INSEAD

Faculty & Research

Organisations as Epistemic Cultures

by

N. Dragonetti

2003/71/SM

Working Paper Series

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NICOLA C. DRAGONETTI
PhD Candidate
INSEAD
Boulevard de Constance
77305 Fontainebleau Cedex
France
Tel: +33-1-60 71 25 45
Fax: +33-1-60 72 55 00
e-mail: nicola.dragonetti@insead.edu

Abstract

Management theory and practice nowadays accepts unquestioningly that knowledge is an important resource for the success of an organisation. However, I claim that we still know very little about the processes surrounding the creation of knowledge inside organisations, and what we know is normally a model-like description of a process that does not resemble the chaotic, ambiguous reality experience by organisations. In an effort to fill this gap, I conducted a year-long ethnography inside an incubator, concentrating on three companies. As a first description of my data, I draw attention to three interesting phenomena, which run counter the conventional wisdom painted in the literature. First, organisational members are concerned with codifying know-how much more than know-what. Second, the social relationships inside management teams allow for very different dynamics, depending on the type of knowledge created. Third, companies devote a long time to the initial planning phase, suggesting that business plans may have a role even in high velocity, turbulent environments like the ones surrounding the net bubble. Tentative explanations are provided for the three phenomena, as well as implications and conclusions.

23 September 2003

"I am interested in knowledge"

"That's always good for a PhD Student…."

Personal conversation of the author with Michael Tushman

It is certainly not very difficult nowadays to make the case for the importance of knowledge and knowledge management in business organisations. A simple perusal of the latest issues of managerial and academic journals alike will reveal an abundance of articles touting the latest tools of knowledge management, or the latest result linking knowledge and a desirable result, be it increased performance, customer retention, employee satisfaction or similar.

At the same time, we know woefully little on how knowledge is created inside organisations, or more precisely how organisations create knowledge *in the process* of carrying out their operations. Existing work (for example, Zollo & Winter, 2001) is very helpful in providing a model for knowledge creation – but by its very nature, cannot consider the intricacies and richness of the daily activities of organisational members, who create knowledge (or fail to) while juggling myriad other tasks. Indeed, Barley and Kunda (2001) argue that we are missing theoretical and empirical work on what people do inside post-industrial organisation. If we accept this criticism, then we know little about the "knowledge work" of people inside organisation, while at the same time we are very interested in the outcome of the process.

This paper presents an attempt to address this gap. Interested in the interpersonal and group level mechanisms of knowledge creation, I conducted a participant observation of an incubator and some of its start-up companies, following them from March 2001 to April 2002. After a brief review of the literature on knowledge creation inside organisations, I will present some of the data emerging from my fieldwork, showing that different types of knowledge are created through different dynamics and using different tools and objects. After that, a discussion section will try to link my study to other studies in related fields. The conclusions, after that, will highlight the potential contributions and limitations, as well as areas in need of further research.

Knowledge creation inside organisations

The idea that organisations create knowledge and use this to their advantage when competing with other economic actors is not a particularly new one. Alfred Marshall (1920) suggested it first, but his treatment of resources with increasing returns (the general category to which knowledge belonged) was abandoned by later economists because not easily tractable with the mathematical language that started to dominate economics in the '30s (Kaldor, 1972). Edith Penrose rescued the concept, and made it a cornerstone of her *Theory of the Growth of the Firm* (Penrose, 1959). She suggested that the main activity of companies is the transformation of resources into services and the subsequent sale of these services. Fundamental in this transformation are management services, i.e. the accumulated experience and knowledge of the management team, which is one of the scarcest resources in any company. Whether Penrose's contribution was intended or simply collateral to her main goal (Rugman & Verbeke, 2002) is irrelevant: what is interesting is that she did suggest a mechanism of value creation by firms that was essentially knowledge-driven.

After approximately 40 years of little attention, Penrose is rediscovered at the beginning of the '90s, when a series of reformulations of the resource-based view stress that if companies use resources that are valuable, unique, inimitable and non substitutable (Barney, 1991), then internally accumulated resources (and knowledge *in primis*) will be a prime candidate for the role of basis of competitive advantage of firms (Dierickx & Cool, 1989; Peteraf, 1993). Social context becomes even more prominent in strategy research just after that, when some authors suggest that indeed firms have an advantage over markets precisely because they facilitate knowledge creation and transfer (the so-called knowledge-based view of the firm). In particular, this advantage comes from two sources.

First of all, a firm lies at the crossroads of several constituencies, and is thus able to synthesise and integrate different bodies of knowledge (Grant, 1996). We may call this a "structural advantage" as it emerges out of the particular position organisations occupy in the structure of economy and society. Some authors have stressed the ability many consulting firms have to generate innovation simply by transferring solutions that have been tried in one industry to a completely different one, or simply from one client to another (Hargadon & Sutton, 1997; Haas & Hansen, 2002).

I would like to concentrate my attention, though, on the second advantage. According to some researchers, a firm generates identity, language and shared coordination amongst its members – all factors facilitating knowledge creation and transfer, which makes firms better knowledge creation institutions than markets (Kogut & Zander, 1996). For lack of a better term, let's call this a "community advantage". This line of argumentation parallels the one in the organisational learning literature, where researchers have stressed that for any learning to be institutionalised, and thus ingrained into the organisation itself, there needs to be a shared interpretation of reality and a shared language (see Miner & Mezias, 1996; Crossan, Lane & White, 1999 for comprehensive reviews).

While this is a relatively solid construction, we are missing a description of the processes at the ground level, as well as explanations on the origin of this community factors. If we want to take the knowledge-based view idea seriously we need to examine the whys and hows of this community advantage, as well as have some sort of description (if not an explanation) of its development. What we need, in other word, is an understanding of organisations as a particular type of epistemic cultures, to use a concept that has been used to describe scientific laboratories (Knorr Cetina, 1999). Viewing organisations as cultures is an established tradition in organisational theory (Van Maanen & Schein, 1979; Smircich, 1983). It simply means abandoning the view that organisational culture is a variable that can be engineered through various manipulations of systems, processes, structures and products, and instead viewing culture as a system of meanings and symbols, as well as rules of behaviour, emerging from the repeated interactions of a group of people. Studying and explaining epistemic cultures simply imply concentrating on the symbols, meanings, structures and products that relate to the creation of knowledge inside an organisation.

Methods and data

In order to provide this understanding, or at least a preliminary version of it, I undertook an ethnographic observation of an incubator, focusing on three start-ups housed inside it, spending thirteen months on the field between March 2001 and April 2002. The incubator,

NetZoo[1], was one of the premier European actors in this space. Headquatered in Belgium, at the start of my observation period it had locations in 5 European countries, and hosted 17 start-ups (called by organisational members "baby companies"), almost exclusively in the hi-tech/internet sector. Access was gained through professional networks: a lecturer at my school had an advisory position with them. I was to be positioned as a sort of internal consultant for baby companies to use, with the only string attached that I was supposed to attend the highest number of meetings possible. This positioning allowed me to move between companies, and achieve the highest breadth of exposure to situations arising in the course of the normal operations of these companies. The arrangement was facilitated by the physical layout of offices, which were open-space thus making most of what happened visible throughout the company. Throughout the observation period, I ended up concentrating on the following companies:

- SystemCon, an IT consulting company
- Amusement, a mobile marketing companies, organising SMS and WAP activities for several clients
- SoftTest, a software testing consultancy offering specialised recruiting services for testers as well.

In addition to them, some observations on NetZoo itself were made. These however were limited by the fact that most of the meetings and strategic decision would take place back at headquarters, thus making it impossible for me to be present. In the last four months of my stay, I concentrated exclusively on SoftTest, to try to complement breadth with a deeper examination of one company.

During my time in NetZoo, I helped each of these companies with small office tasks, including the creation of Excel spreadsheets, PowerPoint presentation, the preparation of e-mails for a sales campaign, search for information and updating of company databases. Infrequently, and especially in SoftTest, I was also asked to comment about strategic options for the company. In addition to direct observation, I tried to get a copy of most official documents, meeting minutes and the like that were produced. Finally, casual conversation and (very rarely) formal interviews completed my methodological toolbox.

All these methods yielded several hundred pages of written documents, mixing interview transcripts, observation notes, and secondary sources like business plans and e-mail messages. I then proceeded to analyse them following the tenets of qualitative analysis (Glaser & Strauss, 1967; Strauss & Corbin, 1998 [1990]). What is presented below are the results of the first round of analysis. I will be deliberately descriptive, much more than analytical, to provide a general picture and framework. Future efforts will be directed to deepening the initial insights, thus privileging more analysis.

[1] The name of the actual incubator, as well as all other names of companies or people involved in this study, has been changed to preserve confidentiality. Certain key information has been altered as well. Care however was exercised to avoid misrepresenting any of the substantive issues.

Knowing what, knowing how

Not surprisingly, knowledge is too heterogeneous a concept to allow any meaningful analysis (Winter, 1987). In particular, in my analysis of the data, I will employ a distinction between declarative knowledge (know-what) and procedural knowledge (know-how).

Procedural knowledge is akin to "traditional" routines, as examined in the evolutionary economics literature, and covers all knowledge related to execution of tasks by organisational members (know-how). It emerges as a mechanism to facilitate coordination amongst team members, but also control of the processes by "top management" (however loosely that concept applies in small start-up companies, which is my sample). Declarative knowledge instead is concerned mostly with descriptive statements and frameworks about external reality (know-what). They orient organisational members action, and provide context in which organisational routines operate. Parts of the literature have examined this phenomenon under the name of cognitive maps, although this latter term is more general than the meaning I just assigned to cognitive representations, often including also the causal links between various concept – an issue that appears in my data, but without sufficient frequency and variation to allow me to draw any conclusion. I will thus concentrate on know-what and know-how for the remainder of this section.

To provide a typical example, each start-up had to develop early on a "sales process" routine, to guide the most critical activity in the life of a struggling company. Thus, the routine described all the various tasks that had to be performed to arrive to a sale: getting information on prospective clients (especially contact information), establishing contact and relationship, obtaining a meeting with decision-makers, following it up, etc. Cognitive representations of reality framed the routine, establishing *who* are the prospective clients, *what* are they looking for, etc. Note that all the various pieces of the representations are often painfully unclear, given the novelty of the operations of most of the start-ups I observed. Thus, industry recipes (Spender, 1989) are not available to guide managers. Clearly the boundaries of the two categories are not clear-cut: for example, how and where to get information on clients could be considered a cognitive representation or part of the routine. Still, the two are distinct enough to justify separation.

How does my distinction of know-what vs. know-how compare with previous typologies of knowledge? Surprisingly enough, the knowledge literature has not been very rich in terms of classifications: it seems like Polanyi's (1958) early distinction between tacit and explicit knowledge has captured most of the field's attention, to the detriment of alternative categorisations. In a rare departure from this general rule, Garud (1997) distinguishes between know-how, know-why and know-what, while discussing technology systems. Know-why for him is thus the causal understanding of the scientific principles underlying the phenomena observed or used in the production process – something without an easy equivalence in the field of managerial knowledge. His conceptualisation of know-what however is much more narrow than mine (again, possibly because of differences in domain), limited to an understanding of the needs the product under observation is going to solve – whereas I include, beyond that, the set of statement and beliefs on the environment and its links with the organisation.

Recently, however, the dichotomy between know-how and know-what has started to take hold in management (Brown & Duguid, 2001; Orlikowski, 2002). Note, however, that the same or similar dichotomy is deeply rooted in other fields. In philosophy, Ryle (1949) distinguishes

between knowing *that* and knowing *how* – the first process leading to being well-informed, the second leading to competence and efficiency. Similarly, in cognitive psychology, the separation between procedural and declarative memory is a standard one (Squire, 1987). The two types of memories are characterised by two different sets of characteristics on a series of dimensions, for example as far as decay, accessibility and transferability to new circumstances (Cohen & Bacdayan, 1994).

Note that I am not suggesting that know-how and know-what should supplant tacit-explicit as the most common lens of analysis of knowledge in organisation. What I am advocating right now is the use of multiple dimensions, reflecting the essentially pluralistic nature of the phenomenon in question (Van Maanen, 1995). In particular, I will examine two instances where the typology is relevant: codification, and social organisation.

Codification

Both know-what and know-how came in various shapes and forms. Appendix A reports the e-mail with which NetZoo completely overhauled its financial control system. The change was the result of a senior level decision at NetZoo, but the routine in question applied to all baby companies, who however were not consulted in any way. This example is one extreme, where the process of routine formation is clearly top-down, with no possible consultation, and an extreme level of codification. The advantage of e-mail communication is that it allows every recipient to get exactly the same information, as well as providing a shared text to go back to and refer in case of doubt. E-mails also allow a user to reach multiple people in different geographical locations at the same time. While this is certainly a feature and an advantage (especially in the case examined in Appendix A), it is not a defining one for the purposes of knowledge creation: I have data showing e-mails detailing specific routine being sent to only two people, with all three actors involved in the exchange sitting next to each other in the open space London office.

In fact, it seems that codification was a key aspect of know-how – or at least of work-related know-how. Social routines (or rituals) tended to remain uncodified. Office hours, lunch habits and even greeting patterns varied substantially from one company to the other – but there certainly was no codification there. For example, SoftTest members tended to have lunch together (and by late January settled to going to one café in particular, nicknamed the Opium Den because of the perpetual cloud of cigarette smoke hanging in there), were very outgoing in their greetings pattern, greeting everybody in the morning, and having "late" office hours (from 10-11 in the morning to late afternoon-early evening). Amusement on the other hand followed more traditional office hours, rarely had lunch together and isolated themselves from most of the rest of the incubator community. In neither case, of course, were these social behaviours guided by written rules.

If we concentrate on work routines, though, the codification aspect really is striking: preparations of memo, task-lists, meeting agendas and the formalisation of procedures take up a great part of the time the organisational members spend working. What's more, there seems to be a constant updating of these procedures: any small change is codified as well, through the issuance of another memo or e-mail or the formal updating of the business plans.

In comparison, know-what was much less codified – and to a great extent much less shared. After a month with SoftTest, I realised that the three members of the team had three different ideas on who their clients were. This was at a time when all of them were working on client

acquisition, through various direct marketing efforts, so the definition of the client group was rather central to the work tasks of all three. What's more, this was not the exception, but the rule. As for updating, this only happens periodically, when the discrepancy between views gets to light. Even then, the updating normally involves an agreement with the team members, but no codification, which again may happen, but only if there is some sort of external constraints imposed. Typically, this comes in the form of a revised business plan to write, or some sort of communication with investors/stockholders.

This association of know-how with codification (and of know-what with tacitness) contrasts with the received wisdom present in the literature. Most of the examples for tacit knowledge Nelson and Winter (1982) give in their seminal work concern processes: their discussion centres around the way skills facilitate the performance of some task, which by definition indicates a process. Thus, the implicit assumption in much of the research that followed is that routines are mostly tacit (Narduzzo, Rocco & Warglien, 2001). Conversely, much research praises and encourages managers to make explicit key elements of know-what, forming a clear strategic context in which organisational members can operate effectively (Burgelman, 1983; Hamel & Prahalad, 1989).

Where does the distinction come from? Because know-what is one level away from the day-to-day operations of most organisational members, there seems to be less concern about being absolutely in agreement on it – whereas when it comes to know-how, everybody is well aware of how important it is that everybody is "on the same page". Thus, it is not uncommon for slightly inconsistent maps to be held by various members of the team, as long as the inconsistency does not affect, in any major way, the operations of the company. In the example I mentioned above, each of the three members could work on their targeted group of clients, relatively independently of the others – though, naturally, some groups proved to be more suitable than others.

This ambiguity of know-how contrasts with the sharp clarity of know-what. In the case of routines there is always an accepted, official version (the last codified one), which people can refer back to. Thus, there is no space for ambiguity, and disagreement can only come from a difference in value judgements about the efficiency and effectiveness of a particular routine, as opposed to a divergence of opinion on "what truth is". Interestingly, however, in both cases there is seldom an objective way to solve the disagreement: performance data is often too fragmentary, ambiguous and time-lagged to provide a real stimulus for routine change, and reality is never clearly mapped.

What are the implications of all this? Theoretically, there is a chance to link the literature on learning with the literature on cognitive maps – which are a specific instance of learning. To my knowledge, these two streams have remained very separate so far, whereas my fieldwork indicates that they are really two sides of the same coin. More fundamentally, we may need to rethink the relation between tacitness and codification: while it is undeniable that tacit knowledge is not easy to codified, it is not clear that this will translate in less effort by organisation – or indeed, in less codification. Finally, there is also scope for questioning the underlying assumption that vision and mission need to be clear in everybody's mind for organisations to function properly. In my experience, organisations seem to function just fine without any agreement (or at least, without any explicit agreement) on "big issues" like identification of clients, priority of products, etc. Managerially, the conditions allowing for best knowledge creation seem different – and thus it is important that managers understand what they are trying to achieve, before they put in place the conditions for the wrong goals. Clearly, ambiguity and diversity in members background and cognitive structures are very good for the

creation of complete and accurate cognitive maps – but maybe not so for routines. At the very least, the need for closure in routines would lead to the choice of a more hierarchical structure in the case of routine creation, compared to map creation.

As a side note, we may also need to revise Mintzberg's (1971) portrait of managerial work. It seems like codifying practices is becoming a much more important task for managers, absorbing more time than before Codification sharing characteristics of the informational role, and of the decisional role, making it difficult to use Mintzberg's typology without some adaptation. Two interesting questions remain open for further research: one is whether the codification role is (or should be) limited to more operating types of management or not. Given the particular sample I have chosen, hierarchical division of labour was certainly not present and thus I cannot say for certain that all managers will spend much more time writing out procedures and practices. The second question is why did this change come about: a partial answer would be the emergence and evolution of IT tools making it extremely easy to communicate in a written form with an expanded audience. Word-processors and e-mail communication both favour the trend towards an increase in written communication. This is however only a partial, tentative answer to a much more complex question, which may warrant separate consideration.

Social organisation

Know-what and know-how also identify two different modes of knowledge creation. Very often, routines emerged from a blend of the skills of different members of the organisation, thus creating a need for tapping into the separate skill reservoirs and then combining them together. Indeed, on average, solutions to issues required people to work together and integrate their skills. In many areas, each team had recognised leaders, to whom everybody deferred as the ultimate authority on a specific subject matter. This deference often overturned lines of authority, so people who supposedly had a "higher rank" were very happy to implement solutions suggested by (authoritative) "lower rank" organisational members without changing a single word, and happily recognising that the contribution came from a "lower rank" person. This is consistent with the Weberian analysis of authority: expertise is one of the main sources he identified (Weber, 1978 [1922]).

Sometimes, however, nobody is a particular expert on a process, or nobody has particularly reliable information on a topic – or a less expert member of the group will challenge a more expert one. As I observed above, successful creation of know-how requires clarity and (almost) perfect congruity of behaviour. Thus, in cases of collapse of expertise-based status (because of a challenge or of lack of expertise), other power structures come into play, and determine the outcome of the discussion – because a clear and unambiguous outcome is what is needed at the end. In other words, the head of the group (the CEO, in most cases, given the small size of the companies) will decide what will be the official version of the routine. This happens even in the case when the person whose expertise is being challenged is the authority figure – making the challenge moot.

For most of the time I spent with them, SoftTest had a team of three people, two founders (Mike and Tim) and an employee (Roxanne). Roxanne however was the recognised "knowledge source" in one of the main areas the company was operating in: recruitment services. Thus, she was the one who suggested all the proper steps for handling the recruitment candidates and clients, and what she said was more or less accepted. At the same time, she was heavily critical of other aspects of the company's operations: from the process

of sales pitching to the process of data entering into the central database. Her objections in these areas were more often met with resistance, with a range of politeness and sensitivity that heavily varied, depending on other circumstances. Mike and Tim both prided themselves on having handled big teams of people successfully in the past, and thus felt more than adequate to the task of organising a small start-up – and felt no need to take somebody else's advice. Note also that some of Roxanne's suggestions were then incorporated into the company's operating routines, but often only when one of the other two founders "independently" came up with the same idea. Thus, it was not a question of inappropriateness of the suggestions, or at least, that was not always the case, as much as it was an issue of accepting somebody else's suggestion in an area where they felt strong enough.

What I am suggesting, here, is that there is a partition of knowledge space. Team members are recognised "leaders" in one or more areas – and their advice will be held into consideration in these areas. As soon as there is a conflict between areas of expertise, the "formal" hierarchy gets into play, and it is up to the leader to decide whose advice is taken.

The hierarchical or power aspect has been totally absent from the discussion on knowledge creation so far. Most of work has analysed learning as a sort of group or firm level construct, inferring it from a given output (Crossan, Lane & White, 1999), thus glossing over the actual dynamics that produced the output. Some other research has looked at the actual behaviour of organisational members in the context of learning, highlighting the existence of communities of practice, i.e. groups of people sharing a similar profession or task, who generate knowledge through sharing experiences and collective problem-solving (Brown & Duguid, 1991; Orr, 1996; Narduzzo, Rocco & Warglien, 2001). All this research however has been done in two separate types of real-life settings: very highly socialised professions, with their own (strong) norms and rules (software engineers, e.g.) or inside one particular job category in one organisation (technicians). In all cases, what appears is a group culture where status is mostly achieved through competence and expertise, and there is a definite lack of alternative sources of power. This is unlikely to be the situation in organisations, where instead power due to hierarchical position is a constant of life. Thus, although the concept of communities of practice may indeed help us understand the issue of organisational learning better (Barley & Kunda, 2001), we may need to specify the same concept much better, adapting it to an organisational, as opposed to a professional or occupational, context.

This contrasts with what happens in the case of know-what. As I mentioned before, the congruity and agreement between the different mental models of organisational members is much reduced in this case. The ambiguity inherent in cognitive representations therefore allows all these conflicts to stay hidden, and not to come out into the open until there is a compelling reason for them to: often, a particular decision to be taken, which hinges on the agreement by all members. Normally, this compelling reason is already sort of evidence one way or another, which makes it easier for one of the two parties to accept "defeat".

What happened when there was disagreement about knowledge? The normal dynamics was for a confrontation to ensue, resulting in the creation of a version that all organisational members could share, or at least that pushed back the disagreement into the background. The form of this new version varied dramatically. Sometimes, one version would be deemed wrong, and completely discarded. Most often though, the alternative interpretations/considerations were new to many of the team members, and thus originated a discussion to validate them. The purpose of the discussion was both to explain the particular idea to the other team members, and to link it with the established core of ideas that were shared by everybody, thus giving the new entry legitimacy by extension.

In these discussions, the various participants assumed a set of fixed roles, somewhat overlapping with roles highlighted in the literature in other instances. The most obvious role was that of the champion (Bower, 1970; Burgelman, 1983), arguing for the value of the alternative he proposed. Note that I am not considering here the proposition of strategies or strategic alternatives as such, as the previous studies have done: the idea been championed here is an alternative interpretation of reality, or an alternative version of a business process.

Much more prominent than in other settings, the discussions I witnessed also had a very clear devil's advocate, trying to show that the idea was bad. This role could be taken up by the champion of an opposing idea, though it was as likely that the role would be taken by a third party.

Finally, the meeting would revolve around a sensemaker (Gioia & Chittipeddi, 1991), who would have the final say about what was considered acceptable or not in the company, and what would become company policy or not. Because of the nature of the role, the sensemaker was often also the highest ranking person in the company (or in the meeting) – not to mention that he was often the one setting the strategic and structural context in which the debate (and indeed the whole life of the organisation) took place (Bower, 1970; Burgelman, 1983). Still, this second part of the role should not be overplayed: the rhetoric of dotcoms encouraged fairness and participation, and this was institutionalised enough in the official rules of the game to make participation possible and encouraged. In a way, I could almost say that the real power of the hierarchical boss rested precisely in his (they were all male, in my sample) ability to dictate what the world looked like (know-what) and how the company should operate (know-how) albeit with a degree of fairness still required. Indeed, there was a general feeling that without somebody to take charge, to channel the energy and ideas bubbling up from all members, all the knowledge and skills present in the individuals would not translate into organisational knowledge, and thus remain useless. This is not unlike what Burgelman (1994) found, though at a different levels – whereas Burgelman suggests that the reason why Intel managed to rejuvenate was because of the existence of rules, the agreement in NetZoo was that rules were far too inflexible to be of any use in that situation. Thus, a more personal approach was needed, with the people in charge taking an active interest in soliciting, elaborating, integrating and proposing new ideas. Many of the people that left NetZoo cited as a reason for leaving their frustration with "top" management, and their inability to listen beyond the clique that had formed around the founder. The same people also indicated that it was not just a question of personal satisfaction, but rather an issue of organisational performance. John, one of my early sponsors who left approximately 5 months after I joined, commented thus:

> "People in this place possess an incredible amount of knowledge and skills. It's just too bad that our leadership seems unaware of this, or simply uninterested to tap into them for the good of the whole company"

In conclusion, preliminary analysis of the data suggests that the distinction between know-how and know-what highlights important differences in codification behaviour and (partially) in the social organisation underlying its creation. These differences would be glossed over were we to look for codification or creation of knowledge as a whole. In particular, I have suggested that contrary to what the literature has so far hinted, know-how receives much more codification than know-what. Indeed, the codification of know-how is so continuous that it is debatable whether the traditional disadvantage ascribed to codification, i.e. its static and inertial quality, still applies in this case. Also, knowledge creation processes differ slightly between know-how and know-what, with know-how exhibiting more pressure for agreement,

and as a consequence a heavier use of authority (often hierarchical) to silence disputes and disagreements. In both cases, however, the role of the authority figure as sensemaker influences the agenda of the discussion – and the outcomes – greatly.

The role of business plans

Let me now turn to a slightly different topic, and focus on business plans. Looking at organisations as knowledge-creating entities means that business plans, instead of or in addition to their role as communication tools to reach the audience of investors, become at the very least also the knowledge product, the condensed representation of the knowledge produced by a company in a particular period of time, or, to put it another way, a representation of the "state-of-the-art" of know-how and know-what inside a company at the time the plan was produced. Thus, it is interesting to analyse their roles, especially because it turns out to be slightly different from the one you would expect reading the literature.

Ever since Burns and Stalker (1961) suggested their distinction between mechanistic vs. organic organisations, organisational theorists have associated innovation and creativity with flexibility and lack of structure. Most recently, Eisenhardt and Sull (2001) suggest that in situations of high uncertainty and turbulence, the most appropriate planning exercise is to craft some simple and flexible rules that can guide the organisational members through the uncertainty, but not stifle them and force them on a predefined course of action.

Thus, for start-ups operating in the emerging markets linked to the internet, we could expect the planning process to be practically non-existent, while managers spent their time concentrating on more operational concerns. In fact, in NetZoo the planning process was a long and protractred process. Companies were admitted on the basis of their business plans, of course (and subsequent interviews), but the general expectation is that the first three to four months of their stay in the Zoo would be spent rewriting the plan itself, with the help of the incubator people as well. Three to four months amounted to a fourth to a third of the incubation period – a considerable amount of time to be spent on something that would not be useful in the future life of a company.

To complicate the picture slightly further, once the business plan was finished, my experience is that it was certainly not considered a live document which people would continuously update: updates would happen sporadically, normally after the gap between the company (and data) presented in the plan was just too different from reality. It was also not given to newcomers, to familiarise them with the business. Its only use, thus, seemed to be with potential investors and external stakeholders, which would explain the need to keep the plan relatively close to reality, but on an infrequent update basis.

One explanation that is readily available would suggest that the time spent creating the business pan is a sort of "window-dressing" exercise that needs to be taken care of, to please potential investors or NetZoo itself. Thus, the operations of the company would proceed independently, loosely coupled with the planning exercise, which would be a ritual that needs to be followed because of external institutional pressures (Meyer & Rowan, 1977). In addition to that, because it is a formal requirement by NetZoo, baby companies could be led to compliance simply to gain legitimacy by following the rules, creating a sort of isomorphic compliance (DiMaggio & Powell, 1983). This last line of argument is strengthened by the fact that the service offer NetZoo makes to its baby companies follows an "all-you-can-eat" model: they are assured of services and assistance for a year, but there is no provision as to a

maximum number of hours that NetZoo personnel would spend on a given company. In such a model, there was a clear status ranking of the companies at any given time, generated by objective indicators like market success, but also by more subjective feelings, such as the ones that come from being praised for a solid business plan (or any other aspect of compliance, for that matter).

This clashes however with a very simple observation: not only do the baby companies not submit to the process unwillingly and protesting, but in retrospect they still consider the period valuable and important. Assuming that it's not just due to a systematically wrong judgement by several baby company executives, there has to be something more to the planning process than what is apparently evident.

Most executives would readily admit that it is not a directly productive period – it would be difficult to deny that. Still, the general feeling is that the more operative, direct, active period that come afterwards would not be possible, or would not be as successful, had the business plan not been done carefully. When pressed, managers certainly mentioned the importance of careful analysis. Interestingly, only a few mentioned "accurate" as a goal of the analysis stage. I am not implying that whoever did not mention that was trying to create inaccurate analysis, only that maybe we have concentrated to much on the result, on the accuracy of what is written, instead of spending time observing the process. Moreover, this could be true of the whole planning process as well.

The process of business plan creation in fact represents a period of time when organisational members are fully devoted to the task of *thinking* about their endeavour, in all its different aspects. Interestingly, there will never be another time quite like this, as managers will soon have to split their time between more strategic, long-term planning tasks and more operational, immediate issues demanding their attention. At this stage, however, there are no operations to "distract" managers from the task of planning. This is, in many ways, a situation that is presented as an ideal by the design school of management: no body to take care of, only brain – and a blank slate, on which execs can draw what they prefer.

The blank slate is key. This can be an advantage, of course, in terms of freedom of action. It does nothing, though, to alleviate the uncertainty of managers. Everything is up for grabs, and they need to grasp with an uncertain environment, as well as an unclear and undefined set of competitors and customers. The intense process of full immersion in the whys and wherefores of the business starts to fill this blank space with constructs, schemas relating to their operations or their competitors – theories, in other world, that help managers make sense of their world (Szulanski & Doz, 1995). Additionally, the process is performed collectively – which means that these theories will be to a greater or smaller extent shared, thus providing a bedrock of identity about the firm, as well as role-structuring the various people working inside it, and creating a shared language amongst organisational members. In other words, the process of business planning provides precisely those characteristics that Kogut and Zander (1996) suggest are the basis of any knowledge-based view of the firm.

Once again, I am not suggesting that the considerable amount of literature predicating flexibility, simple rules and emergent strategy is wrong. Simply that, because they focused on companies that had an established past, they missed the important social role that planning processes have in creating a shared image of the world, one in which organisational members can afterwards move with some freedom. In fact, as I mentioned above, business plans are certainly not seen as the final authority on how to proceed. The actual behaviour seems to mirror closely the emergent strategies model (Mintzberg & McHugh, 1985; Mintzberg *et al.*,

1996), changing directions as opportunities emerge as opposed to following a rigid path. All the same, I am arguing that this behaviour is possible *only because* the planning process before has created the necessary conditions. Thus, the debate between planned vs. emergent strategy may have simply been badly posed: planning has its place in the life of the company, regardless of the actual use of the plan itself.

Of course, this function of the planning process will tend to diminish as time goes by, though high turnover and high turbulence would probably act as counter-forces to the diminishing returns of planning. High turnover would mean that more people would need to be socialised into the company, or alternatively that the identity of the company (or group!) needs to be recrafted to include these people as well (March, 1991). High turbulence increases the changes that need to be included in the new "maps", and thus the need to discard the old maps in favour of creating new ones (Barr, Stimpert & Huff, 1992).

Even with high turnover and high turbulence, established companies would still need identity-creating processes less. Members of these organisations can in fact tap their companies' past, to have an idea as to actions, identity etc. Even if they were not present at the time, memories of past actions (using this term in the broadest term to encompass strategies, decisions and processes) will remain through fellow organisational members with longer tenure or written documents (either internal or external). All these avenues are not available to start-ups, precisely because they have no past. Thus, in many ways, their efforts spent on business planning are also finalised at the creation of a past.

Discussion and conclusions

In this paper, I argued that management needs to develop a theory of knowledge work, or conversely a theory of how knowledge is created inside organisations. The paper presented the first tentative steps in this direction, viewing knowledge as epistemic cultures and spotlighting three aspects of these cultures: the qualitative difference between two types of knowledge output, in particular as far as codification behaviour is concerned; the social organisation surrounding knowledge creation, in particular the interplay of skill-based and norm-based power, as well as the roles necessary for knowledge creation; the characteristics of one important knowledge process, the one resulting in a business plan, and its intended and unintended outputs. These insights were developed based on the data collected in a year-long ethnography in an incubator for internet start-ups.

Very interestingly, the results are consistent with a large part of the literature on knowledge and learning, while at the same time presenting areas where researchers may have been too quick in drawing a conclusion. So, for example, the literature on organisational learning (Miner & Mezias, 1996; Crossan, Lane & White, 1999), stressing the multi-layered, multi-process nature of learning is perfectly consistent with what I presented here. Similarly, evolutionary economics (Zollo & Winter, 2001) would not disagree with my arguments, if not at the margin of the issue of codification. Finally, the emergent body of knowledge on communities of practice is reinforced by the consideration of *what* makes a community of practice, and how does the existence of rule-based power change the established results (Brown & Duguid, 1991; Orr, 1996; Brown & Duguid, 2001).

Are the results dependent on my specific setting, and thus not generalisable? I believe that start-ups are excellent settings in which to study the phenomena I describe – but by no means are these phenomena limited to start-ups. Thus, established corporations still have to contend

with power – one would say more so, as the "iron cage" of bureaucracy expands, introducing more and more layers of management; still codify know-what and know-how – once again, more so, as the number of people that need to follow the same policy gets to be too vast for a single meeting or informal conversation to suffice; and still produce plans, whether they are called business or strategic – though admittedly, and as I discussed, their need for the collateral outputs of the planning process will be scarcer.

My next steps are going to be first of all to deepen the analysis in the three directions outlined above, pushing even closer the theory developed and my data. This is only the start of a long journey of exploration of my own data, so I am in no position to call for further research by other people. Hopefully, that will change.

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Appendix A

I am writing to inform you all of a new purchasing system that will be introduced with immediate effect.

You will appreciate that there is considerable pressure on controlling the operational expenditure of NetZoo at present, given the market conditions, and in particular given the time it takes to raise finance for the company. In order for management to be better informed about the commitments the company is entering into, and to further improve the accuracy and ease of the invoice administration, I have decided to implement a purchasing system that requires the issuance of a Purchase Order (PO) number for ALL purchases from now on.

The basic elements of the system will be:

- ALL purchases will require a purchase order number issued by Finance - after a short transition period invoices that do NOT have a purchase order number will not be paid
- If invoices arrive without a purchase order they will be returned to the requisitioner (where identifiable) and they will not be paid - the requisitioner will be asked to resolve the issue with the supplier
- Soon we will write separately to all vendors on our ledger to tell them that NetZoo will not accept invoices without purchase orders, so expect your suppliers to start asking for them.
- In the near future we will start operating a list of approved suppliers for all purchases - new suppliers can be added but only with Finance approval

The system will be administered by [a financial controller] in London, who will need the following information from you:

- Description of items/services to be purchased
- Supplier
- Value of order

In the case of goods, this is relatively simple and just ensure that the purchase negotiation has been concluded and that a value is known. In the case of services (legal, maintenance, etcetera) you will have to agree an agreed price or limit of the work before a PO number will be given. In the case of regular repeat purchases (catering, rent, etcetera), we will issue a purchase order number that will have a range of approved values, within which the invoice will be automatically approved.

Approval levels for procurement have been set as well. Country MDs will be able to sign off individual purchases up to a level of €5000. Above that, either [the COO] or I will have to approve the purchase.

I ask you for help in this important aspect of our financial control system, and also to make sure you request POs by email, approved by the local MD where applicable. See the attached word document for the required format aimed to speed up the process. We will do our best to improve this system as soon as possible, possibly by using outlook forms or SAP, but the emphasis is on speed rather than elegance of the solution.

Thanks for your assistance.

[the CFO]