *et al.*, 2012) that, since the end of 2012, has gathered contributions from academics,

intellectuals and professionals involved in the evolution of design, following an open logic. Some of these authors explicitly propose metadesign as a possibility for the opening of design processes (Rubino *et al.*, 2011; Avital, 2012; De Mul, 2012; Stappers *et al.*, 2012; Saakes, 2012). Similarly to De Moraes, Vassão and Giaccardi, more than by the development of new artefacts and open design collectives are committed to the development of hardware and/or software infrastructures for enabling other people to design and, thus, opening design processes (De Mul, 2012; Avital, 2012).

Conclusions: The various goals and displacements

In this perspective of complex relations, flows and interactions in an open system, regulated by the dialogic, recursive and hologramatic principles, the various movements of displacement, from one level to another, upwards or downwards, renovate and evolve design.

In the search for a primary synthesis, it seems evident that *metadesign* will be the favoured term; *design practices* and *design processes* are also recurrent terms. Returning to the diagram presented in Chart 1 and, for the purposes of reflection, strategic design is proposed as a method that presupposes complex thought. Chart 2 shows the versatility and productivity of thinking in terms of levels of knowledge which is brought to design.

At the base, not yet a level of metaprocesses, there are the design practices and their elements, besides the dynamic relationships between such elements. On this base, the movement of displacement could start and, thus, it is possible to define a primary metalinguistic level, Meta-design, as a second methodological level, Strategic Design and, finally, a third epistemological level that includes the paradigms towards complexity.

It is important to observe that a better definition of this third level is necessary. The various currents of rational thought, such as pragmatism and the diverse structuralisms have to be deeply reinterpreted towards the theory of complexity and such a theory has to be unveiled. At this moment, these paradigms appear as sparse though as yet coherent components that are the basis of Strategic Design, fragments in dialogue. It is hoped that this more specific discussion will continue, resulting in significant advancement in design research.

A last important observation is that it would be possible to substitute Strategic Design for other theoretic-methodological possibilities. If this were done, there would be implications at the epistemological and metalinguistic lev-

els. A method always presupposes a precise epistemology and different epistemologies barely have dialogue between them (and this is why it is so urgent to better define the paradigm of strategic design). At the metalinguistic level, all the processes and dynamics which characterize it would remain (for example, the processes of reflection or critique, besides the displacements that allow the connection between the method that substitutes strategic design and the related design practices). Also the nomenclature *metadesign* would remain. However, the metadesign processes would be characterized by different methodological principles and so they would be different and, thus, many of the processes presented could become meaningless under the new method (like, for example, the search for the openness of design or the construction of context, including scenarios, knowledge platforms or hardware and/or software design infrastructures). It therefore appears that the effects of methodological choice on the other levels is evident, which allows for consideration of methods as being fundamental for the comprehension of design processes and practices within the proposal herein presented.

This paper/study presents a way to understand design using the levels of knowledge, thus, it defines metadesign as a level for discussing, criticizing and evolving design practices, which presupposes a method and, consequently, an epistemology. Since the beginning, it declares that this emerging concept is yet vague, but also that such vagueness is arecourse for future theoretical and practical development. Even if this proposal precisely defines metadesign as the first level of knowledge of design, it does not cover all the research possibilities on the theme. On the contrary, it becomes clear that more work is necessary for a better understanding of metadesign processes, as much for those which presuppose the strategic design method as those which presuppose other methods, the relation between metadesign level and the other levels, and the same methods and epistemologies that stand on these levels.

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Chart 2. Proposal for a design in levels of knowledge.

(3) Epistemological level	(Paradigms towards complexity)
(2) Methodological level	(Strategic design)
(1) Metalinguistic level	(Metadesign)
(0) Language object level	(Design)
Reality	("Res")

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