

STRUCTURE, AGENCY, AND CAUSALITY: THREE CENTRAL ASSUMPTIONS IN ITD RESEARCH

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Abstract: The intention of this paper is to highlight and demonstrate the importance of three ontological assumptions in information technology for development (ITD) research; structure, agency, and causality. We argue that these three assumptions are 1) inherent in all social theory, and thus in ITD research, and 2) underdetermined by the current dominant philosophical approaches to research. Therefore, irrespective of one's adopted philosophical approach we argue that researchers need to reflect on these assumptions. To expedite this reflection, we present a model of the relationships among philosophy, social theory, and research methodology that illustrates the centrality of these three assumptions in the process of research and theorizing. Then, this essay engages in a retrospective analysis of an ongoing longitudinal interpretive research study in India to consider the relevance of these assumptions and show how they are implicated in research and the development of theory.

Keywords: philosophical assumptions, social theory, structure, agency, causality, India, rural development.

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1. INTRODUCTION

This paper reflects on the relationship between academic researchers in the field of information technology for development (ITD) and the underlying assumptions they employ to underpin their research. We argue that to strengthen the theoretical base of ITD, we need to encourage greater reflection on these philosophical and theoretical assumptions. Impetus for this inquiry comes from recent recognition that immersion into insights from philosophy and social theory can provide us with new insights into our research in the empirical world (Hollis, 1994; A. Lee, 2004, p. 2; Walsham, 1995). If we wish to engage in research that has a chance of reaching valid findings, having clear sight of these assumptions is essential.

ITD researchers are often captives of the debate at the philosophy of science level – we find ourselves obliged to work within the existing paradigms of research such as positivism, interpretivism, (A. Lee, 1991; Orlikowski & Baroudi, 1991; Weber, 2004), and the more recent entry of critical realism (Dobson, 2002; Mingers, 2004a, 2004b; Smith, 2005, 2006; Tsoukas, 1989). Variations on this debate have been conducted at the level of the philosophy of social science and has been evolving for many years now (Bhaskar, 1998b; Kincaid, 1996; Latour, 1999; Laudén, 1990). These philosophies are adopted and debated, along essentially the same lines of argumentation, by researchers across the social science spectrum. This is possible because the purpose of every social science study is the same: to understand human behavior in social situations.

These philosophical paradigms are both a blessing and a curse. They have proven very helpful in the structuring and communication of research through the provision of a set of common guiding assumptions (e.g. George & Bennett, 2005, p. 128). However, sometimes they obscure as much as they clarify, presenting simplifications of more nuanced positions (Weber, 2004). Indeed under the umbrella of each approach there is a wide degree of latitude to choose amongst different assumptions within that framework. For example, there are a plethora of research designs and methodologies that fall within the paradigmatic research approaches. Consider Heller's (2001) listing of a series of approaches in contemporary research: constructionism, constructivism, critical enquiry, deconstruction, discourse analysis, essentialism, ethnography, ethnomethodology, existentialism, foundationalism, Frankfurt School, hermeneutics, and the list goes on (2001, p. 51). Also illustrative is the fact that interpretivism, for example, can arguably be underpinned by the philosophies of critical realism, hermeneutics, or phenomenology (Walsham, 2006), with strains open to hypothesis testing and more stringent methodologies (e.g. A. Lee & Baskerville, 2003) and another strain that argues that methods are more problematic and reject the possibility of hypothesis testing (Avgerou, Ciborra, & Land, 2004; Avgerou & Walsham, 2000; Myers, 2004; Walsham, 2001).

In particular, this article identifies three ontological assumptions that are underdetermined within the frameworks of positivism and interpretivism; social structure, agency (models of individual action), and causality. Importantly, all three of these assumptions are inherent in all social theory, and consequently, all ITD theory. Therefore, regardless of the object of research or research approach, these assumptions warrant explicit consideration. To facilitate this reflection, we propose a simple model of the relationship between philosophy, social theory, and research methodology that highlights the central role of these three components.

This article proceeds as follows. The following section presents and discusses a model of the three assumptions, and shows how they are underdetermined within positivism and interpretivism. With these three assumptions in mind, section three is a retrospective analysis of a longitudinal interpretive research study in India. The goal is to consider the relevance of these assumptions in ITD research and show how this benefits the goals of theorization and generalization. Finally, we conclude.

2. THE MODEL: THE THREE ASSUMPTIONS OF SOCIAL THEORY

This section presents a simple model of the relationship between aspects of the philosophy of social science and research as a starting point for researchers to reflexively engage with philosophy and social theory. The foundation of this model is ontology, the study of what exists. The metaphysical and scientific concepts that constitute one's ontology are our linguistic representations of this reality. When a researcher engages in research he/she necessarily makes ontological claims about what he/she believe exists in the world. The hope is that these claims refer to what actually is in the world. Stemming from ones' ontology other research considerations naturally flow. It should be stated that such a position in no way downgrades the crucial role of epistemology in research, but rather, it should be seen as promoting the often neglected role of ontology (e.g. Crotty, 1998).

We can usefully split this ontology into two domains, the ontology of the natural world and the social world¹. It is the postulated differences in these two domains that results in the schism between the natural and social sciences (cf. Taylor, 1994). While the extent of differences between natural and social world ontologies is debatable (Kincaid, 1996; Martin, 1994), the belief that the social world emerges from the natural world is a view more commonly held, and provides a basis for understanding social ontology (Berger & Luckman, 1967; Searle, 1995).

When a researcher is formulating a theoretical understanding of a particular object of study, he/she will be greatly influenced by his/her assumptions regarding the ontology of the natural and social world. Clarifying this object requires a researcher to make specific assumptions regarding the nature of structure, man, and causality (natural and social). Depending upon these assumptions, the researcher is constrained with respects to his/her epistemology and provides guidance for the consequent research methodology that is deemed to be best suited to study this particular object.² While there are many other assumptions that must be made, our argument is that these three are both a) basic to all social theory and b) left unresolved under the banners of interpretivism or positivism³.

The model of reflexivity proposed in this article has two movements (see Figure 1). First, it begins with meta-theoretical reflection and clarification of the assumptions that underpin the ontology of the natural and social world, specifically with respects to the nature of structure,

¹ Orlikowski and Baroudi (1991) characterize the two types of ontology as "beliefs about physical and social reality" (p. 7).

² Of course, one can engage in grounded-theory approaches where there is ideally no specific starting theory. Such an approach, however, does not exclude the necessity of having specific ideas as to the nature of the natural and social world upon which any theory can be built.

³ In contrast to positivism and interpretivism, critical realism, as a singularly developed philosophy of the natural and social sciences, does takes a clear position on two of these issues; social structure and causality (Bhaskar, 1978, 1998a). Archer, working in the critical realist tradition has been developing a critical realist compatible model of man (see: Archer, 2000, 2002).

man (agency), and causality. This includes, as much as possible, an ontological elaboration of the object of study. That is, what is it exactly that we would like to know? What type of object (natural and social) is it and what types of empirical effects can we expect to see? Second, the researcher moves towards the construction of the appropriate epistemology to tackle that object of study⁴. The rest of this section clarifies the three components.

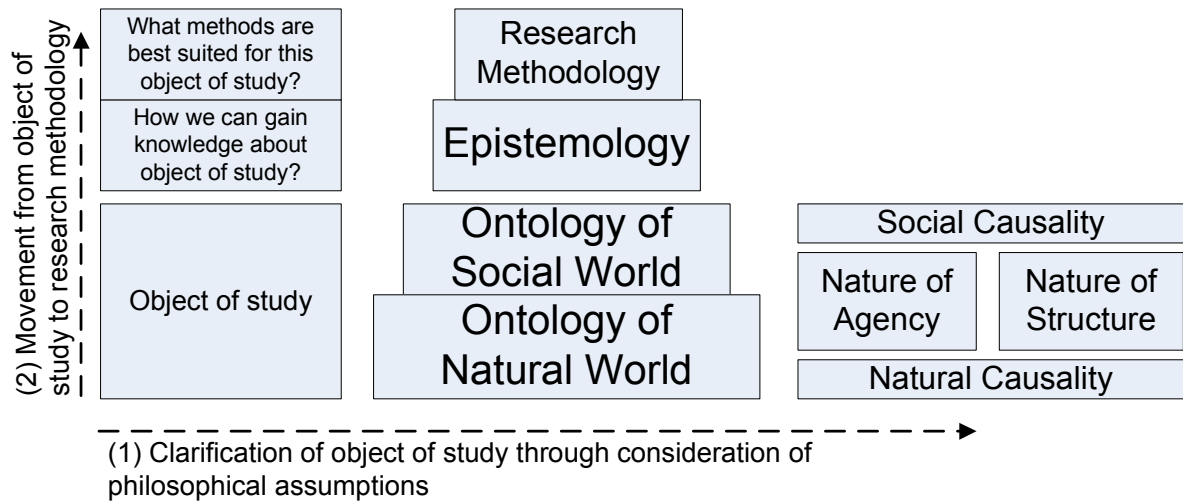


Figure 1. A reflexive researcher does the following: (1) Clarifies the object of study as much as possible with a consideration of the underlying philosophical assumptions involved and (2) Moves from this towards the epistemological and methodological questions that will ultimately define the research methodology.

2.1. The nature of structure

In modern sociology the debate over the nature of the social world has classically been between two positions; individualistic and holistic (Hollis, 1994). Individualists believe that all action and change is based upon the behavior of individuals. The end result is methodological individualism where all social theories are reducible to individualistic theories.⁵ Holistic accounts, on the other hand, hold that individual behavior and social change is the product of macro social forces such that individuals are essentially puppets reacting to these forces (Porpora, 1989).

Two other perspectives argue that structure and agency interact; structural and relational (Porpora, 1998). Structuration theory was an attempt to develop a middle way between the two traditions of sociology defined above (Jones, Orlikowski, & Munir, 2004)⁶. The result is the “duality” of agency and structure where the “two are dependent upon each other and recursively related”, with the main focus on social practices (Rose, 1998). Structure, then, is

⁴ This model presents a static picture of the research process. A more accurate model would show how, through the process of science, further engagement with theory and the activity of gathering empirical data would might bring about an adjustment or changes to these underlying assumptions. The model suffices for the argument here which is to highlight the importance of these three assumptions at the beginning of the research process.

⁵ There are arguably many different subtle variations on methodological individualism, with increasing focus on the significance of the role of individualist theories (Kincaid, 1994).

⁶ Structuration theory has underpinned a lot of IS and ITD research (e.g. Heeks, 2001; Jones et al., 2004; Kouroubali, 2002; Orlikowski, 1992; Orlikowski, 2000; Walsham & Sahay, 1999).

activity-dependent with only a transitory character, as opposed to the holistic conception above. Stemming from Marx and adapted by critical realists (Archer, 1996; Bhaskar, 1998b; Porpora, 1998), a relational sociology holds that structure and agency are linked through a series of relations, where these relations are both necessary and relatively enduring, at least enough that we can set out to study them (Archer, 1995, p. 166). Structure and agency are dependent upon each other for existence; they also operate to a degree autonomous and independent of each other. Consequently, it is possible to trace the interaction of structure and agency through time, something that is difficult for structuration theory that reduces structure and agency into activity (Archer, 1995; Rose, 1998).

The different philosophical approaches of interpretivism and positivism do not necessarily advocate a particular ontological conception of social structure. Social scientists within the positivist paradigm have taken both a holistic perspective (e.g. Durkheim, 1994) as well as an individualist perspective such as assumed by the deductive mathematical modeling at the heart of modern economics (Lawson, 2006). Interpretivists also have some latitude in terms of their adopted vision of structure. Subjectivists are generally considered individualists, focusing on the activities of individuals (King, 1999), whereas those interpretivists who take a critical perspective look to relational structures of power and inequity for their explanations (e.g. Walsham, 2003, p. 85).⁷

Ultimately, one's conception of social structure is crucial as it determines the level of description necessary for the explanation of social events; should the focus be on the individual, the collective, the activity, social relations, or some combination thereof? The choice has significant ramifications. Consider, for example, a critical researcher examining issues of poverty and social inequities. This research takes on a very different focus if power is seen as relational as opposed to an individualistic conception, with significantly different policy outcomes. To better understand and evaluate these recommendations, therefore, we must understand the researchers' underlying conception of structure.

2.2. Agency: an individual-level theory of action

“Any theory of action requires a theory of the elementary actor. The elementary actor is the wellspring of action, no matter how complex are the structures through which action takes place” (Coleman, 1994, p. 503).

As Coleman's statement makes clear, any explanation of a social phenomenon without some reference to the mechanisms prompting human behavior at the level of the individual is most likely incomplete (Coleman, 1994; Kincaid, 1994, p. 511; Little, 1998). Complete social explanation “reaches down to individual reasoning and up to collective resources on offer” (Pawson & Tilley, 1997, p. 60). These are psychological and socio-psychological mechanisms that combine individual desires, beliefs, and opportunities to result in human behavior (Hedström & Swedberg, 1998, p. 23). Consequently, all social theories necessarily include an

⁷ One implication here is that the division sometimes made between positivism, interpretivism, and critical theory (e.g. Orlikowski & Baroudi, 1991) is not comparing likes with likes. Critical theory starts from specific ontological beliefs about the nature of social structure with its inherent conflict and contradiction. Such a position is predicated on its notion of totality that implies a relational perspective of society, generally attributed to Marx. If this is the case, there is no reason that a position of criticality can not be accommodated within general positivist and interpretivist paradigms, provided that they adopt the same perspective of social structure. As a concluding piece of evidence for this argument, we refer you to McGrath (2005) who, after analyzing two critical IS works concluded that “when critical research report on their field studies, their descriptions of methodology (where these are provided at all) show few, if any, distinguishing traits from those of interpretive or positivist researchers” (p. 97).

individual-level theory of action, whether they are in individuals or groups.⁸ Such a theory is implied by most social theorists and is the “dominant model of action we apply when we say we understand the action of another person” (Coleman, 1994, p. 13).

Fortunately, for the purposes of singular social theories, it is not necessary to include a complete model of human behavior. Not every belief, desire, or understanding needs to be identified to explain how a particular theory reaches down through the head of people and motivates action. Each theory will have its particular individual-level theory of action correlate. Consider incentives in economics. Incentives are understood as influential because economics conceives of humans as ultimately self-interest maximizers. Consequently, when presented with incentives, people interpret them according to the desire to maximize their own interest. Of course, self-interest is just one individual level theory of action of human behavior. Just as economics has expanded to bring in behavioral economics, for example, so have ITD researchers argued that there are other rationalities beyond this particular economic approach (Avgerou, 2000). For many people, self-interest is outweighed by other beliefs or desires such as feelings of moral obligations.⁹ Clearly explicating the individual level theory of action plays has two important benefits. First it allows for an easy identification of when and why a theory may be limited or wrong. Many critiques of the economic model of man have led to an expansion of the models and consequent improvement of economic theory. Second it provides the crucial linking macro-level theories with individual level action.

2.3. Causality: the link

Causality is intimately related to the nature of explanation (Gregor, 2006, p. 618). If you believe in the power of social objects to structure human activity, exactly how does this happen? Is it deterministic, and if not, how can we know if something is causally related? When we make assertions about the crucial success factors of an ITD project, for example, can we say exactly *how* and *why* this success factor contributed to the success?

Despite the relationship between causality and explanation, the topic of causality itself receives little direct treatment in the IS or ITD literature, with a few exceptions (Gregor, 2002, 2006; B. Lee, Barua, & Whinston, 1997; Markus & Robey, 1988; Smith, 2006). This lack of coverage may be due to the inherent philosophical complexities that have resulted in so many competing conceptions of causality. Gregor (2006) lists four approaches to the analysis of event causation; regularity, counterfactual, probabilistic causal, and manipulation analysis (p. 617). Indeed, there may be many different types of causality and that “competing” conceptions may prove appropriate in different situations (Cartwright, 2003, p. vii; 2004). Unfortunately, there is not the space to delve into the varieties of causality, or their implications. It suffices to say for the argument here that its tight connection with explanation makes it a necessary component for reflection for all researchers.

3. REFLECTING ON RESEARCH: AN EXAMPLE

In this section, we draw on ongoing longitudinal research carried out by one of the authors in India. This research was initially conducted using an interpretivist lens where the goal was to describe and gain understanding, rather than to explain. We now revisit the case reflecting upon the three assumptions of social theory presented in this paper. The case we present is

⁸ For example, Avgerou and Madon (2004) argue that to account for actors behavior in a particular information system implementation, one must bring in layers of context to allow for researchers to “draw on a frame of reference and meaning: Who are the actors? What understanding and emotional attitudes drive their actions? Where do these stem from” (p. 169)?

⁹ Consider the plight of the low-paid or volunteer NGO worker, who receives less monetary remuneration for the belief that she is going some good in the world.

that of introducing information technology for promoting rural development in the state of Gujarat, India from 1989 to 2006. Rather than discussing specific details of the findings, our aim in the next section is to briefly abstract some key aspects of this effort.

3.1. Abstracting key aspects of the IT for rural development effort, Gujarat, 1989-2006

A strong enabling factor in the effort to introduce IT for rural development in Gujarat was the political leadership in the mid-1980s. Following several decades of failed attempts at decentralization, there was a strong policy drive to introduce computers in order that relevant local information about the implementation of rural development programmes could be made more readily available for planning and monitoring at the district level.

However, despite this vision, various institutions intrinsic to Indian society were seen to play an influence on this policy drive. Here, we focus on three such institutions: the bureaucracy, caste, and the village. First, the top-down nature of the Indian bureaucracy continued to create stiff resistance to efforts made towards decentralization. So strong was the strength of administrative hierarchy that although the slogan of the computerization project was 'decentralisation', the system was eventually designed and implemented completely from the top and imposed as a menu-driven rural development programme information system onto district development agencies. Indeed, the entire planning processes acted as a powerful centralizing force reducing the task of rural development to an impersonal and mechanical exercise that resulted in feelings of apathy among staff at the district level.

A second and related institution of Indian life which imposed itself on the computerization efforts during the first few years of implementation is caste. The administration with its strict division of hierarchy bears semblance to the caste system in India, with its roots in religious beliefs and practices. According to this system, the Indian bureaucracy has a distinct character in which work practices have come to be elaborately differentiated. For example, within each district, senior civil servants have certain prerogatives over the lives of people in subordinate positions – to fire, promote, and determine pay and workload. Under this type of work situation, it is rare to find much collaboration of teamwork taking place between workers at different echelons of the administrative hierarchy with the typical scenario of the lowest clerical rank of officers hardly coming into any direct contact with the highest rank of officers from the Indian Administrative Service.

The two institutions of bureaucracy and caste which tended to reinforce each other exerted a strong influence on the implementation of computerization for rural development in Gujarat during the period 1989 to 1993 and were instrumental in the non take-up of the technology. District-level staff refused to use the system because they perceived it to be irrelevant for the task of rural development. This action gained endorsement from the state government which supported non-usage of the initial menu-driven system but which at the same time encouraged district-level staff to use computers in ways that they found relevant for their own local planning and monitoring tasks. From the mid-1990s, this encouragement provided district officers with an impetus to understand the nature of rural poverty elevating the importance of a third key institution in Indian life – the village. Contrary to the literary image of the Indian village as a peaceful and harmonious self-sufficient community, rural development officers were cognizant of the fact that division and hierarchy arising from income inequalities in the ownership, control and use of land figured prominently in village life. Earlier, they had little opportunity to obtain information other than what was required by higher echelons of the bureaucracy for resource allocation – typically financial outlay and physical numbers of households assisted under rural development schemes.

District officers saw many ways in which computers could directly help them in their work. First, automating the preparation of routine reports and programme plans saved time. Second, sorting data in different ways revealed patterns in the different aspects of the village such as on its demographic composition, on income and other surrogates of poverty, and on inequality and social deprivation. Such data was perceived by them as useful for rural development planning. Third, they gained more confidence in their ability as planners to report to higher authorities about the functioning of rural development programmes and in their ability to make a difference to the communities they were serving. This led to a period of experimental IT usage at the district level in Gujarat. Although there was some degree of synergy in terms of improvements in levels of usage across the districts of Gujarat, individual district rural development agencies were also creating applications specific to their socio-economic and environmental context.

But this local movement to embrace information technology for rural development was short-lived and never really got a chance to transform into some kind of collective outcome. By 2000, a new ideology of governance reform began to intrude into Indian society and the Gujarat state government was influenced by this ideological stance coming from international agencies. This new ideology led to a switch from faith in state control of rural development to faith in markets and other civil society players – for example, non-governmental organizations. A suite of ‘good governance’ prescriptions followed which focused on improving efficiency, increasing civil society participation, and accelerating the marketization of governance activity by involving private entrepreneurs. In terms of computerization activity, the new mandate favored a portfolio of front-end applications such as web portals and e-service delivery over the erstwhile objective of improving the back-end processing of large economic development programs through improved qualitative data. Consequently, by 2003, all earlier progress had been eroded and hardly any examples of local usage and management remained. On the contrary, new players had entered the scene in governance activity. Apart from the bureaucracy, the presence of private players, non-governmental agencies, and community self-help groups was increasing. So far, however, there is little interaction or information exchange taking place between these disparate groups directed towards the common cause of improving rural development.

3.2. Drawing theoretical conclusions

In this section, we attempt to reflect on the relevance of the three assumptions of social theory for this ongoing research. We start with the observation that over the 17-year period of research, there were three main phases in terms of IT usage outcomes. Underlying the descriptions of each phase is a causal explanation which has so far been implicit but which we now explicitly emphasize. In the first phase of research, technology offered the possibility to improve the rural development effort via decentralization. However, the social relations that determined the realization of this possibility were not in place. On the contrary, despite policy prescriptions promoting decentralization to local political and administrative bodies, the style of planning was still very much ‘top-down’ operating within a strict hierarchy of rules and control. The way in which the initial suite of IT applications was launched by the central government (as a menu-driven system designed and developed by a team of programmers in New Delhi in all 436 districts of the country) only served to endorse this attitude thereby demotivating district-level staff from engaging with the technology. During this phase, IT did not improve the effectiveness of rural development and its non take-up by district-level staff was symptomatic of the individual level reasoning of staff members. The application meant little to them because (1) it was an alien artifact for them and they could not understand its potential, (2) the application did not correspond to their daily reporting formats causing them to spend more time, rather than less, and (3) they felt disheartened because the application did

not allow them to use discretion in the collection of data and the taking of decisions regarding poverty alleviation.

In the next main phase of research during the mid-1990s, our findings show that IT offered the possibility of improving the rural development effort but that this time a new context of social relations enabled this to come about. The hegemony of the central government and the long-standing relationship of hostility this caused with the state government resulted in the latter defying the central government and encouraging district-level staff to experiment with the technology. A strong bond surfaced between the state administration and the district agencies and this relationship appeared to be relatively stable over a period of years providing district officers the opportunity to implement their own theories about poverty alleviation. Many of these theories drew on years of experience of working in the field and a wealth of mental models about Indian village life. Earlier, these theories lay dormant in the minds of the district officers who were unable to exercise any discretion in their work due to the top-down target-driven planning orientation. The individual reasoning and beliefs of district officers now found expression because the new relationship with the state administration effectively neutralized the repressive control mechanisms of the central government.

While there was a period of 'making a difference', this was short-lived and was not transformed into some kind of collective action at the state level. In fact, by the late 1990s, there was a new dominant ideology regarding how IT could transform governance activity coming from the international development community based on the idea of 'rolling back the state' and involving a variety of civil society organizations in development planning activity – for example, non-governmental agencies increasingly working with the rural poor. Huge investments have been made to establish e-services applications to improve the interface between citizens and government by providing a range of IT-enabled services such as application forms for government-run rural development schemes. However, the current set of social relations once again discourages, rather than encourages district level officers to improve rural development planning and monitoring systems. These relations now involve more than government alone. There are new players which have their own systems of hierarchy in place – for example, rural development programmes now involve the input of local NGOs which have their own structures of reporting and information systems. Similarly, there is a policy thrust towards the marketization of government services resulting in fragmentation of government information and services. For example, a citizen can obtain an application form for a government scheme from a privately-owned telecenter (such as an application form for obtaining assistance under rural development programmes) but the processing of that application and the monitoring of the assistance is still done by the government rural development agency responsible.

To date, however, there is little understanding of how the activities of the telecentre operator and the back-end development agency will coordinate their activities to achieve desired development objectives of providing assistance to citizens in order to help them generate income. Until such time as this coordination is addressed, district rural development agencies have sadly regressed in time to the earlier situation in which they had little input into local planning processes and little individual motivation to think beyond the routine implementation of targets set by higher authorities for a task as important to India as rural development.

The purpose of our brief analysis presented in this section has been to show how a consideration of the three assumptions: the nature of structure, individual level theories of action, and causality can potentially improve theorizing. A main hypothesis derived from earlier analysis was as follows: 'acceptance and usage of new technology derives from local administrators having the flexibility to direct technology according to their own needs'.

However this didn't tell us about the relationship that supported this flexibility, how the relationship had changed from earlier, and what aspect of the new relationship enabled increased flexibility. The adoption of our proposed model helps to explain what is going on and prompts us to focus on particular directions in future research. This has occurred by making explicit the identification of causal processes, the relationships which enable or constrain those processes, and the individual behavioral patterns that build those relationships. The origin of any of the outcomes observed is dependent on the formation and dynamics of relations between players. For example, at the beginning of the research, structural factors were overwhelmingly shaping the behavior of individuals. The central government wielded considerable power over the state government at the beginning of the research in the way it imposed the technology on the district administration. This imposition was short-lived because later on, the explanation of IT usage was driven to a greater extent by individual decision making within a social context that was conducive to individual experimentation and flexibility. There was a change in the behavior of the state administration and the consequent increase in empowerment of the district officers. Towards the third phase of the research, however, external influences on both central and state government have resulted in a high degree of mistrust between the district administration, private entrepreneurs, and NGOs. New channels of communication need to be established to help build relationships at this level.

Assumptions with respects to the three aspects of social theory we propose are implicit in all ongoing interpretive research in the ITD field. However, we argue that extracting out causal theories from the explanation is a useful process because this process has the potential to be applicable to other contexts. For example, our analysis enables us to provide two broad theories about the 'IT for rural development' effort ongoing in many developing countries. First, improvements in rural development through IT can only come about if local domain experts have the inclination to develop useful applications. Second, this inclination arises and survives over the long term when these officer experts have the requisite flexibility and support from the government.

In this paper, we have proposed a model for analysis which operates both at the wider societal level and at the level of individual human behavior. Such analyses are important and are made possible through efforts at studying ITD initiatives over the passage of time as recently identified by Walsham & Sahay (2006). They argue that while ITD analyses have typically focused on the wider context of the organization or society, issues of identity and individual behavior have so far been neglected. The purpose of our paper has therefore been to bridge this gap by recommending that for strengthening theoretical reflection in ITD research, the level and focus of analysis should be both multi-level and longitudinal.

4. Conclusion

There is a tendency for ITD research to be pigeon-holed into positivist or interpretivist camps. While these philosophical positions arguably represent different world views about the nature of reality, they also do not fully specify the nature of ontological assumptions about the world. The authors believe that a significant way to improve the quality and output of research is for a researcher to at least reflect on the three assumptions that are implicit in all social theory; structure, agency, and causality. Our case shows how structure can be constraining at one point in time, but that that this constraining influence can be enabling at a later point in time depending on the model of individual behavior and motivation. The causality we propose through this model is not a simplistic one based on empirical observation, but one which is based on an in-depth and long-term study of the underlying processes which prevail.

Such reflexivity has benefits. It helps clarify the object of research potentially improving the connection between the object of study and research methodology. It also has the ability to improve the communication of research across different paradigms. Grounding theories in essential ontological components of the world gives them a status that can be assessed from across the epistemological spectrum, as well as compared to other competing theories (Psillos, 1999).¹⁰ Thus, despite working from within different paradigms, researchers may find common theoretical ground based upon a clarification of the nature of these three assumptions at work in any theory. In this way, through the explicit consideration of these assumptions, we may be able to break away from pigeon-holing our research into philosophical silos.

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¹⁰ This does make the assumption that social science theories do correspond to (refer to) an existing reality in the world, and thus comparison across theories is possible through empirical testing and adjudication.

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