A Web on the Wind: The Structure of Invisible Work

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Introduction

What is work? Efforts to design and introduce new technologies and to restructure the workplace (which often involve new technology) will be most successful when built on a firm foundation of knowledge about how work actually gets accomplished.

Much work is visible. It yields to being being mapped, flowcharted, quantified, measured. When planning for restructuring or new technology, visible work is the focus of attention. It is the only work that is seen, so efforts to restructure center on how visible work can be manipulated, redrawn, reorganized, automated or supported with new technology. But a growing body of empirical evidence demonstrates that there is more to work than is captured in flow charts and conventional metrics.

This special issue documents four kinds of invisible work: (1) work done in invisible places, such as the highly skilled behind-the-scenes work of reference librarians, (2) work defined as routine or manual that actually requires considerable problem solving and knowledge, such as the work of telephone operators, (3) work done by invisible people such as domestics, and (4) informal work processes that are not part of anybody’s job description but which are crucial for the collective functioning of the workplace, such as regular but open-ended meetings without a specific agenda, informal conversations, gossip, humor, storytelling.

Understanding the nature and structure of invisible work is crucial to designing and managing organizations. When organizations are restructured and work is reorganized, invisible but valuable work is often eliminated. No one recognizes that it is being done, or that it is of value, so the time and personnel it requires are not allotted in new plans. Recently at Apple Computer, for example, the Apple Library, considered one of the best, if not the best industrial library in the world, was closed down during budget cutting. One famous high level executive was shown the library in September, 1997, in a last-ditch effort to persuade him of its importance before the budget ax was about to fall. His remark to the head of the library was, “The engineers should already know all this, shouldn’t they?” Another executive said the library was unnecessary because it simply encouraged employees to waste
time getting clever quotes for their slide presentations. The invisibility of the work of the librarians led (in part) to the Library’s demise. In other settings, librarians are targets for elimination because it is believed that they can be replaced by software. For example, some government officials do not understand the importance of what librarians do, and are willing to cut library funds because they believe that “digital libraries” and computer-based services can successfully replace human librarians.

Invisible work also occurs in the case of workers’ input to continuous improvement and development of practices, products, and technologies. Such work has tacitly become an increasingly important layer of “second order work” on top of regular work duties.

Sometimes new work processes are introduced that undermine good but invisible work being done by employees. For example, the work of telephone operators is often defined by telephone companies as rote and routine, amenable to being tightly scripted on a second by second basis (saving the phone company money). Upon closer scrutiny, it is found that telephone operators frequently solve problems for customers in a resourceful, proactive manner (e.g., “My heat has been turned off. Who do I call?”). Attempts to constrain and reduce interactions with customers result in poorer customer service and less satisfaction with phone company service, leaving companies vulnerable, over the long run, to competition. In another arena, many banks that have cut back customer service in an effort to reduce costs, are now being openly challenged by “boutique” banks that emphasize personal service and human contact.

We call this issue *A Web on the Wind* after the work of the Russian physiologist Nikolai Aleksandrovich Bernshtein (1896–1966). Bernshtein proposed that the rudiments of complex physiological phenomena were like a web on the wind: highly structured, but floating and difficult to detect unless one looks carefully. A gossamer web on the wind is visible if you train your eye on it, though it floats past undetected when you are unseeing. The web has a complex, even beautiful structure, and is both as strong and delicate as a finely spun web. Exploring that gossamer – both its strength and delicacy – is the objective of this issue.

The contributors to this issue come from varied backgrounds including psychology, anthropology, economics, design, artificial intelligence, sociology, and education. Theoretical backgrounds are diverse, including ethnocriticism, activity theory, Weberian perspectives, grounded theory and social criticism. As the papers in the issue will show, invisible work takes many guises: as tacit and contextual knowledge, as informal social networks, as expertise acquired by old hands, as long-term teamwork. These things disappear in bloodless diagrams showing the putative advantages of “matrix” organizations, in blithe proposals for “intelligent” software agents.

Because of the extreme division of labor in postindustrial society, work is, in a sense, always invisible to everyone but its own practitioners (and even they are not always aware of their own special expertise and how it functions). The question is: when do we need to make the invisible visible? There are many answers depending