**An evaluation of practice-based theoretical resources to understanding the adoption and use of information systems**

**Abstract**

**Purpose.** The purpose of this paper is to evaluate the value and limitations of a practice based approach to studying the adoption and use of information systems, through a summary of the theory and exploration of empirical data about the use of collaborative software.

**Design/methodology/approach.** A selection of theoretical resources from the practice based approach, namely, its view of routine and change, socio-materiality, relational thinking and knowing are introduced. They are employed to analyse the adoption of a collaborative technology in a corporate setting. The empirical data is thirty interviews with Human Resource professionals involved in a project in a large Mexican University.

**Findings**. The adoption and use of the collaborative technology is shaped by collective, historical, social and contextual factors that permeate the HR practices being supported by the information system. Among the factors that shaped participation are the interconnection of HR practices to other practices of the University; the existence of habits and the sense of routinisation reflected in HR practitioners´ patterns of interaction and media use; the concern of practitioners that participation in the community did not fit the way HR practices are performed; and the political manoeuvring taking place between actors to persuade potential users to participate in the community.

**Research limitations/implications.** The strength of the analysis using key tenets from the practice based approach (PBA) is to deepen our understanding of context as shaped by collective and historical conditions. The sociology of translation can be used to further increase understanding of the political process around the adoption of the collaborative technology. Remaining issues point to a major issue with the theoretical resources from the PBA used in this study, namely the adequacy of its treatment of structural power.

**Originality/value**. The paper reports research of significance to those interested in information systems by providing an alternative perspective that sheds light on contextual, social and historical factors affecting the adoption and use of information technologies. The paper is also valuable in suggesting how the PBA can benefit from Actor-Network Theory (ANT). This will be relevant to the field of praxeological studies.

**Keywords**. Practice based approach, technology adoption and use, information systems, actor-network theory, Mexico.

**Paper type**. Research paper.

**Introduction**

A turn to practice theories (Schatzki et al., 2001) has been identified across a number of fields within the social sciences, and is now apparent in the study of strategy (e.g., Chia, 2006; Jarzabkowski, 2004), knowledge management and organization (e.g., Corradi et al., 2010; Gherardi, 2000; Gherardi, 2001; Gherardi, 2009b; Nicolini, 2011; Østerlund and Carlile, 2005); consumption (Shove et al. 2012; Warde, 2005), media (Postill, 2010), and education (Trowler et al. 2012).There is some evidence for a turn to such theories in information science too. In fact, the notion of Communities of Practice (Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 1998) which in many ways embraces the core themes of PBA – has already been widely adopted within the information science literature, particularly in the subfield of knowledge management. The last few years has seen a move towards practice theory in the understanding of information behaviour through the concept of information practices (e.g., Cox, 2012; Huizing and Cavanagh, 2011; Lloyd, 2009; Lloyd, 2010; Savolainen, 2007b; Savolainen, 2008), that portrays information needs, seeking, and use as embedded in a wider socio-cultural or organisational practice (Talja and McKenzie, 2007). In addition, specifically in the realm of information systems adoption and use, a number of authors have also been inspired by practice theories (Boudreau and Robey, 2005; Orlikowski, 2000; Schultze and Boland, 2000; Schultze and Orlikowski, 2004; Vaast, 2007; Vaast and Walsham, 2005; Venters, 2010; Yates and Orlikowski, 1992).

Yet rather than there being a single authoritative account of the PBA, there is diversity in its flavours, sources, influences, and applications (Nicolini, 2013). The multivocality of the approach (Cox, 2012) reflects the varying emphases given to aspects such as embodiment, routine, materiality, open-endedness, and knowing, and is associated in complex ways with other theoretical traditions including Activity Theory (Blackler 1993; Engeström 1987, 2000), ethnomethodology (Garfinkel, 1967) and Actor Network Theory (Callon, 1986; Law 1986; Latour 1987). It is these diverse theoretical origins and rather diffuse affinities that suggest the need of clarity when a particular praxeological approach is used (Reckwitz, 2002; Warde, 2005). Schatzki (2002) for instance, has fiercely argued to differentiate his ontology of practice theory from Actor Network Theory. Others (e.g., Huizing and Cavanagh, 2011), however, see ANT as a member of the same family of theories.

It is timely, therefore, to discuss the strengths and weaknesses of what will be referred to in this paper, for the sake of consistency, as the Practice Based Approach (PBA) (Gherardi 2009b). The purpose of the article is thus to evaluate the use of a package of theoretical resources from the PBA applied to a classic information science problem: the take up and use of ICTs. The paper explores the strengths and limits of these practice-based theoretical resources, and how weaknesses around the conceptualisation of change and power can be partly addressed using the sociology of translation from ANT. The argument is based on empirical data from a study of participation in an online community created to support a HR project in a multi-campus University in Mexico.

The paper proceeds as follows. It first introduces the PBA and distinguishes it from other approaches. It identifies its core themes. It then outlines the theoretical debates about strengths and weaknesses of the PBA, and discusses how it has been used to inform the study of the adoption and use of technology. The paper then introduces the case study example. An analysis is offered using the notions of the PBA discussed above. In discussing this, a number of limitations to the theoretical resources used in the paper are identified, and the case is developed that Actor-Network Theory can be used in conjunction with the PBA. Remaining weak points are discussed.

**The practice based approach**

One of the main reasons the ‘practice turn’ has gained ground in different fields is because the PBA presents itself as an alternative to positivist, cognitivist and rationalistic perspectives (Geiger, 2009; Nicolini et al., 2003; Reckwitz, 2002; Schatzki, 2002). A useful distinction is the one offered by Reckwitz (2002) who locates the PBA as a form of “cultural theory” and differentiates it from two classical models: ‘the homo-economicus’ and the ‘homo sociologicus’ traditions. The homo-economicus tradition explains action as purpose-oriented; social order is the consequence of the combination of single interests, in which the primacy of individual choice (agency) prevails. In contrast, the homo sociologicus tradition presents a norm-oriented model of action, where, social order is the product of normative consensus (structure). The aim of practice theories is to offer an account of social action that allows for structure and for agency, as observed by Schatzki when he writes that his site ontology moves away from both individualistic and societist ontologies. The former, according to Schatzki offers an account of human activity on the basis of cognitivism and a functionalist view of behaviour and the latter explains human action on the basis of how it is shaped by wider social structures. Unlike these alternatives, the PBA is neither individualistic nor holistic (Warde, 2005). Central to PBA are concrete practices and bundles of practices. Thus, one of the central arguments among practice theorists is the idea that the domain of study “is neither the experience of the individual actor, nor the existence of any form of social totality, but social practices ordered across space and time” (Giddens, 1984:2). Thus the PBA is positioned as a meso level theory locating itself at an intermediate level of analysis allowing for agency to be observed but also for awareness of how forces of context shape individual action. Practices are seen as the point of departure from where one can move up and down to explore how practices are enacted and what practice does within the larger context. However, it is difficult to fully summarise the PBA because of the multiple voices within it. To convey some sense of the body of theory, what follows introduces four core themes of the PBA. It is worth clarifying that whenever we refer to the PBA in this paper, the PBA is not seen as inclusive of ANT, as, for example, Huizing and Cavanagh (2011) do.

*The productive and reproductive aspect of practices*

Trying to make sense of how practices change is a common theme among practice theorists. However, given the multivocality of the PBA, it is difficult to find agreement among writers on how such change occurs. This is clearly reflected in the definition of the term practice itself. Whereas some authors highlight the ‘productive’, emergent aspect of practices, others emphasise the ‘reproductive’ historically-constituted features of them (Østerlund and Carlile, 2005). The accounts by Schatzki, Gherardi and Wenger are found at one end of the continuum and highlight the productive and emergent aspect of practices (Cox, 2012). Schatzki defines practice as “a temporally evolving, open-ended set of doings and sayings” (2002:87). Similarly, Nicolini and his colleagues acknowledge that the vocabulary of the PBA is characterised by words that denote “uncertainty, conflict and incoherence” (Nicolini et al., 2003:23), which are seen as intrinsic features of practices producing “innovation, learning and change” (Corradi et al., 2008:17). At the other end of the continuum are those perspectives that emphasise the reproductive quality of practices. These views highlight aspects such as habituation and routinisation. Bourdieu’s definition of ‘habitus’ as “a system of durable, transportable dispositions, structured structures predisposed to function as structuring structures” (1990:53) is clearly towards this end of the continuum. Reckwitz’ definition also stresses the element of routine:

“For practice theory, the nature of social structure consists in routinisation. Social practices are routines: routines of moving the body, of understanding and wanting, of using things, interconnected in a practice…[and] social order is thus basically social reproduction” (2002:255).

Summarising the discussion, a clear view of these two ends of the continuum is offered by Nicolini:

“While for [the reproductive aspect] change is a “variation” stemming from unexpected events in the reproduction process, for the [productive aspect of practices] change is constitutive of practice itself… [while] the former emphasize the power of tradition; the latter stresses expansion, creativity, tension and unease”(2003:24).

*Socio-materiality*

A second theme among practice theories is the stress given to the material world and embodiment. Schatzki, for instance, defines practice as “embodied, materially mediated arrays of human activity” (2001:2). This attention given to embodiment is also apparent in the definition by Reckwitz (2002) who emphasises routinised bodily movements. The focus on the material is emphasised by Orlikowski (2007) who has suggested the term socio-material practices rather than social practices to highlight the critical role of the material in the shaping of human action.

This theme of socio-materiality also helps to point to the differing emphases given in different versions of practice theories. Some agreement is apparent in the acknowledgement of the agency-like effects of objects on practices (Huizing and Cavanagh, 2011). In contrast, Schatzki’s (2001) account can be considered as highly human-orientated and thus giving primacy to certain sorts of relations, those between humans.

*Relational thinking*

Relational thinking (Østerlund and Carlile, 2005) is a third theme that permeates practice theories. This has three main aspects. Firstly, the relational thinking of the PBA stipulates interconnectedness in the sense that no phenomenon can be understood in isolation or taken to be independent of other phenomena (Nicolini, 2011; Østerlund and Carlile, 2005; Schatzki, 2002). Thus, only when looking at the totality of interconnected practices, events and entities, can one grasp the meaning of human action (Nicolini et al., 2003:8). That is to say that for practices to be recognised as practices they need to be repeatedly and collectively practised. According to Orlikowski, a practice is a “recurrent, materiality bounded, and situated social action engaged in by members of a community” (2002:256). If a practice is not recurrent - that is, repeatedly practised - and instead, certain actions take place as a one-time event, those actions are not a practice. Once a practice has become recognised as such, it is the repeated understandings, rules and emotions that sustain, and slowly modify, a practice (Schatzki, 2002). Moreover, to become a practice, actions not only need to be repeatedly carried through, but also collectively enacted. When an action is performed in isolation by a single individual and is not enacted by other members of a community, this action will not become a shared practice (or part of a practice). Therefore to be a practice (or an action as an element of a practice), it needs to be collectively recognised and sustained. The definition of practice by Gherardi reflects this character when she writes about it being a “collective, situated activity” (Gherardi, 2009c:538); and “ways of doing things together” (Gherardi, 2009c:547). Thus, recurrence and collectiveness are fundamental elements of practices so that whether a collaborative technology to become an element of a ‘practice’ will largely depend on the collective and recurrent actions taken by the ‘practitioners’ of such practice.

Secondly, the relational thinking of the PBA also seeks to overcome the problematically dichotomous thinking of other theories (Feldman and Orlikowski, 2011; Nicolini et al., 2003; Østerlund and Carlile, 2005). In the PBA, elements such as structure and agency (Giddens,1984); the ostensive and the performative aspects of routines (Feldman and Pentland, 2003); the social and the material (Orlikowski, 2007); knowledge and knowing (Cook et al., 1999); knowings and practices (Nicolini, 2011); meshes of practices and social orders (Schatzki, 2002), are seen as mutually and recursively constituted relations. For example, Feldman and Pentland (2003) explain that whereas the ostensive aspect of a routine is the ideal or schematic form of a routine, the performative aspect consists of specific actions by specific people, in specific places and times. Both the ostensive and the performative aspects are necessary for organisational practices to exist. Similarly, Schatzki (2002) suggests that a mesh of practices creates social orders and these orders in turn shape the way practices are performed. Thus, in looking at the relations of mutual constitution and recursive interaction among elements of practices, practices can be seen as “the locus for the production and reproduction of relations” (Østerlund and Carlile, 2005:92).

Thirdly, the relational thinking of the PBA allows us to see organisations as arenas of interconnected practices (Corradi et al., 2008; Nicolini et al., 2003; Schatzki, 2006). They are a texture of practices which extend internally and externally beyond the organisation (Gherardi, 2012). Schatzki’s (2002) definition of ‘site’ reflects the relational thinking of the PBA. Site is defined as an “immense mesh of practices and orders” (2002:151) in which people, artefacts, organisms and things are interconnected through practices. Practices in turn are to be seen as practised within a context – a site – in which other practices are performed and where certain conditions pertain. Thus, what occurs within a practice (or a bundle of practices) is not only shaped by the internal dynamics of such a practice but is also shaped by what characterises the site in which the practice is performed. This is to say that when practices are seen as interconnected within a site these practices and their elements can overlap, enable or constrain each other (Schatzki, 2002; Warde, 2005).

*Knowing and taste*

Practice theorists criticise positivistic, cognitive and rationalistic views of knowledge (Geiger, 2009) and move away from understanding knowledge as an object, to understanding knowing as an activity with an essential role of getting things done (Gherardi, 2001; Gherardi, 2009b; Gherardi et al., 2007; Orlikowski, 2002). It is through the enactment of knowings that practitioners demonstrate their competence and by solving practical problems that emerge in the complex web of practices they perform (Corradi et al., 2008; Gherardi, 2001; Nicolini, 2011). Thus, knowing is “knowledgeable activity, a knowing-in-practice” (Corradi et al., 2008:26) that demonstrates practitioners’ “feel for the game”; their sensitivity to understanding what is appropriate and what is not within a practice (Nicolini et al., 2003:16).

Moving in this manner away from a cognitive conceptualization of knowledge, knowing is seen not as an abstract idea solely situated “in the brain of the human body” (Gherardi et al., 2007:318), but also embracing passion, emotion, desires and affectivity (Gherardi et al., 2007; Strati, 2007). From this perspective, practices also entail attachment to the object of practice (Gherardi, 2009c); ‘aesthetic’ or sensible knowledge (Nicolini et al., 2003); and routinised bodily movements and ways of wanting and feeling (Reckwitz, 2002). It is the degree of intentionality, emotionality (Reckwitz, 2002) and the style of performance (Cox, 2012) embraced by practitioners when enacting their practices that create room for diversity within a particular practice every time it is enacted. This causes practices to be “internally differentiated” (Warde, 2005:138), and thus suggests the possibility that different and dispersed ways of knowing can be present in a single practice (Nicolini, 2011).

Moreover, acknowledging that practices are “internally differentiated” can also generate debates about taste (Warde, 2005:139). According to Gherardi, a “minimum agreement is necessary for the practice to continue to be practiced” (2009b:357). This minimum agreement among practitioners is what characterises the specific taste of a particular bundle of practices. Taste can thus be seen as “a sense of what is aesthetically fitting within a community of practitioners [that shows] a preference for the way [practitioners] do things together” (Gherardi, 2009c:535). It follows that, while different knowings can be enacted within a (bundle of) practice(s), they all most probably share the same taste. In turn, as Nicolini (2011) suggests, shifting across sites or bundles of practices, will reveal that different set of knowings and taste exist.

*Summarising the contribution of the PBA*

The PBA provides a rich theoretical basis to be brought to the study of the adoption and use of information technologies. The key concepts discussed above – productive/reproductive qualities, socio-materiality, relational thinking and knowing and taste –illuminate how the historical, collective and material aspects of the context in which technology is introduced shapes its use. Practices are acknowledged to be interconnected so that participation might be expected to be shaped by what occurs beyond the boundaries of immediate practices. Rather than looking at the technology as an isolated entity, it is seen as an element of practices, in which other competing technologies may be used. Moreover, in moving away from a cognitive tradition of thinking, other elements of practices such as their taste, temporality, space, and the role of the body while performing practices become relevant to understanding participation. In this way participation in use of technologies is not seen as determined solely by individuals’ motivations and interests but also informed by collective understandings; by the way of doing things within that particular context: by its taste. Adopting the PBA allows us to understand the role of the historical context and how aspects such as routinisation and habituation might shape participation. The next section discusses how previous information systems authors have been inspired by the PBA.

**Applications of the PBA to studies of technology adoption and use**

The PBA has already had some impact on writing about information system adoption and use, notably the work of Orlikowski (Boudreau and Robey, 2005; Orlikowski, 2000; Schultze and Boland, 2000; Schultze and Orlikowski, 2004; Vaast, 2007; Vaast and Walsham, 2005; Venters, 2010; Yates and Orlikowski, 1992). This literature develops four major themes in the understanding of information system use.

Firstly, these studies have in common an interest in understanding the adoption and use of technologies through investigating people’s everyday activities. The focus is on “what people ‘actually’ do rather than on what they say they do or on what they ought to be doing” (Schultze and Boland, 2000:194). Adopting this position has prompted researchers to look at practices in situ and scrutinise their micro-level dynamics (Vaast, 2007); to study the micro-level issues of how practices change with IT use (Vaast and Walsham, 2005); and to observe how macro-level phenomena are created and recreated through the micro-level actions taken by practitioners (Schultze and Orlikowski, 2004).

A second theme in studies adopting the PBA as a lens is that the use of a particular technology is a highly contextualised phenomenon. As such, these studies have tended to look at technologies, not as isolated entities, but as elements of a bundle of practices. Such studies have looked, for example, at how only when the use of a Knowledge Management System (KMS) has become integrated into the regular routine of practitioners’ work will information technologies they be used effectively (Vaast, 2007). Similar studies have discovered how the use of a new internet-based technology is undermined by the reluctance of users to adopt it, when it is at odds with the working practices of sales representatives (Schultze and Orlikowski, 2004). A study by Orlikowski (2000) found how the same technology is enacted differently across various contexts and practices and how people do not use a particular technology because its use can be against institutional practices. In the same sort of way Schultze and Boland (2000) found that the democratisation of access to information that a KMS facilitates is at odds with competitive intelligence analysts’ privileged access to information and therefore the use of the system is inhibited.

A third theme is that practice-based studies of technology adoption have helped understand how human activity (e.g., participation in an online community) is a historically-shaped and constantly evolving phenomenon. For instance, previous studies have shown how, when technologies do not support the maintenance of embedded relationships developed in the past, the credibility of these technologies are questioned by their users (Schultze and Orlikowski, 2004). Similarly, PBA studies have shown how the adoption of technologies can be challenged when people find it difficult to break their old routines (Boudreau and Robey, 2005). Practice based studies have also shed light on how practices can be altered over time when new technologies become increasingly used and transformed by such use; and how processes such as habituation and routinisation hinder change (Vaast and Walsham, 2005). The study by Orlikowski (2000), for instance, offers a clear example of how different degrees of routinisation permeate practices. She looked at the adoption of the same technology in different contexts, and found how some practices reflect: 1) a greater ability to change, e.g., when new technologies are adopted to transform existing practices; 2) a lesser degree of change when routinisation and inertia are present, e.g., when there is a reinforcement and preservation of the status quo in the use of technologies and no evidence of change in practices is observed; and 3) an intermediate level of change, e.g., when technologies are adopted to refine existing ways of doing things.

A fourth theme is that studies adopting a practice based approach look at practices, rather than at individuals, as the unit of analysis. In so doing, they avoid exploring the adoption of technologies as if they were determined by individuals’ attitudes, intentions, motivations and interests. Rather, these studies highlight that the use of technologies is informed by shared collective understandings, and collective ways of doing things within practices.

These themes reveal the power of the PBA in contrast to the homo economicus analysis of technology use, and its tendencies to:

* Solely focus on individual motivations and interests as shaping the adoption of technologies thus oversimplifying the social nature;
* Under-explore the historical context that shapes the adoption and use of technologies resulting in the tendency to provide single snapshots of activity;
* Offer reductionist explanations of technology adoption in which relations among variables are predicted at the cost of the simplification and abstraction of the ‘messy complexity’ of phenomena;
* Neglect the larger context within which particular technologies are introduced by treating them as if they were isolated entities in a static, container-like setting.

**Critiques of the PBA**

Despite the value of the PBA, there remain significant criticisms of the approach in the literature. For example, some commentators have seen applying the philosophical elements of a practice based approach to empirical analysis as a difficult task (Cox, 2012; Feldman and Orlikowski, 2011; Geiger, 2009). The vocabulary of the PBA is seen as problematic. Fox, for example, has pointed out that “practices are almost always more interesting and varied than the theories attempting to ‘explain’ them” (2006: 442). This suggests the difficulties in finding the appropriate lexicon to express the dynamic, enacted and relational character of practices (Feldman and Orlikowski, 2011; Gherardi, 2009b; Nicolini et al., 2003), without ending up providing an “undesirable set of indefinite, fuzzy, and equivocal ‘practice-related’ concepts incapable of withstanding any serious analysis” (Nicolini, 2011:603).

Another critique of the PBA has been that it is unable to make sense of the contribution of individual agencies to processes of change (Fox, 2000; Miettinen et al., 2012). Fox (2000) has observed that the PBA tells little about how practitioners change or innovate their practices. Miettinen et al. (2012) have suggested that practice theories tend to privilege the collective dynamics of social processes at the cost of dissolving the self thus missing the opportunity to supply accounts in which individuals’ contribution to change is apparent.

The most significant critique has argued that some versions of the PBA fail to understand power at different levels of analysis (Contu and Willmott, 2003; Fox, 2000; Handley et al., 2006; Kuhn and Jackson, 2008; Marshall and Rollinson, 2004). According to Marshall and Rollinson “practice-based approaches do partly acknowledge the importance of power and politics in knowledge processes, but tend not to extend this to its logical conclusions” (2004:574). Schatzki (2002:267) explicitly acknowledges that the issue of power is not directly addressed in his book *The site of the social: A philosophical exploration of the constitution of social life and change*. Similarly, Brown and Duguid have noted that their conception of communities of practice needs to include the issue of unequal relations of power more systematically in analysis (1991:41).

Such critiques have seen the PBA as neglecting the issue of power within particular communities. For example, Fox (2000) has observed that CoP Theory “accepts that there are unequal, triadic, power relations within CoPs, but it basically leaves these unanalysed” (2000:864). Similarly, Contu and Willmott have strongly criticised the fact that when using the notion of community, practice theorists tend “to assume, or imply, coherence and consensus in its practices” (2003:287). Similar critiques have challenged the overtones of warmth and consensus implied by the use of the term community (Roberts, 2006).

The problem the PBA has of unpicking power issues at a higher level also requires attention. First, Kuhn and Jackson (2008) acknowledge that there is a risk for those looking at patterns at the micro-level of ignoring the organisational imperatives shaping practices and thus assuming consensus within communities that silence issues around power. Others have pointed out that while the PBA is concerned with those relations of power within a community of practitioners, it is not as concerned with relations of power in which the community is embedded, such as capitalist production and employment relations (Contu and Willmott, 2003; Handley et al., 2006). In the light of these criticisms, the main concern is how the role of context in shaping social life might potentially be undermined; thus under-exploring how the broader socio-cultural context shapes practices (Contu and Willmott, 2003; Handley et al., 2006).

Further reflecting on such issues will be one concern of this paper. Next, however, the empirical case used to examine these concerns is introduced.

**The case: An online community, CODECO**

This paper investigates the value and issues with the PBA through empirical material drawn from a study of the adoption of a collaborative technology. CODECO was a system designed to support knowledge sharing during the implementation of a HR project within a large multi-campus University (INSTEC) in Mexico. When he envisioned a new performance measurement approach to be deployed across all 31 campuses of INSTEC, the head of HR felt there was a need to cultivate an online community to support collaboration. After two years of on-going implementation of the project CODECO was formally introduced to all HR staff with the expectation that it would become “the exclusive media to be used during the implementation…to support the deployment of the project”. This expectation was shared by the leader of the project implementation team who believed “the features of CODECO would give people responsible for the implementation the possibility of sharing knowledge and experiences on a frequent basis”.

A launch session took place and HR staff attended the presentation. The launch session was also recorded, so that it could be accessed by those who did not attend. Accompanying this initiative, policies of participation for the community were established and technical and support documentation regarding CODECO were created and made available. A member of HR staff was allocated the responsibility to moderate participation in the online community and promote its use after the launch session. Attempts by those supporting the adoption of CODECO were made to further develop all the applications of the technology; however, they failed to get the necessary resources to accomplish this aim.

After its launch, CODECO was initially used as a document repository; however, after some time the collaborative technology remained completely unused. Even those initially supporting its adoption neglected it. Instead, they continued using existing media to communicate. In the opinion of HR practitioners the online community was perceived to be a failure. The purpose of the study became to understand why CODECO failed to be used.

**Data collection and analysis**

Observing the low level of activity in the online community led the researchers to conduct seventeen semi-structured interviews with HR professionals playing roles in the performance measurement project. A further thirteen interviews were conducted a year later to further explore how pre-existing practices shaped participation. The interviews followed a similar approach to that of “the interview to the double“ proposed by Nicolini (2009), and paid particular attention to aspects such as daily routines, tacit agreements, and the role of bodily movements and materiality. This method can be seen as an effective method to articulate practice in a way that remains authentic to the constructionist character of the practice based approach (Nicolini, 2009). To complement the use of interviews other methods for data collection were used to a lesser degree, namely attendance at online seminars and meetings, and project-related documentation. Overall, the use of multiple interviews, combined with visiting the places where people worked and with participation in some of the meetings enabled the researchers to uncover ways people acted and talked. It allowed a depth of analysis and description similar to that commonly achieved in other practice based studies using ethnographic techniques.

Research participants were chosen with the aim of capturing examples of ‘polar types’ (Eisenhardt, 1989) for the sake of maximising the diversity of opinions from participants to be included in the analysis. The aim of this was to reflect the different perspectives and the complexity of the phenomenon under investigation. The strategy consisted of selecting participants who had different, sometimes contradictory, interests and roles in the performance of HR practices: including people at HQ, campus based directors and a range of staff below directorial level. This strategy was complemented by previous empirical data gained through browsing the online community (observing and analysing communication activity).

**(Table 1 Summary of interviews conducted)**

The interview processes, though based on a set of relevant themes to be explored, followed an emergent logic that helped the researchers conduct them with flexibility and responsiveness to issues raised by interviewees. Interviews were audio recorded and transcribed. The data was seen as a way of understanding participants’ reality as expressed in their own words. The findings were seen as relative and context-specific (Orlikowski and Baroudi, 1991); thus multiple and potentially contradictory realities were acknowledged to exist (Guba and Lincoln, 1994).The PBA was seen as a plausible starting point to conduct such a study.

Theoretical resources from Schatzki (2001, 2002), Nicolini (2011), Gherardi and her colleagues (2009b, 2009c), Wanda Orlikowski (2002) and Reckwitz (2002) were chosen as key practice-based sources. Schatzki´s (2001, 2002) concept of site helps for looking at HR practices as being interconnected to, and shaped by other practices. Silvia Gherardi’s notion of taste (Gherardi, 2009c), Nicolini’s (2011) and Orlikowski’s (2002) concept of knowing and Reckwitz’s (2002) routine aspect in practices provide the basis to characterise the flavour of HR practices. Orlikowski’s work is also highly relevant for this paper given its use of practice theory ideas to focus attention on the use and adoption of technologies within organisational settings (e.g., Feldman and Orlikowski, 2011; Orlikowski, 1993; Orlikowski, 2000; Orlikowski, 2007; Woerner et al., 2004).

The study adopted a hybrid process of inductive analysis to identify themes within the data and also make sense of them through theoretical lenses. Thus it incorporated both the data-driven inductive approach suggested by Braun and Clarke (2006), and a more theory-driven analysis guided by the particular preoccupations of the PBA (and subsequently ANT). By combining these two approaches, an attempt was made to allow relevant themes to emerge directly from the data, while at the same time making sense of the empirical data through the theoretical resources of ANT and the PBA.

Although the coding process was not linear, six steps broadly guided the analysis, namely: data familiarisation, generation of initial codes, searching for themes, defining and naming themes, and reporting findings. This process was iterative and reflective, and moved back and forth across the empirical data and the theoretical resources as required. Seven themes were developed during an initial analysis namely: features of HR practices, shared knowings, supporting shared knowings, fitting taste, availability of media, interconnectedness between practices and routinisation of media used. A further analysis informed by ANT resulted in five themes namely: inability of CODECO to evolve, irreversibility properties, late launch, competing actors, and weak envelope.

A number of strategies were adopted to ensure the quality of the research. The researchers endeavoured to make their research practices transparent by describing in detail key processes as selection of research participants, data collection, and data analysis. The triangulation of different methods for data collection and use of different theoretical resources contributed to enhance the quality of the study. To meet the criterion of authenticity the researchers ensured that different voices from research participants were taken into account. Yet it is important also to acknowledge that the interpretations provided in this paper were two among many others possible.

**Analysis of CODECO from the PBA**

HR work was perceived by practitioners themselves to be a set of “supporting practices”, providing a service to the core activities of the University (e.g. teaching). This also implied that it was a marginalised area within the institution. The marginalisation of HR practices was in turn reflected in practitioners continuously experiencing work overload as the following quote reflects: “You can see it in two ways: What is always lacking is time; and what is always certain is excessive work and pending issues to attend to”. There was also a tendency to receive “the minimal amount of resources to operate, or sometimes even less than that” as one HR practitioner put it. The wide variation of types of activities in which HR practitioners were involved was another feature of their work. HR practitioners tended to be tasked with activities that were not related to their duties –a further sign of marginalisation. When one director was asked about the type of activities that were delegated to her, she responded: “everything you can imagine and everything you could not imagine”. HR practices were further perceived as embracing a mixture of different feelings and emotions. It was difficult to practise HR “without getting emotionally involved”. Practising HR entailed “a different range of feelings which are sometimes contradictory and inevitable”. Such positive feelings as a sense of accomplishment, empathy, becoming a better person, self-confidence and pride, were experienced simultaneously with negative feelings such as frustration, powerlessness, and uncertainty.

These features of HR practices (though they are not an exhaustive account of HR, but those that emerged in the light of trying to understand participation) showed that HR practitioners’ experiences were alike in many ways, regardless of the differences among them e.g., in terms of age, gender, seniority, scope of activities and responsibilities, hierarchical position, or campus specific issues. A set of knowings were collectively and routinely enacted so that practitioners could get their work done. Six shared knowings were identified:

1. Relationships were seen as key. Interviewees were preoccupied with the maintenance and development of relationships and continuous interaction. One directorexpressed this value as follows: “I do whatever I can to keep my work relationships fresh”.

2. Collaboration and support were core values. Given that the HR area was perceived to be one of the most marginalised areas of the institution, mutual support was seen as a key aspect of the role. One practitioner commented “... and of course within the [HR] area we all have the same supportive attitude that guides our behaviour”.

3. Learning was highly valued: Learning is “embedded in our daily work” as one interviewee put it. To support this, a range of materials, learning sources and opportunities for tutoring and coaching were available; however, as practitioners constantly faced time constraints and work overload, this shared knowing was enacted in the form of learning-by-doing.

4. Knowing how to communicate. There was a shared understanding that being a HR practitioner required “special modes of communication and interactions”. This had three main features: a purpose-oriented aspect; secondly, being the public face of INSTEC required them not only to adopt particular ways of verbal communication, but also to enact specific behaviours, ways of dressing, ways of addressing people, and specific attitudes; and thirdly, interacting with other human beings which demanded certain standards of behaviour and required practitioners be aware of the relevance of their bodily actions such as shaking hands and opening the door.

5. They showed a devotion to employees. This knowing was reflected in the considerable effort made to provide their employees with “a well-deserved service and support”.

6. They prioritised operational continuity over other activities, such as participation in institutional projects, as the following comments showed: “I have not been working on the project because of the current work overload we have”; “the project is now on standby because we have overwhelming pressure from our daily activities”; “we have daily operations that we cannot postpone”.

The analysis showed why when CODECO was introduced HR practitioners did not find it ‘fitting’ the taste of their practices. As one director put it: “It just does not go with how we work here...do not forget that we are Human Resources, you know, we are not very technologically oriented”. CODECO did not offer practitioners opportunities to develop and maintain existing relationships, nor occasions to create new ones – a central driver for HR. Interviewees also commented that they did not find the same attitude of collaboration and support when using CODECO that were found via other forms of interaction. Nor was it perceived to support the learning that they so highly valued.

Within a site in which other practices were performed and to which HR practices were highly interconnected, HR practitioners’ choices of technology were not only shaped by the performance of their own practices, but also by this interconnection among practices. Practitioners’ media choices were necessarily shaped by the way in which the institution as a whole communicated. As one Director commented:

“I see that one of the reasons why we continue using the existing media in the way we do is the fact that everybody in the ‘INSTEC community’ uses email and the telephone on a daily basis. And to some extent you have no other choice but to use the media that everybody else uses”.

Practitioners’ position of continuously interacting and giving service to other departments increased their tendency to reproduce the use of certain media, giving them the feeling that there was “no way to escape from the use of existing channels” e.g., email.

HR practices consist of a bundle of actions repeatedly performed, so that an element of routine developed, as one of the HR practitioners commented:

“Within the area of Human Resources we have been using these media, [telephone and email], as the mainstream media for quite a long time and in such a way that the habit of using them has led us so to a point where it would be difficult to move to a different media, unless a real need is perceived”.

They tended to develop routine ways of using communication technologies that, after being repeatedly enacted, became ‘natural’ ways of communicating and thus they found it difficult to switch to the use of CODECO once it was introduced. Even when a policy was explicitly set up to embrace participation, practitioners did not follow it as articulated in the following comment:

“Yes, I remember that policy of participation; it did not make much sense to many of us…I remember we talked about it a long time ago and wondered who was going to follow it; and how they were going to measure our participation? What would have happened to those not following the policy? Nothing I suspect. So, as you can see, the policy may be there in the documents, but in practice we do not use [CODECO]”.

Other characteristics of the taste of HR practices not supported by CODECO were its time-consuming nature which conflicted with work overload and time constraints faced by practitioners, as shown in the following comment:

“Rather than being helpful to me, I found myself browsing and spending a lot of time finding the job description I needed. It might be that I am exaggerating a bit, but with the workload we have to deal with, every minute spent in the [online] community counts”.

Similarly, CODECO did not fit practitioners’ preferences for face-to-face interactions; as shown in the following comment:

“It is funny because, when you are in those workshops, you ‘feel’ you are with Human Resources people. Everybody is polite, everybody shakes hands, everybody interacts, talking, smiling; I think even for people who do not know who we are, they would probably guess we are Human Resources people…The [online] community just does not suit this well”.

Nor were the emotional dimension of HR practices fully supported, as one HR practitioner explained:

“What worries me is that I have the impression that the University wants to force us to use some technologies in situations where they are not needed… it often happens to me that I feel the need to share my worries, and sometimes frustrations, with others; and, well, what I do, is to talk to my colleagues [face-to-face], or give them a quick [telephone] call”.

**Discussion**

*The value of the PBA*

Adopting the PBA gives context life, avoiding the view of participation as merely about what is taking place within a “community” itself. Through the notions of site (Schatzki, 2002), taste (Gherardi, 2009c) and knowings (Orlikowski, 2002) the relevance of the context in shaping participation is fore-grounded. Context is not merely treated as a background, rather it is seen as constituting and interacting with the phenomenon under investigation. In this regard, the adoption and use of CODECO was shaped by the practitioners’ needs to accomplish particular aims and by what was seen as appropriate within the HR practice. The effort made by practitioners to develop and maintain their relationships is a clear example of this situation. Moreover, the relational thinking of the PBA suggests that participation was not only influenced by the features and the particular taste of HR practices, but also by the interconnectedness among practices within the site. HR practitioners tended to use other media rather that CODECO because their interactions with others in the University were supported by these media. The PBA also reveals that the adoption and use of technology is a historically-shaped phenomenon, being influenced, to a certain degree, by what was done in the past, reflected in aspects such as routinisation, inertia and reproduction of patterns of interaction and media use. This challenges the view of participation as merely a static and isolated event.

The PBA also stresses the social character of practices and of technology adoption and use in which the collective is privileged over the individual and the material is included. Thus the adoption of technologies is seen as a collective engagement and shaped by shared ways of doing things, the taste of HR practices, mutual understandings, and shared concerns and priorities. As HR practitioners described, they used email and phone (more than CODECO) because everybody in the University used these media. The PBA moves to look at practices as the unit of analysis rather than individuals and their motivations or needs. This social character of phenomena is also highlighted in the relational thinking of the PBA that suggests that although actions (e.g., participation) are performed by individuals, they have to be understood through shared understandings and meanings. The relational approach captures the messiness of real world phenomena, avoiding reductionist tendencies to define discrete variables with predictable relations. In this light, participation in the online community appeared to be shaped by organisational conditions permeating HR practices, rather than only being influenced by the motivations of individuals or technological constraints.

The PBA is particularly useful for zooming in on practices (Nicolini, 2009, 2013). Studying real time practices and local accomplishments allows the analysis to highlight different aspects of practices: sayings, doings, knowings, taste and routines. The environment of camaraderie, for example, embraced informal conversations and friendship relations that extended beyond organizational boundaries. The marginalization felt by HR practitioners was a shared concern reflected in the lack of resources such as time and opportunity to participate in strategic projects. The PBA perspective also serves to foreground materiality and the role of body in the performance of practices and phenomena in general. HR practitioners preferred face-to-face interactions because they perceived themselves as not being highly technologically-oriented. Shaking hands, smiling and opening the door to others were seen as core competencies of HR practitioners required to provide “good service to their people”.

Together, giving context life, stressing the social character of HR practices, giving priority to the collective character over the individual and zooming in on practices provided a good understanding of participation in CODECO. However, the data showed that other concerns not fully understood through the PBA were also critical in the shaping of participation. This suggested the need to conduct a further analysis through the use of an alternative set of theoretical resources.

*Further analysis using the sociology of translation*

Although a powerful way of looking at CODECO, the ideas adopted in the current study from the PBA as discussed above are far from offering a complete account of the case. Significant features of the data were not integrated in the analysis. For example, foregrounding the collective character of HR practices obscured how particular individuals (failed to) promote participation in CODECO due to lacking the political power to persuade others to participate. The special attention given to humans over technologies in the PBA analysis also undermined an understanding of the active and disruptive role played by existing technologies in influencing participation in the online community. Therefore a second analysis was performed using the sociology of translation from ANT as a theoretical lens (Callon, 1986; Latour, 1986; Law, 1986a; Law, 1986b; Law, 1987; Law, 1992). Other theoretical choices of theory were available but the sociology of translation seemed to speak to the data.

The PBA and ANT have been grouped by some commentators into the same family of praxeological approaches (Reckwitz, 2002) having a shared concern with context, situation and practice (Marshall, 2008). The analysis informed by ANT sought to address known issues with the PBA around the role of actors in changing practice and the treatment of power relations. Previous technology adoption studies using ANT, for example, have explored how human and non-human actors engage in political processes of negotiation leading to the adoption of information technologies (Bartis and Mitev, 2008; Elbanna, 2010; Martin, 2000; Walsham and Sahay, 1999; Wilson and Howcroft, 2002). In fact, one of the primary interests of ANT is to describe the relations between actors –both human and non human - that can potentially lead to the formation of actor-networks of aligned interests (Law, 1992).

In ANT, networks are continuously evolving and transforming through processes of translation in which a temporary actor-network progressively takes form, and eventually certain entities end up controlling others (Callon, 1986; Law, 1986c). Those playing the role of the controlling actor develop different strategies to drive the translation in order to enrol and mobilise other actors (Blackburn, 2002). Thus an interpretation informed by the sociology of translation might entail a description of the way influential actors persuaded others to use CODECO and how technologies enabled or constrained others’ actions. Through the lens of ANT the implementation of CODECO could thus be seen as a heterogeneous network of human and non-human actors, changing and adapting themselves to comply with the interests of their network. Actors not able to adapt, or to align to the network were excluded and isolated. Such was the case of CODECO which unlike other actors failed to evolve and align itself to the implementation network. Even though the supporters of CODECO acknowledged that it was not fully developed (e.g., instant messaging video conferencing, and other functionalities were not available), they decided to launch it with the promise that they would develop other applications at a later date. Yet they failed to involve actors who had the capacity to facilitate its enhancement. Lacking the ability to gain support from powerful actors to further develop CODECO in line with the needs of the implementation, CODECO remained under-developed. This situation generated false expectations among those leading the implementation in each campus creating a sense of betrayal and thus affecting the adoption of the technology.

Furthermore, when CODECO was introduced, pre-existing media (e.g., email, telephone, virtual meetings) posed themselves as non-human actors which were difficult to ignore or abandon. They became powerful competitors to CODECO, disrupting its ability to strengthen relations with key actors. Indeed, practitioners perceived little need for CODECO to be used at all, since the existing media adequately supported their communicative practice. This problem was reinforced given that there was a long delay between the initiation of the implementation and the launch of CODECO during which pre-existing technologies were used for project communication and co-ordination purposes.

CODECO acted as an envoy used by the controlling actors to support the implementation at distance. However, other ‘supporting’ actors that surrounded CODECO failed to influence its ability to act in accordance with the interest of the implementation network. Among these relevant actors were those such as the launch session when CODECO was initially introduced; the policies of participation declared by its promoters; the documentation in which the purposes and main features of CODECO were made explicit; and the efforts made by the initial supporters of CODECO to promote its use. The failure of these initiatives and strategies ended up reducing the ability of CODECO to impose itself as a taken-for-granted actor on others.

Thus, for ANT, the adoption of the technology is seen as a relational phenomenon entailing a process where relations between actors are developed, maintained and undermined during a translation process. These relations shaped, to a large degree, the use of the technology supporting participation. The focus on relations between actors was not limited to humans but extended to non-humans. Non-human actors, such as technologies are seen as active agents with the ability to constrain or enable the performance of some actions. Here pre-existing technologies promoted the use of media rather than CODECO. ANT also sheds light on how power manifests itself at the individual level. For example, ANT showed how despite the powerful position the focal actors held in the corporate hierarchy, they failed to negotiate the allocation of resources to further develop the technology. Similarly, the notion of translation helped explore how the focal actors failed to develop strategies or engage in processes of negotiation in order to persuade others to use the technology. Thus, from an ANT perspective, what shaped the adoption of CODECO were continuous processes of negotiation, failures of enrolment, deployment of strategies, and processes of betrayal and competition that occurred over time. Furthermore, the complexity of this dynamism reflects how some actors betrayed, resisted, supported, disrupted, or competed against the use of the technology supporting participation.

*The analytic contribution of ANT*

Although the PBA sees innovation, learning and change as intrinsic features of practices (Corradi et al., 2008:17) one of its weaknesses arises from privileging the collective over the individual, missing the opportunity to fully recognise the contributions of individuals to innovation in their practices (Fox, 2000; Miettinen et al., 2012). In contrast, the notion of translation from ANT is by definition a process of change generally led by particular agents in which they use political power to accomplish their own goals. The very notion of problematisation points to the existence of a conflict in which the problem statement is stated from the viewpoint of a particular agent. Moreover, by treating human and non-humans symmetrically ANT recognises the power of human actors but also things, technologies, documents, and ideas. The PBA has been criticized for overemphasizing the active role of humans and minimizing the agency-like effects of non-humans (Orlikoswki 2007, 2010). In ANT a focal agent or a controlling actor leads the process of translation and develops enrolment and mobilisation strategies to persuade other (individual) actors to join its network. The case of CODECO shows how a successful translation largely depends on the initiative taken by single agents and how they relate to other actors.

A second limitation with the PBA that has been identified relates to power issues at different levels of analysis both within particular communities by assuming consensus and coherence (Fox, 2000; Contu and Willmott, 2003; Roberts, 2006) and by under-exploring relations of power at a higher level (Contu and Willmott, 2000; Handley et al., 2006). This was the case of the study given that the PBA was used with the primary aim of exploring participation in an online community within the context of HR in a Mexican University. There is the possibility that if the PBA had been used for different purposes (e.g., looking at the evolution of HR practices within the University or exploring HR practitioners’ social networks across Mexican Universities), different conclusions might have been reached. Again, ANT seems to be particularly relevant to shed light on power issues in the political sense and to look at how particular members of a community can align the interests of many in a chain to represent the intent of the multitude (Fox, 2000). However, ANT has also itself been widely criticised for its “flat ontology” (Reed, 1997) which leads it to pay little attention to how broader social structures influence the local (Walsham, 1997) and to ignore the hierarchical distribution of opportunity (Whittle and Spicer, 2008). This is clearly reflected in the emphasis put on arguing that nature and society are effects of networks, not causes; or in the view that “social structure is not a noun but a verb” (Law, 1992:385). Latour’s claim “networks are immersed in nothing” (1999:128), clearly shows how ANT tends to neglect the regulating role that social structures play in shaping the course of local phenomena.

Interestingly, critiques of both the PBA and ANT way of dealing with power, have pointed to the same concern of giving primary attention to focus on practices in situ and their micro level dynamics. This has been reflected in the clear preference of these approaches for ethnographic methods (Carlile, 2002; Nicolini et al., 2003; Charreire Petit and Huault, 2008; Nicolini, 2009; Feldman and Orlikowski, 2011; Huizing and Cavanagh, 2011). For example Kuhn and Jackson (2008) have suggested that those who use the PBA tend to over-examine patterns at the micro-level thus under-exploring the organisational imperatives guiding practices, or making simplistic assumptions about intra-community consensus that silence issues on power. Similarly, as Reed puts it when criticising the flat ontology of ANT:

They feel no need to look beyond these micro-level processes and practices, because as far as their advocates are concerned, there is nothing, ontologically or analytically ‘there.’ Flat ontologies and miniaturised local orderings construct a seductive vision of our social world in which everything and everybody is constantly in a ‘state of becoming’ and never in a condition of ‘being’ (1997:29).

Coming back to CODECO, the challenges faced by ANT and the PBA to explore power issues at the institutional level was reflected in the relative failure of the two interpretations to explore how macro actors, macro-forces, or social structures such as religion, capitalism, or gender shape the adoption of the collaborative technology. For example, this study paid little attention to Catholicism, which shapes many of the practices (i.e., educational, work-related, entertainment) within Mexican society. Neither theory prompted the research to look at how Catholicism might influence the way HR practices were performed. Similarly, little attention was directed to the issue of gender, such as to ask how does the fact that most HR practitioners are women (except for the top two highest positions) affect participation, or whether this pattern explain why HR was perceived to be marginalised. While acknowledging that no account is ever complete, and that different theoretical approaches provide different understandings of the phenomena under investigation, the lack of explanation of some key issues within the case suggested the need to explore other ways to analyse the data. Issues around structural inequality are too important to set aside.

An initial thought about exploring such issues is to follow the suggestion by Walsham (1997) of combining the methodological and conceptual ideas of ANT with insights from other social theories. One possibility could be looking at the potential contribution that institutional theories (Lounsbury, 2007; Nicolini, 2009) can offer. Adopting this perspective, through its different research foci, could shed light on how practices can be seen as embedded in cultural systems “that individuals are compelled to engage with as they go about negotiating the sorts of everyday events that confront them in their lives’’ (Lounsbury, 2008:356). This view might be criticised for underestimating the relevance of individuals’ agency when looking at how organisations work. However, this is precisely where the strength of praxeological approaches to deal with issues at the micro level can be found (Reckwitz, 2002; Huizing and Cavanagh, 2011). Thus, together, praxeological and institutional theories might open up the opportunity of looking at the dynamics among different levels of analysis that are required for organisational phenomena and change to be understood (Battilina, 2006, Friedland and Alford, 1991). This would in turn require the need to adopt different angles for observation allowing moving upward and backward to look at practices and their connections; to address the connections between “the here-and-now of the situated practising and the elsewhere-and-then of other practices” (Nicolini, 2009:1392).

**Conclusion**

The turn to practice across the social sciences, with Schatzki’s work at its heart, offers powerful conceptualisations for studies of information technology adoption and use. This paper has sought to evaluate a set of theoretical resources from the PBA in this context, by providing an overview of the theoretical foundations, summarising previous applications to the study of technology use and then applying the chosen resources to a particular case. The PBA account of the failure of an online community provides the empirical material for the paper, and draws particularly on theoretical influences from Schatzki, Gherardi and Orlikowski.

The strength of the PBA is in deepening our sense of context and the historical character of closely intertwined social practices. Its relational thinking engages with the complexity and messiness of real world phenomena. Its stress on the social character of activity, shifts attention from the individual and their choices, motives and needs. Nevertheless, the PBA has some limits, particularly in its treatment of power. It was found that ANT’s sociology of translation provided a plausible complementary perspective, at least in so far as exploring the politics of how certain social actors seek to make significant innovations in practices. Yet there remain limits on the explanatory power of even these two praxeological approaches in combination, particularly in relation to the shaping of micro level activity by wider social structures.

Postill (2011) debates with other authors in his edited book about whether practice theory should be a new paradigm for media studies. He concludes that it should not, partly because there are already some very powerful other theories that satisfyingly address particular problems. In information science there has already been a strong influence from practice thinking via Lave and Wenger, Gherardi and Orlikowski. This paper has found there are further rich theoretical resources available within the tradition that can be further developed, but that it does have its limits, and suggests that it is also not in itself a new paradigm for information science.

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