

THE SPACE BETWEEN. DESIGNING BOTTOM-UP KNOWLEDGE IN AN INTERCONNECTED SOCIETY

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ABSTRACT

The complexity of connections and relationships that articulate our society has transformed the way we conceive and project human spaces: the spaces of communication, dwelling and knowledge. The rise of the World Wide Web in constant growth has furthered the development of evolved and complex systems to control and manage information. The hierarchical construction of classificatory systems has guaranteed the first footsteps for the formalization of online knowledge. Notwithstanding, some popular taxonomies (folksonomy) without neither default relationships among elements nor a precise point of departure, have been growing. These contemporary bottom-up processes inscribe social relationships in a network: they show that every phenomenon is inter-related, that nothing that exists is self-sufficient or independent, and that it is possible to manage a sustainable dimension of knowledge by means of a collaborative approach relating to information.

However, apart from that dimension of connectivity between people, the social role of information must be also considered. This role relates to the decodification of links, deals, bonds and contamination between the different layers of knowledge involved in everyday life. And it is exactly in “the space between” these two different and interrelated worlds that design can try to find new frameworks of intervention.

The main objectives of this paper are, firstly, to investigate “the space between” these two dimensions, decoding the idea of cybrid design; secondly, to explore which are the sceneries and possibilities for frameworks like WiredBook and Electronic Margin to overcome some limitations of the actual paradigm; and lastly, to underline how design, and specially communication design, can collaboratively define new guidelines to sustain and facilitate a bottom-up construction of knowledge in a specific field of application.

Keywords: Bottom-up knowledge, connected intelligence, cybrid design.

1 INTRODUCTION

Our world is living in a moment of unprecedented complexity, where things are not only changing faster but are also modifying the post-structuralism ideas of stability, security, and equilibrium. The constant growth of information, with its meaningless and self-referent bombarding of images and sounds, causes a sense of emptiness, and creates, at the same time, a “total surround” that transform the relations between users, data and media devices.

While the cross-fertilization between people, media and information itself inevitably generates confusion and uncertainty, the social and cultural transformations are also creating new possibilities for apprehending ourselves in new ways, and to translate our practices into a new paradigm based on the wiredness state of the information. The complexity of connections and relationships that articulate our society transformed the way we conceive and project human spaces: the spaces of communication, dwelling and knowledge. The spread of the World Wide Web in constant growth has furthered the development of evolved and complex systems to control and manage information. These systems have been designed, according to guidelines, to optimize use and retrieval of data, and represent the first step to translate everyday’s experiences into a shared world of communication where people can find new deals, new spaces of interaction and new ways of approaching knowledge.

2 CHANGING TAXONOMIES

Between the multiple perspectives of innovation and development, in order to codify in a flexible way and with great effectiveness the information of the net, at least two wide perspectives (correlated but with independent variables) have been advanced in a few years. These perspectives are the semantic web (Berners-Lee 2002) and the creation of ontologies (Davies et al. 2003, 58); both these aspects have allowed to reach specific results in the field of knowledge management and in its indispensable declinations.

The semantic web represents a proposal that since the dawn of the net, for the merit of Tim Berners-Lee, has taken consistence. It implies a dynamical evaluation of information that permits to present and made traceable any kind of data (pages, files, images, links...) and to associate them specific metadata. This metadata is additional information able to individualize the context and to construct a network of multi-pertinence for each piece of information.

The semantic web structure is based upon ontologies, which bringing their name from philosophy, so far constitute one of the few frameworks codified for the management of information. Ontologies are structures able to maintain in perfect hierarchical relation all the entities found (Nirenburg and Raskin 2004, 353-8) and opportunely "tagged", supplying also an exhaustive and rigorous conceptual schema with which to manage specific relations, rules, dependencies, symmetries and differences. Ontology is a descriptive, classificatory form, realized to open and delineate the schemes in which information will be incorporated and rearticulated. And, exactly, different kinds of ontologies have guaranteed a hierarchical construction of classificatory systems, introducing the first steps for the formalization of online knowledge.

In fact, such structures would have to be reconsidered in order to mature a vision opened towards a future rich in elements based on a hyper-connected and fluid society: greater possibilities for interconnection between people, high speed of feedback related to users's actions and choices and, above all, bottom-up management of data classification, granted by communities that complete an automatic selection and a cultural analysis of the information they manipulate and with which they come in contact.

Notwithstanding, some popular taxonomies (folksonomy) without neither default relationships among elements nor a precise point of departure, have been growing. These non-structured taxonomies developed some spontaneous forms of classification and "bottom-up" collaboration that reflect the conceptual model built by users. These contemporary bottom-up processes inscribe social relationships in a network: they show that every phenomenon is inter-related, that nothing that exists is self-sufficient or independent, and that it is possible to manage a sustainable dimension of knowledge by means of a collaborative approach relating to information. And, properly, this different way to configure information and knowledge management starts to show "the space between" the human practices and their translation into a digital framework of actions and relationship.

3 DISCOVERING THE "SPACE BETWEEN"

The systemic hierarchies of information today begin to transform themselves into folksonomies, starting from a bottom-up perspective of common collaboration (Tapscot and Williams 2007, 41), to define and classify, by tagging, different kind of data. This perspective has started from a communication necessity and not from knowledge itself, in order to take advantage of more suitable protheses, more versatile instruments and simpler technologies, just to define with these instruments what can enter in the grid of shareable knowledge.

If we want to trace the consequences, or the forerunners of this phenomenon, we have to formulate some basic considerations regarding the scenario transition in recent years:

- People are "inside" the information flow and not only "in front".
- Information does not have a relationship of pure fruition and distribution in relation to users, but they became active parts in the process of knowledge construction.
- Not only messages (contents) are "tagged", but also objects (media) that deliver contents, and the whole entities involved in every process of information.
- The hierarchical schemas and univocal classifications cannot describe scenarios, as they are in constant change.

Considering these points the user becomes not only a passive receiver of data but also an active promoter of information in the net, freeing themselves from hierarchies and relational ties. Information becomes a moment of proliferation of indefinite groups (Lévy 1996, 122), that aggregate and separate themselves according to complex and not measurable phases. The ties that are constructed among statements, terms, concepts and cluster of data born and die at the same time in which the attention of collectives spot them, rearticulating the capacity, the content and the same labels (tags) that can classify it. Unstable links between information are developed, as a result of the “bottom-up tagging” practices, that deriving from how online community accept and determine the attributable values. The outcome of all these processes is a form of semantics that is declined on the attractions and the polarity of the involved users, and that rearticulates the same network, because no hierarchical structure can control a process that does not coincide with its own schemes of demarcation and classification. We run into a sort of imperfect semantics, articulated by a bottom-up construction of the data, in which no more models of heuristic and linguistic can be found, but it’s simple to discover processes of tag mash-up and syndication, that characterize the collective mass actions, projective and unforeseeable, of communities in the net.

Considering the social matrix that moves people’s aim and the social dimension of information, the problem is to define how these new kinds of practices inside the web can be integrated, with which results, and with which possibilities. This social role relates to the decodification of links, deals, bonds and contamination between different layers of knowledge involved in everyday life.

People have social attitudes, capacities and behaviours embedded in their own environment, in scenarios that constitute the space of everyday’s life. Every tentative to translate these practices in something able to fit the web dimension creates a change of perspective and a resistance. The main issue is to focus on the space between the layers of these scenarios: the human layer and the digital layer, distinguished by the two worlds of real life and web interaction.

The boundaries of these layers are not clear, and have a sort of space between them, where every process of sharing information, knowledge, and practices is considered as a process of transition, of passage between two different dimensions. Discovering this “space between” these two different and interrelated worlds, design can try to find frameworks of intervention, not only to eliminate the blindspot and the missteps that a transition through this space generate, but also to empower tools and systems for everyday’s users. If the user’s will is to gain knowledge and to participate in its common creation, the rule of design is to offer guidelines and projectual indications to have a more reliable approach to digital environments, to shared systems of information and to properly devices.

4 CYBRID DESIGN TO EMPOWER BOTTOM-UP KNOWLEDGE

The rule of design in relation to knowledge sharing becomes fundamental when we need to create an organized and structured grid of contents. Can tribute to design the same rule for the bottom-up perspective of knowledge management? Apparently it’s impossible: users will became designers as well, driving their own rules and paradigms to manage information. But behind this consideration there is an epistemological problem and we should admit that we need a theory of knowledge to understand how society builds knowledge by means of processes of design. In the electronic society of knowledge in which we are immersed it is essential to turn our attention to pre-disciplinary forms of design that can shed light on our connective trials of electronic knowledge generation. We can find almost two different and complementary roles of design: the design as a cultural mediator in the “space between”, and the design as natural inclination (a matrix) of every user when creating his-her own knowledge path in the web.

4.1 The bread-matrix

We can start from a simple and metaphorical example: bread making. Bread is a thousand-year product of design, a model of bottom-up design present across time and space. Bread is a kind of food matrix or model that adapts to social tastes and is actualized according to the technological stages and resources of each epoch. The bread-matrix is the result of collective process in assembling intelligences focused towards a common aim. Each culture adapts that abstract bread-matrix to its own needs, material

resources, specificities and culturally determined tastes. Bread is design without designers, or at least without authorship, without intellectual property or patent. It is a world's popular patrimony. However, bread is not a homogenized, standardized, unique, product that serves everybody. Bread, as a cultural matrix, remains in a kind of abstract form that is actualized and customized each time in different shapes made anywhere in the world. But none of these forms overrides the other possibilities of bread making. Thinking in a web-based grid, bread-making is not a "wiki process", nor a constant research for a state-of-the-art result: it is a pre-disciplinary field of historically determined shared knowledge. The processes of knowledge generation in the society of knowledge, favoured by the semantic web can be compared to the bottom-up experience of design that guided bread making. The same democratic character shows up as an attitude towards fixed design strategies. We are not used to the immense quantity of data to which we are submitted in the society of knowledge. We are deeply in need of signposts, and in search of sensitive ways to help manage data that is meaningful to us. In a similar way as what happens to bread, that can be considered as a food and diet abstract matrix, words are abstract models that each person actualizes in each situation.

4.2 Words

Words are historically and culturally generated matrixes that gain meaning in socially shared contexts. The generation of the meaning in the case of each word is an actualization of abstract matrixes in emotional, political, rational, highly charged contexts. In these contexts there is no possibility of existence of an unique sense: according to Donald each word is an invention, a "cultural invention that represent consensual maps that every culture uses to graft word forms onto meanings" (Donald, 2001). Words are in most cases a product of a kind of bottom-up social design in which cultures were designers. The social actualization of words is the key to understand meaning in each historical context. Breads and words are two kinds of food, for body and for intellectual and emotional communication. In both the same kind of generative process is present.

4.3 Tag: the ephemeral identity of a word

Words inhabit a hybrid space between their configuration as abstract matrixes and actualized meanings in each circumstance. This hybrid space is simultaneously synchronic and diachronic. Words emerge from complexity pools, as salt flowers emerge in a pool of salt water. Their emergent ephemeral identities are the building particles of electronic meaning in the semantic web. In this form of building up knowledge, words, not text, are the stars with which we form constellations of meaning and forms of cyberdesign. The interval is constituted by the difference between their identity as abstracts matrixes and actualized forms of up-down, social knowledge. The interval is the hybrid space in which words live as tags. So, we can define a tag as the unstable and emergent stage of a word in constant search for identity. It is a kind of cyberdesign of word identity. We can render visible word's ephemeral identities as meaning in cybrid design.

4.4 Cybrid Design

Cybrid design represents a first step to cover all the aspect of relations and interactions in the "space between". The concept of Cybrid Design comes from the mother-concept of Cyberdesign (de Kerckhove, 1995, 89), and can be understood as design that combines analogical and digital media, or augmented reality. In augmented reality both the virtual and the analogical domains are present and collaborate to augment either the virtual or the analogical dimensions of reality.

That is a hybrid situation in which a physical object is connected to the virtual reality: a wired-object, a cybrid object of design.

A wired-object is a hyper-node, an interface to the virtual dimension of the object. This virtual dimension is what is called the 'electronic margin': the virtual place where all the benefits of Internet and of multimedia contents can be managed and customized in relation to the Web dynamics.

For instance, these benefits, inscribed in the product's electronic margin as information and knowledge, can be either about the very object (its process of fabrication, certificates of quality, multimedia files, etc) or about the social or personal data that the owner of the object wants to add to the electronic margin. So

a wired-object can include professional files, personal professional information, multimedia contents and so on.

The process of wiring product is a method to establish a bridge between the digital and the analogical dimensions of the product, enabling people to access digital information through hi-tech devices and special codes (wired-codes) that connect real world with the virtual context. In this sense, the electronic margin is the virtual treasure of an object, which can be achieved directly from the object.

4.5 New design knowledge management approach: wired versus wiki processes

The first step moved by this design approach, based on wired-objects, offers an answer to both the issues on bottom-up knowledge management: which is the role of design and which is the role of users as designers of their own path of shared knowledge. Wired processes adds a specificity to technological convergence, unifying the cognitive structure and organization of information in a “hypertinent way”, completing the cycle of information between two dimensions: the material and the electronic/virtual. The same processes, adding fluidity and real time-ness to objects of design, produce augmented objects of design.

For example, a process to create a wired-object starts with tagging a real object or a text on paper by means of an evolved barcode (wcode or wired-code). With a mobile provided with wcode reader we can access the digital variant of the object or book and its “electronic margin”, in which we can browse all related resources and add our own. So, users either can add or browse texts, links, notes, comments, files and media, publishing them directly in the platform, with a lot of open tools, and without any pre-defined ontological or semantical structure.

Apparently, this just happens in a lot of platforms, starting from the most famous: wiki. But the difference between a wired system and a wiki system rests on the fact that no data replaces previously added data. New data enriches the electronic margin but does not take the place of existing data. A palimpsest of bottom-up created, and collectively shared, layers of contents emerge. And the wired approach permits to change the initial structure of the whole system: design offers only the space for the kick-off of knowledge management, then knowledge must evolves on the forces of all the users.

5 CONCLUSION: A WIRED APPROACH TO DESIGN (FOR) KNOWLEDGE

One of the most powerful applications of a wired process to improve bottom-up knowledge is connecting paper (text, books, label...) to the digital environment in the web. In the case of wired-books there is a transformation of the experience of reading from a one-way to a multiple-way process, that adds a synesthetic approach with multisensoriality and spatiality to the experience of reading on paper (depth, volume, texture, etc.).

It implies a substitution of the idea of text on paper understood as final product by the idea of discovering and building by themselves, an opportunity to transform the reading on paper in a lively process that breaks the fixity and linearity of the text, contextualize reading, and contributes to build the e-imaginary of text. All that increases immediacy of lecture. The integration of paper and electronic dimensions of a book brings the paper book closer to the way the mind think. To wire texts means to empower the reader: the text becomes a reader-directed product. It also enables alternative shared readings and interpretations obtained directly from a paper book in real time. It is a system that favours the externalization of personal internalized reading (de Kerckhove, 1995), thought processes and shared consciousness. A wired-book adds to technological convergence, in different ways: it links the analogical and electronic dimensions of technology and it also helps to increase the scope of use of other technologies. In addition to this the system inscribes the paper book in the context of connected intelligence and sharing of on-line knowledge making the most of the power of social networks.

Democratizing design implies a deep change in the way we consider interactivity. Democratizing mechanisms should be considered from the first phases of design making if we want to be consistent. The design has the possibility to establish a new rhetoric of the project in order to create a dialogue between the social and the technical tissue, and this means not only to produce tools or system to support new scenarios with sustainable models, but also to suggest a vision of a different cultural apparatus, to offer a new way of online interaction, and a new points of access to the knowledge.

REFERENCES

- BACA, M., 2000. Introduction to Metadata: Pathways to Digital Information, Los Angeles: Getty Trust Publications.
- BERNERS-LEE, T., 2002. Weaving the Web: Origins and Future of the World Wide Web. Britain: Orion Business.
- BOLTER G. D., GRUSIN R., 1999. Remedation: Understanding New Media. Cambridge: MIT Press.
- CAROL, T. G., 2005. Finding People in Early Greece, Columbia MO: University of Missouri Press.
- D'ALESSANDRO, P., 2002. Critica della ragione telematica. Milano: LED.
- DACONTA, M., 2003. The Semantic Web. Indianapolis: Wiley Pub.
- DAVIES, J., STUDER, R. and WARREN, P., 2006. Semantic Web Technologies. Trends and Research in Ontology-based Systems. Chichester: Wiley & Sons.
- DE KERCKHOVE, D., 1999. L'intelligenza connettiva. L'avvento della Web Society. Roma: Aurelio De Laurentis Multimedia.
- DE KERCKHOVE, D., 1991. Brainframes. Technology, mind, business. Utrecht: Bosch & Keuning - BSO /ORIGIN.
- DONALD, M., 2001. A Mind so Rare, New York: W.W. Norton.
- FIORMONTE, D., 2003. Scrittura e filologia nell'era digitale, Torino: Bollati Boringhieri.
- GREENFIELD, A., 2006. Everywhere. The Dawning Age of Ubiquitous computing, Berkeley: New Riders.
- BASTEN, T., JEILEN, M., DE GROOT, H. 2004. Ambient intelligence: Impact On Embedded System Design. New York: Kluwer Academic Publisher.
- MCLUHAN M., 1964. Understanding Media: The Extension of Man. New York: McGraw-Hill.
- JOHNSON - LAIRD P., 1988. The Computer and the Mind. An Introduction to cognitive Science. London: William Collins Sons & Co. Ltd.
- LÉVY, P., 1994. L'intelligence collective: pour une antropologie du cyberspace. Paris: La Decouverte.
- MAIOCCHI, M. and LAURENT L., 2002. Giocare con la complessità, Milano: Francoangeli.
- MCLUHAN, M. and FIORE Q., 1967. The medium is the massage. An inventory of effects. New York: Bantam Books.
- MINSKY, M., 1986. The society of mind. New York: Simon & Schuster.
- MINSKY, M., 1997. A Framework for representing knowledge. In Mind Design II. Philosophy, Psychology, Artificial Intelligence. Ed. John Haugeland, 111-142. Cambridge: MIT Press.
- NIRENBURG, S. and RASKIN, V., 2004. Ontological Semantics. Cambridge: MIT Press.
- ONG, W., 1982. Orality and literacy. The technologizing of the Word. London: Methuen.
- TAPSCOTT, D. and WILLIAMS. A. D., 2006. Wikinomics: How Mass Collaboration Changes Everything. New York: Portfolio.

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