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Facilitating and navigating user knowledge in an organizational context

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ABSTRACT

The paper explores the staging of innovative processes in the context of the organization, as relates to the transformation of knowledge about users and use practices. The paper focuses on the facilitation and navigation of such knowledge across diverse worlds of (pre)conceptions and practices informing the understanding of users, in relation to strategic concerns, path dependencies, market creation or engineering systems and practices. The paper draws upon empirical illustrations based on concrete industry practices with respect to the so-called Front End of Innovation. It raises questions as to how particular organizational competences and the knowledge they bear upon are made mutually relevant, while undertaken in and through particular initiatives and processes in the context of an organization at the 'fuzzy front end'. It is suggested that the sites and actors through which forms of user knowledge are translated - in confrontation with different knowledge domains - are occasioned and framed, as part of emerging configurations of networks of innovative practices. The present paper addresses possibilities for staging socio-material interactions involving the engagement of user knowledges at the Front End, across diverse engineering, management, and user marketing worlds, in their pursuit of technology strategies and exploration of business opportunities.

Author Keywords

Staging, participatory spaces, socio-material interaction, framing, STS, Front End of Innovation.

INTRODUCTION

Within management discourses and engineering practices, the quest for radical innovation and the attentiveness towards the importance of working with insights and ideas from a variety of sources has attracted considerable attention. The trend is indicated in the growing academic literature as well as more practically-oriented internet

fora, and ongoing experimentations, exchange of views and experience among practitioners across industry under the heading of Front End Innovation (FEI).

What is being emphasised is the role of interactive and feedback processes in working with product ideas, in contrast to the linear ideas embedded in stage-gate based models of the 'New Product Development'. Within, but also beyond, its capacity as a management construct, the FEI seems to point to a current locus for potential innovative processes of relevance, and a pertinent space for co-creation of products and markets. In terms of the translation of users FEI can thus be a matter of political concern. The FEI concept reflects a general debate about the need and possibility for enhancing industry capabilities, being able to take a diversity of perspectives on board, from emergent technologies, to governmental regulation, potential markets and new innovative competences and organisational schemes.

FEI has also attracted an increasing attention as the target for user-related knowledge and anthropologically inspired field studies of use practices and everyday life (Buur and Matthews, 2008). It appears as a space where engineering, management and marketing worlds in their pursuit of technology strategies and exploration of business opportunities may connect to wider perspectives. From the perspective of Science & Technology Studies (STS) this invites exploring the possibilities for staging socio-material interactions, questioning taken-for-granted issues concerning users and social and environmental concerns and reframing the idea of sociotechnical action (Clausen and Yoshinaka, 2007).

While the 'front end' of innovation space may appear as a promising new space for participation to be explored, the experiences from a participatory design or innovation perspective tends to be rather mixed. Either the expected 'front end' space is quite temporary or non-existing, or it is not equipped to embrace ideas or novel designs arriving from the 'collaborative design space'. On the contrary, the front end often represents a world inhabited by dominant designs and path-dependent thinking with rather short-sighted expectations concerning ready-made business cases. In particular the uptake of user knowledge seems to be difficult.

The 'front-end' of innovation thus seems to reveal itself as acontested, albeit interesting, terrain where company product development strategies and visions for future products are currently challenged and reframed. Control and management of these emergent processes are far from amenable to stratification like in the stage-gate controlled part of new product development. They are processes which potentially call into question or beckons redefining a range of taken-for-granted assumptions concerning issues of product/service, custo-mer/users, firm identities, and the like. The content and framing of ideas are put into focus, and sensitises towards concerns of path-dependency and translations are raised, including trade-offs and potentialities involved in sustaining or reframing matters of significance as part and parcel of the innova-tive process. This has bearing on the fundamental notion of participation.

STAGING INTERACTIONS

'Staging' has figured into a means of addressing and engaging the collective nature of change processes, based on political process perspectives (Buchanan and Badham, 2008) and collaborative design. Here staging is denoted to characterize how diverse perspectives and worlds (users, designers, engineers, management) may be 'brought to-gether' or 'connected' to perform interactively in diverse workshop formats, for instance in terms of the setting up and framing of a design project. Staging includes the organizing of activities like inquiries into the future user context as well as existing practices, creation and explora-tion of design material, design concepts etc. Creating reflective conversations and interactions between partici-pants and objects and enacting stories of future use is seen as 'ways to put the design and arrangement of space, scenery and props, the staging, into into play' (Brandt, Johansson and Messeter, 2005). The selection of design objects for the stage, choosing participants both as spokespersons and as contributors of knowledge (Bucciarelli, 2005) seems to correspond to the constitu-tion of emerging networks. In the same vein Broberg (2008) and Clausen and Moltu (2006) have shown how political programs and concepts within workspace design or management concepts like BPR are strong tools to include certain actors and subjects while excluding others in staging their performances.

We see the staging of innovative processes as a forma-tive, emergent process where multiple agents and objects (actants and mediators) interact, connect or separate which may be object for study as well as engagement. As such our concern with heterogeneous staging processes is aimed to be a contribution to the process of transforming a predominantly post hoc STS analysis into more proac-tive, forward-looking perspectives, in line with the ambi-tion of social shaping of technology and transition ap-proaches (e.g. Williams and Sørensen. 2002). We aim with the staging approach at sensitizing towards the no-tion of 'front end' as a construction and as a space which may be amenable for shaping.

SOCIOTECHNICAL AND TRANSFORMATIVE SPACES

The notions of 'socio-technical space' (Clausen and Yoshinaka, 2007) and attention to the role of objects for framing and staging (Clausen and Yoshinaka, 2009), respectively, are intended as contributions to understand-ing the distributed character of heterogeneous complexity and its management. Attention is hereby drawn to the socio-material, political and discursive practices and emergent processes configuring the working of socio-technical ensembles. Especially at the fore are the issue of the inclusion and exclusion of actors, objects, interests and meanings (relevances), not to mention the content in sociotechnical developments and design processes at project, organisational and interorganisational levels. The notions set as a target political concerns in organisations for technological change, approaching socio-technical issues and interaction, allowing for the staging, ordering and localisation of change processes (in and through their delimitation and opening). 'Socio-technial spaces' as a notion allows for not only the potential opening of spaces for scrutiny and exploration but also the association of realms (a larger framework for the bridging of 'spaces'), otherwise rendered distinct and without immediate rele-vance to one another. The facilitation of particular views and combinations of knowledge and insight, particularly through a sensitised approach through which framing and staging take place, and through which processes may be facilitated, may, potentially, lead to innovative processes in technology design, appropriation and change.

Notions as markets and technological potentials are seen as the outcome of translation processes and not as prede-fined concepts or facts we can go out and look for. This also means that they may be encumbered with precon-ceived notions, embedded in the actors and their interrela-tions or even inscribed in the repertoires of tools and methods they bring into play. However, through the trans-lation processes, if they are successful, facts, technologies and other social and material arrangements are rendered strong and durable, as preconditions of further action (Latour, 1999). We see these network-building processes as playing important roles in the constitution of socio-technical spaces, and in the creation of meaning and the generation and selection of ideas for product develop-ment. Translation points both to the accomplished charac-ter of the state-of-affairs (that work has been done), and that they are nevertheless conditionally so, at bedst pre-carious, and by no means neither self-evident, nor a logi-cal outcome of a linear and rational course of develop-ment (see also Christiansen and Varnes, 2007).

TRANSFORMING KNOWLEDGE ACROSS SPACE BOUNDARIES

One of the key challenges in innovation processes is to transform knowledge and ideas concerning technology, users and markets from departments and groups within the organisation as well as from the outside world in a useful way. Where the treatment and handling of knowledge within certain domains of specialisation may be guided by established methods, practices and rules of thumb, the exchange or flow of knowledge across do-mains seems much more challenging. Carlile (2002), based on his study of a USA supplier to the automobile

industry, describes difficulties in 'transferring' knowledge in NDP across the specialised functions of sales and marketing, product design, manufacturing engineering and production. Innovative solutions demand the transformation of knowledge across functions where established understandings and knowledge practices within the single domain challenge coordinating activities.

Insight into user practices and experiences, and building upon continued engagements with particular communities (or networks) of practice for translating insight into the idea generation processes, may be complemented with more established forms of translation. The sales and marketing department may have methods for a more market research based approach to user needs.

Users may hereby end up being reduced to statistical representations in the form of sales numbers, product prices and user categories in terms of market segments and translated in a more 'machinated' way. The space which such a department engages for knowledge generation concerns a very different set of translators. Compared to a community of practice or a service department, it does not draw upon 'actual' users, be it through intermediaries or by actually meeting them. And if we take the specialist departments concerned with environmental questions or those concerned with materials, audiology or medical specialities, it is obvious, that they again offer very different translations of trends in knowledge, technological potentials or markets. Similar points can be made by studies of the role of lead users (von Hippel, 2005) -to what extent spaces can or are being bridged, in early informal stages of product development across the different translations employed in the respective departments, are therefore issues to be problematised and worked upon.

Another example from industry dealing with the translation of market understandings into the idea generation comes from the medico-pharmaceutical industry. Anchored historically as well as institutionally in the medical research practices based on evidence based medicine, the company in question is exploring, at the same time, approaches directed toward gaining unique insight into concrete user practices concerning one of their product lines. Through video-recordings of selected users across cultural/national contexts, the company frames the engagement of different specialisations within the company to examine common excerpts of such videos and discuss areas of problems and solutions to be resolved across the diversity of perspectives based on the insights and associations, that the videos evoke (see also Ylirisku and Buur, 2007).

The video-clippings help problematise pertinent user-practices not only for the sales department (traditionally dealing with users in terms of market segmentation, etc.) but also to product designers and other professionals. The video viewing works as a 'boundary object', to interest and enrol actors within the company and to mobilise them through the occasioning of a common discussion across disciplinary engagements and concerns in the traditional senses (Star and Griesemer, 1989). Differences and potential ideas of relevance across such differences may be evoked, articulated and addressed, and their respective resources and networks potentially mobilized toward the transformation of knowledge into new product features.

Yet, even from the company's standpoint, the innovative workings of such configurations of spaces for idea generation do not readily translate to knowledge and points of argument with legitimacy and authority conducive to the crucial decision-making processes of product development. Firmly grounded in the institutionalised evidence-based approaches for the organization, particular knowledge 'carries more weight', and may interfere with or overshadow the role played by idea generation from qualitative and relational sources. A key challenge for the organisation in this respect is again to identify translators to better be able to differentiate and coordinate various forms of knowledge so that they may be engaged strategically to sustain and facilitate the product conceptualization.

SOCIOTECHNICAL CONSTITUTIONS

The socio-technical constitution of these front end spaces and the contradictions and challenges their configuration poses for managing innovation and product development, are issues of increasing importance in the organisational context. Steve Woolgar's seminal work on 'configuring the user' (Woolgar, 1991) addresses how organisationally internal positionings on 'users', and the knowledge that bear upon how user related issues are dealt with are, indeed, distributed and far from coherent. This raises an issue as to how the user is scoped and framed through activities of not only configuring the user as a company, but of user configurations and reconfigruations taken on and playing out, in the dynamics of the organisation. No single actor, ingenious inventor, brilliant designer or company founder can either act as sole interpreter and translator of trends in societal needs or be expected to command an overview of interdependencies for the specialised generation and matching of otherwise *partial* knowledge (Strathern, 2004).

In this situation, companies must rely on mechanisms involving multiple translators, as product innovations have to reflect a broad range of potential sources for inspiration (see also Akrich, 1995). Use situations, anticipated environmental demands, ethical debates, as well as the more traditional sources from marketing, specialised technology or science departments, universities sources, etc. have their legitimacy as being a relevant part of the processes of innovating and generating ideas for product development, where not one of these can *a priori* be granted a privileged status.

Perspectives from STS, particularly Actor-Network Theory, point to the translation of knowledge from a variety of sources as one of the main processes in the constitution of socio-technical spaces for product idea generation. Multiple actors are involved in what is often a conflicting set of interpretations of problems and solutions, based on the specific working of a network of people, objects or machines as translators. A question is whether and in which meaning these translations can be managed and how they contribute to the constitution of a sociotechnical space for innovation and product design with its specific inclusion and exclusion of the content of ideas.

NAVIGATIONAL PERSPECTIVES ON SPACES, ACTORS AND DESIGN OBJECTS

In this exploratory paper, we have indicated how understandings of users are produced and formatted through a range of diverse translators each contributing to a certain configuration of the 'front end' space. Questions for further research here is how these configurations may be shaped through the staging of interactions between user domain knowledge and the preconfigured front end spaces. How to navigate these staging processes aiming at the reconfiguration of user perceptions at the front end target space.

In figure 1, we have indicated the mediating role of a design lab (Binder and Brandt, 2008) where different actors are bringing different knowledge and perspectives into the performative interactions of the lab. Navigational decisions include a number of choices concerned with the delimitation and placement of a discursive and material space, the inclusion or exclusion of actors and objects, and how to stage interactions in the space. The choices may be concerned with a number of decisive questions.

Should users be involved directly speaking on behalf of their own practices? Or, should they just manifest (be represented) through user studies, where, for instance, ethnographers and designers are to speak on their behalf?
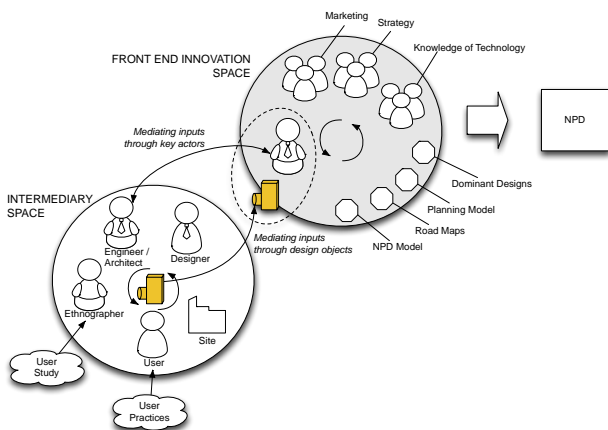

Figure 1. The mediation of knowledge through actors and objects from a design lab to the target space of FE Innovation

Experts coming from entrenched institutionalized practices may be difficult to change their positions, and what is more, are often hesitant to put their knowledge on trial in a design lab. Should actors such as these be included or excluded from the space? May a design game loosen up for their taken for granted assumptions and diffidence?

What can be expected from the mediating role scripted to actors from front end of innovation and taking part in collective sense-making and generative processes in the design lab? Often a number of difficulties surface, when engineers or architects are expected to or trying to enact their new won experiences in attempts to transform colleagues and managers in their 'old world'.

A subject for further investigation might be the role of mediating design objects like provotypes, prototypes, provocating or debate stimulating statements, transforma-tive video clips etc. The interesting point here is, how stable or how shortlived these design objects may be turn out to be. Both qualities may be equally relevant.

REFERENCES

Akrich, M. User representations: Practices, methods and sociology. In Rip, Misa and Schot (eds) *Managing Technology in Society: The approach of Constructive Technology Assessment*, pp. 167-84. Pinter, London. 1995.

Binder, T. and Brandt, E. The Design:Lab as Platform in Participatory Design Research. *CoDesign*, 2008, 4(2):115-129.

Bucciarelli, L.L. Design collaboration: Who's in? Who's out?, In: Binder and Hellsröm (eds.) Design Spaces, pp. 64–71. Edita IT Press, Finland. 2005

Buur, J. and Matthews, B. Participatory Innovation. *Int. J. Innovation Management*, 2008, 12(3): 255-273.

Carlile, P. A Pragmatic View of Knowledge and Boundaries: Boundary objects in new product development. *Organization Science*, 2002, 13(4):442-455.

Christiansen, J.K. and Varnes, C.J. Making Decisions on Innovation: Meetings or Networks? *Creativity and Innovation Management*, 2007, 16(3): 282-298.

Clausen, C. and Moltu, B. *Socio-technical spaces: A new guide to organisational politics?* Copenhagen: The 19th EGOS Colloquium, July 3-5, 2003.

Clausen, C. and Yoshinaka, Y. Staging Sociotechnical Spaces: Translating across Boundaries in Design. *J. Design Research,* 2007, 6(1-2):61-78.

Clausen, C. and Yoshinaka, Y. The Role of Devices in Staging Front End Innovation. *Proc. IDEMI'09.* Porto, Portugal, Sept. 14-15, 2009.

Latour, B. Pandora's Hope. Harvard University Press, USA. 1999.

Sørensen, K.H. and Williams, R. (eds) Shaping Technology, Guiding Policy: Concepts, Spaces and Tools. Edward Elgar, UK. 2002.

Star, S.L. and Griesemer, J.R. Institutional Ecology, "Translations" and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science,* 1989, 19(3): 387-420.

Strathern, M. *Partial Connections.* AltaMira. 2004.

von Hippel, E. *Democratizing Innovation.* MIT Press, USA. 2005.

Woolgar, S. Configuring the User: The Case of Usability Trials. In: J. Law (ed.) *A Sociology of Monsters: Essays on Power, Technology and Domination*, pp.57-99. Routledge, UK. 1991.

Ylirisku, S. And Buur, J. Designing with Video. Springer, UK. 2007.