User-Inspired Design. Co-creation processes vs. business-to-Customer industry

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Abstract

User-Inspired Design can be defined as the discipline relating to a new idea of what innovation means today in the design field. This idea derives from the consciousness that innovation does not just relate to high-tech fields. Innovation affects also products and services, public and private bodies, factories, research centres and universities, which all aim to renew and be competitive in their own fields. Three different kinds of innovation have been determined: price-driven, research-driven, user-driven. Companies, sometimes, use a combination of these three types of innovation.

It seems clear that research in high-tech does not take you straight to high innovation in the performances of products and services that relate to them. There is a new idea that focuses on "users' needs". Bodies, companies, industries must meet users' needs in order to be competitive. User-driven innovation is a strategy that points out - co-creation processes - a complete knowledge of users' needs based on B-to-C industry.

Keywords

Grassroot, Open Innovation, Co-creation processes

1 INTRODUCTION

The aim of this paper is to show that User-Inspired Design is the area of User-driven Innovation which describes a bottom-up process starting from the joint action of end users, who interpret the meanings and opportunities provided by emerging technologies in creative, original ways. The idea is to show that user-driven innovation is a process producing a diffuse creativity which innovates at all levels, i.e. the design, production, distribution and social acceptance of the goods and the technologies themselves. A number of methods have been proposed over time, including the Lead User Method (Von Hippel, 1986), which are used to learn user innovation in a systematic way and then transfer it to the design of new products and services.

The user innovations which are known as of today concern the use of products and services, urged by the analysis of new behaviours; the design of technologies to make objects easier to understand (e.g. interfaces design); innovation of new technologies, such as Open Source Software (OSS), producing innovation for the social sharing of design choices and their impact on life contexts. The old idea whereby user innovation was focused on the use and design of existing projects having in mind the end user or was closely linked to mixed working groups where consumers were involved in design choices (co-creation processes) gives way to new types of involvement. These are consumer-inspired rather than consumer-oriented choices - which claims the crucial role played by the user as designer.

2 OPEN INNOVATION AND NETWORKS

2.1 Development of human skills and self-organisation

Today's society is based on the development of human skills, and is carrier of new contents viewing the wellbeing/productivism pair as some possible alternative; the uniqueness and abilities of the individual are the response to change: the individual is no longer at the service of production, but production is oriented towards a human development enhancing the production of the self. In André Gorz's view, a society aiming at each individual's development is mainly defined as a "society of culture", one of its priorities being identifying the people and groups carriers of values and knowledge who will lead this transition within enterprises and institutions alike. This process entails an emancipation of the human capital from the economic capital: according to Gorz, one instance of this is the "craftspeople of free software and networks" who hold a highly technical know-how and therefore oppose the privatisation of the means to access a shared knowledge - a common good of humanity as a whole.

These instruments are essential for the development of the self in transforming humanity from an instrumental "labour force" to an "independent force": thanks to software it is possible to produce contents that are accessible to everyone and whose only value is their "use", going beyond the outdated value of "exchange".

It is a revolution from inside the system, where "practice is the programme" and starts from a learning self-organisation. According to Gorz it develops within spontaneous communities acting from the strategic perspectives of production, orientation, distribution and property of knowledge.

The impulse of communication technology (ICT) has enhanced the birth and spreading of self-organised Networks – interconnected entities (e.g. companies, universities, public bodies and consumers) that create, acquire and bring together various types of knowledge and skills necessary to innovate products and services. As a matter of fact, Innovation Networks revolve around the constant acquisition of knowledge and self-organisation of contents.

The term "grassroot" identifies this type of structures whose organisation is not hierarchical, but is based on peer relationships, and whose nodes, made up of groups of critical users, draw on the idea of interdependency.

The emerging of a movement of aware consumers has played a major role in strengthening the issues of personal development within market mechanisms, affecting the choices of industry in producing shared goods. The evolution from consumers to users with negotiating skills on the quality of goods leads to another important consequence: the user re-acquires his/her decision-making ability on the products and services related to the place where s/he lives.

The ability to see a result ahead and to achieve it in an original way gave birth to creative communities that had their say on various sensitive social issues which had not been resolved through the conventional instrument of delegating institutions.

Re-gaining one's role in co-designing and co-production in the change of or response to everyday needs side by side with experts entails a direct responsibility and thus the care for the good or service put in place by the local communities.

Creative communities are groups of people who get together to achieve a result and share it. This space for action has a virtual homologue where aggregation occurs by raising a topic, acceptance of which will help promote initiatives affecting social and economic policies by forcing their implementation criteria.

While most of user innovation focuses on the use and design of existing products and technologies, new tools (web-based forums) foster innovation that is produced by the consumers themselves in virtual environments and is later transferred to the partner companies in various stages of the development of a product and, most importantly, in other activities having a creative content.

2.2 Open Innovation: Price-driven, knowledge-driven, technology-driven, user-driven, social-driven…

For almost twenty years the driving sectors of economy have gone through a major transformation, shifting from a price-based competition to a knowledge-based one.

Ideas and innovation have become the focus of social and economic actors, supporting new or renovating existing products and services, processes, production organisations, educational bodies, etc. i.e. all the categories of goods and services requiring constant updating to remain competitive.

Knowledge-based economy has increased competition between economic actors by focusing mainly on innovation.

Technology-driven innovation has recently shifted its focus towards a greater understanding of consumers and the definition of their needs. This type of competition gives priority to understanding emerging needs and to the ability to use this knowledge when designing new products and services. The consumer thus becomes the crucial element of the design process and his/her needs are identified through a systematic, scientific approach.

The mapping of the consumer's experiences and of his/her latent (non explicit) needs is based on an investigation methodology drawing inspiration from social sciences and ethnography. In addition, new forms of work have enhanced the development of professionals-consumers mixed groups.

This approach has brought about a substantial process innovation, which has been named "user-driven innovation": even when a new technology becomes part of

the design process, innovation will always be called "user-driven" if the inspiration originates from consumers' needs. The consumer is thus the focus of user-driven innovation, and it is the will to give voice and respond to the consumer's needs by improving their manifestations that leads innovation.

Similarly, research remains at the core of technology-driven innovation. In the industrial age technology-driven innovation was the content needed to be competitive on the market: research and education centres were set up to develop and support technology and innovation was thus automatically associated to technological change.

Experience, however, shows that technology-driven innovation alone cannot ensure major returns in a long-term perspective. Analysis on the field also shows that companies create innovation in various ways, including user-driven innovation, which may potentially have a significant impact. It is a kind of innovation driven by consumers and end users and borrowed by manufacturers; many products and services are developed or re-defined by users in the very place where they use them.

Any possible re-definitions, that is new ideas, go back along the supply chain to be implemented in new products and services. Actually it is a process whereby the needs contained in the products and services are shared, which only happens when the product or service has been defined in its final shape and when the user is only in charge of checking its implementation.

The new approach reverses this procedure, and the implementation of the user's needs can be shared with the manufacturers since the very conception of the product or service. This process is made possible by Internet technologies, Open Source Software (OSS) and by the fact that consumers are social promoters of their own needs.

The need arises to set up social-driven innovation, which explores collaborative approaches for the resolution of conflicts, regardless of their size and nature – from the micro-scale of life contexts to the global scale that becomes the sharing of a given problem, using open source communication and operational tools.

Through social networks user innovation contributes to fostering the social and socio-technical spreading and distribution of new products and services right within knowledge-structuring processes entailing the acquisition, dissemination and use of information.

Experiences, learning and the production of collaborative contents are considered fundamental in the innovation generation process at large: social innovation is the expression of self-organisation and do-it-yourself strategies, as competences resting on a set of users' expertises and enabling them to intervene directly at the heart of a problem and provide solutions to it.

As for user-driven innovation, because it does not have its own area of study within educational bodies as yet, manufacturers devise their own instruments to cope with users' needs, which is evidence of the proliferation of best practices in user-driven innovation within the companies themselves.

However, user-driven innovation remains a top-down process at best: led by the companies, formulated on the basis of consumer needs' analysis, it develops methods which include the user in the design process to reach solutions that only ensure competitiveness on the markets.

3 USER TOOLKITS FOR INNOVATION VS WEB-BASED USER TOOLKITS

Following this logic, Eric von Hippel e Ralph Katz (2002) identify a new approach as the key to solve the problem of manufacturers, which consists in being always able to come up with products and services responding, constantly and properly, to the needs of users.

In their view, manufacturers shifted from interpreting and understanding users' needs to outsourcing this task to the users themselves after equipping them with "toolkits for user innovation" (E. von Hippel, R. Katz).

These tools consist of sets of "user-friendly design tools" enabling users to develop new products or innovation, usually on their own.

According to the procedure, users are equipped with specific design tools, such as design software, etc., and find their way along the process: first, a preliminary design is produced, followed by simulations or prototypes and, finally, users themselves test the product in their own environment and keep improving it until they are fully satisfied with the result.

Recently, the concept of mass customization (MC) has seen increased attention in marketing.

The core idea of mass customization is to provide a web-based user toolkit that allows the individual customer to design a product which suits her individual preferences and is then produced exclusively for his.

Many companies have set up MC systems that have been identified as a promising strategy in markets. These MC systems represent where customers have sound preference insights, where preferences are heterogeneous, and where production technology facilitates small lot sizes at mass production costs.

4 USER-INSPIRED DESIGN APPROACH

As was mentioned above, the grassroot experiences identifying cooperative organization forms are supported by the spreading of Open Source Software (OSS) IT tools. In Open Source Software the source code, that is the program files needed for its functioning, is given to the user on purchasing the software.

The user (just like the network of users) is therefore enabled to analyse the functioning of the programme and to modify it to adjust it to his/her needs. Free Software communities have developed methodologies whose organisation is open to sharing and joint action and which is useful to define horizontal design and communication tools to the benefit of communities of non software developers.

This dynamics has encouraged a shared view of technologies, bringing about organisational models of virtual communities based on autonomous tools. The spreading of highly-performing IT tools has produced a kind of "participative technology", building the net as an infrastructure or a technological support for the joint design and production action.

A real evolution of user-driven innovation, it originates from a new approach which grows little by little going beyond the monological view of manufacturer-driven innovation.

4.1 Co-creation processes vs business-to-customer industry

New organizational models skilfully re-shape the areas of research, design and creation at large, bringing innovative practices into production, distribution and, the end stages, of waste recovery and re-use.

Complex creative processes combine codified knowledge with new value systems that develop in environments benefiting from the exchange that takes place between very different educational and research areas. These are knowledge-based processes, whose prerogative is that of re-organising knowledge into non-predetermined paths and which consolidate contents and re-shape them with a view to an end result.

The sense-making paths that are established each time are generated in open systems - environments where, starting from different initial needs, the same results can be achieved following different ways. The term to identify this type of process is equifinality [3], which points to an equivalent competitive advantage based on fundamentally different competences in a complex production framework.

In particular, in knowledge-based systems the competitive advantage concerns intangible goods like human knowledge and the ways to turn implicit value into other negotiable types of values. The future of many entities will mainly depend on their ability to transform a given value into another - for example an intangible good like professional advice will be turned into a more negotiable kind of value, like consulting services. Intangible goods, which have increased thanks to the commitment in intentional actions, are generally accepted today - almost as much as other types of goods.

As a matter of fact, it is widely accepted that a company's reputation is closely related to its brand value, which includes goods such as social and environmental responsibility, as is shown by the companies acting on the basis of sustainable values and practices. To have a hands-on approach to everyday reality one must be able to choose contents and, above all, to arrange connections, that is create a "chain of knowledge and practices". Knowledge and work practices - including the most exclusive ones - can merge with others coming from different disciplines in a bottom-up approach.

This must also be combined with the substantial contribution of creation viewed as an innovative practice, which through the dynamics of re-contextualisation and re-conceptualisation, benefits from the real possibility of using existing materials to design evolutive scenarios for products and services. The system of products and services thus rests on a texture of external inter-relations, which come in at different levels and determine its driving force. These processes are characterized by evolutive dynamics interacting at the various levels of value creation and are constantly on the move.

The main characteristic of this type of interrelations lies in establishing transparent ways to benefit from the knowledge available, through dynamics, that are not only science and capital intensive, but originate from immaterial qualities in uncodified (and thus fluctuating) creative paths. This kind of innovation is called "poiesis intensive", meaning to do in the immaterial field, create, creativity: it is a kind of innovation that attaches growing importance to knowledge and is able to give rise to new, different creative pathways.

Within these paths, apparently diverging knowledge and practices may interact, which at a closer look appear as integrated strategies and symbiotic cooperative processes. These chances have established themselves around the idea of orienting re-organization processes from a design perspective, meant as a strategic vision, the engine of innovation, which is open to inter-discipline collaborations involving the design of new products for new markets or new entrepreneurial models based on unusual chains in close contact with the existing productive environement.

In this sense design confirms once again its role of driving force for new micro-entrepreneurship actions that, on the

one hand, recover the handicraft tradition to re-propose it in new forms and, on the other, are able to merge these forms with the most up-to-date engineering processes, giving life to chains that bring together micro-businesses and globalized companies, renovated handicraft production methods and well-established industrial production ones.

It is a flexible, constantly evolving structure which is far ahead of the traditional model of supply, and can meet a variety of market and consumer needs, which are becoming more and more sophisticated – an eco-system which creates links between the productive, educational and institutional systems, acting in symbiosis and without hierarchies.

It is defined as the co-existence of various organisms where each one benefits from the other. In the given context the term applies to cooperation between the university, institutions, manufacturers and industry, where a number of entities including universities, research centres, public bodies, NGOs, industries or manufacturers of any size, together, mutually benefit from their own or others' educational, research and production abilities, making up a network based on performative cooperation and on the concept of equifinality.

Design becomes the driving force of online entrepreneurship and, by recovering a historical aptitude, brings together educational and research chains with producers anywhere on the national and international scene. The search for specific qualities and knowledge, re-organised around complex design visions, includes systems of products and services experimenting with new distribution and communication forms to intercept global market niches.

In addition, the symbiosis among organizations appears alongside the methodological hypotheses and on-field investigations of Design for Environment or Life Cycle Design, where the actions identified, aiming at minimising the use of resources and impacts on the environment, are implemented by the actors in the product-service life cycle and where economic and institutional actors take the place of production stages. A further step beyond the exclusive availability of goods is constituted by the socalled "integrated cycles", which concern the service accompanying the good, i.e. intangible goods.

The reference literature for Design for Environment or Life Cycle Design sets up the links and relationships existing between those who produce (and design) products and services, those who supply or produce the materials, those who distribute, those who consume or use, those who dispose of and the new actors - new actors who make up the panel full of activities and interventions, which confirms the configuration of fluid organisational structures aimed at setting up a place-based symbiotic network of actors.

4.2 Case study

A new, parallel approach develops within the company organization at the same time, based on the simultaneous integration of user-designer, technology, IT and industrial production, which is to be ascribed to generative design. The Breeding Tables project (2005) by Reed Kram and Clemens Weisshaar takes on the challenge, considering the production process as an integral part of the design, thanks to the contribution of the computer as a tool generating innovative cognitive processes and industrial operational ones.

The new frontier is represented by the transformation of a set of data into matter: this is entirely achieved within the design process, which is identified through the creation of a software (BT) which begins to work in the first creative and design stage and then manages the production stage:

the process diagram of the software first provides the machines used with the data (size, type, etc.), then with the algorithm which generates a series of two-dimensional geometries (each inherits a set of properties from the mother object) giving rise to a "species" of objects with same genetic traits.

In the case of the Breeding Tables, the constructive surfaces are generated by a triangulation of the basic geometry created by the algorithm in the previous stage; later the structure of the table is taken out by means of oblique cutting planes resulting in a three-dimensional model of the table.

The stage following a series of feasibility tests consists in cutting the components: the cutting pattern is sent to the numerical control machine which performs the laser cut; then the components are taken to the folding and prepared for assembly. Designers define software as "a super-extension of the designer's hands", which expands into a wider dimension than that of production; "a sort of digital factory, a sweatshop which constantly comes up with proposals among which we pick up the most promising ones".

It is a hypothesis belonging to user-inspired design which gains a new dimension from this instance, i.e. the extension of the factory distributed over relational territories following an advanced way of working - a practice defined by the paradigm of Open Source Software identifying in a strategy that rests on a network of specialised partners in design and production: actors in a boundless geography which only works if there is a connecting capacity to control the whole.

5 CONCLUSIONS

The case presented is paradigmatic of the evolution of the design and organizational skills taking place on the Web, which opens up to society at large and proposes innovation in (not only digital) supply chains.

The expansion of the community organization with its fundamental feature of cross-fertilisation with technology, and of the socio-technical distribution of innovation, moves from the individual to collaborative platforms. These are the logistical bases from which to experiment with alternative possibilities to create new design opportunities.

The hypothesis takes shape around the definition of peer-production (Benkler, 2006), that is the production of goods which are durable because they are relational, founded by a shared design process based on the trust in the individual-community relationship.

User-Inspired Design rests on experience-based knowledge and insight, which is useful to design as it proceeds from unsaid knowledge of design expertise.

It originates from the assumption that the design process is shared by several subjects and is comprised of several different phases aiming at both exploring and operating.

It is closely linked to the context of activities, developing a collaborative and cooperative nature, and uses heterogeneous resources: flexible, ever-changing structures, eco-systems creating links between production and creation with no hierarchy.

User-inspired design is based on the co-existence of various organisms, each benefiting from the other. In the given context, the term applies to the cooperation of users in manufacturing and designing, where a certain number of users and small, medium-sized and big manufacturers make up a digital platform using their own or others' production and design abilities, setting up a network based on performing cooperation and on the concept of equifinality (von Bertalanffy, 1968). In this sense,

equifinality brings about an equivalent competitive advantage in a complex productive context, based on fundamentally different competences.

In particular, the competitive advantage of knowledge-based systems relates to intangible goods like human knowledge and to modes to convert the implicit value into other negotiable values. The spaces of creativity laying in such platforms need to be equipped with practical tools as well as cognitive instruments.

Designers define relational software as "a super-extension of the designer's hands" which reaches production, and thus manufacturers.

The idea of customer co-creation is most commonly applied to concepts of approaches to new product/service innovation, it represents customer and brand-company working together in any type of partnership to develop a joint outcome. Co-creation has lived for years in the B2B world. (For example, in a public-relations agency, many of the agency's outcomes and marketing of itself, are very much collaborative and result from a partnership between agency and client.)

Co-creation remains very new to the B2C world, yet it is quickly becoming a critical concept - one that is being used to respond to the fundamental shift in power; moreover, co-creation is being applied to a broader range of customer-brand interactions.

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