Ethnography, Work and Technology Design

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Case Study. The Dragon Project - www.cit.dk/COT/case5-eng.html - provides one of the earliest examples of the concrete use of ethnography to support the design of new IT systems. Ethnographic studies focused on customer service work in an international container shipping company across Europe, Asia and the US and informed the development of a prototype which served as a product specification for commercial implementation. The role of ethnography was to uncover the *actual* work practices of customer service operatives, in distinction to working practice according to job descriptions, process descriptions, procedures and other (formal) organizational representations of work. Ethnographic studies enabled the design team to move beyond abstractions of work to take the real world, real time skills and competences of operatives into account.

For example, operatives should, according formal representations of work, have entered the details of each and every enquiry about the shipment of goods into the computer system at the outset of each enquiry, whether or not an actual booking emerged. Operatives routinely ignored this procedure however, not because it could effect perceptions of their performance, but because it was highly inefficient to do so. Registering a potential booking required operators to navigate a large number of computerized worksheets, which once entered could not be exited until all necessary steps had been completed. Operators worked around the computer then to speed the booking process up, relying on pen and paper to organize the flow of work and only entering bookings into the system after they were confirmed.

Studies of operators' interactions with customers and the IT system made it visible and available to the system developers that 'work arounds' inhabited every aspect of customer service work. None of these work arounds represented incidents of bad or slovenly practice but rather, they displayed organizational acumen. The operatives were not so much dismissive of formal procedure as highly attuned to its requirements and to just what it was procedure should amount to. In other words, by working around an inflexible system which was designed without respect for the actual nature and demands of work 'at the coalface', the operatives could ensure that business goals were met in a timely fashion and that ships set sail with as high a tariff cargo as possible on board. In turn, these studies of operators working practices and craft sensibilities shaped the development of a prototype that built the skill, competence and flexibility which actually inhabited work into the design of a new IT system to better support efficiency and productivity in customer service work.

Ethnography is one of the oldest methods in the social science research armoury. It emerged from anthropology in the early 1900s and the study of 'far away tribes' but was soon put to work by members of the pioneering Chicago School of Sociology to study more mundane features of our own lives. Also known as 'participant observation', ethnography has been employed to study work and organization since the 1940s. It has been exploited in the design of IT systems since the 1980s, when Lucy Suchman's *Plans and Situated Action* elaborated the profound mismatch between the generic models of work that IT systems were built on at the time and the situated nature of work in which they were used.

Paying attention to the situated character of work is a rather unusual thing for a great many ethnographers in the social sciences to do; they much prefer to dwell on 'scenic' features of work (hierarchy, roles, gender, etc.) rather than *work itself*. However, Suchman's pioneering research encouraged the uptake of 'naturalistic' analyses of work in systems design, which focus on the practically achieved nature of work and technology use and have played a formative role in the development of Computer Supported Cooperative Work.

Studies of the situated nature of work make it visible that the organized arrangements of work which IT systems are embedded in are produced in the *actions and interactions* of parties to them. When studying work, then, ethnography seeks to unpack the arrangements of cooperation and collaboration that inhabit it and which provide for its organized character. The approach is distinct from industrial engineering approaches in its refusal to 'decompose' work, whether in terms of processes and/or tasks. In either case it finds decomposition insufficient to develop an adequate understanding of the real world, real time character of work in any organization.

Process mapping is inadequate insofar as it is too high-level and all too often suspends analysis at the level (as business process re-engineers might put it) of 'transactions' between participants, without specifying how transactions between parties to the work are collaboratively achieved. Task analysis, in all its rich variety from scientific management to ergonomics and cognitive analysis, is inadequate insofar as it is too low-level, individuating work and blinding us to its collaborative character. In either case, then, it is not possible to uncover the arrangements of cooperation and collaboration that inhabit work and provide for its organized character in *interactionally achieved* detail.

Fundamentally ethnography insists that the design of IT systems should be grounded in and be responsive to the interactional circumstances of work's production, as

design is inevitably intertwined with them. Even where design is concerned to develop a completely new system, significant value and utility may be gained from understanding the lively context of work, the professional relationships that inhabit it, the skills and competences that people exercise, and the bearing these may have on *work redesign*, which is what systems design actually amounts to. Ethnography is not a panacea to the 'wicked' problems that inhabit design but it may engender an analytic sensitivity to the craft sensibilities, working practices, and real world demands that a new IT system will have to respond to if it is to be used and not to be worked around, as is all too often the case.

Furthermore, with its emphasis on naturalistic study, ethnography is not difficult to incorporate into organizational development strategies and design teams. Organizational 'toolsmiths' familiar with the work of a setting may readily adopt the approach. It requires no special skills but rather, attention to what is already in plain view. Special methods or instruments are not required, though video recording is extremely useful as it permits detailed analysis after fieldwork has been conducted. The aim here is to inspect and analyze the ordinary course of work activities, to look at and examine whatever it is that people ordinarily *do* in the course of working.

In a great many respects doing ethnography is all about teasing out what people take for granted. While this may seem unremarkable, to the incumbent at least if not to an external party, it is within the 'routine' that the craft sensibilities, working practices, skills, competences, working relationships, and arrangements of collaboration that inhabit work are displayed and have their purchase. After all, the 'same business as usual' doesn't just happen – it has to be *made* to happen, and skilled professionals have become so adept at making it happen again, in the face of the all the contingencies that may effect their work, that it becomes an utterly unremarkable and mundane feature of their working lives. Nevertheless, IT systems will be embedded in such unremarkable achievements and will ultimately be made answerable to them by those who must use them.

While it may take a little more effort for an outsider, a consultant or industrial designer, to develop familiarity with the work of a setting, the principles are still the same: pay close and careful attention to whatever it is that people ordinarily do in the course of their work and tease out the skilful, competent, concerted ways in which the work 'gets done' yet again. It might be asked, what of the Hawthorne Effect and the disturbance caused by another party observing the work and videoing it even? The best advice that can be given is: don't worry about it; disturbance effects are over-inflated.

By and large people have better things to do than worry about the presence of an ethnographer, such as getting on with their work. The only caveat is that you are frank with them. Tell them why you're taking an interest in their work, what the study is for, what will be done with the findings, and be sure to address any questions and concerns they might have. It is even good practice in design to present your findings to the people you have been studying. Not only does this serve to validate your results, and allow you to amend them if they are wrong, but it provides an invaluable opportunity to engage them as stakeholders in the creative process of designing a new system of work.

It need not take undue effort to incorporate ethnography into the design process either. While ethnography is typically associated with long periods of fieldwork in anthropology and sociology, years even, in a design context much more modest and tractable periods of time may be invested in the enterprise. 'Quick and dirty' studies may be conducted to scope the work of a setting in the first instance and be complemented by 'concurrent' studies as development progresses and 'evaluation' studies as design solutions become more concrete.

Ethnographic studies have proven to be a valuable addition to the developer's toolkit, shaping the design of IT systems that add value to work rather than add overhead. Ethnography is today exploited by academic and industrial research labs alike, including Xerox, Intel, IBM, Hewlett Packard and Microsoft. For a more detailed introduction to ethnography for IT systems design see Andy Crabtree *Designing Collaborative Systems: A Practical Guide to Ethnography*, published by Springer.[*]