

DIVERSITY: DESIGN / HUMANITIES

PROCEEDINGS OF FOURTH INTERNATIONAL
FORUM OF DESIGN AS A PROCESS

DIJON DE MORAES
REGINA ÁLVARES DIAS
ROSEMARY BOM CONSELHO SALES

(EDITORS)



DIVERSITY:
DESIGN / HUMANITIES

Latin Design Process

4th INTERNATIONAL FORUM OF DESIGN AS A PROCESS

SCIENTIFIC THEMATIC MEETING OF THE LATIN NETWORK
FOR THE DEVELOPMENT OF DESIGN PROCESSES



IN COLLABORATION WITH:

HUMANITIES DESIGN LAB
POLITECNICO DI MILANO, DEPARTAMENTO INDACO (ITALY)
ESCOLA DE DESIGN UEMG
CENTRO T&C DESIGN
MESTRADO EM DESIGN (PPGD)
UNIVERSIDADE DO ESTADO DE MINAS GERAIS (BRAZIL)

SCIENTIFIC COMMITTEE

Dijon De Moraes

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

Flaviano Celaschi

(Coordinator of the Latin Network, Politecnico di Milano, Italy)

Paulo Belo Reyes

(Universidade do Vale do Rio dos Sinos - UNISINOS, Porto Alegre, Brazil)

Raquel Pelta Resano

(Universidad de Barcelona, Spain)

Roberto Iñiguez Flores

(Tecnológico de Monterrey, Campus Guadalajara, Mexico)

Rui Roda

(Universidade de Aveiro, Portugal)

Sebastiana Bragança Lana

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

MEMBERS OF THE HUMANITIES DESIGN LAB

Antonella Penati (Politecnico di Milano, Italy)

Eleonora Lupo (Politecnico di Milano, Italy)

Salvatore Zingale (Politecnico di Milano, Italy)

SCIENTIFIC SECRETARY AND ORGANIZING COMMITTEES

Elena Formia (Politecnico di Torino, Italy)

Rita Engler

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

Giselle Hissa Safar

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

Mariana Misk Moysés

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

Regina Álvares Dias

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

Danielly Tolentino

(Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil)

REVIEWERS (ABSTRACTS)

Alessandro Deserti (Politecnico di Milano, Italy)

Antonella Penati (Politecnico di Milano, Italy)

Chiara Colombi (Politecnico di Milano, Italy)

Cristina Portugal (PUC-Rio, Brazil)

Dijon De Moraes (UEMG, Brazil)

Elena Formia (Politecnico di Torino, Italy)

Eleonora Lupo (Politecnico di Milano, Italy)

Flávia Nízia Ribeiro (PUC-Rio, Brazil)

Francesca Rizzo (Politecnico di Milano, Italy)

Gregory Sedrick (Christian Brothers University, US)

Lia Krucken Pereira (UEMG, Brazil)

Manuela Celi (Politecnico di Milano, Italy)

Marcelina das Graças de Almeida (UEMG, Brazil)

Marizilda Menezes (Unesp, Brazil)

Paulo Belo Reyes (Unisinos, Brazil)

Raffaella Trocchianesi (Politecnico di Milano, Italy)

Raquel Pelta Resano (Universidad de Barcelona, Spain)

Rita Aparecida da C. Ribeiro (UEMG, Brazil)

Rita de Castro Engler (UEMG, Brazil)

Roberto Iñiguez Flores (Tecnológico de Monterrey, Mexico)

Rosemary Bom Conselho Sales (UEMG, Brazil)

Rui Roda (Universidade de Aveiro, Portugal)

Salvatore Zingale (Politecnico di Milano, Italy)

Sebastiana Luiza Bragança Lana (UEMG, Brazil)

Sérgio Antônio Silva (UEMG, Brazil)

REVIEWERS (FULL PAPERS)

Dijon De Moraes (UEMG, Brazil)

Regina Álvares Dias (UEMG, Brazil)

Rosemary Bom Conselho Sales (UEMG, Brazil)

Sebastiana Luiza Bragança Lana (UEMG, Brazil)

Solange Pedra (UEMG, Brazil)

PRODUCTION TEAM EVENT

Alice Andrade Guimarães

Ana Paula de Sousa Nasta

André Mol

Antonione Franco Leone Ribeiro

Bárbara Dias Lage

Bianca Teixeira Oliveira

Caio Lacerda

Carlos Magno Pereira

Daniela Menezes Martins

Débora de Assis Watanabe

Elisangela Batista da Silva

Fernanda Melo Almeida (UFMG)

Gilberto Almeida Jr.

Iara Mol

Lia Paletta Benatti

Maria Cristina Ibarra Hernandez

Nadja Maria Mourão

Orlando Gama da Silva Junior

Paula Glória Barbosa

Paula Maria Areias de Freitas

Priscila Bruna Medeiros Ferreira

Rachel Menezes Coelho de Souza

Rafaela Guatimosim Assumpção

Raquel Canaan

Soraia Cabral Simões

Teresa Campos Viana

Vinicius Gomes Marques

EDUEMG – EDITORA DA UNIVERSIDADE DO ESTADO DE MINAS GERAIS

Avenida Coronel José Máximo, 200 – Bairro São Sebastião
CEP 36202-284 – Barbacena /MG | Tel.: 55 (32) 3362-7385
E-mail: eduemg.uemg@gmail.com

EDITORIAL COUNCIL OF EDUEMG

Dijon Moraes Junior (Presidente)
Fuad Kyrillos Neto
Helena Lopes
Itiro lida
José Eustáquio de Brito
José Márcio Barros
Paulo Sérgio Lacerda Beirão
Vânia A. Costa

PRODUCTION EBOOK

EdUEMG | Editora da Universidade do Estado de Minas Gerais
Coordination
Daniele Alves Ribeiro de Castro
Graphic project
Laboratório de Design Gráfico (LDG) da ED/UEMG
Coordination
Mariana Misk e Iara Mol

UNIVERSIDADE DO ESTADO DE MINAS GERAIS

Rector

Dijon Moraes Júnior

Vice-rector

Santuza Abras

Cabinet Chief

Eduardo Andrade Santa Cecília

Pro-rector of Planning, Management and Finances

Thiago Henrique Barouche Bregunci

Pro-rector of Research and Post Graduation

Terezinha Abreu Gontijo

Pro-rector of Teaching

Renata Nunes Vasconcelos

Pro-rector of Extension

Vânia Aparecida Costa

Escola de Design da Universidade do Estado de Minas Gerais

Director

Jacqueline Ávila Ribeiro Mota

Vice-Director

Simone Maria Brandão M. de Abreu

Apoio financeiro

Fundação de Amparo à Pesquisa do Estado de Minas Gerais – FAPEMIG

Capes – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior

Editors

Dijon De Moraes

Regina Álvares Dias

Rosemary Bom Conselho Sales

© 2014, EdUEMG | Editora da Universidade do Estado de Minas Gerais

FICHA CATALOGRÁFICA

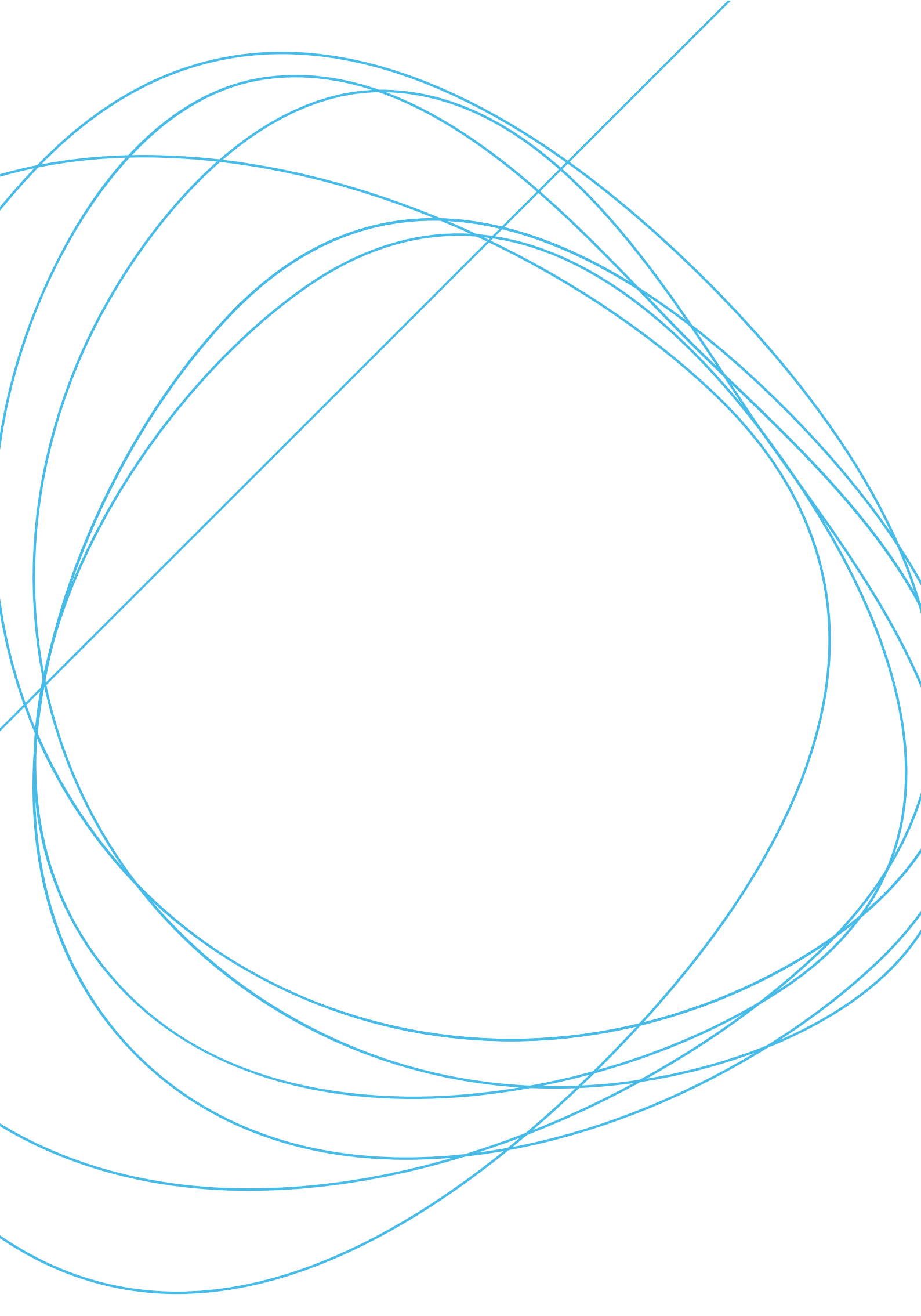
Diversity: design/ humanities. Proceedings of Fourth International Forum of Design as a Process. /organização: Dijon De Moraes, Regina Álvares Dias, Rosemary Bom Conselho Sales – Barbacena: EdUEMG, 2014.

806p.: il. – v2

E-book / ISBN: 978-85-62578-33-5

1. Design. 2. Design como processo. 3. Design e humanidades. 4. Diversidade. 5. Identidade. 6. Inovação. I. Moraes, Dijon De (org.). II. Dias, Regina Álvares, III Rosemary Bom Conselho Sales, (org.). IV. Universidade do Estado de Minas Gerais. V. Título. VI. Série.

CDU: 7.05



SUMMARY

8	PRESENTATION
10	ABOUT THE FOURTH FORUM
13	FOREWORD
15	TRACKS
17	GUEST PAPERS
57	TRACK 1 DESIGN AND HUMANITIES: A DISCIPLINARY COMPARISON
277	TRACK 2 FOR A "HUMANISTIC" DESIGN: DESIGNING FOR DIVERSITY
408	TRACK 3 HUMANITIES CENTRED INNOVATION
526	TRACK 4 THE DESIGNER HUMANIST AND THE HUMANIST DESIGNER
559	TRACK 5 DESIGN AND HUMANITIES: DIVERSITY AS IDENTITY
638	TRACK 6 THE UEMG TALKS ABOUT ITSELF

TRACK 01

DESIGN AND HUMANITIES: A DISCIPLINARY COMPARISON

- 59 **CHAPTER 5.**
Modernist designs, social and aesthetic objects that speak of mentalities, ideologies and attitudes in textile patterns
[Rui Gonçalves Souza]
- 69 **CHAPTER 6.**
Perceiving a company's identity as an individual personality
[Nora Karina Aguilar Rendón, José Luis Hernández Azpeitia]
- 76 **CHAPTER 7.**
Design and Brazilian popular culture: The challenge of designing from autochthon handicraft
[Matheus Freitas]
- 90 **CHAPTER 8.**
Experimentation as a procedure in design education: Diversity, innovation and discovery as human learning responses
[Myrna de Arruda Nascimento, Giorgio Giorgi Jr]
- 98 **CHAPTER 9.**
Art education and critical reading in design
[Marisa Cobbe Maass]
- 105 **CHAPTER 10.**
Contemporary design and other worlds. An anthropological relationship between the shamanic magic and Brazilian design
Rosane Badan]
- 116 **CHAPTER 11.**
Design and semiotics in dialogue
[Ione Bentz]
- 125 **CHAPTER 12.**
The evaluation of contemporary design: Systemic observations and consequences
[Flaviano Celaschi, Massimo Bianchini]
- 138 **CHAPTER 13.**
User design approach applied to interactive digital art projects
[Virgínia Tiradentes Souto, Fátima Aparecida dos Santos]
- 147 **CHAPTER 14.**
Iconology as a matter of design between information visualization and artistic approach
[Raffaella Trocchianesi, Paolo Ciuccarelli]
- 159 **CHAPTER 15.**
Relevant factors to researches on the affective relationship user-product
[Shirley Gomes Queiroz, Leila Amaral Gontijo, Laís Cristina Licheski]
- 169 **CHAPTER 16.**
The memory of objects in the identity construction of subjects
[Rita Aparecida C. Ribeiro, Sérgio Antônio Silva]

-
- 177 **CHAPTER 17.**
Taking down walls and building bridges. Considerations towards a transdisciplinary articulation in design
[Evandro Renato Perotto]
- 185 **CHAPTER 18.**
Design as inventive process. The contribution of design semiotics
[Salvatore Zingale]
- 195 **CHAPTER 19.**
Exhibition design as an act of direction towards a cultural convergence project – some Italian cases. Exhibition design: a process where the most specialised component is implemented only in relation to a “humanistic sensitivity”
[Marco Borsotti]
- 205 **CHAPTER 20.**
The contribution of future studies and computer modelling behind the debate on sustainable design: The role of the report on The Limits to Growth
[Pier Paolo Peruccio]
- 213 **CHAPTER 21.**
The humanistic discourses in design. Ambiguity, vagueness and risks
[Evandro Renato Perotto]
- 222 **CHAPTER 22.**
Design and semiotics in constructing scenarios
[Paulo Henrique da R. Bittencourt, Ione Bentz, Paulo Edison B. Reyes]
- 231 **CHAPTER 23.**
Design beyond discipline
[Marília Riul, Maria Cecília Loschiavo dos Santos]
- 240 **CHAPTER 24.**
Design and Anthropology. An interdisciplinary proposition
[Zoy Anastassakis]
- 248 **CHAPTER 25.**
The contribution of humanistic psychology to human-centred design. Concepts of Carl Roger, Alfred Adler, Carl Jung and Christopher Bollas to understand users as individuals
[Denise Dantas]
- 256 **CHAPTER 26.**
Communication design and the digital humanities: Visualizations and interfaces for humanities research
[Giorgio Caviglia, Paolo Ciuccarelli, Nicole Coleman]
- 266 **CHAPTER 27.**
Self-production: a human centred design process: The sustainable future of self-production through a humanistic and participatory process
[Francesco Mazarella, Pier Paolo Peruccio]

Design as inventive process:

The contribution of design semiotics

Salvatore Zingale

_____ salvatore.zingale@polimi.it

Politecnico di Milano, Dipartimento di Design, Milano, Italy

Assistant Professor

Abstract

Intended as planning tension – that is to say an intentional act moved by a state of necessity and oriented towards the achievement of a goal – design has a role always more important in the construction of the “idea of the future”. But the future not only needs to be constructed, but firstly it needs to be interpreted. The sense of the future (what we desire being) influences the sense of the present (what we are able to be). But through which possibile means is it possibile to elaborate a plausible hypothesis as a response to a problematic condition (lack, inadequacy, desire)? What does it mean in semiotic terms, to interpret the sense of the future?

Keywords

Semiotics, Inventive, Abduction, Future

1. Design as interpretative activity

The roots of semiotic thought lie in the medicine of Hippocrates and in the art of navigation. In these and other activities, the guiding role is played by the mind's capacity to interpret a present fact, object or event: the symptoms of disease, the position of the stars in the sky. This is practical and design-related knowledge, expression of a thought capable of adapting to the changing, obscure and problematic reality. And obviously also capable of overcoming this reality and finding ways of dominating its enigmas. Medicine and navigation can be defined as techniques of finding, or inventive techniques. We live to find: an explanation, the meaning and the sense of things, the connections between one event and another, the overcoming of a problem, a destination, the conclusion of a physical or mental journey, a purpose.

This practical knowledge has been called by historians Jean Pierre Vernant and Marcel Detienne (1974) *ruse de l'intelligence*, a "trick of intelligence". This form of knowledge differs due to certain aspects concerning design semiotics: because it is a knowledge with a purpose; because this purpose is aimed at a future action, such as healing, searching for resources, orientation; because in this practical knowledge, thought is always stimulated by an object-related reality which presents a problem.

Design and design-related activity in general, is a practical knowledge; and design implicates knowing how to find, knowing how to seek and knowing how to interpret. Design is moved by the awareness that we live in a problem-world, because the environment itself is a problem.

This means that design operates within the space of a double observation: between dissatisfaction and the search for pleasure, between feeling inadequate and creating a balance, between suffering a state of discomfort and preparing a state of wellbeing. This double observation is what Peirce called abduction, the form of reasoning that allows us to create a possible absent. Every product, before being designed, is absent and possible: and if we are able to think about them, it is only because of abduction.

2. Abduction and inventive

Abduction is a form of prefiguration and implicates the capacity to see beyond appearances (which can be obstacles, problems) and to create associations between experiences we already know about and those that could still occur. The capacity to prefigure possible scenes is one of the conditions of inventive thought. As sustained by Johann-Heinrich Füssli at a conference in 1801 at the Royal Academy of London, inventive consists in knowing how to combine what we know with what we think is possible and likely, plausible. At that conference, entitled "Invention", the Swiss painter traced a clear difference between creation and invention:

[...] the term invention never ought to be so far misconstrued as to be confounded with that of creation, incompatible with our notions of limited being, an idea of pure astonishment, and admissible only when we mention Omnipotence: to invent is to find: to find something, presupposes its existence somewhere, implicitly or explicitly, scattered or in a mass (Füssli 1801)

This passage was later summarised by Füssli in a well-known aphorism: "Creation gives, invention finds existence".

Inventing, therefore, meaning finding, discovering. But in order to find, we have to act, start using our hands and mind, rummaging and digging deep down, physically and intellectually. This

means dividing what we select from what we reject; making choices by following the idea of a purpose. Again, Füssli:

Form in its widest meaning, the visible universe that envelops our senses, and its counterpart the invisible one that agitates our mind with visions bred on sense by fancy, are the element and the realm of invention; it discovers, selects, combines the possible, the probable, the known, in a mode that strikes with an air of truth and novelty, at once. (*ibidem*)

Invention therefore is the identification of a possible object within the knowledge available, where reality – the physical and psychic world – become a field for constant interrogation and therefore of in-terpretation. Not for nothing, the logical form of inventive is abduction which, starting from a question, seeks the answer where it has never been sought before (cf. Bonfantini, 1987).

Abduction as a form of inventive

One of Pierce's most significant definitions of abduction is that contained in A Syllabus of Certain Topics of Logic, dated 1903:

An Abduction is a method of forming a general prediction with-out any positive assurance that it will succeed either in the special case or usually, its justification being that it is the only possible hope of regulating our future conduct rationally, and that Induction from past experience gives us strong encouragement to hope that it will be successful in the future. (EP 2:299)

Among the many definitions, I've chosen this one because it reveals two very fertile aspects for design: (i) abduction as "a method of forming a general prediction"; (ii) but, at the same time, uncertain in nature and lacking guarantees of success, seeking all the time; (iii) and the fact that abduction is "the only possible hope of regulating our fu-ture conduct rationally".

So abduction means interpretation of the present state and the in-ventive of a future state; abduction is the logical road taken by every interpretative process. This logical road starts with the acknowledge-ment of a surprising fact, the cause of which we seek. This is Pierce's summary:

The surprising fact, C, is observed;
But if A were true, C would be a matter of course,
Hence, there is reason to suspect that A is true. (CP 5.189)

Looking at this double passage and applying it to a tangible exam-ple, the formula that expresses abduction is:

	C	I see that the ground is wet (C);
A	→	C If it had rained (A), the ground would be wet (C),
<hr/>		
A		So I'm right to think that it has rained (A).

As you can see, the conclusion is just a possibility, but not a cer-tainty. But this is the strength of

abduction. That the ground is wet because it has rained is one of the many possible reasons, not the only one. It isn't a necessary reason, it's only sufficient. This is why the conclusion of abduction is a hypothesis, a thesis which is still under-ground and temporary. Abduction is the only inference that is a may-be. And while being uncertain and subject to verification, abduction is the only explicative inference: not only does it explain the facts, it also enables us to uncover them and find them.

The macro-argument

The formation of a hypothesis is, after all, the initial act of every design process. In a text dated 1901, Peirce writes, *On the Logic of Drawing History from Ancient Documents Especially from Testimonies*:

Abduction, on the other hand, is merely preparatory. It is the first step of scientific reasoning, as induction is the concluding step. (CP 7.218)

And further ahead:

Abduction seeks a theory. Induction seeks for facts. In abduction the consideration of the facts suggests the hypothesis. In induction the study of the hypothesis suggests the experiments which bring to light the very facts to which the hypothesis had pointed. (*ibidem*)

Adapting this step to the design process, we could say: abduction is the first step (merely preparatory), while induction is its conclusion (the concluding step). While induction seeks facts in order to draw up a theory, starting from a hypothesis, abduction seeks a hypothesis, encouraged by facts, by something which the mind sees a question that still has no answer. It stems from a surprising fact and leads towards its possible cause; instigated by what happens in our mind, starting with what surprises it or arouses its curiosity, which interests it because it stimulates it to acquire knowledge.

But as far as abduction is conceivable as the first step in a design process, by itself it leads nowhere. Its adventurous inference, which proceeds in uncertainty and moves forward by attempts, exposes it to a risk: abduction can fail. No design can be entrusted to abduction alone; inventive can be the dawning phase of the design process, but not its only path.

So, while there is a clear distinction between the three inferences (deduction, induction, abduction), in the flow of thought they are amalgamated like the different elements of a chemical composition. If, according to Peirce, "An 'Argument' is any process of thought reasonably tending to produce a definite belief" (CP 6.456), this composition of the three inferences is a macro-argument. In this passage, taken from the same text of 1901, we have a description which adapts well to the design process:

Now the only way to discover the principles upon which anything ought to be constructed is to consider what is to be done with the constructed thing after it is constructed. That which is to be done with the hypothesis is to trace out its consequences by deduction, to compare them with results of experiment by induction, and to discard the hypothesis, and try another, as soon as the first has been refuted; as it presumably will be. How long it will be before we light upon the hypothesis which shall resist all tests we cannot tell; but we hope we shall do so, at last. (CP 7.220)

The macro-argument can be considered as the logical path ("the only way") of every design, marked by the abduction-deduction-induction movement. It is an open process, a largely unlimited semi-otic cycle. While it is plausible to state that thought always tends towards the hypothesis – for example in the form of hope or suspicion, of scientific doubt or even of the fear of something new

–, it is necessary to acknowledge that a permanent state of hypothesis makes us feel as though we are always waiting and never departing. Always with a plan in mind and never in the thick of the implementation process.

The macro-argument is an inferential cycle which can always re-commence from the start, destined to begin again and again, until at least a design hypothesis, to quote Peirce, “shall resist all tests” and shall open the way to the executive and productive phase.

Being an inferential cycle, the macro-argument is a sort of “design life” which acts before, during and after the design, involving every player: from the designer to the end user, from production to disposal, from the buyer to technical assistance. Not only is the user the addressee of the design, he is often the new subject of the design activity. Every user completes and continues the design by using it.

The triadic rhythm of the macro-argument could be represented as follows:

In all three moments, the abduction-deduction-induction triadic rhythm is the same, but with partially different contents.

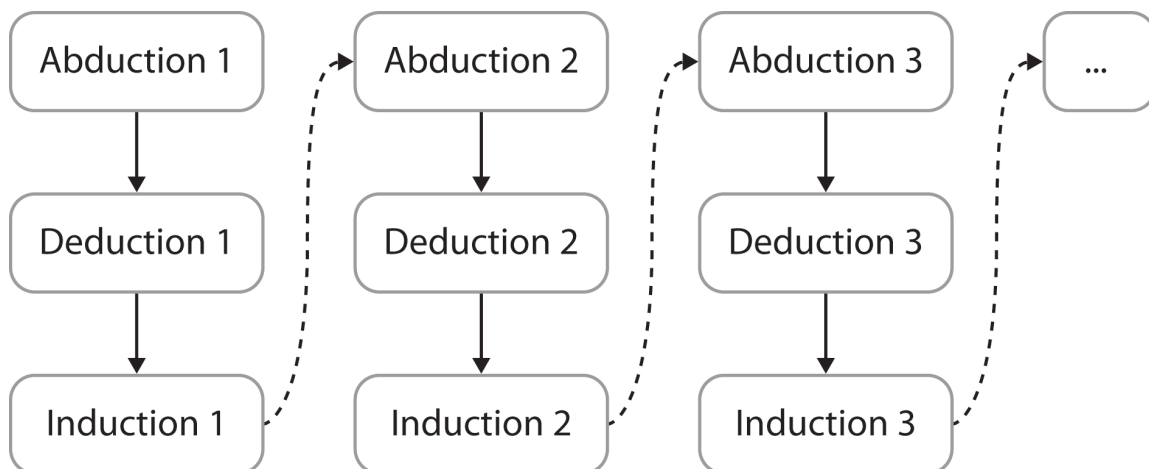


FIG. 1.
The triadic rhythm of the macro-argument.

Abduction and the idea of the future

Abduction doesn't only look at the past through. It should be conceived as an oscillating movement of the mind, which shifts its vision between past, present and future, between what is and what could be.

[...] according to Pragmaticism, the conclusion of a Reasoning power must refer to the Future. For its meaning refers to conduct, and since it is a reasoned conclusion must refer to deliberate conduct, which is controllable conduct. But the only controllable conduct is Future conduct. (CP 5.461)

Any future reality will be the result of our present action and the consideration that we have of the past. This isn't a forecast but, once again, an interpretation: the germ of the sense of an action that

can occur lies in an existing reality. In this case, past and future cannot be separated:

To say that the future does not influence the present is untenable doctrine. It is as much to say that there are no final causes, or ends. The organic world is full of refutations of that position. (CP 2.86)

Between present and future there is a relationship of reciprocal interpretation: if the present is subject to interpretation (e.g.: I want to understand why I find myself in a crisis), its interpreter can but be a future action (the decision as to what to do to overcome the crisis). If, on the other hand, the subject of interpretation is the future (what I want to be), I have to seek the answer in the present (in the conditions that determine the desire). The idea of the future has effects on the present. Tomorrow's plan doesn't leave today indifferent. The sense of actions in the present is determined by the sense that we are able or that we wish to plan.

But how does the future influence the present? Peirce responds shortly afterwards:

But it is true that the future does not influence the present in the direct, dualistic, way in which the past influences the present. A machinery, a medium, is required. (*ibidem*)

The thought of the future guides the actions of the present, but to design future actions we need a mediating device. This device is the design activity. Design is machinery and medium towards the future.

In another passage, Peirce writes:

How does the Future bear upon conduct? The answer is that future facts are the only facts that we can, in a measure, control; and whatever there may be in the Future that is not amenable to control are the things that we shall be able to infer, or should be able to infer under favorable circumstances. (CP 5.461)

We can have control only over what we are able to design because only what we want to design is already in our hands. Design is the connection between our beliefs in the world and our future conduct, because "the only controllable conduct is Future conduct" (*ibidem*).

Projective abduction

So abduction allows us also, and in many cases especially, to look ahead. It doesn't just reveal what has been: its observation is perspective and allows the portrayal of what can be, interpreting a future sense. Abduction also allows us to see what has still to be, or which is far away and beyond our horizon; it can also be metaphorically thought of as a mental view (to quote Hippocrates), which extends the visual field of purely phenomenal dimension (what we see) to the imaginative dimension (what we could see). Abduction allows us to see through the phenomenal data – so we can find, even before we seek.

This also means that abduction does not seek probability as much as possibility. Abduction does not calculate what should reasonably happen, but poses questions and seeks answers. «Abduction starts from a question, the subject-interpreter remembers or invents a possible answer, an interpretant, and assumed it in a hypothesis» (Bonfantini, 2000: 109).

Now, this assuming in a hypothesis is a prefiguration: a figure placed in front of itself – taking into account that "figure" comes from pretence, meaning moulding and forming, like in the visual arts. Pre-figuring is pretending, staging a scene: it's "what if". The prefiguration is a model of what could be and is not impossible: it's maybe.

Prefiguration is one of the objectives attributed to design, together with the capacity to exhibit or display the nature of problems. Good luck and the applications of the scenario-based design concept (cf. Carrol, 1995) are indirect confirmation.

Abduction and the projective future

How can we portray a projective abduction? We can look again at the formula that we traced at the beginning of this essay. We assume that the consequent is a problem, considered as an object or event that obstructs and prevents proceeding towards a target. It is necessary to take into consideration the existence of a form of abduction can pre-figures a state of things such that an object-problem found may no longer exist. The antecedent is therefore placed in the projective future: the subject of the abduction is what will be designed.

To portray the projective abduction it is possible to switch, using a negation operator, the values of what is consequent (an existing state) and what may be antecedent (a state to be hypothesised). The intention is no longer to seek the origin of the problem but to overcome it by intervening. Here are three possible variants:

First variant of projective abduction:

	C		C is an object-problem.
A	→	– C	The existence of A can remove C.
<hr style="width: 20%; margin-left: 0;"/>			
A			So I prefigure the possible A.

Second variant of projective abduction:

	– C		The absence of C is an object-problem.
A	→	C	If A were to exist, C would exist too.
<hr style="width: 20%; margin-left: 0;"/>			
A			So I prefigure the possible A.

Third variant of projective abduction:

	C		C is an object-problem.
--	---	--	-------------------------

– A → – C If A were not to exist A, C would not exist either.

– A So I prefigure the removal of A.

In all three cases, the consequent is always an object–problem, an existing and problematic reality, an obstacle or an absence. It is the subject of the interpretative activity that prepares the design activity.

An oscillating movement

So a looking to the past makes abduction a retroduction and looking to the future makes abduction projective. In the first case, abductive reasoning presumes the hypothesis of the possible antecedent: it is an act of effective “presumption”, not only in the sense of the conjecture, but also in that of self–confidence and faith in the capacity to see clearly. In the second case, abduction in an “assumption” of re–responsibility: because it accepts the challenge and because it projects its future action on what it assumes as a hypothesis.

We can display this double observation with a graph – showing the oscillating movement between past, present and future – of abduction:

In the centre we place any fact that surprises the mind, a fact that aims towards our attention and our interest because it contains some–thing that equips it with relevance and meaning. In general, every fact can be surprising or can be a “curious circumstance”. The “surprise” lies in the possible sense that it lets us glimpse.

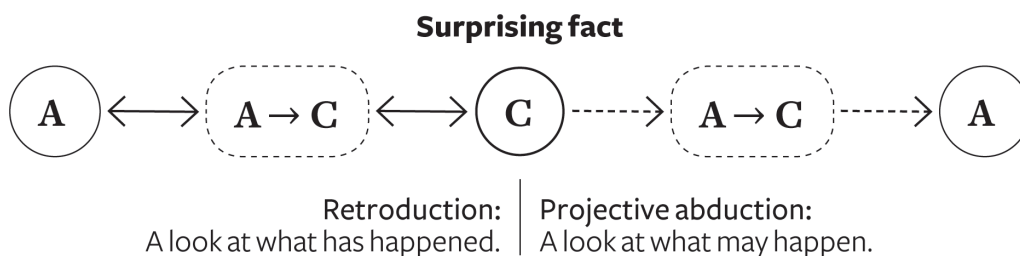


FIG. 2.
Retroduction and projective abduction

Like in one of the numerous cases of best known and analysed ser–endipity, that of the invention of the Biro, an idea which (is said) was had by László József Bíró at the end of the 1930’s, after watching some children playing marbles on the road – and noticing that the marbles left a wet line after rolling through a puddle. But, as the biologist Louis Pasteur would say, abduction requires not only capacity for observation – or oriented perception – but also a “ready mind”. A mind that is already implicated in research. A mind that knows how to seek even if it doesn’t know what it might find. Bíró knew he was seeking a type of pen that left no marks on paper, the way expensive fountain pens did; and watching those kids play, he understood how the pen he was seeking had to be.

Design, training in interpretation

In conclusion, we ought to remember that inventive isn't an exceptional action. It mustn't be confused with an act of general "creativity". Inventing is completely different from creating; inventing is out everyday capacity to find something, but also high tension in terms of awareness and poetics. Inventive capacity is training in interpretation; it is the most acute moment of semiotics, considered as an interpretative activity, semiotic which interpret the world in order to know about it and transform it.

The semiotics of design should then grasp design as the semiotic act that draws connections, relationships and interdependence between an idea and its tangible form, via an act of prefiguration. Without this vision that embraces the entire "design", from the intention to the end, without this regulative skill which is design, *designare* and *disegnare*, the Latin terms from which the word "design" comes, meaning the attribution of a name and form and sense to things, without all this, every project risks remaining unrealised or risks limiting its effectiveness to an act of mere repetition.

Hence the inventive nature of design: the form found by design is the form of a content that design portrays through the form. This then leads to the connection between design and abduction. Design is the invention of a form capable of making an inventive step forward and shedding light on the unexplored aspects of our practical and mental universe: the imaginative step forward of abduction.

References

- BIANCHI, C., MONTANARI, F., ZINGALE, S. (eds.). 2010. *La semiotica e il progetto 2. Spazi, oggetti, interfacce*, Milano, FrancoAngeli.
- BONFANTINI, M. A. 1987. *La semiosi e l'abduzione*, Milano, Bompiani.
- BONFANTINI, M. A. 2000. *Breve Corso di Semiotica*, Napoli, Esi.
- BONFANTINI, M. A., TEREZI, M. T. (eds.). 2004. *Come inventare e progettare alla maniera di Poe. Filosofia della composizione*, Bergamo, Moretti Honegger .
- BONFANTINI, M. A., ZINGALE, S. (eds.). 1999. *Segni sui corpi e sugli oggetti*, Bergamo, Moretti Honegger, 20022.
- CALABRESE, O. 2001. *Breve storia della semiotica*, Milano, Feltrinelli.
- CARROL, J. M. (ed.). 1995. *Scenario-Based Design: Envisioning Work and Technology in System Development*, New York, John Wiley & Sons.
- DENI, M., PRONI, G. (eds.). 2008. *La semiotica e il progetto. Design, comunicazione, marketing*, Milano, FrancoAngeli.
- ECO, U. 1984. *Semiotica e filosofia del linguaggio*, Torino, Einaudi.
- ECO, U. 1990. *I limiti dell'interpretazione*, Milano, Bompiani.
- ECO, U. 1997. *Kant e l'ornitorinco*, Milano, Bompiani.
- ECO, U., SEBOK, TH. A. (eds.). 1983. *Il segno dei tre. Holmes, Dupin, Peirce*, Milano, Bompiani, 1983.
- FLUSSER, V. 1993. *The shape of things : a philosophy of design*, London, Reaktion Books.
- FÜSSLER, J.-H. 1801. *Lectures on painting, delivered at the Royal Academy*.

- IPPOCRATE. Opere, Utet, Torino 1961.
- LISBOA, F. 2005. A ideia de projecto em Charles S. Peirce. Ou da teoria do projecto considerada como uma semiótica, Porto, Faup (Faculdade de Arquitectura da Univesidade do Porto).
- MALDONADO, T. 1970. La speranza progettuale, Torino, Einaudi.
- MALDONADO, T. 1976. Disegno industriale: un riesame, Milano, Feltrinelli.
- MANETTI, G. 1987. Le teorie del segno nell'antichità classica, Milano, Bompiani.
- MANGANO, D., MATTOZZI, A. (eds.). 2009. Il discorso del design, E/C, Serie Speciale, n. 3-4.
- MARSCIANI, F. 2007. Tracciati di etnosemiotica, Milano, Franco Angeli.
- PEIRCE, CH. S. 1931-1958. Collected Papers of Charles Sanders Peirce. Voll. i-vi, 1931-1935, a cura di Ch. Hartshorne e P. Weiss; voll. vii-viii, 1958, a cura di A.W. Burks, Cambridge (Mass.), Harvard University Press.
- PEIRCE, CH. S. 1982-2009. Writings of Charles S. Peirce: a Chronological Edition, a cura del "Peirce Edition Project", Bloomington, Indiana University Press. Vol. i-VIII.
- PRONI, G. 1990. Introduzione a Peirce, Milano, Bompiani.
- TUZET, G. 2006. La prima inferenza: l'abduzione di C. S. Peirce fra scienza e diritto, Torino, Giappichelli.
- VERNANT, M., DETIENNE, J.-P. 1974. Les ruses de l'intelligence. La mètis des Grecs, Paris, Flammarion.
- ZINGALE, S. 2005. La semiotica e le arti utili in undici dialoghi (ed.), Bergamo, Moretti Honegger.
- ZINGALE, S. 2008. "Le inferenze nel design. La semiotica in un laboratorio di usabilità", in Deni e Proni 2008.
- ZINGALE, S. 2009. Gioco, Dialogo, Design. Una ricerca semiotica, Milano, ATi Editore.
- ZINGALE, S. 2012. Interpretazione e progetto. Semiotica dell'inventiva, Milano, FrancoAngeli.