INNOVATION IN DESIGN EDUCATION

Proceedings of the Third International Forum of Design as a Process

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INNOVATION IN DESIGN EDUCATION

Theory, research and processes to and from a Latin perspective

Edited by
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UMBERTO ALLEMANDI & C.
TORINO ~ LONDRA ~ VENEZIA ~ NEW YORK

Published by Umberto Allemandi & C.
via Mancini 8
10131 Torino, Italy
www.allemandi.com

First published 2012

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FOREWORD

The evolution of design is parallel to the evolution of design education. Some phenomena in particular are shaping the contemporary world of design education: the development of countless private design schools; distance learning; the birth of structures and laboratories that allow students to pursue a fully experimental education; the regulation of public education pushed by the respective countries' education ministries; the proliferation of associations that organize continuous professional update education programs; and the increasingly intensive relationship between companies and schools.

Therefore the aim of the Third International Forum of Design as a Process[1] was to present an overview of the ongoing changes in design's educational processes. This represents a central theme for the members of the Latin Network for the Development of Design Processes[2], always involved in recognizing crucial phenomena of the design debate, studying the processes and practices used to disseminate and develop design as a culture and growing through a mutual exchange of research and experiences.

The structure of the book is the same as that of the three-day conference, which was held in Torino (Italy), in November 2011. It also reflects the three main tracks chosen to outline the current innovations in design education: the relationship between education and companies, innovative instruments for design teaching, and research for education. One more session ("The school talks about itself") was established in order to bring visibility to the host school and create a positive dialogue with the representatives of the international community present on this occasion.

An introductory essay defines the cultural influences of design education over the productive system, while full papers document the contributions of the seven keynote speakers. Finally, the Forum of Torino was the occasion to introduce the Design Processes Award, a special recognition to a representative person from the host country responsible for an outstanding advance in the field of design processes.

The book also presents the contributions of members of the international scientific community, who were selected as discussants in the four main sessions of the event. The num-

[1] "Design Cultures as Models of Biodiversity" was the title of the First International Forum held in 2009 in Porto Alegre (Brazil); the Second International Forum (Aveiro, Portugal, 2010) was focused on the cross-fertilizations between design, art and craft. The Fourth International Forum will be held in Belo Horizonte (Brazil), in September 2012, with the title "Diversity: Design-Humanities".

[2] The Latin Network was set up in 2008 during the international conference "Changing the Change", an event included in the program of Torino First World Design Capital of ICSID (International Council of Societies of Industrial Design). It is an informal group of researchers and university professors of design interested in understanding the change that is happening inside Latin cultures, how these cultures interact everyday with others, and how other cultures are permeating Latin ones. Now it counts more than 50 members from 19 universities of 10 countries.

ber of countries represented has grown over the past four years: there were 32 researchers from Latin Europe, 22 from Central and South America, and 4 from Northern Europe, Turkey, and North America.
During the organization for the setting of the conference, a great contribution came from the scientific committee composed of Luigi Bistagnino, Flaviano Celaschi, Dijon De Moraes, Claudio Germak, Pier Paolo Peruccio, Paulo Reyes, Rui Roda, and Carlos Teixeira.
Finally, the Forum would not have been possible without the hospitality of the Politecnico di Torino, the generous commitment of professors Luigi Bistagnino and Claudio Germak and the help of researchers, professors and graduate students of the Department of Architecture and Design (Design Course).

Elena Maria Formia, Head of the Forum's organizing committee

OPEN TEACHING. HOW EDUCATION (AND SOCIETY) HUNGER FOR A DIFFERENT PATH CAN BE SATISFIED

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Education, not only in design, is one of the cornerstones of any form of human association and around its quality, characteristics and evolution is decided the fate of the people this aggregation are part of.
There are some elements of this environment that suggest a possible evolution of this environment: a quick analysis of the development of knowledge sharing with digital networks suggests that the ability to search for data and the instant communication are the keys to this success but it is clear that a communication network is not enough.
It is necessary to find another key element that the industrial revolution has partially hidden from view: the ability to share what we know, to have it transformed by others, in order to make it evolve.
The scientific communities have been the engine of this kind of innovation and are certainly the place where the Internet cultural revolution can find room for action. A process that needs to be analysed to verify whether to adopt it or not.
This analysis will be focused on:
· usage rights;
· means of sharing and participation;
· revision of old roles and new roles;
· cross-roads methods and disciplines;
· publication strategies;
· industrial fallout or social impact. Why not both?
We aim to investigate which are the operational directions to be taken, but above all the tools, mainly cultural, to use for the arrangements to be introduced.

The university is inherently a place where the formulation of new responses to new demands is an ideal space for experimentation and dissemination.
This concept is even more applicable in times of crisis when human aggregations are living in turning points, where long term strategies can give positive answers to the issues rather

than hasty and particular solutions, often rooted in the same mistakes because of crisis.
The economic, social and political global difficulties that characterize the beginning of the twenty-first century, have deep ties with a structural trouble, particularly evident in Western cultures. The reference model since the dawn of the industrial revolution that is the way we think the economic development, has shown its hard limits which, put in place globally, generate imbalances never occurred before.
These imbalances also occur in a very clear manner within the communicative structure that every country has adopted, even those who have traditionally used stringent, if not dictatorial ones, criteria control of information exchange.
In this situation, there is also an overlapping phenomenon, not yet clear, but intrinsic in the technological revolution that is the basis of the aforementioned massification of communications, which resides in the evolution and acceleration of computational capabilities of the computer processing systems that permeate every corner of our daily lives.
It consists, as theorized and named the *Singularity* by Ray Kurzweil, in the moment when the ability of computers will exceed the humans one and will merge with it to form a new type of intelligence not exclusively biological.
This definition may seem to be brutal to an instinctive first step analysis, producing strong feeling of rejection, especially if we think about some of the apocalyptic visions that literature and movies have accustomed us to envision an hyper-technological future.
However, a more closer reading can tell us that the danger of a drift is not really specific to the Singularity itself, and that today we do not realize we are already taking daily behaviors we can not exclude they would not bring us to a not so different future than the one speculated by Kurzweil.
In fact what is happening today in the digital world, thanks to the information infrastructure systems and habits we have adopted is making us have a different perception of what we do and what we make computers do for us or, very more often, instead of us.
Trying to make a simple exercise we can imagine a hypothetical day of Mr. Mario using technology in a conscious way like other billions of people around the world.
Our Mario uses a smartphone, with which he communicates via voice, text, images and videos with people he shares his time with daily, takes pictures, manages his calendar and address book contacts, connects to social networks where he shares part of what he does with virtual "friends". He drives his car using the navigator integrated into the phone with which he planned destinations, obtaining routes and travel times. He booked a dinner at the restaurant and bought a theater ticket, and while walking through the city he receives business information close to where he is from his favorite social network app, thanks to built-in GPS in his phone and the triangulation of his position with the cells the mobile telephony. Another app allows him to recognize a piece of music heard in a public place, even suggesting the purchase in a store nearby. At the end of the evening, before going to sleep he set the alarm alined with the first task scheduled on the agenda for the next day.

Agenda synchronized on multiple devices through the network services offered free of charge from his provider.
All these behavior are normal activities thanks to the existence of an infrastructure consisting of networks that are operated by companies, which provide reciprocal access to the transmission and processing of data that users, through the applications send and receive second by second.
The fact that these often personal nature data are moved around the world in ways that only three decades ago we would not have imagined nor have even allowed, is now considered normality. Not surprisingly indeed, because having personal related data in "the cloud" is seen a positive and very useful opportunity since Cloud Computing is now a well established tool. Whose potential, however, we have seen a very tiny fraction of yet.
To make this possible we must consider the structure of the Internet and the way it is evolving: a network of computers that not only exchange data but store them in a diffuse way (perhaps do we know where our gmail message has been saved? and what about the digital location of the beautiful pictures taken today and saved in our DropBox? Above all, do we know if, how and who has access to that data?) and rework them with multiple computers parallel processing (in cloud) giving them back to us exactly the way we wanted, in form of emails, text messages travel routes or whatever else.
We can therefore say that some form of the future of integration between men and machines is already in place, because we are farther away from the position of being able to live without the use of technology or, more likely, without a deep integration with them.
This prompts an obvious question: since it is clear that we can not afford, or even better, we do not want that the Singularity will manifest itself in a malicious form, what can we do today to make this forthcoming revolution being hopefully positive, rather than the first step to humanking extinction?
To find the answer we must return to the keystone of the digital revolution, ie data and a concept that seems to take on ever greater significance to the extent that is increasingly missing: awareness.
These two elements are in fact a summary of what we are in modern form: individuals that produce, release and share instantly information, which are the basis of knowledge, which consists in the specific attitude of human being, individually and in groups.
Looking at data, however, very quickly shows a heavy problems with rules, which we have developed for almost three centuries as a result of the industrial revolution, making us managing what we know and the way we develop new forms of knowledge; doing this we encounter a lot of issues of industrial rights protection, creation and in general in the world of copyrights and patents.
Even leaving aside the paradoxical and more or less famous historical cases well described by Charles Gubitosa, we can not avoid to underline the fact that there are many cases that show how the protection of rights provides much food for thought. Without wanting to

turn this analysis into a partisan fight between good and evil, there is no denying that the approach exclusively based on protection above all other considerations, is experiencing a moment of escalation; it is clear that this is happening especially since dissemination of information has become pervasive and global.
The high-profile cases that highlight this situation are numerous and are internationally important, due to the nature of the phenomenon.
The years of the beginning of the millennium have in fact seen legal battles for the closure of sites that allowed the exchange of music and video between users with P2P tools (Napster, 2001), cases almost surreal if not alarming as the patenting and deriving protection against unauthorized use of a particular shade of magenta (Deutsche Telekom, 2007).
Considering the matter from the economic point of view, moreover, we understand what is one of the most limiting aspects of an approach based on the possession of rights rather than on their spreading: in 2011 Apple has spent $100 million in lawsuits, an amount of money that could suggest an excessive exposure also considering the scarcity of results obtained for only a small percentage of cases won by the Cupertino giant. However, consider that this figure is only 1/460 of the turnover of the 4th quarter of the year for Apple, since this amounted to 46 billion dollars.
The fact then that has not achieved much in won cases is not important for the company, since putting in place the causes is enough to deter the counterparts to face the lawsuit. The deterrent effect of the cost to defend themselves in lawsuits with giants such Apple is often more than enough to deter those who can not afford to litigate. In this sense it is exemplary the case of the blog cocacolla.it which in March 2012 has closed its doors after receiving a very much explicit and irrevocable request to do so by Coca Cola. The site managers, who also had no kind of similarity on the market of the multinational, have not only had to close the blog and where possible eliminate any reference to it but they also had to give free rights of the domain name to the multinational.
Underlining again the fact that these references do not have any purpose other than to describe some relevant case studies and that there is no problem in the intrinsic right to protect what derives from the intellectual activity/production of someone, it seems interesting to see how digital globalization makes the phenomenon of protection appearing abnormal in some situation. It is obvious that in a global community, the protection of an industrial or creative content can be pursued only by those with huge amount of immediately available cash resources, putting in actually only these people in the position to proceed and leaving all other just the ability to act locally. This is a matter that in a global community has not any effect other than just growing costs without any significant returning profit.
Another sign of the different conditions in which we presumably will find ourselves in the commodities market of the next years, is suggested by the emergence of increasingly important technologies of *rapid prototyping and manufacturing.*
These new methods of manufacturing, already widely adopted in many areas of design

and production allow the creation of physical objects from virtual three-dimensional data, effectively avoiding the goods transportation translating it almost exclusively in the data transfer (the raw material is still necessary even if you can act locally with greater ease for its retrieval).
This approach, already productive for itself, can undermine the structure of markets, transport and economic balance with the only re-localization or resizing of production facilities. As others have noted (Bruce Sterling with his spimes) will rise from a global production market to a local, first, then subsequently personal, allowing anyone to purchase a virtual product virtual "printing" it three-dimensionally at home.
In addition to this obvious aspect another peculiarity is added, however, inferable from what happened with music and movies, that is the strong likelihood that a production method of this kind, based on the transmission of data, allows the possibility to disseminate the information worldwide through peer to peer networks.
This scenario obviously quite critical for those who produce data, highlights again the need to search for a different new paradigm looking forward for an effective solution to the problem.
If these are already sufficient reasons to enable arguing other ideas, there is another much more important, even if less immediately tangible, which is the intrinsic characteristic of the knowledge, growing only when it is transmissible and transformable in a non-linear systemic way. Enclosed in a place, whether physical or virtual, and isolated from mankind, it has no way to evolve and become instrument of development.
For these reasons a change of strategy seems particularly urgent; that could give new impetus to development through the establishment of new management paradigms of what we create with our own intellectual and production activity.
One of the most interesting scenarios of this sort is offered by the information technology field itself, where the late '60s of last century was born, within the hacker culture, but not limited to, a different way of approaching the issue, which for the field of software development and hardware it seemed critically important: the of Open Culture philosophy.
From this approach, essentially characterized by the release of free knowledge, opposed to the concept of protection and closing the content, is immediately born the concept of Open Source, combination of words identyfing a method of releasing free software, including source code (the heart of the creative product, and container of the rules regulating the software itself, de facto the primary secret of the software industry).
This approach, definable much more strategic than merely technical, has still its creator and promoter in the person of Richard Stallman.
Often seen, however and although not without reason, a revolutionary approach to the limits of acceptability, it has found its place in time today, being applied in many areas quite different from the computer field one.
Definitely relevant are certainly cases where Open Source has allowed us to give economic

space to major companies such as Red Hat and Ubuntu Foundation, but what is most striking is the vividness with which small and medium sized businesses around the world have adopted this approach because of the visibility deriving from spreading in a viral way what they do.
In fact some of the critical characteristics typical of the traditional closed approach are removed with the release of the knowledge freely, which is not like, as Stallman says, free as in beer but is like free as in speech, meaning that in the second we are allowed, and expected, to reuse, dismantle, analyze, modify, reuse and redistribute freely.
Inventing, for example, a new system for kinematic connection between an electric engine and the wheels of a vehicle which markedly improve the efficiency would be liable to patent but easily applying this case to a small company or an individual designer would mean put that person or factory in the position of having to take legal action against those who, perhaps on the ther side of the world, will grab the industrial secret making their own version of it, perhaps even in a country with a patent law incompatible with the one of the original designer's country.
The complexity of this situation and the resulting unsustainable costs and time commitment would make its implementation unlikely.
We could argue that the eventual release of industrial secrets in question certainly would open a market of low-cost copies of the system, putting the original author economically on its their knees; ignoring the fact that this scenario would be applicable, albeit illegally, however, even in patent case we can say that this is true if the only intent is to profit from secret itself rather than from the expertise that generated it.
Instead of trying to imagine a different scenario, where the designer publishes the idea online and makes it available to everyone, it could happen the case in which the creative product, no longer secret, becomes a vehicle for spreading the skills of the designer, who would become instantly and globally known primarily as the author of the idea, but especially in the second round as the one who presumably has the skills to do it again.
The scenario, not hypothetical, much less magical, is otherwise quite concrete: the case of Arduino is one of the best examples of how a hardware and software platform, bundled with the specifications for reproducing it, has not generated a plethora of copies by mysterious oriental countries and the authors Massimo Banzi and David Cuartielles did not have to invest any percentage of sales to ship lawyers around the world in pursuit of thieves of ideas.
On the contrary Arduino is in fact the reference for many sectors using control systems and management of equipment rather than data acquisition or multimedia installations.
Another particularly significant case is the Golcorp inc. one, a mining company that in late '90s of last century, through the release of free geological data of a major gold-bearing area on which it was working, was able to identify new areas through participatory activity of hundreds of thousands of scientists around the world; these for their part have been

made aware of information that traditionally never even considered for release by the precious metals mining industry, being considered their most valuable asset, even more than the extract itself.
The scenario described so far, however, lacks an essential element: the culture of the Open and its application may be disseminated in a structured way? And if so, how?
The key once again seems to be the culture and its vehicle, ie those who produce and spread it on the territory. Beyond this element there is the human subject, which again becomes the pivot around which, freed the scene from the exclusive value of the product, rotates the scientific and cultural phenomenon of the production, ie knowledge.
The university has always been one of the first places to experience in didactic what the research processes, thanks to the intrinsic link between the two worlds and as a shared place in physical space for culture and its development. In the field of industrial design, this symbiotic relationship is expressed even better by virtue of the specific characteristics and the fact that it is multidisciplinary.
This feature puts the design in position to challenge to experiment and test new methodological approaches such as the Open one.
To do this we must first define a scenario and then establish rules and identify tools.
Fortunately, these needs can be met immediately because rules and tools are already available, but what is lacking is the specific academic testing.
The rules must drive the process of generation of new knowledge with an Open approach: the formation becomes therefore a time when the fruition of knowledge is obtained through use of sharing approach in an open system of connections similar to the process output-input typical of nature biological processes. The products of this process, similarly to the previous step, are then released in an open way to be disclosed but certainly even more usefully modified, implemented and redistributed; a process which is then at the base of the evident "evolutionary" advantage of the Open strategy.
The tools are the possibility to protect the creative work, the students for first and then the academy, so that the source is identified throughout its travel following the work outside the field of education.
This requirement may be satisfied through the use of Creative Commons licenses, legally binding instrument of assignment of rights with an open approach that includes on one hand the identification of the author and on the other the ability to change the creative product freely but keeping track of all the interventions, and authors, which came into play time by time.
Other instrumental element must meet the need of a new approach to the design process itself. The site of the project, namely the workgroup, real hotbed of new knowledge, requires tools method for open discussion and implementation across the board with a multidisciplinary approach, not based on a hierarchical structure that sees some predominance over other disciplines especially in the preliminary phase of investigation work.

In this sense, the Open Space Technology method, used in organizing complex decision-making processes within numerous working groups provides an open method in which all participants can contribute equally to the project by making available to everyone the opportunity to argue, to introduce elements and check the final results.
Regarding the latter ones, which are then what we would expect from teamworking path, the problems of the traditional publishing systems can be overcome with the use of Open Access
Publishing, whose use is spreading in the academic community and which, if made aware of all the actors involved, could be a new vehicle for the proliferation of open culture in education and research.
Downstream of this analysis there is the need to test all the above work; to do so, the Master of Science in Ecodesign of the Polytechnic of Turin, has introduced this approach in the Virtual Design course in the academic year 2011/2012.

The methods used include:
intensive use of online tools for sharing and participation
- adoption of open source tools for digital content creation
- visibility and partecipation to the working progress with an open blog
- adoption of Open Space Technology
- release of the final students creations licensed under the Creative Commons
- publication of results in Open Access Publishing

The projects will consist, for this first year of experimentation, in digital images and videoclips focuses on the concept of Open allowing the course to narrate itself after the experimentation.
The results are expected by the summer of 2012, and they will be tool for verifying the the project and help students and researchers to understand whether and how this methodology can be applied in other fields of training, like the other courses of Design of Politecnico di Torino.

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FINITO DI STAMPARE NEL MESE DI LUGLIO 2012
PER I TIPI DELLA SOCIETÀ EDITRICE UMBERTO ALLEMANDI & C.

“Innovation in Design Education” is the title of the Third International Forum of Design as a Process, the annual meeting of the Latin Network for the Development of Design Processes, held in November 2011 at the Politecnico di Torino, Italy. The book presents the results of the conference, which focused on three specific topics of the debate concerning design education: the relationship between schools and companies, innovative instruments for design teaching, and research for education. Particular attention was finally addressed to the host school, which was invited to present its experiences and research relating to the chosen theme.

Elena Maria Formia is an architect and has a Ph.D. in History of Architecture and Urban Design. Since 2008 she has coordinated the activities of the Latin Network for the Development of Design Processes, an international organization of professors and researchers from nineteen universities, which meets every year during a thematic Forum. Her research deals with the history of design and its impact on contemporary professional culture. Over the years, she has attended several international conferences and has written many articles in magazines and journals, such as Strategic Design Research Journal, Redige, I+Diseño, The Art Newspaper, Il Giornale dell’Arte, Il Giornale dell’Architettura, and Le Culture della Tecnica.

ISBN 978-88-422-2175-3