Combining creativity and stability: responses to specialization and globalization

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Combining creativity and stability: responses to specialization and globalization

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Abstract
Innovation theory states that organizations need to innovate in order to transcend incremental improvements but that difficulties arise when innovations are mingled with existing business processes. The literature of (Knowledge) Management offers ideas to embed innovations in existing business by enabling professionals to pool and combine their information, both co-located and remote. A community of practice (COP) is a useful instrument for this goal, but only:
-   if the innovative knowledge stems from the dialogue between participants with different competencies by means of combining tacit and explicit knowledge (exploration);
-    if a 'dashboard (or scorecard) function' identifies relevant metrics that make the returns of knowledge workers visible to the workers and their managers. This enables them to appreciate and channel their complex work processes effectively and so decrease uncertainties (exploitation).

This paper explores a business model that includes the knowledge modules of a COP and relates them with the business processes and formal organizational hierarchy in order to optimize the value of knowledge worker performance and to embed this value in the on-going organization.

Introduction
An often debated challenge to date is how companies deal with innovative projects for value creation beyond the borders of their ongoing business (Anderson and Tushman 1990; Gibson and Birkinshaw 2004). We ask ourselves to what extent the present business models of companies are suitable for new product and service developments of the knowledge economy. One of the major shifts during the last decades has been the change towards the "post-capitalist" society (Drucker 1991). Incumbents and new entrants have evolved from product making companies towards partners that offer services and sense for customers, employees and investors (Brown, 1999). More often than not, global knowledge workers 'produce' specialized parts of intangible services while transferring tacit knowledge (Nonaka 1991). These highly valued intangible services also have a drawback, namely uncertainties about the sense of place, labor satisfaction and personal productivity (Sennett 1999). The goal of this paper is to explore how the added value of the knowledge workers can be stimulated and merged within the existing routine activities of their companies. Therefore, we will leverage the concept business models through a bottom-up approach from the field of Knowledge Management, namely the community of practice (COP).
          The paper's structure is as follows. The theoretical section introduces the concepts of ambidexterity, business model and COP, and ends with a business model that takes the COP approach into account. This model forms the starting point for the method and case results, where we explore how the aspects of a case of a vocational education 'factory' support the model. We finish with the conclusions and limitations of the study

Theoretical background: ambidexterity
Growing customer requirements have motivated organizations to specialize their activity set. Langlois (2003) has indicated that organizational innovations, such as the Chandlerian revolution of the late 1800s and the development of network structures at the end of the 20th century, were intended to seize the opportunities of specialization and technological developments by bringing them in line with present business activities. At present times, organizations still have to combine this issue of exploration and exploitation. Gibson and Birkinshaw (2004) provide suggestions to shape an ambidextrous company to 'wed' alignment with adaptation to meet changes. They distinguish between structural ambidexterity and contextual ambidexterity. Structural ambidexterity refers to organizational mechanisms such as separate units, partitioning within a business unit

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1

(creating organic and mechanistic parts) and a temporal separation of groups of people. All these options suffer extra coordination costs. Contextual ambidexterity refers to the option of building sets of processes and systems that enable individuals to make their own decisions, to divide their time between different demands so that adaptation of entire business unit may take place without coordination disadvantages.

<u>Similar approaches and their limitations: using business models to provide ambidexterity</u>
<u>Chesbrough and Rosenbloom (2002)</u> also observe the difficulties of managing innovations that do not align with previous experiences. They look for the concept of business models to contribute to literature on ambidexterity a disruptive innovation. The term 'business model' emerged at the dawn of the digital age (<u>Magretta 2002</u>). In essence, a business model is the unit of analysis that depicts the sources for the firm's value creation, explains the underlying logic how such value is delivered to customers and how the company profits from that (Amit and Zott 2001). Various publications highlight the central position of the customer value proposition, which can be reached by the integration of it business processes, the network in which the company is active and a profit formula (<u>Chesbrough and Rosenbloom 2002;</u> <u>Johnson et al. 2008</u>).

The reasons for the popularity of business models is that they offer suggestions to make work more efficient, flexible and smarter (Malone et al., 2006). These models create a narrative of the work processes of the company. These processes are embedded within their strategy, are being performed by the use of people and equipment (functional knowledge with certain dependencies creating information needs) and need to be coordinated (coordinating knowledge answering the information needs).

Although in theory novelty and knowledge (resources and competencies) are components of business models, organizations find it hard to apply them to combine innovation and continuity. Especially the possible contribution of individual knowledge workers to innovations is not discussed elaborately. Therefore we focus on the question how to stimulate and use the creative potential of the organizational members to embed novel ideas within existing business models. We turn to the concept of self-directed teams to deal with this issue.

<u>Innovative and original aspects of the proposed model: the contribution of COP to support innovations in business models</u>
During the 'Brick and Mortar' economy, a response to this specialization was the development of self-managing task groups in the so-called socio-technical tradition. Both the Scandinavian and the Japanese tradition have demonstrated that overview of a labor process as a whole, a deep insight in details and a certain control over an entire production process tends to contribute to increasing labor satisfaction and productivity. But traditional socio-technical teams were present in the same space and in a 'blue collar' environment. Besides, their innovative ability was impeded by the latter causing above all incremental process innovations and rarely product innovation (De Leede 1997).

New views from the socio-technical tradition give room for its application in the field of Knowledge Management (<u>Coakes 2002</u>). The contemporary service economy offers new opportunities to grasp the notion of teamwork for innovation purposes, because knowledge workers cooperate within a team structure by contributing their specialist skills to activities that yield complex, recombined 'products'. Besides, the use of digital media affords team members to bridge geographic distance so that they can be dispersed over several locations. The emerging community-of practice (COP) affords possibilities to bring together dispersed knowledge workers, but only if the model fits the need to distribute the tacit knowledge of knowledge workers across different geographic locations (<u>Hildreth et al. 2000</u>).

A COP is a bottom-up developed community of interacting people. Lave and Wenger (1991) characterize it by its specific practice (joint work), identity (mutual engagement, sense of ownership, legitimation) and a shared repertoire (accumulated knowledge: best practice). Its core-peripheral nature offers the opportunity for new entrants (takers who may become givers) to develop deeper knowledge by communicating with members (givers) and the core figure(s) who acts as a guardian. The members combine work, learning and innovation processes (<u>Brown and Duguid 1991</u>). The COP is based on the competences and ownership of workers, motivating them to apply their creativity and to create a narrative within the corporate business system. A COP may even transcend organizational borders. Prahalad and Ramaswamy (2004) and Huston and Sakkab (2006) suggest to cooperate fully with suppliers, clients and partners, with the intention to combine knowledge in order to attain an open business model (<u>Chesbrough, 2006</u>).

2

An important issue is that the members take ownership of novel ideas, which motivates them to support or execute the subsequent implementation. This issue may support ambidexterity. However, Wenger and Snyder (2000) observe the fact that the pay-offs of COP often come forward in business processes and units outside the scope of the COP, and not in the COP where the efforts have been made. This lack of transparency hampers the motivation of COP members and the acceptance of COP based ideas by other parts of the organization.

We explore the innovation process stages (variation, selection and retention) as adapted by Burgelman (1991) to verify how knowledge management techniques may encourage and support knowledge workers. On the one hand, it aims at how organizational members innovate from their present skills and competences, on the other hand it verifies how it can be assured that the value of COP members is made manifest. This issue may offer the involved organizations to meet the dual focus of 'innovation' and 'continuity'.

Creating variation: developing emerging ideas within an (semi-)autonomous context
The COP represents a knowledge management method for coordinating the realization of bottom-up innovation. The bottom-up approach affords knowledge workers a level-playing field, which enables them to 'stretch', autonomously and to use their imagination, based on their intrinsic values. People from different locations are allowed to demonstrate and interact about complex, varying and even erratic ideas to recombine them into innovative solutions.
        Hildreth et al. (2000) emphasize the fact the tacit and explicit knowledge of members intertwine although they are different of nature. Although the transformation of non-codified routines toward routines or even codified standards is not a trivial task, organizations need to make some aspects of their tacit knowledge explicit or put them into routines in order to diffuse it internally (Nonaka 1991).

Selection: hosting
The managerial task develops from taking the lead in developing novel ideas into the linking and fostering of communities in order to finally select the most suitable ideas based on the company's goals and direction (Wenger & Snyder, 2000; Thompson 2005). This approach may be characterized as hosting of employees. In the preindustrial age, hospitality meant offering an institution of safety (Breukel and Go 2009). Due to the 'intrusion' of ICTs as a stranger as seen by Ciborra (1999), the hospitality phenomenon has moved beyond the physical space, for example in the form of 'web-hosting. Within the framework of Zuboff and Maxmin (2003) the hospitality paradigm is seen to offer workers a sense of 'sanctuary'. Key elements of hosting are the removal of the language of planning, an incremental approach and the introduction of multinational disciplinary teams.

Retention: measurement, self-esteem and implementation
The location of the pay-offs of COP often come forward in business units or at customers, outside the scope of the COP where the efforts have been made. Besides, these returns are the consequence of complex and intangible 'products' of which the value is often difficult to determine. If metrics could visualize the added value of knowledge workers in the value chain, then it would offers transparency to the knowledge workers, their colleagues and their managers. Therefore Wenger and Snyder (2000) plea for nontraditional methods (qualitative, listening to narratives) to assess the value of the community. Borzillo (2009) adds examples of more concrete measurement methods, e.g. if the quality justifies higher prices or if the costs will decrease customers costs at the end of the chain. These are the strategic parameters by which the sponsor of different communities is able to guide them simultaneously.

These metrics not only visualize the added value of knowledge workers, but also offer opportunities to diffuse (internal) COP practices into broader corporate routines. To achieve the latter, managerial sponsorship must succeed in demonstrating the organization-wide value of the application of particular COP practices.

Structure of the model
The alignment of COP with the business model concept starts with bringing together three ways of looking at organizations, namely a corporate chart, business processes and a knowledge map.

First perspective: the corporate chart demonstrates a top-down view of companies where management and technocracy determine the function of and hierarchical relations between the various departments. This chart demonstrates the accountabilities for costs and benefits at the various locations in the company.
Due to recurring organizational transformations and a short term managerial 'stay' with companies (Senett 1999), this chart (including their departmental accountabilities) is fairly volatile.

3

Second perspective: during the 1990s, the literature put more emphasis on primary processes such as product and service development, delivery processes, and customer-facing processes (marketing, order management, service processes (Davenport 1993). This process structure is more appropriate to deal with all obstacles that interfere with a smooth functioning of processes, especially with rising environmental dynamism. Therefore, advantages can be gained by focusing on the process, rather than the department.

This process map is more stable than the corporate chart because routines, which concern functional activities (sales, logistics, service operations management, and marketing), are difficult to change because have a highly tacit content, are linked to decision-making and coordination in the face of goal-setting and performance achievement, and allied with investments in ICT and production facilities. That does not mean that they are inflexible, because recombination of their contents and mutations cause modifications.

Third perspective: some knowledge elements are present in different processes, and processes make use of different knowledge sets. This attention on knowledge as the most important resource of our post-industrial society comes up later in the 1990s. Intangible services and information are valued more highly than the tangible, physical goods. Organizations tend to outsource their production, but keep the initial knowledge and coordination about this production inside the company (Prahalad and Hamel 1994).

Its value originates from the fact that it is rather stable, caused by uniqueness, path dependency, i.e., the historical accumulation of knowledge, causal ambiguity and the economic deterrence of built knowledge as a resource. Because human knowledge is not only explicit, but tacit as well, its complexity makes it especially difficult to copy. As knowledge development has a continuous nature, it therefore has a durable value. However, its durability may be short-lived when impeded by organizational inertia. Therefore, scholars continue their search for models that describe, prescribe and simulate the development of knowledge.

To embed the COP into the concept of the business model, we map it along the three perspectives.
- Architecture of knowledge (third perspective): a COP can contribute towards the renewal of knowledge because it is a natural consequence of interaction between self-managing peers. Variation is supported if COP members have different backgrounds because this stimulated recombination. This presence of varying knowledge depends on the *resources and competencies* of the company and is indicated by a modular based design of competencies. We start off with the knowledge worker's perspective on how his knowledge and competences can be pooled in an optimal manner to interlock 'specialist arenas' that can be reinterpreted to develop new notions of community-of- practice that are currently emerging in cyberspace. The latter model raises issues of coordinating common pool information (Hess and Ostrom 2003) and potential shifts in identity, encounters, relationships for learning and innovation (variation → innovation).
- Process map (second perspective): knowledge delivers value for specific processes, which can be made visible through a variety of performance indicators. The modular based design of competencies can be linked to process map. Such design enables decision makers to keep track of the impact of knowledge on various processes. This dashboard, including relevant metrics, demonstrates the productivity of the COP and its members. This is relevant for the self esteem of COP members and the organizational acceptance of their ideas of COP members, supporting the later retention. This perspective depends on the *processes and value proposition* of the company (innovation→ measurement and routines).
- Corporate chart including managerial authority(first perspective): it shows the authority locations (inside and outside the organizations) where the costs and value touch-down and is therefore relevant for the selection of COP based ideas, depending on the *profit formula* of the business model of the company (measurement → fostering COP and selecting ideas)

In this way the COP can deliver economic value in a company that combines creativity and continuity by means of collaboration between dispersed professionals. As such, the COP is not a part of a dual structure, but integrated in an ambidextrous organization. ICT plays an indispensable role, not only a means to spread, compute and diffuse systematic company productivity knowledge but especially as a set of tools to transfer and diffuse soft knowledge (wiki, social media, twitter and so on) to leverage new narratives for purposes of strengthening the COP members' corporate belief.

Method
In this study, we explore how COPs may be included in the business model of a company and to what extent this supports knowledge worker performance. We have developed a case example to look for data that supports, adapts or rejects our model. The case is performed at the Water Factory (WF). This factory is located in the Netherlands and run by students of the upper secondary vocational education (for youngsters aged between 16 and 20 who have completed the first compulsory cycle of secondary education). This project has been started by

4

a vocational education school (Koning Willem I College: KWIC) that has set up this factory as an experiment to innovate teaching. It applies the so-called 'reversed teaching method'. The traditional method claimed learning starts with theory. In this reversed approach attitude, practices and formal knowledge are intertwined simultaneously into a hybrid teaching-and-learning method (Huisman et al. 2010). Its goal is to operate as manufacturing plant, particularly to produce bottles of water, but a more important purpose of the WF is to offer students a better grasp of working processes by practicing them as a means to motivate them to apply theory, finish the education and enter the labor market with a certificate. The students receive guidance from the director of the WF (a former teacher from KWIC), from teacher-practitioners, from teacher-theorists, and from university students who support operational management.

The WF task processes involve multiple levels. Accordingly, the COP is studied by applying various approaches:
- Observation: resulting in primary data about the process of developing and running the factory.
- Students of Avans University of Applied Sciences: offering primary data about their experiences as operational managers and their descriptions of the corporate and process structure, tasks, competences, and COPs.
- Change agent: offering primary data about putting in practice of the "reversed teaching method", which she has developed as a part of the design hybrid teaching-and-learning method.
- Audit report: offering secondary data about the experiences and development of teachers and students.

The corporate structure (first perspective) is not presented in this paper and will be discussed in a subsequent study. The process map is discussed in the case results but not shown.

Results obtained by applying the model to the real case
The competence map (third perspective) is presented below (Figure 1). In line with Grant (1996), we apply a modular approach. The mix of functional and coordination routines must dovetail with the processes of applying, spreading and retaining (explicit and implicit) knowledge. Examples of functional competences are:

F1.	*The ability to work with production facilities as required*
F27.	*The ability to realize commercial results*
F31.	*The ability to apply learning and working in the WF*
F36.	*The ability to exchange relevant information*
F38.	*The ability to define and follow principles of the 'reversed teaching method'*

Examples of coordination competences are:

C1.	*The ability to coordinate all activities of the 'blue-collar' production department*
C5.	*The ability to coordinate the processes of the different departments*
C 11.	*The ability to coordinate and maintain the students development trajectory 'lower secondary vocational education - upper secondary vocational education - higher professional education'*

We have identified two COPs, namely one Operational COP (OC: left) and one Conceptual COP (CC: right):
- Operational COP: manager, management support (University student), student workers, teachers with knowledge of production (and sales) knowledge.
- Conceptual COP: manager, management support (University student), change agent, consultant and the director vocational education with knowledge of the context, contents and implementation of the concept of the Water Factory.
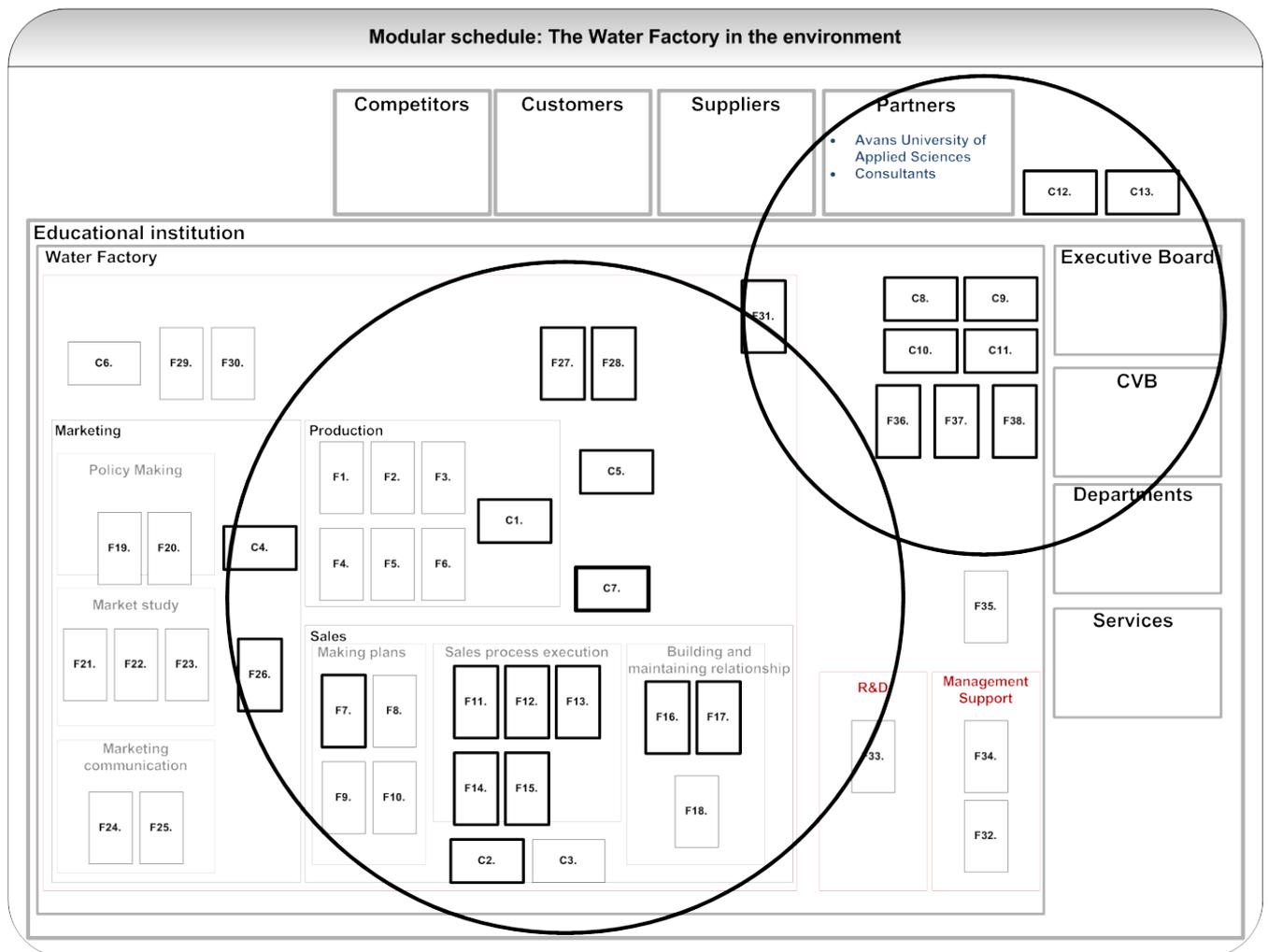
5

Figure 1   Competence map with COPs

We propose to map the COPs on grounds of their knowledge sets and processes.

Architecture of knowledge: third perspective (variation → innovation)
Operational community:
-    Innovation options: the students have developed, for the first time in their school career, a sense of ownership, which is a service innovation. They have intensive interaction with each other and surrounding participants of the WF that creates a variety of initiatives. Teacher development is for some members more complex.
-    ICT and communication*:* foremost regular face-to-face, with additional email and telephone between teachers who are not always 'on site'. Students have developed an elaborate website, fed by own data. The application of social media is not yet elaborate. This COP is especially co-located and is able to exchange locally tacit knowledge in addition with regular diffusion of explicit information.

Conceptual community:
-    Innovation options: the Executive Board of the KWIC has chosen the 'reversed teaching method' after discussions with the change agent. That makes the innovation top-down because it did not rise out of the community itself. The WF makes use of 'standard' ICT facilities, so it follows a top-down approach in their way of working. However, the WF is not positioned as a part of another department and even welcomes the HRM department to join their professionalization efforts. Here we see a variation of bottom-up experiences emerging. Also the mutual impact of consultants on other members of the COP are stated as unexpected, refreshing and proactive, mixing tacit and explicit knowledge

6

- ICT and communication*: foremost email (with papers attached), and additional telephone, face-to-face and formal letters. This COP is distributed over different location with members with different goals. The verbal communication takes place in a regular two-monthly cycle.

Process map: second perspective (innovation → measurement and routines)
Operational community: the competences of the OC have a slightly broader scope than the corresponding processes. F1 (the ability to work with production facilities as required) for instance is also relevant during R&D and sales processes, but not abundantly. In this development stage of the company, operational knowledge is still relatively local. This makes the COP knowledge only relevant for the processes within their scopes (mainly production and sales, with also some marketing and R&D).
- Measurements: interviews show that both production and sales students are happy to have taken this opportunity also because students from other discipline have positive, reciprocal feedback about their efforts (e.g. sales students valuing students responsible for production output). They indicate that they want to learn more and feel privileged to work with student from other school departments, students who they used to ignore before. Teachers, however, are used to apply knowledge in a familiar context, feel lost outside that context and are not familiar with the decreasing autonomy (in their classroom). Some teachers dispraise the decreasing autonomy but if they learn to apply knowledge outside their known context, then interesting effects may rise because of the recombination of routines that may be valued by third parties in that new context.
- Stability: the improvisations from the start has turned into more routine work (also because of fixed investments in production facilities), but experimental behavior will not cease to exist because new teams of students will enter the factory, the business will develop and new university students will enter the COP. As these students will diffuse their opinions, prospects are that future student participation will rise as a sign of legitimating. The growing participation of teachers points in the same direction.

Conceptual community: the competences of this community have a wider scope than the range of their own processes. Members outside of the WF mix in WF processes, while the WF participants take part in processes from other departments.
- Measurements: the HR department shows proceedings in their professionalism and values positively the experiences of the WF, which is received as pleasant feedback. Also the home base of consultants (e.g. Avans University) grants the emerging value of the WF for their employees, which supports the positive attitude of these consultants to their work within the COP.
- Stability: investments in specific facilities are not striking for this COP. The acceptance of the position of the COP in the WF fully depends of the perceived value of their contributions by other departments and institutions. There are signs of growing acceptance of the WF, also by outside parties, but this evolvement has not yet developed over the whole range.

Conclusion and discussion
We view this WF as a case example of an organization that successfully seeks variation via the mechanism of the COP and leverages the latter as a possible sanctuary for the incubation of innovation. Here we see promising results while COP members get positive feedback from third parties concerning their efforts.

In addition, organizations need to have alignment around their routine activities (Gibson and Birkinshaw 2004). Indeed, we see confirmation that the COP supports the ambidextrous nature of the WF because it seeks to develop from the stage of improvisation towards the stage of routines, although the factory does not yet produces scale in students, teachers nor bottles (Ciborra 1999). The way of working has met several problems such as teachers withdrawing themselves from the project. The main message is that teachers need to develop to meet near future student demands (experiences and ownership instead of formal knowledge). Overall we see a process of growing number of routines of innovative experiences that may trickle down to, and accepted by KWIC.

ICT's main role is yet to offer additional communication next to face to face communication, but there are signs (elaborate website) that ICT evolves towards a means to present a narrative. Wiki, social media, twitter and other media may soon enter the stage. The members of the COP's can use these media to diffuse their experiences outside the direct scope of the WF. This narrative is anchored within the concept of the business model (Magretta 2002). The narrative defines the company's value proposition that needs to be reached through relating the COP's competencies with the company's processes.

The Water Factory case exemplifies a pendulum that swings back from large systems (e.g. mass education practices) to local systems (COPs within a education environment) where students develop their identity, where

7

managers, teachers and consultants are willing to contribute and where the task of the Executive Board of the school is to foster and relate COPs with neighboring developments in their institution to improve the economic and humanistic value.

This thought implies the need to understand of the boundaries in organizational space. In this regard there are two perspectives to consider. First, the managers' perspective of their position on the organizational chart. Second, to determine the managers' perspective on their relevant interests i.e., how are these bounded within the process structure and what is his vision on the costs and benefits of knowledge workers as a result of applying the COP method. Managers might apply the COP as a mechanism to connect, and cultivate a high performance organizational culture.

Summarizing, this paper has focused on business models that are able to exploit bottom-up innovations that inject organizations with new, unpredictable insights. The study has generated indications that it is useful to relate the competence map with the process map of the business model because it visualizes the impact of COPs to a wider scale and involves the knowledge worker with the implementation of new ideas to support motivation and later exploitation. However, we need more data over a longer period and/or comparable learning experiments. The conclusions derived from the present single case study are less reliable than those deriving from multiple case studies. Therefore, the present findings provide a less consistent base for generalization. The next step would be to develop and use a survey to ascertain how knowledge workers and managers, at different levels of the organization, perceive levels of stretch and support, and make the findings visible by way of a dashboard (Hildreth et al. 2000). An inclusive approach would be recommended so as to avoid the risk of sub-optimal performance. Furthermore the relation with the corporate chart will be laid out during further research.

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