Connecting through Design: designer's role bridging R&D and businesses

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This paper presents an exploratory study carried out in Catalonia from autumn 2007 until spring 2008, with the aim of bringing the local design and research and innovation systems together. This research work has revealed that the design sector can serve as a vehicle to transfer technology and knowledge produced by the research and innovation system (R&D) to businesses. Designers who follow up activities in research centres, mainly developed at universities or public technology centres, may be eventually interested in adding value to their proposals by taking advantage of the scientific-technical knowledge produced in the R&D system. The field work in this research consisted of organizing a set of focus-group sessions among designers and researchers who shared similar activity sectors.

Key words: Design System, Design Strategy, Innovation, Design Technology, Design Management

The purpose of this paper is to present a research work developed during the time period autumn 2007 - spring 2008 promoted by ACC1Ó CIDEM-COPCA, an agency of the Autonomic Government of Catalonia. It was carried out by researchers from the University of Barcelona (UB) and the Polytechnic University of Catalonia (UPC). The object of the inquiry was studying the reasons underlying the weak connection between design industry and the research and innovation system in the region, in order to help overcome the situation by means of an action directly aimed at initiating and promoting knowledge and mutual collaboration.

The study and the decision to carry it out were based on a set of assumptions and on the previous knowledge of the situation. In fact, a previous research work aimed at diagnosing the situation of the Catalonia's Design System (Calvera et al., 2007) had shown that one of its major weaknesses was its patent, overwhelming and evident disconnection from the research and innovation system (R&D), which added to the difficulties already identified for R&D to enter into contact with the productive sector in general. Other assumptions on which the work was based were:

- The true existence of both systems
- The consolidation degree and power of the Catalonia's design system, even at the international level
- The activities developed by a network of Technology and Innovation Centres (CTI's), linked to universities and coordinated from the Autonomic Government
- Disconnection between both systems is real and overwhelming, therefore, collaborations can be considered sporadic and exceptional. In any case, the flow of relations is far from being the desirable one and from reaching the status it should have.

As far as Catalonia is concerned, it was clearly evident that the disinformation is reciprocal; researchers and research managers who are involved in CTI's, have a lack of knowledge in the area of design, whereas designers lack knowledge of the research work being carried out and of the very existence of this network of R&D centres.

Other premises are derived from the international debate on design-based innovation, on the strategic role of design within current economy, on the role of the Administration for R&D promotion, and on the incorporation of design in plans and programs to foster R&D, which, in addition, refers to the abundant literature on design research[1]. This disconnection was perceived by most players of the design system interviewed during the former study, as a serious weakness for the development of the system itself, but also for that of the economy of the region in the immediate future.

1 Organization of the paper

In the following sections, we will present the designer's role bridging R&D and businesses, and the detail of the experimental approach. In section 2 of this paper, the reasons underlying the weak connection between design

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industry and the research and innovation system in Catalonia will be summarized. In section 3, the details of the Study Methodology and Working Process are discussed, followed by a presentation of the results in section 4. The paper concludes with a summary of conclusions (Section 5).

2 *R&D in Catalonia*

The significance of research and innovation as fundamental driving forces for economic growth has been explicitly recognized by public administrations both in Europe, in Spain and Catalonia. In the case of Spain, Central Government has made research one of its present economic policy priorities, with a considerable increase of the resources earmarked for financing the R&D system (COTEC 2008)[2]. The same spirit has inspired policies of the Catalonian Autonomic Government that has currently developed several assistance and promotion programs oriented to increase R&D in companies. Catalan R&D system basically consists of two networks: one directly oriented to businesses that comprises a hundred of centres that promote technological innovation (CTI's), which are coordinated by the ACC10 Agency, and another one consisting of research centres that transfer technology to businesses, but that also have, in a higher or lesser degree, a remarkable academic component[3]. Most centres are linked to one of the 10 universities existing in Catalonia at present (eight public and two private).

Concerning businesses, thanks to the innovation promotion policy implemented by the Catalonian government, the region has been organized into production clusters that are grouped in sectors, including a design cluster in Barcelona.

The little R&D growth among small and medium-sized businesses (SMBs) is another relevant aspect of the study. Catalonia's economy is based on small and medium-sized companies and their size has frequently become a limiting factor for their manoeuvre capability. It is very difficult for SMB's to establish and maintain the connection with R&D in the practice. As a consequence, the opinion according to which the R&D system has not still consolidated in business dynamics is widespread in Catalonia. CTIs themselves express that it is difficult to reach businesses. If the aim is identifying the numerous obstacles that currently exist for technology and knowledge transfer between R&D and companies to take place and consolidate in a more or less fluid fashion, recommendations made by *COTEC Report 2008* concerning whole Spain are valid for Catalonia. According to the report, the main problems that have prevented the R&D system advance throughout the whole country include:

- The lack of financial and human resources for innovation in businesses;
- The little orientation of R&D at universities and CTIs toward businesses needs;
- The lack of collaborative culture among businesses and between businesses and research centres;
- The lack of promotion of domestic demand as a driving force for innovation;
- The lack of culture on the Spanish financial markets concerning innovation financing;
- The fact that a considerable small number of technologists are incorporated to companies.

It can be concluded from the above observations, and this has been one of the premises on which this study has been based, that R&D in Catalonia is currently clearly underused by the production system. Although the situation may be motivated, albeit partially, by prevailing corporative culture, CTIs and the set of R&D are still little adapted to business reality and marketplace laws. Many of the statements presented in this paper have been clearly confirmed by the conclusions drawn during meetings and gatherings that have been propitiated by this study.

However, while a slight perception that some aspects of the R&D system have improved has spread throughout Spain over recent years, essentially due to the increase in public funds and R&D promotion, the interfacing structure for technology transfer has remained stable, probably signifying that the situation is still not favourable. A successful innovation process, besides focusing its attention on R&D, also considers other strategies such as the use of functional and cross working teams, integrating marketing to R&D, and strengthening relations to users (Jaruzelsky et al., 2005; Marsili et al., 2006). Therefore, without interface and efficient dissemination structures, it will be very difficult to take full advantage of public funds invested in R&D that have the ultimate goal of attaining a higher level of innovation in the region.

3 *Study methodology and working process*

Works started by selecting together with ACC1Ó CIDEM-COPCA's responsible people for CTIs' networks, those centres that could have a more active and fruitful participation in the study. Given that some centres were already very sensitized to design, the study started directly with a dynamization phase with them. It included holding focus group meetings. Furthermore, the decision was made to try the focus group with a technology centre that, due to its sphere of action (lumber and furniture) was closely related to design industry. The success of the meeting was decisive to schedule other meetings. Fifteen centres and a total of 20 renowned designers were involved in the dynamization phase.

The follow-up phase was also changed as a result of the conclusions drawn from the meetings. In the most successful ones, participants asked to hold a second session in which a greater number of designers would participate. In these second meetings, CTIs reported and presented designers which innovations and technologies they were working on. Three meetings were held within a few days of the first ones, dealing with issues such as innovation in the textile sector, industrial product and Internet and services. Some of the projects that have been developed afterwards were born at the second meeting. It is worth recalling that some designers that had not been invited to the first session asked to attend and take part in the second meeting. Almost 30 designers attended to it.

Concerning the participants' selection process, different criteria were applied. Five work sectors were first selected: lumber and furniture, sustainable building, innovation in the textile sector, product, and, finally, Internet and services. Usually there were four different CTIs present. Industrial and interior designers took part in the first meeting; architects and interior designers attended the second one; textile, fashion and product designers participated in the third encounter; industrial and product designers took part in the fourth meeting; and graphic and digital designers attended the last one. Most of the participating designers have their own studios and have international projection. Sometimes, young designers starting their own studios were invited. In-house designers of large and multinational companies attended the second meeting.

Focus groups' chief goal was to inform CTIs about the potential of the design factor in relation to production economy in the promotion of a favourable opinion that allows CTIs and designers to put forward projects in a joint fashion. Sessions were well controlled in terms of time, and they never lasted more than two hours. Three questions that the participants did not know beforehand were made. They were related to the following topics:

1. The status of the relation between design and R&D.
2. Potential opportunities of this relation.
3. Ideas or suggestions about how to facilitate this relation.

Each question was formulated as an accurate utterance that participants should complete or evaluate according to their particular criterion. In the case of the first one which was aimed at confirming or dismissing the disconnection detected between the design system and R&D, participants were asked if they think the following statements be true:

- The relation between designers and researchers is practically non-existent today. In other words, there is not any contact between Catalan design systems and R&D.
- Designers are not acquainted with what R&D is and entails and they are not aware of the opportunities they will be offered if they enter into contact with R&D.
- Researchers do not understand what design is. They are not aware that if they include the design factor in their activity they could better contribute to the innovation of the companies they work for.

Participants were invited to evaluate the gravity of the situation, taking into account that Catalonia's innovation position is below the European mean[4].

With regard to the second question, the ultimate goal was to identify advantages and opportunities derived from the consolidation of such a relationship. In this case, participants were directly asked if they could identify challenges and concrete proposals: basically, if they could pinpoint those problems that companies face, which could be counteracted if designers and researchers could work jointly and if they were aware of the strategic significance of this relation. Concerning concrete proposals, they were asked about the following issues:

- Public aids, their effectiveness and convenience;
- Viability of joint offers and if the relation would make it easier for them to have access to SMBs.

The question also had a dual pedagogic purpose: helping designers understand the need of learning what the R&D system is and how it function, and research people realize the importance of design and how useful design can be for their activity.

The third question was directly referred to the most suitable tools and strategies to bring both systems together. Participants were asked to suggest what these tools could be. They were also asked what the management's role should be in this case, what the biggest obstacles to make contact are and how the relation between them could be made operative. By identifying collaboration opportunities it was expected to be able to set an agenda. In some cases, a second meeting marked the start of the agenda.

Besides holding these meetings, the study was also intended to help the relation be continuous by providing the participants with an intranet where the required information was available. Participants have been able to consult at this intranet selected literature on the different topics discussed, and the minutes and videos of all of the sessions, which were recorded to make the subsequent analysis easier (approximately 15 video hours long).

Finally, to know the participant's satisfaction degree, a questionnaire was distributed through the Internet for them to evaluate their experience. They were also asked about the initiatives and projects that had been derived from the meetings. The processing of the questionnaires marked the beginning of the follow-up phase of the projects and activities derived from this study, which currently total eleven that can be considered the first results of the study.

4 Data collection and analysis: main results and indications vis-à-vis future research

4.1 Focus groups' results

Besides confirming initial hypotheses, very interesting suggestions were made during the focus group sessions. These suggestions would help understand not only the reality of the current disconnection, but also the reasons behind it, the major obstacles that each sector is facing as well as future perspectives and possible strategies to be applied so that both sectors regularly collaborate. Furthermore, since talks were very friendly, they gave rise to multiple suggestions concerning many other aspects of this issue within the present context of Catalonia.

According to the interests and objectives of the study, those suggestions have been grouped per topic. Ideas that were repeated the most in all or in some of the meetings have also been gathered, regardless of their sector-based content. Below there is a review of the indications that address the relation with businesses and researchers' and designers' customers; researchers' and designers' view with respect to each other, checking how that view changed throughout the project; and guidelines concerning the development and specific problems faced by the research with regard to its potential customers in the chain from academic research up to innovation.

4.1.1 R&D-Design relation

A conclusion that was drawn at all meetings has been confirming that the disconnection is true and severe. It has been very illustrative to observe how the same question has been answered from sectors that are very different from each other and have a very diverse background. In those sectors that have a certain degree of contact, and even those that have sporadically developed joint works (product technologies and product engineering), it can be confirmed how the parties do not know each other; that is, designers do not know the very existence of CTIs and their activities, and researchers, in turn, have ignored the possibility of looking for designers at least as an information source concerning businesses reality and market situation.

Paradoxically, companies were mentioned as one of the reasons that explain the lack of contact, although they are the main source of the demand for knowledge and innovation. They have been determining so far the demand for research and have been the ones that inform designers about innovations in terms of materials and processes: "I think that manufacturers are the ones that have to look for knowledge, so that they know what they should do; the designer does nothing without any previous request." While this was the usual stance among designers at the beginning of the meetings, it changed as the debated developed: "A relation emerges when companies foster it. They resort to us only as a formality and to see how a product may be. We are separated from engineers. Research is done only if businesses do it."

The debate immediately offered new elements to consider. For instance, in the researchers' opinion, the common trend among designers and businesses to consider research as something very similar to engineering, which hides the production of knowledge, was seen as an obstacle. Designers, in turn, are entrusted with finding new ideas for research. The company must hire the CTI service. "Designers, in general, do not know the existence of these centres or their activities and, therefore, they do research on their own." This reinforces that what has been considered for long an attribute of Catalan design industry's behaviour, described as a high degree of individualism, or rather as a certain trend to perform all activities and replace from your desk what is missing in the surrounding environment. It strengthens agility and dynamism that characterize the sector in Catalonia, but also demonstrates that the own

dynamics has given rise to a situation that is not receptive to things that come from research and the production of knowledge.

4.1.2 CTIs' limitations

Precisely because from the beginning it seemed logical that businesses were the source of demand for research, it was interesting to identify the difficulties CTIs have to reach companies. It can be stated that, in general, most SMBs seldom demand researchers. Moreover, many of them do not even have researchers or designers; they are only concerned about being up-to-date in terms of new services and manufacturing tools, new materials and machineries. They do not invest in research or in introducing innovations, or in conceptualizing products or reviewing processes.

4.1.3. Businesses' needs

Businesses' needs vary from one sector to another. In fact, "businesspeople and promoters in the construction sector perceive research as a risk, even when it is understood as applied research or innovation." In other sectors, this issue emerges when research, as a knowledge generating tool, and its application are to be combined: "It is difficult to organize applied research projects that involve a CTI, a company and the interaction between both of them. The problem is finding funding for basic research and interaction."

4.1.4. R&D's limitations

Some of the obstacles researchers find to disseminate their work include the structural ones that are derived from how scientists, technicians and the Administration conceive research. One of the significant weaknesses of the system identified by researchers was the lack of agreements between the different agents to establish and render the R&D chain more effective. "It is necessary to change the way how the Administration understands research, particularly from the point of view of public assistance programs. Nowadays, the most valued research outcomes are only those that are related to the production and spreading of knowledge through papers and publications. In our current R&D system, applicable things and knowledge and technology transfer are rarely appraised." The disapproval was also directed to university departments and CTIs: doing applied research and developing concrete projects entails working with much shorter times than those that are usual in academic research and this, in turn, implies making changes in the very conception of research activity. Dependence on publications, either relevant or not, results in the image and situation of university inefficiency that hides behind basic research. It was precisely at that time when the involvement of design in research dynamics acquired a more clearly defined profile: "Many resources are wasted when researchers are the ones who decide what should be the subject of the research work."

It became evident that incorporating designers into the research dynamics would open up new opportunities, provided that this happens from the very beginning and based on team work: Designers are interested in participating in multidisciplinary teams, creating synergies to produce interesting products. "However, it is very difficult for us to have access and take part in the orientation of the research work." Translating this into the researchers' specific perspective, the proposal implies a different approach and emphasizing methodology rather than technology, as usual. The purpose of the meetings was reformulated as the search for concrete opportunities derived from a more fluid relation based on concrete projects. However, the general framework had taken a very different dimension: "Designers are and live in the real world, in contact with the marketplace, whereas research work is endogamous, because publications and funding entities continue to be the clients of the research work."

4.2. Opportunities

Consequently, a first collaboration possibility was to have a guiding role: "Since designers know better markets and businesses' needs, they could show researchers and CTIs what is the convenient research." The purpose of these sections is to review the different indications concerning these and many other opportunities as they appeared in the discussions.

An issue that is difficult to solve is financing the inclusion of design into the overall R&D process. This issue could be solved if design is incorporated at the beginning of the value chain, especially if the research is undertaken from an innovative perspective. The general opinion was to propose designers as users of knowledge produced by researchers; it was even proposed that "we designers could use the techniques you create in a way you had not thought."

4.2.1. Researchers' expectations

One interesting aspect that is worth considering was to perceive the idea researchers had about design and how extended prejudices about this topic are among Catalan society. The usual stance among researchers, as was stated at the beginning of the meetings, is perfectly expressed through the following reflection: "I do not understand that design can form part of knowledge generation; it is an intellectual act that has nothing to do with research; it is rather a question of marketing. It is true that it could perfectly intervene in development just to answer what things we know are useful for. Designers precisely intervene in innovation." In this context, if funds have not been earmarked for design in research projects, the ultimate reason is of cultural nature and depends on what, in general, is expected from design, namely, "design is important in very competitive sectors and it is understood only as a differentiating factor." CTIs rarely think of designers as potential interlocutors; they work at best upon request from industries and in relation to them: "we rather work for development processes upon request by companies." Therefore, a change of entrepreneurial culture is necessary to assume design as an investment to be paid off rather as an expense that can be avoided.

With regard to wasted opportunities, researchers feel that their possibilities to intervene in the entire process toward innovation are wasted. In many sectors, people turn to CTIs when these latter can hardly intervene. An example is the case of construction: "they turn to us only to put singular touches in a structure that is already designed: one does not design or think with the characteristics of new materials or new structural possibilities in mind. We perceive this disconnection because they do not come and ask us anything when they are designing." Thus, researchers started to make new demands on designers: confirming that they are only considered as engineering, they need designers and companies to resort to them to apply their research potential from the beginning.

Concerning the inclusion of the design factor, both parties advocated that design should imply much more than a matter of style: "I expect that designers go far beyond aesthetics; when this happens, it is really interesting working with them," stated a researcher who had already regularly collaborated with designers. In fact, "there is a broad spectrum of possibilities in the design world. Designers have a very broad view that should not be underestimated." After, more than verifying the evolution of design in the new economy, emphasis was made on the need to further consolidate this new conception, which makes a permanent review of the discourse of design in its implication with today's world necessary.

The designer's prescriptive function within the productive process was the reason on which collaboration was based: "Designers can be the first receivers of the research work and then include it into the dynamics of the companies for which they work." In fact, collaboration is possible if it is considered from the design project and can supplement the information provided by businessmen: "The task of contacting centres and looking for knowledge the designer needs in each particular case can be made by the designer. Information on novelties or research expenses can be included into costs and the project dynamics as a whole that the manufacturer is presented with together with the project results. This is indeed happening already." Trying such experiences would necessarily require fostering joint projects, even without a previous client. In this regard, one of the relevant conclusions has been realizing that they can work together in the relation with producing companies, especially taking into account that knowledge and knowledge management are one of the key elements to differentiate companies from their products.

With regard to the social and economic view toward design, it is significant that designers' research ability is still being questioned; that whether designers really research, what they research when they do it, and if they take into consideration technological research is still an issue. The demand for a more scientific knowledge of design was mentioned by researchers as something that has to exist in the present world. It would seem a first step toward the establishment of collaborations. In fact, it would grant design more visibility and would allow it to have a dialogue from a specific standpoint inside the research world.

4.2.2. Designers' expectations

Retaking designers' prescriptive role in terms of products and research, they also mentioned their own value as highly qualified users of research results. Notwithstanding, true opportunities depend on the possibility of directly contacting researchers and developing joint proposals. In fact, "clients have distribution, markets and patents at their disposal; the only thing we can do is collaborate to redefine the project."

With regard to concrete research fields, the issue of sustainability was addressed at all meetings. This is an issue dealt with at many specialized centres, but designers were the ones who showed more interest in it and they demanded more reliable and credible information on the environmental behaviour of materials and procedures, in order to be able to apply that knowledge when they are developing a design project. Measures were proposed for this information to directly get to professionals, but just like happened with many other topics that were discussed, in this case the major demand of designers was to be able to know and have up-to-date information of research results. Therefore, the major shortcoming of the R&D system is the lack of channels that allow it to find up-to-date

information and knowledge to apply to each project. This is also the case with regard to knowing the assistance mechanisms included in promotion plans; in this case, the question is facilitating access to information and knowing where to look for it.

Now, to become users of the research, the kind of knowledge that designers were most interested in "is not that applicable to large structures, but the one that is closer to people. We are interested in all that whose application really entails a qualitative leap for people, or for the professional practice. Information on research has to be closer to ordinary designers, making it clear that its results affect the most simple and immediate things." One of the most important contributions of the meetings was probably that they made it clear that designing also consists of solving problems by applying knowledge, which opens a large field of collaboration with researchers and R&D centres.

4.3 Strategies to increase collaboration between designers and R&D: suggestions for an agenda

Once the many opportunities derived from a deeper and more fluid connection between designers and researchers were confirmed, it was time to see how obstacles can be overcome for relations to take place under the terms established during the talk. If designers could perfectly assume the role of prescribers and users of research and, from there, incorporate it to the culture of the companies for which they work, researchers should take another step and start thinking that they are also providers of designers and act accordingly. If, as it has already seen, designers miss up-to-date information about research progress, researchers have to prepare that information and disseminate it among those that are most directly interested, including designers. Both groups recognized they had little visibility and that this is a big inconvenience for their activity. Research and technological innovation centres have difficulties to find designers and they do not know where to go to find them despite the numerous support entities and infrastructures available for design industry today. The obvious conclusion is once again the little visibility of both systems, and that prevents them from being more operative.

4.3.1. Agenda

Some of the proposals put forward to promote increased collaboration strengthened those actions that the study had envisaged for the follow-up phase, such as holding workshops on monographic information about the activities of the R&D centres, which were accessible to more design professionals. They were a first step to disseminate results among designers.

Resorting to subventions was a recurring aspect, not because of their capacity to drive and promote R&D, but rather not to have to be dependent on them: "What has to be promoted is a culture of permanent innovation. It is necessary to assist following up projects and the implications derived from them. Continuity must be demanded and maintenance must be supported. That would lead to a change of culture and imply coming out from the closed cycle of subventions."

Concerning research financing, in addition to projects ordered by large businesses which determine guidelines for research areas, "public subventions could be used to promote collaboration projects similar to those that have been proposed at these meetings."

Inclusion of design in culture and activities of R&D was also mentioned directly: "It is necessary to analyze more in detail the place of design in research promotion programs, so that design innovations are considered as such." Another aspect that emerged at the meetings was the need to change the sense and concept of research assessment for it to accommodate applied research and the research that is subordinated to concrete realizations. It is urgent to understand and be capable of accepting design-based innovation and give it a place within the R&D system. This affects both centres' policies and requests for assistance for R&D, which show the way to be taken by opening up possibilities. Furthermore, actions should be taken for design knowledge to be disseminated as a tool that can be used by businesses and R&D centres.

Probably one of the most important suggestions was the necessity to find the figure of the driving agent that would be responsible for establishing collaboration. It soon became clear that the role of driving agent could be perfectly played by designers themselves.

4.3.2 The administration's role

As far as the possible role of Administration is concerned, some suggestions have already been made, from the review of the research evaluation criteria to the development of standards that provide for the application of concrete knowledge where appropriate. These suggestions can serve to promote and consolidate an innovation culture, since, in fact, "the point is often to apply that what is already known."

Many other measures were suggested. For instance, if the aim was transferring technology and knowledge to SMBs, the Administration's task is bringing them closer, given their dispersion. This would allow small factories to access the R&D system and benefit from its results. An action that researchers have to take is "manage knowledge and concentrate the existing dispersion."

As to subsidies and aids policies, the main proposal was to encourage any kind of research by sponsoring concrete projects: "Administration should try the R&D system to be more oriented toward innovation and design. It is necessary to facilitate knowledge transfer and orient projects so that they follow this trend."

5 *Conclusions*

Initially, the research was planned with the aim of practically having R+D environment know the potentialities of the design factor for productive economy and businesses. Researchers were expected to be willing to take advantage of the existence of a well-consolidated design industry as a channel to reach their clients. As the study progressed, the figure of the designer became increasingly significant, because designers can serve as a bridge for knowledge transfer from R&D activities toward business, especially SMBs which designers themselves work for. The object of the research became increasingly clearer, and what has started as a mere hypothesis ended up being one of the most important achievements of the study, the role designers can play as connectors and transmitters between businesses and research centres. This role can become demand for research for CTIs, guiding them with respect to the market; and from research centres to businesses, incorporating research results into design projects, thereby increasing the value of the obtained results. Therefore, the main object of the study was completely reformulated: propitiating the development of an interface between the production world, i.e. businesses that demand design, and the entire R&D system, i.e. CTIs and university departments. This interface is made up of designers themselves practicing their profession on the design market.

It was demonstrated that to take advantage of technological research and innovation, it is essential to establish more efficient communication channels, because most designers who were present, all of them very active professionals in the business world, not only were not aware of the potential of the country's technological innovation and research centres, but most of them did not have enough information on, or knowledge of the technologies and innovations presented. Designers, in turn, demonstrated by far that they were capable of taking advantage of knowledge that centres offered them.

Two assumptions have inspired it: first, the certainty that resources invested by the Administration have to be duly applied and that efficient dissemination and interface structures toward businesses are needed; and second, the certainty that the lack of proper transfer channels makes it absolutely impossible that public resources invested in research and innovation provide economic results that have an impact on citizens. Designers can assume, and they have in fact, the role of businesspeople, because one of their main activities is presenting companies which they work for with new ideas. Design agencies and free-lance designers as well can be an outstanding channel to facilitate SMBs access to R&D. Therefore, the second stage of the study clearly assumed as a working hypothesis the possibility that Catalan design industry was the catalyst for research and innovation produced in public centres toward businesses.

Afterwards, a questionnaire was developed to know the opinions of the participants about working meetings and the conclusions drawn, in order to determine their satisfaction degree. It was sent via e-mail to the 36 participants. 17 researchers and 15 designers answered the questionnaire, i.e. 88.8% of the participants. Results obtained from that final survey, besides reflecting the interest participants developed in the study, confirmed conclusions obtained at the meetings. Both groups agree that this study should continue and they assure that they are willing to continue participating in it. In fact, as a consequence of the meetings, most designers and researchers began to establish contacts in order to consider collaboration options and develop joint projects.

Notes

[1] Literature in this area is currently abundant. We used National Design Policies reports published or enforced over last ten years. Several comparative studies have been used too, basically those released by Designium, Helsinki (2003, 2006), and those carried out in Spain, such as one developed at BCD in 2005 (unpublished and provided by one of the authors of this paper). Conclusions were published both in one chapter of the above mentioned study and in Calvera, A, Taranto, F and Veciana, S (2005) Políticas públicas nacionales para el aprovechamiento estratégico del diseño. URL http://www.adp-barcelona.com/rcs_actu/politicas_disseny.pdf

[2] COTEC is a Spanish corporate organization aimed at promoting technological innovation and increasing social sensibility for technology. Since 1996, COTEC's yearly reports provide a compilation of indicators on the situation of innovation and technology in Spain.

[3] The system is supplemented with other R&D management and support instruments, including a network of Technological Trampolines that provide services to enterprising people. For more information, see CIDEM (2007) Guía de transferència tecnològica. URL http://www.cidem.com/cidem/es/publicacions/DirectorisGlossaris/directoritt.jsp

[4] EUROPEAN REGIONAL INNOVATION SCOREBOARD (2006 RIS), MERIT – Maastricht Economic and social Research and training centre on Innovation and Technology. November 15, 2006. Revised January 4, 2007, http://www.proinno-europe.eu/doc/EIS2006_final.pdf.

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