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Autor: Michelis, Giorgio de

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GIORGIO DE MICHELIS*

COMMENTS ON COLOMBETTI & PAOLINI

The paper by Marco Colombetti and Paolo Paolini, *Information Technology and Human Communication*, proposes a new perspective on the role digital technologies play in communication, assuming that the latter can not be understood unless technologies are placed “in the context of complex interaction processes among people”. The shift from reducing communication to information exchange to observing communication within a wider interaction process opens new perspectives to design tools to support human communication processes. Designers should take into account that in their everyday life, as well as while working, humans are engaged in “wider social interactions, involving such aspects as negotiating agreements, arranging and interpreting stigmergic cues, and creating and exploiting affordances embedded in shared artifacts”. The discussion of two examples and references to various projects carried out at TEC-Lab of the University of Lugano allow the authors to underline the need to foster cross-breeding between ICT and human and social sciences at the interaction level, and to indicate relevant research areas where multi-disciplinarity can add value.

Since I fully agree with the perspective illustrated by the authors, let me shortly suggest two lines along which their discourse can be enriched.

The first one is at the macro level. What Colombetti and Paolini propose in their paper is not a simple correction of the way we design a particular class of ICT based applications, rather it is a radical change of paradigm in the design of any ICT based application. Therefore, it requires a change in the way we conceive their design. From their viewpoint, ICT-based applications should be capable of supporting the interactions users are expected to perform. What matters is not the type of functions the system is able to perform, but how much the functions it performs fit

* University of Milano Bicocca and University of Lugano, gdemich@disco.unimib.it

with the interactions of its users supporting them adequately (De Michelis 2003). In the design of a system, the interactions it supports should drive the development of its functions (its constituent algorithms, as well as its information structure): less sophisticated functionalities may be preferred if they best fit with the way users interact with the system, and if they are able to deliver adequate services with respect to the expectations of the users.

In summary, the design of human interaction technologies needs to move from the traditional engineering model “*functions first, then interfaces* (to access functions)” to the new one “*interactions first, then functions* (to support interactions)”. This paradigmatic change impacts design at several levels: at the level of the system architecture, where different realizations of a function (embodying different performance qualities) should be considered as alternative modules of the systems; at the level of the design process, where requirement analysis should go beyond listing users needs, to bring forth innovative interaction models (via scenarios, stories, etc.) to be further refined during the whole design process; at the level of the multi-disciplinary collaboration, where together with ICT designers, social scientists and interaction designers are involved in a continuing collaboration and not confined to the requirement analysis phase (social scientists) or to the interface design phase (interaction designers).

The second line of reasoning can be considered a continuation of the discourse of the authors, who already underline the limits of Semantic Web Technologies with respect to supporting human interaction at the end of Section 3.

As they observe, ontologies can only partially reflect human knowledge and it is a major problem today to deal with the changes of meanings over time. The above problems do not have a solution, since they reflect the irreducible complexity of human behaviors, however we can build systems offering adequate services to their users, even without solving them, if we understand how human practice intertwines formalized knowledge embedded in numbers, forms, graphs with the fuzzy, incomplete, inconsistent evolutionary knowledge reflecting innovation processes. The two forms of knowledge are linked in any human interaction, since, on one hand, formalized knowledge opens to innovation whenever a breakdown occurs, and innovation processes converge sooner or later to new formalizations, whenever an agreement is reached to overcome a breakdown.

Using the new system should be a learning experience, where users invent new behavioral patterns and guide the evolution of the system: the system therefore should be designed as open as possible to leave room for further user invention of new interaction patterns. Within this learning and invention process, more sophisticated functions can be developed as the response to the changing user needs and expectations. Systems should be designed incrementally, intertwining the development of the technology with the development of the system for a specific group of users. It must be underlined at this point that users are generally conservative: listening to user needs is therefore a necessary but not sufficient activity; designers must involve users in new ways to look at their activities and at new ways of interaction, creating the space for innovative systems. This brings new arguments to support the attention Colombetti and Paolini pay to the communication skills of designers: designers must, besides listening to users and stakeholders, be able to convince them that the system they want to design is relevant for them, to seduce them (Agostini et al. 2000). Communication skills are quite relevant from this viewpoint. However, they must be accompanied by the qualities of the designed system, otherwise their effectiveness has a short duration.

A final minor remark

The authors observe in a footnote that Americans use *computer science* instead of *informatics* to name the emerging scientific discipline because at the beginning of the sixties *informatics* was already registered by a software company. This may be true, but there is something more to observe here: *computer science* is defined in the American Heritage Dictionary as “the study of computation and computer technology, hardware, and software”, while in accordance with Wikipedia *informatics* “includes the science of information, the practice of information processing, and the engineering of information systems”. So different names induce different definitions of the disciplines with some impact on cultural differences between what is done at the two sides of the Atlantic. But if Colombetti and Paolini are right, then both the definitions are limited and misleading, and what we should really characterize, study and design is *Human Interaction Technology*.

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