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Editorial of the Special Issue on Human-Technology Interaction and Technology Adoption: Exploring Frameworks other than Actor-Network Theory

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Exploring Frameworks Other than Actor-Network Theory

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Actor-network theory (ANT) has established itself as a valuable resource for the analysis of technology innovation and adoption. One of the main reasons for the success of the Innovation Translation Model (a specific instantiation of ANT) is the fact that it fits very well the emerging dominance of ecosystem or multiple stakeholder perspectives on technology development and technology adoption. At the same time the variety of technology adoption contexts would easily undermine the credibility of any methodology pretending to possess the ability to adequately address all possible contexts and research challenges. This is why in this special issue we have focused on exploring, in parallel to ANT, other approaches that have also proven valuable in studying technology adoption and human-technology interaction. Some of these approaches share significant common ground with ANT. They also diverge in some visible ways. The commonalities and differences are of particular interest because they provide the basis for shaping a particular method, or a specific combination of methods, in a specific research context. The special issue includes four papers focusing on Phenomenography, Consumer culture theory, Design in-use, Practice theory, Innovation diffusion, Consumer innovativeness and Activity theory.

Bill Davey draws an insightful comparison between ANT and Phenomenography. His paper starts with a brief but systematic overview of the key aspects of Phenomenography in terms of its object of study, data collection method and research outcomes, and then moves on discussing its value in the light of a possible ANT approach to a very specific research problem – the continued failure of information systems professionals to incorporate research findings into requirements elicitation or, to put in other

words, the failure of innovative techniques to become widely adopted. The main value of such a comparative approach consists in the contextual power of its findings. For example, the comparison between the two approaches emphasizes the difference in the ways their research questions are being asked. While a phenomenographer would be interested in what the conceptions of the practitioners are, an ANT researcher would look for the actors and the interactions between them, trying to identify the findings that might be translated into practice. Davey points out that in the first case (phenomenography) the answer to the specific question would allow detecting any potential mismatch between the research findings and practitioners' understanding of how these findings might be useful in their work. In the second case (ANT), the answer to the specific questions would allow managers to problematize the research findings in a way that could help in identifying the interactions that are preventing the adoption of the findings as well as the specific actors that could enable such adoption. The important similarity here is that in both cases the questions are not aimed at research outcomes *per se* but at outcomes that can support immediate action in the specific industry context, i.e. it is the improvement of practice that is the motivation rather than the purely theoretical refinement of the research findings. The direct link between research findings and practical decision making is of particular relevance since it points out to the advantages of the two approaches in terms of their potential ability to substantiate normative instead of descriptive research projects.[1]

Domen Bajde provides a detailed review of the strengths and the limitations of Consumer Culture Theory (CCT) - a research stream exploring the socio-historical patterning of consumption, the interplay between consumption and consumer identity formation, marketplace cultures and consumption collectives, and mass-mediated ideologies and consumers' interpretive strategies. The main objective of the paper is to offer suggestions as to how ANT and CCT might draw on each other's insights to enrich the un-derstanding of technology consumption. After the initial introduction of CCT, Bajde provides a summary of its contributions to technological consumption studies and discusses the potential opportunities for cross-fertilization between CCT and ANT with respect to studies focusing on technological innovation. According to him the central thrust of CCT consists in its ability to articulate in a sensible way the cultural aspects of technology consumption, where cultural refers to the role of mythologies, ideologies, discourse and meaning in shaping consumers' engagement with an innovative technology. It enables the discussion of how cultural meanings could be granted or denied to technological innovations in a way that shapes the value of technologies as cultural resources sustaining the emergence of specific consumer identities. In doing that CCT appears to go against ANT's key symmetry principle by tending to reinforce the gaps and the asymmetries between the socio-cultural and the techno-material. At the same time however it embraces ANT's spirit of agential contingency and emergence by adopting a conception of culture which is dynamic, interactive and always under construction, focusing on the processes of emergence of cultural meanings rather than on some predetermined cultural ontological structures or essences. Bajde substantiates his analysis by discussing two distinctive trends in CCT's approach to the study of technology consumption. The first one focuses on dem-onstrating how ideologies inflect consumers' broader understanding of the category of technology. The second one illustrates how cultural myths and meanings are wielded in battles over images of particular technological innovations. According to Bajde, in both cases the symbolism of technology is caught-up in the negotiations of conflicting values, ideals and identities. Thus, successful technological innovations are those that can help consumers resolve these conflicts. Bajde concludes by discussing how ANT studies of technological innovation and CCT could mutually enrich each other. For him the answer to this question demands additional reflection on the limits of cultural and network analysis within the context

of the potential co-operation between CCT and ANT. ANT can definitely benefit from CCT's sensibility in the articulation of socio-cultural forces and dynamics. It could however help CCT in addressing the subtlety of the asymmetries and gaps in theorizing culture by focusing its attention on the problematic omission of the techno-logical in cultural consumption studies and, more specifically, on the actual making and the breaking of distinctions between the symbolic and the technical in real life technology adoption practices.

Svenja Jaffari introduces two theoretical perspectives on users' creative appropriations of new technology products – design-in-use and practice theory. She sees successful adoption to arise from users' concrete actions to creatively adopt and integrate a product into existing or emergent practices. Design-in-use considers users as active participants in "everyday design" which is portrayed as being (i) resourceful in terms of moving between temporary uses, routine uses and evolving systems; (ii) adaptive in terms of allowing alternative actions that could be integrated into changing systems; (iii) emergent in terms of shifting, over time, from the intended function and form of an artifact towards something completely different. Jaffari makes a comparison with ANT by referring to its key principles of agnosticism, general symmetry and free association as well as its claim of making a difference by explaining social phenomena in a non-essentialist, heterogeneous and non-binary (social vs technological) manner. She finds striking overlaps between ANT's focus on the relational, dynamic and emergent character of studied phenomena, and early research focusing on design ethnography where technologies are conceptualized as situational and variable across time and space, as taking shape through very specific but sometimes different and quite unexpected uses within an assemblage of other technologies and routinized ways of doing. The overlaps are taken in support of the the claim that product adoption stretches further than a successful projection of the designer´s work to the users' context; the users have a critical role in constructing their own context by bringing products or technologies into relation with each other and integrating them into existing practices.

In what it concerns the second theoretical perspective, Svenja Jaffari reminds us that, according to theories of practice, what people actually do in their everyday (including professional) lives is to actively integrate, make or break connections between three elements: materials, meanings, and competences, and practices emerge as recognizable entities only within the process of integration of these three elements. Jaffari emphasizes the temporality of practices which follow a specific career path by going through different stages and sequences while being populated or carried by people who have different degrees of expertise and dedication. She indicates the scholarly interest in the conversational aspect of such practices. Everyday conversations are the very fabric of social life and designers, innovators and researchers should look more carefully at the details of how people, as social actors, actually engage in talk-in-interaction when dealing with new technologies. This could explain the recent sociolinguistic turn which looks at the use of materials as a conversational tool, i.e. people are seen in their continuous efforts of transforming some formerly conspicuous everyday objects into containers of meaning by suggesting, negotiating and agreeing or disagreeing on a particular role and meaning. The point here is that what is usually taken for granted by designers of innovative technologies, namely the meaning that an object communicates, is actually an emergent feature which is coming to life through the particular use of the object within a specific social setting. The adoption of a new product is inherently associated with situations of dissonance and struggle when this product moves from the relatively abstract web of its potential meanings to the personal context of a specific user. In this sense, adoption is always personal and it is the personal nature of this experience which makes technology adoption research so challenging.

Finally, Frederiksen and Tanev offer a "change of subject" from the creativity of de-

signers and inventors to consumer creativity as a key enabler of product adoption and innovation in general. To do that, they compare four different approaches – innovation diffusion, consumer innovativeness, activity theory (AT) and ANT. Out of the four papers included in this special issue this is the one that pays most attention to ANT itself. The focus on ANT is done within the context of two different messages: first, activity based approaches such as AT and ANT operate at a more dynamic micro level as compared to classification approaches such as innovation diffusion and consumer innovativeness; second, despite the existence of a certain degree of complementarity, ANT appears to be more resourceful than AT in its ability to handle the everyday life context of technology adoption. Innovation diffusion and consumer innovativeness possess an explicit time dimension, but their classifications of the different types of consumers seem to miss the dynamics of the complexities and the contingency characterizing the personal encounter between consumers and newly introduced products. The authors emphasize the need for the articulation of adoption models possessing a finer granularity in their ability to study consumer creativity and adoption by taking into account the personal embodiment aspects of human activities and adoption practices which involve coordination, engagement, imitation, repetition, education and, ultimately, modification of the rules of interaction. The comparison between ANT and AT refers to their different disciplinary and philosophical backgrounds which results into one of their key differences – the different focus in their interpretation of the concept of mediation: ANT emphasizes a *symmetrical* approach to the interaction between human actors and non-human objects while AT has adopted an *asymmetrical* attitude leading to a privileged role for human intentionality. The unit of analysis of AT is the activity itself, while ANT has focused on tracing the actors and following their attempt to transform existing links as they seek to reconfigure or recreate their own contexts, thus raising the question of the emergence of new configurations including both existing and new actors and objects. One of the contributions of this paper is to emphasize the subtlety of ANT's symmetry principle – the fact that objects should be included as equally present and equally relevant in the course of action. What the adoption of this principle actually does is to shift the focus away from the identity and the nature of the actors to the interactions, the associations, and the relationships between them. The symmetry principle however allows the complementarity of both symmetry and asymmetry in the ways actors are treated (reference to Strum and Latour, 1987). The symmetry among the actors consists in the fact that the more active they are, the less they differ from one another; the asymmetry consists in the fact that the more the actors are seen to be equal, the more the practical differences between them in the ways they achieve a particular real life context. According to Frederiksen and Tanev, missing this subtlety illustrates the kind of misunderstandings that could emerge in social science studies without a proper definition of personality in a way that it could embrace non-human or composite actants. The paper concludes by a discussion of how ANT could help in conceptualizing consumer creativity as an important factor in the adoption of technological products. The authors refer to one of ANT's key insights that the act of creation is not a solitary endeavor and that the invention is not the product of the inventor, but rather an outcome of the stabilization of the relationships between the interests of many actants, humans, and non-humans. Such understanding offers a radically different way of studying creativity which is based on the notion of configuration. The value of ANT for creativity research is found in its ability to position creativity in the effectuation of consumer practices through which a consumer is constituted as such. It is consumer's struggles and creative efforts that lead to the invention of new configurations including new actants and new relationships which make the adoption of new products possible.

In conclusion, we should briefly mention the relevance of the topic of this special issue. The first aspect of its relevance is, obviously,

methodological. It points to the potential of ANT as a valuable resource in elaborating a specific design approach to technology adoption. This field is still in its infancy but it is very promising. The second aspect of the relevance is equally important. This is the promotion of an adoption perspective on technology innovation management. This perspective allows emphasizing the challenges associated with the adoption of technological products due to the potential gap between the value built in the products and users' perception of this value as well as the fundamental point that it is the adoption and not invention that effectuates innovation. Last but not least, adoption is not a function of a mere dyadic human-technology interaction. It is a relational, inherently contingent and complex process which, as ANT scholars have rightly pointed out, makes innovations look like an exception rather than the rule.

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ENDNOTE

[1]   For an insightful discussion of the difference between descriptive and normative research see: Christensen, C.M., *The ongoing process of building a theory of disruption.* Journal of Product Innovation Management, 2006. **23**: p. 39-55.