Chapter 3
The View from Organizational Studies

In this chapter we will argue that CSCW has to provide the empirical descriptions as well as the conceptual development more or less on its own given that e.g. organizational studies do not frame their research problems towards technology development in the sense that their focus is repeatedly on factors and issues somewhat irrelevant to the immediate endeavour of technology development for cooperative work.[1]

The material in this book reports ethnographic work conducted in architectural offices and on building sites over a number of months. Hopefully, the results of this 'organizational ethnography' will be of interest in itself. Nevertheless, the building process is not our primary subject in this chapter at least. Our interest is in the nature of inquiry in the social sciences and more particularly organizational studies and the purposes to which it can be put in connection to technology development. Organizational studies have sought, broadly speaking, to explain human action using a range of theoretical models and conceptual frameworks, and to critique what is perceived as the foundation of this conduct. Such foundation may be found in power formations, gender divisions, the distribution of wealth, institutional structures and so forth. The task in this chapter is to inquire into the practical implications that these approaches may have for the design of technology for cooperative work in organizations, rather than to resolve the various debates within organizational studies.

Seeing organizational studies through the prism of technology development will make many of the debates and perspectives within the field seem irrelevant, and the point is that they may very well be precisely that *with the concerns we have in mind*. This may seem like an odd thing to say at the outset, but by the time we have concluded this chapter and indeed this book, hopefully the argument will seem clear, namely, that the debates within organizational studies are primarily about competing

[1] Please do not read this as an attempt to belittle the great research carried out in the field of organizational studies, this is by no means the intention. The arguments made here are only made to explicate the diverging researching interest that are at stake in the respective research fields of CSCW and organizational studies.

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theories. We will argue that most of these theoretical debates offer little guidance on how to analyse and describe actual work practices with the concerns of technology development we have in mind.

Of course this is not to say that organizational theorising is without merit, far from it. It is wholly appropriate in a large and complex discipline. The argument we are setting out to make here is less extreme. All we are saying is that much inquiry into organizational studies consists of using empirical material to refine and develop theory, rather than to refine and develop technology. The latter obviously being our concern. As convincingly argued by (Harper et al. 2000, p.21), the focus on theory and theoretical debates within sociology and organizational studies has distracted attention away from the problem of how to capture and present empirical materials for those less interested in theory for its own sake. One by-product of this is that the results of many organizational studies and debates are unsuitable for use in technology development.

Organizational Studies

Our goal then may seem rather broad, although, the argument is not as radical as it might first appear. As indicated, our concern is to investigate if we can import theories wholesale from e.g. organizational studies into the research field of CSCW and use them as tools in the development of technologies for cooperative work. We are concerned especially to identify what a description of coordination in cross-organizational settings would be. That is, we will seek to analyze how actors within and across organizational settings manage to coordinate enormously complex projects involving hundreds of people and scores of firms and organizational units. Our view is that technology development for cooperative work settings needs adequate understanding of these matters on a practical level. Perhaps the most striking aspect of organizational literature is how little understanding of the 'practical' aspects of human practice it confers, and this holds true regardless of the theoretical stance in question. It seems that the reasons for this lie in the purpose of the research in question. By and large, these purposes have to do with elaborating or refining theoretical discussions. Contemporary organizational literature is rife with competing theoretical stances (Harper et al. 2000). One commentator, Peter Manning, sums up this state of affairs[2]:

> Organizational analysis faces a turning point as the now-tired functionalism, including the system theory and the organic models of another generation, seems exhausted. In functionalism, system theory, Marxism, structuralism and semiotic-influenced work, system and structure precede content and pattern agency. These outlines of the possible seem blurred now, and 'exhaustion' is perhaps less accurate that desuetude. A cursory examination of research in organizational analysis suggests a proliferation of new journals with a continental flair, combining ethnography and case studies with a dash of semiotics and poststructuralism […] They draw on unfamiliar and abstract models (structuralism, semiotics, population biology)

[2] See also Harper and associates (Harper et al. 2000).

> and cite difficult (perhaps even unread) sources (Derrida, Lyotard, Kristeva, Baudrillard) and walk a blurred line between organization, a focus on meaning creation and ordering, and organizations as a product and determinant. Some argue from a philosophical premise free of empirical data. (Manning 1997, p.139).

It is not our primary concern to offer an account of how this state of affairs came about. Although, McKinley and Mark (2003, p.366) does offer some explanation in stating that 'a case can be made that in recent decades, organization theory has been dominated by a 'uniqueness value' which dictates that unique work is good and constrains scholars toward the production of intellectual novelty', rather than empirical description and incremental advancement. This observation may go some way to explain the proliferation of competing theories within organizational studies. However, as mentioned this is not our concern here. Our immediate concern is, rather, to map the terrain of organizational studies, and this map must be based on some general distinctions in order to appear coherent. This holds true of the work of Burrell and Morgan (1979) as well as (Morgan 2006), two of the most cited works in the area. According the latter, organizational studies may be mapped out and theoretical orientations categorised using a set of images or metaphors such as 'organizations as machines', 'organizations as organisms', and 'organizations as political systems' (Morgan 2006).

More specifically, Morgan (2006) bases his mapping of organizational studies on the simple premise that all theories of organization are based on implicit images or metaphors that stretch our imagination in a way that can create powerful insights, but at the risk of distortion. Metaphors invite us to see the similarities, while disregarding differences. According to Morgan (2006), approaching metaphors in this way we see that the premise that all theory is metaphor has far-reaching consequences. We have to accept that any grouping of theoretical approaches according to metaphors may be incomplete, biased, and potentially misleading.

Be that as it may, the metaphor approach does serve one important function; it is a way of structuring the mass of literature within organizational theory according to analytical purpose. Whereas the distinction between, for example, 'organizations as machines' and 'organizations as political systems' is represented as a struggle between those who seek to explain the form of organizations in terms of efficiency and effectiveness (the 'organizations as machines' approach) and those who seek to understand organizations in terms of a plurality of interests, conflicts and power struggle (the 'organizations as political systems' approach), Morgan's typology also serves to make explicit the different purposes organizational analysis might serve. This is what interests us. Some of these purposes are moral, some political, while others are mercantile. But rarely do these purposes lead to any practical consequences for technology development. Or more precisely, though some of these could (e.g. some of the early scientific management work), by and large they are not focused on the technology development process or the implications for technology development are simply not pursued. Morgan's (2006) account of certain explanations of 'organizations as machines', 'organizations as organisms' and 'organizations as political systems' can be used to demonstrate this. We shall turn to this now. Please note that we are *not* embarking on a full review of organizational studies, rather we are merely attempting to qualify our point.

Organizations as Machines

Morgan (2006) associates two early strains of organizational theory with the 'organizations as machines' metaphor, the first being *classical management theory* (e.g. Fayol 1949; Gulick and Urwick 1937; Mooney and Reiley 1931) the second being *scientific management* (e.g. Taylor 1911).

Of the works of classical management theory, those of Fayol (1949), Mooney and Reiley (1931) and Gulick and Urwick (1937) have been among the most influential. Each illustrates how classical management theory is essentially about how to design an efficient and effective organization along the lines of a well-oiled 'machine'. That is, the organization was conceived as a network of parts each with its own function e.g. production, marketing, finance, personnel, research and development, with each department further specified as a hierarchy of well-defined job functions. Command and control was essential to the workings or the organization.

The principles of scientific management are set out by Taylor (1911) who treats management as the key variable in determining organizational efficiency. The principle of separating the planning and design of work from its execution is often seen as the most far-reaching element of Taylor's approach to management, for it effectively split the work or the hand and the mind. Managers should do all the thinking and design of work, leaving workers to perform the tasks they were told to do. The jobs workers were required to do were simplified to the utmost so that workers could be unskilled, cheap and easy to train. Taylor's system aimed to rationalize the workplace so that it could be 'manned' by interchangeable workers. In applying these principles Taylor advocated the use of time and motion study as a means of analysing and standardising work activities. His scientific approach called for detailed observations and measurement in order to break down the work process into every detail so that it could be specified exactly what every worker was supposed to do. Taylor found inspiration in Gilbreth's *Motion Study* (1911).

Both approaches mentioned above are also described as *functionalism* (Burell and Morgan 1979). According to Morgan (2006, p.27), mechanistic or functional approaches to organizational theory presume that (a) there is a straightforward task or set of tasks to plan and perform, (b) that the environment of the organization is stable, (c) that one wished to produce exactly the same product time and again, (d) that human workers can be expected to work as they have been stipulated to do. In this set of assumptions lie also the limitations of these approaches. That is, we cannot take it for granted, that it is possible to plan all work tasks in advance, that the organizational environment is stable, that contingencies do not arise, and that people do as they are told by management. Quite the opposite may hold true.

Perhaps it is obvious that with these limitations to the approaches of classical management theory and scientific management (and its contemporary descendants e.g. in the process reengineering movement of the early 1990s) are so severe that we cannot use these approaches in the context of technology development for

cooperative work. That is, this approach takes it for granted that technology will always when implemented simply work. The achievement of the work was left aside as were questions about how technology was made to facilitate processes in specific and often changing circumstances (Harper et al. 2000). Paradoxically, this state of affairs was prevailing in spite of these approaches' explicit focus on work performance according to e.g. time and motion studies or goal achievement. The trouble was that 'scientific methods' such as time and motion studies gave a very limited view of work practice that did not account for the contingencies nor for the cultural and innovative aspects of it. Present day ethnographic studies may be better placed to give a fuller picture as indicated above.

By ignoring, or failing to capture, the contingencies of the work place, the attitudes and values of the workers as well as the need for innovation the mechanistic approaches fall short of informing the development of technology for cooperative work. Alas, we are not able to import theory or conceptual frameworks wholesale from approaches that rely on the metaphor of 'organizations as machines'. That is, we cannot (indiscriminately) use the theories and approaches of classical 'management theory' and 'scientific management' as tools in the technology development process. We will have to look elsewhere. First we will take a look at organizational theory that views 'organizations as organisms'.

Organizations as Organisms

Morgan (2006) associates several directions within organizational theory with the 'organizations as organisms' metaphor, including *contingency theory* (e.g. refs) and the *population ecology view* (e.g. refs). We will begin with the former.

The idea of a contingency theory of organizations was first presented in an explicit way by Lawrence and Lorsch in their book *Organization and Environment* (1967), which reported the results of an empirical study of ten organizations operating in a variety of environments. The study was directed at answering the question 'What kind of organization does it take to deal with various economic and market conditions?' The study was based on an organism analogy and viewed the organization as a system of interrelated elements that were subject to influence by the environment (Burell and Morgan 1979, p.164).

The findings of the Lawrence and Lorsch study provided a direct challenge to the tenets of classical management theory. As mentioned above, classical management theory sought to specify *universal* principles of organizations as a guide to managerial action. In contrast, Lawrence and Lorsch suggested that *different* organizational principles were appropriate in different environmental circumstances and within different parts of the same organization. As they put it, 'in a diverse and dynamic field, such as the plastics industry effective organizations have to be highly differentiated and highly integrated. In a more stable and less diverse environment, like the container industry, effective organizations have to be less differentiated, but they

must still achieve a high degree of integration' (Lawrence and Lorsch 1967, p.10). Lawrence and Lorsch's contingency approach suggested that the appropriateness of management principles depend on the nature of the situation in which they were applied, and organizations must adapt and acquire a 'fit' with the circumstance of the environment. This was as mentioned in contrast to the tenets of classical management theory that aspired to the development of universal management principles. Moreover, other important studies leading up to Lawrence and Lorsch's formulation of contingency theory were generating similar results (e.g. Burns and Stalker 1961; Emery and Trist 1965). This work served to enforce the idea that in different environmental circumstances 'some species of organizations are better able to survive than others'. Many followed the lead of Lawrence and Lorsch, exploring and elaborating the various tenets of contingency theory (e.g. Kast and Rosenzweig 1973).

With the work of Aldrich (1979) and Hannan and Freeman (1977) the population ecology view of organizations were formulated and organizational analysis shifts from explaining how individual organizations adapt to their environments (as in e.g. contingency theory), to explaining how whole populations of organizations are formed and change. According to the proponents of the population ecology view of organizations, the idea that organizations can adapt to their environments attributes too much flexibility and agency to the individual organization and too little to the environment as a force in 'selection' of organizational success and failure, survival and demise. The general idea is that organizations, like organisms in nature, must fight for a limited amount of resources with competitors, and only the fittest survive. The environment (rather than human management) is the main critical factor in determining which organizations succeed and which fail, 'selecting' the most robust competitors through eliminating the weaker ones. The population ecology view of organizations encourages us to understand the dynamics influencing whole populations of organizations. Why are there so many different kinds of organizations? What factors influence their number and distribution? Why do some 'survive' while other 'perish'? As is perhaps apparent, the population ecology view has strong leanings towards biology and the idea of natural selection (Morgan 2006, p.59).

The approaches of contingency theory as well as the population ecology view of organizations invite us to see organizations as organisms (Morgan 2006). One of the main strengths of creating and exploring a parallel between organisms and organizations stem from the emphasis placed on understanding relations between organizations and their environment. The mechanical theories mentioned above e.g. classical management theory more or less ignored the role of the environment, treating organizations as relatively closed systems that could be optimized according to e.g. time and motion studies and the delegation of all executive power to the management layer of the organization. Using, the image of an organism we are encouraged to see the organization as an open system deeply intertwined with other organizations, markets and institutions (Morgan 2006).

Having said that, the metaphor does have some major limitations, most of which are associated with the way of seeing it basically encourages. According to Morgan (2006), organizational theories that rely on the organism metaphor presume or encourage the view that organizations are as concrete or tangible as a biological

organism. Nature in most cases presents itself to us in a concrete and tangible way. However, this image breaks down (or ought to break down) when applied to organizations because to a large extent organizations are the creation of human agency. That is, organizations are very much products of human norms, visions, ideas, and attitudes. Of course there are material aspects of any organization but for their activity and everyday reproduction they depend on human action.

In light of this it is misleading to suggest that organization adapt to the environment, as the contingency theorists seem to think, or that environments 'select' the organizations that are to survive, as the population ecologists will have us believe (Morgan 2006, p.67). Both views seem to offer *no* avenue into the study of how humans *achieve* organizations through their actions and practices. That is, the organism view of organizations seems to remove focus from the normative socio-technical practices of human beings that make and remake organizations on an everyday basis and put a focus on themes of adaption and survival.

Perhaps it is self-evident that with these limitations the approaches of contingency theory and the population ecology view of organizations are so that we cannot use these approaches whole-heartedly in the technology development process. That is, in order to inform the development of technology we need to focus on the everyday achievement of organizational action rather than the grand themes of adaption and survival. This is a question of choosing the right tool for the job, rather than a question of the merit of these approaches in any absolute sense.

By ignoring, or failing to capture, the level of normative practice the approaches of contingency theory and organizational population ecology fall short of informing the development of technology for cooperative work. Consequently, we cannot wholesale import conceptual frameworks that rely on the metaphor of 'organizations as organisms' such as e.g. contingency theory or the population ecology view of organizations into the field of CSCW. Again, we will need to look elsewhere.

Organizations as Political Systems

According to Morgan (2006), several clusters within organizational theory can be identified with the 'organizations as political systems' metaphor, including theory pertaining to *systems of government* and *organizational politics*. We will begin with the former and in turn consider the latter.

The idea of linking modes of organization and system of political rule has been long appreciated not least by political scientists interested in understanding the political significance of organizations and the relationship between organizations and the state. As a result several systems of 'government' within organizations have been investigated. For example, Michaels (1949) early on explored autocracy as a form of government within organizations, more famously Weber (1947) has explored the nature of bureaucracy, and the power of experts has been investigated in Galbraith's (1967) studies of technocracy, while approaches to democracy and industrial self-organization has been studied by Vanek (1975) as well as Woodworth,

Meek and Whyte (1985). The guiding principle in these studies (and many others) is that organizations, like governments, employ some sort of system of 'rule' as a means of creating order and maintaining control among their members. Often these different kinds of rule are described as coexisting within the same organization, rather than being mutually exclusive. An analysis of organizations in the perspective of comparative government can induce an understanding or view of organizations as systems of government. However, in order to understand the particular political actions of organizational members it is necessary to explore the detailed process through which organizational members engage in politics (Morgan 2006).

According to Morgan (2006), the idea of viewing organizations with a focus on the political actions of organizational members has gained momentum since the early 1960s. The notion that organizational politics hinges on the relationship between interest, conflict and power runs through the literature on organizational politics.

Culbert and McDough (1980) discuss how self-interest shape organizational behaviour. When talking about 'interest', we are generally talking about predispositions embracing goals, values, desires, expectations, orientations and concerns that lead a person or group of persons to act in one way rather than another. Downs discusses various types of political actors found in bureaucratic organizations, including climbers, conservers, advocates and statesmen. While the role of interest groups is considered in e.g. Bacharach and Lawler (1980), Frost and Egri (1991), Freeman (1984) and Wheeler et al. (2003) emphasize the importance of viewing organizations through the eyes of the stakeholders.

The general link made between interest and conflict is that conflict arises whenever interests collide (Morgan 2006). In the organizational literature conflict may be depicted as personal or between rival groups or coalitions. Discussions of the role conflicts between bureaucrats and professionals can be found in e.g. Benson (1973) and Corwin (1970). Discussions of the role of interdepartmental conflict may be found in e.g. Frost (1987) and Putnam and Poole (1987).

The subject of power has received long-standing treatment in the field of organizational studies, and its nature has been the subject of great debate. Most organizational theorists tend to take their point of departure from the definition of power offered by the political scientist Robert Dahl (1957, p.202), who suggested that power involves the ability to get another person or group of persons to do something that he or she would not otherwise have done. This is just one particular view of power, of course, and there are many perspectives in play. For example, in a seminal study Weber (1947) has explored the power of formal authority, while the control of resources as a source of power has been investigated by e.g. Emerson (1962) and Pfeffer (1981). Crozier (1964). Following him Lorsch et al. (2005) has focused on the control of information and knowledge as a means of power, while the power of interpersonal alliances, networks, and coalitions are studies by e.g. Pfeffer and Salancik (1978) and Pfeffer (1981).

The view of organizations as political systems may help us see the phenomenon of politics as a feature of organizational life and recognise its role in the creation of order. More specifically, it may explode the myth of organizational rationality. Within organizations it may be kosher to stress the importance of rational, effective

an efficient action. But, rational, efficient and effective for whom? Who's goals are being pursued? What interests are being served? Who benefits? The political metaphor emphasizes that organizational action may be rational for some actors' interests but not for others (Morgan 2006).

The metaphor of organizations as political systems, then, may help us see the phenomenon of politics as a feature of organizational life. The limitation associated with that in the context of technology development is that this perspective is not always entirely relevant. In fact, when we in CSCW analyse cooperative work activities we are employing a distinct analytical perspective that deliberately leaves the political (i.e. interest, conflict and power) in the background while the practical achievement of cooperative work occupies the foreground. The influential researcher Kjeld Schmidt (2011, p.11) makes a distinction between the cooperative work organization on the one hand and the governance arrangements on the other hand. This distinction – between cooperative work and the political and contractual setting in which it is embedded – is useful in that it allows us to focus clearly on the one rather than the other. That is, it allows us to single out 'cooperative work' as a distinct category of practice that can be conceived of fairly independently of organizational politics i.e. the motives, interests, conflicts and power struggles of the actors (what we are faced with here is of course an analytical choice of perspective, rather than the proposition that the study of cooperative work is somehow more important that the study of organizational politics).

When we describe the cooperative activities in for example the building process, we are applying a distinct analytical perspective. We look at the cooperative effort without stressing e.g. organizational politics. In fact, we do not need to know e.g. the interests, motives, conflicts and power struggles of the actors. That is, by applying the distinctions made above between cooperative activities and the political and contractual setting we can focus on and investigate how cooperative actors achieve cooperative work practices (Schmidt 2011, p.10).

Furthermore, being interdependent in work (as cooperative actors are) is *categorically* different from being interdependent by virtue of sharing the same budget or belonging to the same formal organizational structure (and associated politicking) as is the case when people are employed in the same company or institution. Different rules apply and hence different practices and considerations are in play (Schmidt 2011). Thus defined, the interdependencies between actors in cooperative work are, as we shall see, directly observable in that the actors have to coordinate, align and integrate their activities in order to achieve their cooperative work of for example designing and constructing a large building where a multitude of interdependent actors are involved.

In addition, when we conceive of cooperative work in terms of actual observable interdependencies, the obvious next step is to investigate the different characteristics of different relations of interdependence and how they are resolved, integrated and coordinated. This is precisely what we will do in the context of the building process.

Perhaps it is obvious that with these analytical choices and interests i.e. in relation to understanding the interdependences and the coordination of cooperative work practice, the approaches and theories of the 'organizations as political systems'

metaphor become marginalized, pushed in the background and even redundant *for our purposes*. In order to inform the study of cooperative work, and in turn the development of technology for cooperative work, we need to focus on the everyday achievement of cooperative work, such as, the alignment and coordination of interdependent work tasks, rather than focus on e.g. 'organizations as political systems'. This is again a question of choosing the right tool for the job, rather than a question of the merit of these approaches in any absolute sense.

The Missing Metaphor: 'Organizations as Practical Achievements'

In Morgan's (2006) vivid and approachable account of organizational theory a large array of metaphors are in play, we have only discussed a few. In addition, to the ones mentioned above there are the metaphors of 'organizations as culture' that provide insights into the values and attitudes of organizational actors across the globe, 'organizations as brains' with a focus on the learning organization, 'organizations as psychic prisons' that provides insight into the psychodynamic aspects of management, 'organizations as flux and transformation' that focus on change and the management of organizational change, and finally there is the metaphor of 'organizations as instruments of domination' that focus on potentially exploitative aspects of organizational and corporate life.

As mentioned above, we do not have the ambition of making a full account or review of organizational theory and will not consider these metaphors and their associated theoretical stances in any further detail. Having said that, we will point out that perhaps the *missing* metaphor in Morgan's (2006) typology of organizational studies is that of 'organizations as practical achievements' – this metaphor may be helpful in the context of technology development for cooperative work we will argue. Thankfully, both within organizational studies proper and in associated disciplines the view of 'organizations as practical achievement' abound. For inspiration, we need only look at the work of Charles Perrow (e.g.1970, 1984) who within organizational studies stressed what we may describe as socio-material concerns, to practice theory that put a focus on the logic of everyday action (e.g. Bourdieu 1977, 1992), to ethnomethodologically informed accounts that deftly and wholeheartedly seek to provide detailed descriptions of lived experience free of theoretical indulgence (e.g. Anderson et al. 1989; Harper et al. 1989, 2000; Harper and Hughes 1993; Randall et al. 2007), to accounts informed by language philosophy that carefully provide fundamental concepts and strategies for the analysis of cooperative work (e.g. Schmidt 2011). These approaches are very helpful indeed, and the following pages are deeply indebted to them. Although not all of them explicitly frame their research towards technology development.

We will not provide a detailed account of these approaches in this section; rather the debt to these approaches should be evident in the pages that follow. Having said that, we will take a quick look at the intriguing work of Charles Perrow who neatly (and early on) put the finger on some of the concerns that we share and that will be important in this book.

Perrow raised the following problem in 1970 that had hitherto not been fully addressed:

> One of the enduring truisms of organizational analysis is that organizations are, after all, made up of people. Such a statement usually brings about a sagacious nodding of heads and a comfortable feeling of being on solid ground. But it is also true that organizations are inanimate things – they are filing cabinets, typewriters, machinery, records, mailing lists, or goods and services. This observation usually elicits no resounding thump on the table. Still, it raises a good question (Perrow 1970, p.2).

This is indeed a question or a perspective that will be evident in this book as the cooperative practices of the actors and their associates' use of material artifacts in the building process are described an accounted for. However, though the problem posed by Perrow is highly important we may note that Perrow does not say much about what kind of data would be appropriate in a study that addresses this. There is no description of the achievement of organizational practices that are called for in the context of technology development. In all fairness though it should be mentioned that Perrow does not explicitly set out to inform the development of information technology for cooperative work as we do.

Summary

For the sake of clarity we will briefly reiterate the arguments made so far.

In the context of accounting for the practice-oriented research program in CSCW, which is the foundation that this book rests on, we have described how CSCW is ultimately concerned with the design of technology for cooperative work. Furthermore, we argued that 'technology' refers to the use of artifacts in practice. It is an 'ability' word. When accepting this notion it becomes clear that understanding human practice is integral to developing technology. Applying the methods of ethnography may give us insights into practice that we would otherwise be unaware of. This is an important justification in that we cannot know in advance what the relevant features of a certain practice are, let alone how it is relevant for technology development and the prospective users.

In addition, we argued that analytical findings based on ethnography, in the form of e.g. concepts and conceptual frameworks, may ground the technology development process by providing a framework within which it may be conducted, explored, critiqued and evaluated. As such there is (ideally) no 'gap' between ethnographic work places studies and technology development providing that the role of analytical concepts is taken into consideration. Analytical concepts such as *awareness* and *articulation work* have inspired numerous interesting and useful technologies.

Having considered the role of analytical findings based on ethnography in technology development we wondered if any concept, conceptual framework or theoretical orientation might do as tools in the technology development process? Is it possible to import concepts wholesale from, for example, organizational studies into the research field of CSCW and use them as analytical tools in the development of technologies for cooperative work? Obviously, it could save a lot of time and

energy within CSCW if such a wholesale import strategy was tenable. Unfortunately this did not seem to be the case, however.

Through the investigation of a series of theoretical orientations represented by various metaphors, such as 'organizations as machines', organizations as organisms' and 'organizations as political systems', we found that the field of organizational studies does not frame the research problems towards technology development. We argued that the primary goal of much inquiry into organizational studies consists of using empirical material to refine and develop theory, rather than to capture and present empirical material and generate concepts for those interested in technology development. The latter obviously being our concern. Consequently, a wholesale import of theory and theoretical orientations from e.g. organizational studies does not seem tenable *with the aims that we have in mind*. Rather, the field of CSCW must itself contribute to the presentation of empirical material and the generation of concepts aimed at framing the technology development process. This is precisely what we will set out to do next as we explore the complex world of the building process. That is, in the following pages we will attempt to generate empirically informed accounts of the building process and discuss concepts of cooperative work and coordinative practices with a view to technology.

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