

Designing experiences for SMEs

Venanzio Arquilla*, Daniela Seminara**, Antonella Castelli***

* *Contract Professor of INDACO department, Faculty of Design, Politecnico di Milano
Milano – 20158 - Via Durando 38/A, Italy, venanzio.arquilla@polimi.it*

** *Phd, Advisor of INDACO department, Faculty of Design, Politecnico di Milano
Milano – 20158 - Via Durando 38/A, Italy, daniela.seminara@polimi.it*

*** *Researcher of INDACO department, Faculty of Design, Politecnico di Milano
Milano – 20158 - Via Durando 38/A, Italy, antonella.castelli@polimi.it*

Abstract: This paper aims to show how design can become a strategic lever at the service of the productive context (SMEs, practitioners, corporate policy, research system). In particular, it focuses on the ability of design to enable social and economic connections among the actors involved, to find new ways for developing innovation within the SMEs, and to give a new meaning to the current definition of “Made in Italy”.

In these years, the projects developed at the INDACO department of Politecnico di Milano show how creativity can add value to the professional relationships between young designers and micro, small and medium companies. These projects include action-researches and their aim was the promotion of the design culture within the local productive realities and the districts. Based upon the action-research framework, the case studies use mechanisms of the design knowledge and technology transfer [28] through the physical transfer of innovation agents (newly graduate designers) into companies. With the researchers' support, these mechanisms led to develop product, service and communication projects in collaboration with the companies. This model is so called “human capital growth” [19, 27], and it adds expertise to the company, in an action-based perspective. The project was developed through a practical process of learning by doing and learning by interacting, through which the companies (previously unfamiliar with design) had the chance to understand and apply the potentials of design innovation, while young designers experienced real working situations, applying their technical knowledge on products and production processes [1].

In synthesis, this paper describes some case studies, involving collaborative experiences with many small manufacturing companies, aimed to create a permanent meeting place to exchange knowledge and generate innovative projects through the use of ICT, supported by both University and Entrepreneurial Associations as trust generators [12, 20]. The idea is to be able to create a low cost/low impact open source creative arena for designers and companies; a place to generate collective intelligence [16], changing the relationship between young designers and Italian SMEs.

Key words: *SME (Small and Medium Enterprises), University, designers, design knowledge.*

1. Introduction

Several experiences of design action-research in SMEs show how, in order to be able to compete and survive, these companies have to make their needs clear, and continuously develop the basic knowledge that helps them shaping innovation. This paper presents a “work in progress” project of the technological transfer of design knowledge from university (research center) to the micro and small enterprises of the Italian productive territory. This paper wants to offer some interpretations about the modalities in which design, in its current and contemporary meanings, can enable innovation within SMEs, the industrial systems, and the balanced development of the geographical areas [2, 21].

The scientific premise of the research is represented not only by the typology of the services that the design research in Italy can offer to the companies (and especially to the micro, small and medium companies and to crafts companies), but most of all by the capability of a public research system to define clear methods and tools to enable and qualify a series of models that spontaneously replicate themselves among the national territory. This is especially possible thanks to a “fertilization” process triggered by the action-research and by the scientific thought of design research, activated in some pilot productive contexts.

Currently, the research especially focuses on the definition of the possible opportunities that the university research system in Italy offers to connect young designers to SMEs, presenting a “proactive” rather than a “imitative” model to the international scientific community. This program aims to change the current model, promoting innovation and design, stimulating, coordinating and supporting new processes for knowledge sharing. This means to experiment a technological tool capable to keep the relationships activated among the territory, and to pursue collaborations between University and SMEs, making this collaboration more homogeneous and capable to face the international context.

In order to better understand the methodologies chosen by our University to generate and enable the collaboration between companies and young design professionals, it is necessary to clearly define the specific characteristics of the Italian productive and creative context. Since the Eighties, the economy hasn't followed a standard model, but it has been organized in several different national capitalisms, each having different stories, cultures, behaviors and institutions [6].

The fast and fluid changing market place in a competitive global context [8], the increasingly aggressive competition (due to the reduction of production costs and not only to this), and the high variability in the usage and mixing of products and services impose to companies, especially SMEs and Craftsman Firms, the development of new skills, in order to generate vision and interpret the signs of these changes. In this context, the industrial structure in Italy looks highly fragmented: it shows originality in the path and in the highly characterized competitiveness. This has led to the development of an articulated system of small companies and local systems, generally within traditional sectors that comprise the so-called “made in Italy”.

In these kinds of sectors, protected by lower technological and financial barriers than others, many systems, with different degrees of complexity, were developed with the aim of sharing the work amongst several small and mainly B2B companies. These companies are supported by local networks (industrial districts) or by supply and sub-supply chains (production lines) [4], across several places, nowadays even non-contiguous ones (meta districts).

The network production of the Italian meta-districts, districts, and production lines is able to offer, at a low cost, a wide variety of niches, flexibility, and adjustment speed. At the same time they guarantee a company's capability to manage unplanned situations, which might occur throughout the process – on demand production, and flexibility in answering customers needs [25].

The main issue regarding this system is that there is no detailed analysis of opportunities, risks, and market trends aimed to develop new products consciously and efficiently: the innovation still follows a Darwinian architecture, where the market is the ultimate filter and the input to trigger new ideas [3]. On top of this, there is a deeply rooted mistrust toward ICT, both for internal issues tied to the managerial and organizational adjustment, and for the tendency of the companies to protect their own established “physical” distribution network (“*Questione dimensionale*” – “Dimensional issue”). It has already been proven that, in the future, the companies won't be able to innovate only by means of a strictly technological investment. From this perspective, where companies move toward strategic requirements, design is becoming essential as a value of the product-system. In its latest definition (even if not yet univocally established) the design discipline has definitely moved over its status of “applied-art” or “artistic/creative” discipline, thanks to its multi-disciplinary (or multiversa) [20] core. It has thus acquired dignity, at the economic and managerial level [7,13,25], as a possible or even unique way to innovate the system of Italian SMEs.

There should be a dialogue and a link among the industrial production centers and centers for knowledge and thoughts management (universities and research centers); there should also be a merging of traditional jobs with new contemporary visions, that young creative designers bring into the company.

Facing the changes of the design discipline, the University research must also change, without becoming a closed academic model, but becoming a system that proactively aims to get universities and the SMEs world close to one another, suggesting ideas, projects, and services. Those companies that have a production know-how, but are very far from the current market trends, strongly need the support of the design culture. These companies generally lack vision in realizing products that meet the taste of increasingly demanding customers, which don't look for products but for “experience” [24] and “emotions”.

Thus, there is the need for triggering a design-driven innovation model [11, 23], based upon radical innovation, while trying to re-trigger innovative processes which led to the Italian design historical successes of micro-companies which are currently real brands (Artemide, Alessi, ...) [30,31].

2. The Work Process

2.1 An evolving model

The “design strategy” research group of the IN DACO Department of Politecnico of Milan defined the intervention model. It took a long time to develop this model, especially as regards the connection between design and small enterprises; the development process started 10 years ago, and it is still in progress [17,18,1,2,3]. It is an action-research process, including 3 completed research phases and 6 interventions within the entrepreneurial context, which contributed to the implementation of an initial intuitive model for the connection among design, research, and companies.

In particular, two design projects were developed between 1999 and 2004: DXD (Design for Districts) and DAC (Design for Arts&Crafts). Characterized by a “learning by doing” process, these projects triggered the need to define an original and repeatable intervention model, capable to interpret the localization variables that other possible application contexts include. The subsequent projects, called DAC.Tool and FASHIONPLUS were activated in 2004 and 2007 respectively. These started a second phase; an experimentation in which the working model, previously defined during the practical phase, was consolidated, and original tools for design research were determined. Furthermore, the generic and shared need for a design intervention among the productive community was translated in a complex offer of design services, to support innovation within the SMEs. This phase is still ongoing, and two actions are currently taking place on the territory, and are trying to implement the working model at two different yet complementary levels [21]. These actions are: DEA – *Design e Artigianato per le imprese trentine* (Design and Crafts for the companies in the Trento region), a project that includes a preliminary training program for the companies, aiming to implement the quality and typology of the services offered; DESIGNforALL, which focuses on the generation of new business for SMEs, with a special attention to users niches.

While these last two projects were being developed, a third research phase was activated. This focuses on the convergence of the results and implements the working model from the point of view of the network’s ability to give continuity to the innovation process, previously triggered by design, and to generate new services. The DAC.Link research project starts from this third phase. DAC.Link aims to widen the capability of the initial model, which interprets the design demand at a local level, and defines a wider network (national and then international), which can self-generate design driven innovation for the SMEs.

Each project’s phase and results are below described, and the evolution of the technological and knowledge transfer [28] is explained.

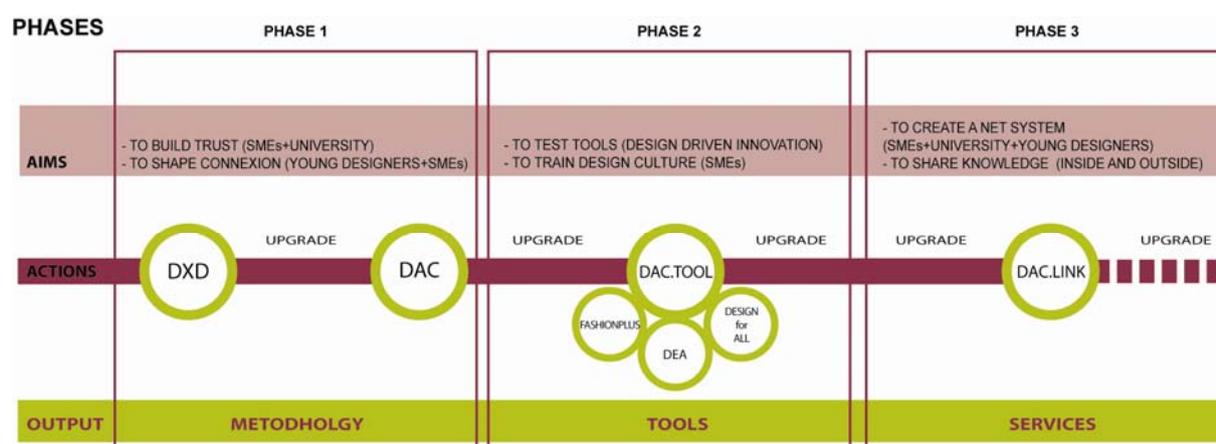


Figure 1: phases and actions “working in progress” model

2.2 Phase 1

The first design experience guessing that the combination of design and SMEs could represent an innovation factor was activated in 1999, 10 years ago. DXD – Design for District wanted to enable a connection between the design world and Small and Medium Enterprises located in the same industrial region, or “industrial district” [4], now called “production district” [5, 7]. This was possible through spreading information and actually developing design projects in the field of products, services and communication for specific company needs. The

action model is thus defined. The actors involved and the activators of the process are the university, with an experimental workshop and final internship of Politecnico of Milan, and an agency for local development of the Brescia industrial area, involved in the project. The action was addressed to local companies. The young designers of the design course are the promoters of the initiative; their competencies are at the service of the company in which they are doing their stage, and they help answering the companies' specific needs through design actions (product, communication, service). It is a waterfall model: the activators trigger a process that has even "invasive" repercussions on the territory and on the companies, in order to fill the cultural gap and make the companies aware that a design action can represent a strategic lever, a potential that has to be kept under consideration when defining business strategies. As a result, a lab/ideas incubator was activated within the university, 60 internships were established in the 22 companies that took the challenge and accepted one or more designers to work for 6 months on a specific design issue (60 projects were developed), 46 dissertations were written, a design award was established, and an exhibition/event was organized in the Brescia area.

DAC – Design for Art&Craft is the second initiative of design culture "fertilization" within the entrepreneurial context in Lombardy [26]. This project, activated in 2005, represents the first opportunity to carry out a methodological synthesis of the research process, and allowed us to codify a first model, starting from the acknowledgement of roles and competencies of the actor involved.

The general objectives, derived from the first pilot experiences, involved: contributing to the creation, promotion and improvement of the image and competitiveness of the crafts processes, especially as regards the "home system"; enabling a wider spreading of the design culture among companies, as a winning asset on increasingly complicated markets. The specific objectives, strategically important for DAC's first edition (2005-2007), are: enabling product, communication and service innovation to strengthen the companies' and the crafts sector's competitiveness; involving the companies in the professional consultancy activity of young designers; bringing young designers near the crafts world, through a professional/educational experience.

Thus, the activities started. Politecnico and Confartigianato, representing the project, selected the companies and designers through national public call. The companies selection was based on their profile and on the presentation of a project, in which the *design contribution* would have been crucial for developing an innovative approach to the product-system. The designers were then similarly selected, on the basis of their skills and experience, and assigned to the companies. The young designers' creativity and design skills were thus the enzyme for the innovative seed to bloom in the companies' offer. Once the connection between companies and designers was established, the projects started under the supervision of the university research team.

The final, tangible result was a series of ideas that combine the companies' know how with an original vision derived from the design approach. A further result, which we consider even more important, was that both the companies and the territory became more aware and open to the "innovation issue". The project didn't end with the closure of the single projects: the experience was collectively shown to the local authorities and actors through an event, an exhibition and a catalogue. Thus, the project enabled new relationships among the different actors, and the experimentation of a new model for technological transfer established through the encounter of different competencies: designers and companies.

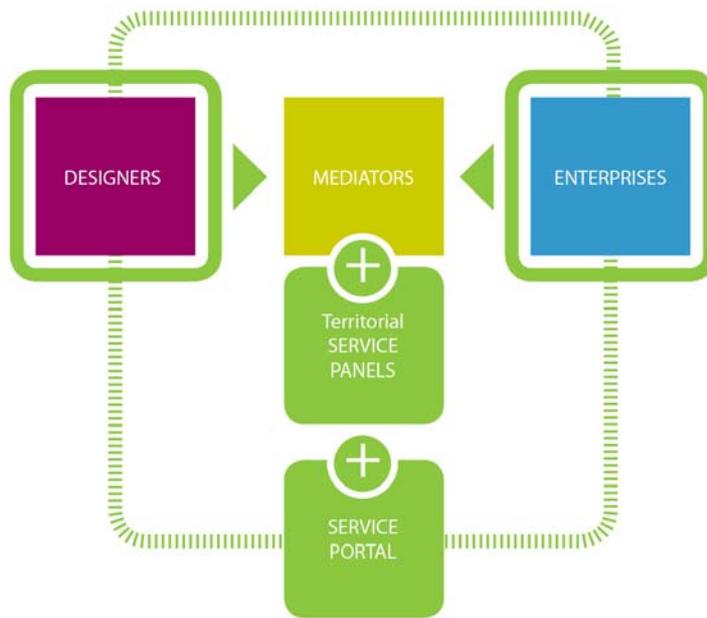


Figure 2: The actors involved in the DAC – Design for Art&Craft project



Figure 3: The “technological transfer” model applied to the DAC project

2.3. Phase 2

The second phase of this process saw the application of the model in 2 different directions: on one hand, DAC.Tool activated a new series of activities and tests on the geographical areas previously explored with companies of the home goods sector; on the other hand, FASHIONPLUS investigated the Carpi district of textile companies. This phase confirmed that design can enable a *systemic dimension of innovation* through a specific design activity. In fact, the experimentation allowed the creation of relations, opportunities for discussion, and design activities aimed to develop a shared objective: bring innovation into a system [15, 17].



Figure 4: Overview of the results of model-making and testing actions

2.4. Phase 3

The third, ongoing phase, see the “design strategy” research group involved in systemizing and elaborating the previous experiences through the creation of a start-up group for the generation of an innovative modality for knowledge management and transfer, using the 2.0 web’s technological skills and collaborative systems [14]. This phase, called DAC.Link, represents the shift from an intuitive model to the generation of a services system for the SMEs. The desired result is the classification of all services that a Design Research Center can offer to support the productive creative System in Italy.

A tool was designed and developed, to give to the companies involved, at present and in the future, a continuous access to the innovative dimension brought by design. This tool is a communication platform called Design Hub (www.designhub.it). Design Hub wants to be a specific response from the University and design research, to the current situation of the Italian entrepreneurial and professional scenario. Design Hub tries to decline, in a virtual dimension and in a global market scenario, the creativity and quality factors that have historically determined the “Made in Italy” success. The platform acts on the ‘perpetual beta’ idea [9, 10, 29], and represents a permanent meeting place where it is possible to exchange knowledge and generate innovative projects by the use of ICT, supported by both University and Entrepreneurial Associations as trust generators [12]. Design Hub is the spontaneous result of the previous actions’ success, and the practical answer to the suggestions and requests related to new needs for support and consultancy in project development by the companies involved in the projects.

The current objectives, to be tested in future activities, are: answering the design innovation request of the companies, expressing and addressing the offer potential (young designers), giving visibility to the companies’ innovation processes, showing successful cases, sharing innovation among the companies, and allowing them to access the design services mediated by the university.

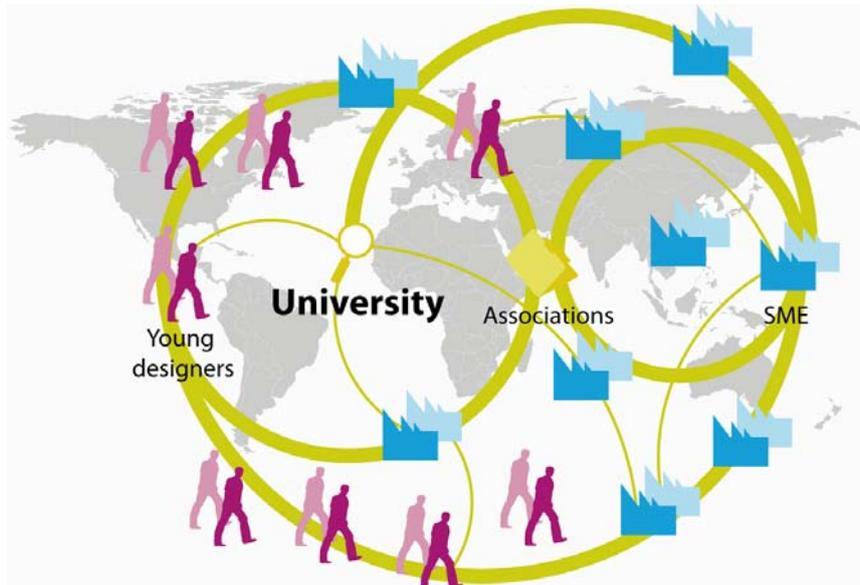


Figure 5: The Design Hub actors



Figure 6: Design Hub interface

4. Conclusions

This paper investigates and discusses several actions carried out on the Italian entrepreneurial context by the project team, to enable the transfer of practices and knowledge from University to micro, small and medium enterprises and to craft companies. These experiences identify a real opportunity for the applied design research to “bridge” the academic knowledge and the world of small production.

In this past 10 years of work, 100 young designers were selected and took part in the projects, and about 60

SMEs were involved, from various product sectors (from food to the production of machinery, including the classical “Made in Italy” sector such as home and personal goods and textile), and very different company structures (mainly micro and small enterprises and craft companies, but also larger companies and consortia). Furthermore, the activated intervention model involved in the design and projects supervision over 50 among researchers, young designers, tutors (senior designers), and staff of the local Confartigianato.

These numbers, as well as the steps of a “work in progress” project, are indications of the need for the knowledge and competencies produced by the research to converge in a container capable of collecting, but most of all of implementing new relations and trigger a virtuous circulation of ideas.

Design Hub is exactly this: a tool currently promoted by the research group and used as a service platform and “social network” among the actors (companies, designers, researchers, bureaus and institutions) of a system that promotes design driven innovation, which raises locally but which, in order to implement contents and quality, is open to all bearers of ideas, competencies and significant experiences.

From this point of view, Design Hub wants to be a durable tool of dialogue and connection among distant universes, a tool capable to enable the encounter between the potential of an often tacit demand and that of a wide offer, which struggles to become visible and available. Design Hub, open to contribution and discussion with similar national and international experiences, is also an opportunity to reflect on models and good practices of design processes transfer, as well as on the generation/supply of design services to SMEs and micro companies.

To conclude, in order to trigger a constructive discussion with the scientific design community, we would like to suggest a series of open issues that our research group is currently working on:

- What is the role of the university and of the design research activity within the system of actors that promote design driven innovation?
- What parameters differentiate the model activated by the university from other examples, in Italy and abroad?
- What are the interests of the international scientific community that could implement our working process and make it applicable to other entrepreneurial contexts (at an international level)?
- What are the advantages of a digital platform to enable the knowledge sharing among the actors involved?

5. References

[1] Arquilla V., (edited by), 2006, Design e imprese artigiane. Un modello per l'innovazione, ed. Poli.design, Milano

[2] Arquilla V., Vignati A., Simonelli G. (edited by), 2005, Design, imprese, distretti. Un approccio all'innovazione, ed. Poli.design, Milano gennaio

[3] Arquilla V., Vignati A. (a cura di), La relazione tra design e ICT nei sistemi produttivi locali italiani, SDI Design Review n°1, www.sistemadesignitalia.it/sdiview, POLI.design, 2004

[4] Becattini G., 2000, Il distretto Industriale, Rosenberg & Sellier, Torino

[5] Bertola P., Sangiorgi D., Simonelli G. (edited by), 2002, Milano distretto del design, Il Sole-24 Ore, Milano

- [6] Berger S., Locke R. M., Il Caso Italiano and Globalization, Industrial Performance Center, Massachusetts Institute of Technology, Cambridge, MA 02139
- [7] Bettio I M., Micelli S. (a cura di), 2005, Design e creatività nel Made in Italy. Pro poste per i distretti industriali, Mondadori, Milano
- [8] Bauman Z., 2002, Modernità liquida, Laterza, Roma-Bari
- [9] Bosshart D., 2007, The Real Cost of Living in a Low Price, Low Wage World, Kogan Page
- [10] D'Ottavi A., 2006, WEB 2.0. Le meraviglie del mondo che verrà, Unwired Media
- [11] De Michelis G., 01/2001, La creazione di conoscenza e l'innovazione design-driven nei distretti allargati, in *Studi Organizzativi*, pp. 121-136
- [12] Fukuyama, F., 1996, Fiducia. Come le virtù sociali contribuiscono alla creazione della prosperità, Rizzoli
- [13] Fortis M., 2005, Il Made in Italy nel "nuovo mondo": Protagonisti, Sfide, Azioni, Ministero delle Attività Produttive
- [14] Ippolita, 2005, Open non è free. Comunità digitali tra etica hacker e mercato globale, Eleuthera, Milano
- [15] Kotler P., Rath A. G., 1984, Design: a powerful but neglected strategic tool, in *Journal of Business Strategy*, 5(2): 16-21
- [16] Lévy P., 1996, L'intelligenza collettiva. Per un'antropologia del cyberspazio, Feltrinelli, Milano
- [17] Maffei, S., Simonelli, 2002, G., I territori del design, ed. Il Sole 24 ore, Milano
- [18] Maffei S., 2003, Design e distretti industriali: contesto territoriale ed apprendimento collettivo situato, in *Impresa e Stato*, n°62
- [19] Maldonado, T., 1991, Disegno Industriale: un riesame, Feltrinelli, Milano
- [20] Manzini E., Bertola P. (a cura di), 2004, Design Multiverso, Ed. Poli.Design, Milano
- [21] Manzini E., Jégou F., 2003, Sustainable everyday. Scenarios of urban life, Edizioni Ambiente, Milano
- [22] Micelli S., 2000, Imprese, Reti e comunità virtuali, Etas, Milano
- [23] Nonaka I., Takeuchi H., 1995, The Knowledge Creating Company, Oxford University Press, New York
- [24] Pine G.B., Gilmore J.H., 2000, L'economia delle esperienze, Etas, Milano
- [25] Rullani E., 2004, Economia della conoscenza, creatività e valore nel capitalismo delle reti, Carocci, Roma
- [26] Simonelli G. - DESIGN|Focus (a cura di), 2006, Milano Made in Design. Design Directory, Milano, www.designfocus.it/df/designdirectory.pdf
- [27] Romer P.M. 1989, Human Capital And Growth: Theory and Evidence, NBER Working Papers 3173, National Bureau of Economic Research, Inc, revised
- [28] Tasch A. F., 1995, Knowledge and technology transfer: a university experience and perspective, Microelectron. Res. Center, Texas Univ., Austin, TX; University/Government/Industry Microelectronics Symposium
- [29] Tapscott D., Williams A. D., 2007, The Wikinomics Playbook. Mass collaboration in action
- [30] Verganti, Calderini, Garrone, Palmieri, 2004, L'impresa dell'innovazione, la gestione strategica del le tecnologie nelle PMI, Il Sole 24 Ore, Milano
- [31] Zurlo, F., Cagliano, R., Simonelli, G., Verganti, 2002, R., Innovare con il Design, ed. Il Sole 24 ore, Milano