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**Title:** Developing Appreciation of Micro-Organizational Processes of Accounting Change and Indicating Pathways to More ‘Enabling Accounting’ in a Micro-Organizational domain of Research and Development

**Abstract:** The paper contributes by developing and refining the critical theoretical framing of organizational processes implicating accounting change. This includes articulating how accounting can become more ‘enabling’ in a dynamic micro-organizational context. The latter articulation reflects a critical theoretical appreciation and mobilization of the construct ‘enabling accounting’ that begins to contextualize and reconcile aspects of differing usages of this construct in the literature. In framing organizational processes implicating accounting change, the paper furthers understanding of accounting colonization around categories building upon Laughlin (1991) and related studies, including work seeking to develop Laughlin (notably Tucker, 2013, and the Social Network Theory he promotes). Change pathways implicating colonization are in this respect seen as shaped by structural, relational and social mechanisms. The theoretical framing advanced helps to illuminate aspects of colonization processes that facilitate, as well as hinder or counter, meaningfully enabling dimensions of accounting. This enhances the critical theoretical appreciation of colonization in terms of a more complex evaluation. The theorizing is fleshed out and developed through an action research project conducted at the Research and Development (R&D) site of a multinational corporation in France during the implementation of a performance measurement system (PMS). In theorizing accounting colonization and dynamics of an enabling accounting in an R&D setting, we add to prior appreciations of the relation between creative, innovative, ostensibly intuitive and unstructured processes, and, systems of financial control.

**Keywords:** Accounting Colonization, Enabling Accounting, R&D, Performance Measurement Systems, structural/relational/social mechanisms.

**Highlights:** 1. The framing of organizational change implicating accounting in critical theoretical terms is advanced: deepening contextual appreciation of the process, including regarding its multi-dimensional character and how structural, relational and social mechanisms interact (and summarily displaying stages of the process insightfully via an S-shaped curve). 2. The appreciating of ‘enabling accounting’ as varied and multi-dimensional, aspects of it traceable in a micro-organizational context of colonization.

## INTRODUCTION

Laughlin (1991) and related studies (e.g., Laughlin, 1984, 1988; Dent, 1986, 1991; Laughlin and Broadbent, 1993; Broadbent and Laughlin 2005) pursue a critical perspective on accounting change in a micro-organizational context. These works articulate appreciation of accounting colonization. We have affinity here with the critical theoretical framing – the concern to uncover problematic processes implicating accounting and to arrive at better ways. At the same time, we seek to refine and develop the theorizing, consistent with attempts to enhance critical theorizing of accounting through dimensions of post-Marxist work (e.g. Gallhofer and Haslam, 2003; Brown, 2009; Dillard and Roslender, 2011; Brown and Dillard, 2013; Gallhofer et al., 2015).

In this regard, we mobilize a critical perspective on the construct ‘enabling accounting’. This goes beyond the dichotomies of much prior critical work. And it theorizes and mobilizes ‘enabling accounting’ as a progressive force. Our perspective allows us to insightfully draw from and reconcile aspects of diverse usages of enabling accounting in the literature (Gallhofer and Haslam, 1991, 2003; Broadbent and Laughlin, 1994; Broadbent et al., 1997; Ahrens and Chapman, 2004; Wouters and Wilderom, 2008; Oakes and Berry, 2009; Mundy, 2010). We integrate our appreciation of enabling accounting in a theorizing of accounting colonization that substantively builds upon the key prior work of Laughlin (1991) and related studies, including work seeking to develop Laughlin (notably Tucker, 2013). In doing so, we begin to articulate senses in which accounting can come to be more meaningfully enabling even in the accounting colonization of a micro-organizational domain. This enhances critical theoretical appreciation of accounting colonization, offering a more complex evaluation of the phenomenon. Scant research has so far been done in this area.

We confirm in the above context the relevance of an appreciation of networks, and Social Network Theory (SNT) – as promoted by Tucker (2013) - in developing Laughlin's (1991) theorizing. Appreciating networks allows us to see better how change pathways involving colonization are shaped not only by structural but also relational and social mechanisms. It also offers insights into why particular change pathways are followed. Adding to this, we here delineate how interactions of structural, relational and social mechanisms implicated in accounting transformation facilitate, hinder or counter enabling dimensions of accounting.

Further, we refine the theorizing and add flesh to the skeletal framings of the literature through an action research project conducted at the French R&D site of a multinational corporation during the implementation of a performance measurement system (PMS). We elaborate how the implementation involved a form of accounting colonization.

The focus upon R&D in a micro-organizational context is here an additional dimension of interest. In theorizing accounting colonization and dynamics of enabling accounting in such a context, we add to prior appreciations of the relation between creative, innovative, ostensibly intuitive and unstructured processes, and, systems of financial control.<sup>1</sup>

The structure of our paper is as follows: development of our framing; overview of our research methods; elaboration and discussion of an in-depth longitudinal empirical case analysis; concluding comments.

## **DEVELOPING THE THEORETICAL FRAMING**

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<sup>1</sup>This area's literature is substantial (e.g., Hayes, 1977; Pappas and Remer, 1985; Clark and Fujimoto, 1991; Roussel et al., 1991; Weinstock, 1991; Armstrong and Tomes, 1996; Abernethy and Brownell, 1997; Kerssens-van Drongelen and Cooke, 1997; Nixon, 1998; Szakonyi, 1998; Zan et al., 2000; Bisbe and Otley, 2004; Ditillo, 2004; Elsbach and Hargadon, 2006; Hargadon and Bechky, 2006; Baraldi and Strömsen, 2009; Bisbe and MalagueH, 2009; Davila et al., 2009a,b; Revellino and Mouritsen, 2009; Jorgensen and Messner, 2010; Adler and Chen, 2011; Jeacle and Carter, 2012).

In this section, we firstly elaborate critical theorizing of accounting colonization in a micro-organizational context, offering a critique but extension of Laughlin's (1991) skeletal framing and related work. This reflects appreciation of networks as promoted by Tucker (2013). Secondly, we critically develop the construct 'enabling accounting' and elaborate the relevance of this in relation to advancing theorizing of accounting colonization.

### *Accounting Colonization*

Laughlin (1991) drew upon Dent's (1986) empirical evidence of a change in organizational culture (from engineering to accounting) to develop organizational models that describe accounting colonization pathways. Laughlin's (1991) skeletal framework articulates structural characteristics of three possible pathways engendered by disturbances threatening to entail a colonization that is negatively construed: "rebuttal", "reorientation" and (strong) "colonization". More recently, Tucker (2013) further developed Laughlin by articulating a perspective addressing these pathways by reference to relational dimensions.

These theoretical works interest us here in several ways. Laughlin's (1991) skeletal approach is geared to the critical analysis of pervasive organization-wide change processes linked to accounting colonization. Tucker's (2013) development of the relational dimensions adds to Laughlin (1991) in elaborating the significance of the networks through which organizational change processes must pass.<sup>2</sup> Appreciating network settings, structural, relational and social mechanisms and giving more attention to processual detail promises additional insights relative to prior studies, including, for instance, into accounting colonization's complexity and unpredictability. We can thus develop appreciation of colonization around notions such as the rate of change, the location of change agents, communication channels used and their relational content, and, colonization's social dynamics.

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<sup>2</sup> For Baraldi and Strömsen (2009), appreciating networks is very important in some contexts, including R&D.

## Laughlin's (1991) skeletal perspective on accounting colonization

Laughlin (1991) adapted Habermas' (1981a/1984, 1981b/1987) model of societal development for a micro-level organizational focus. Laughlin (1991) is particularly interested here in the impact of environmental "disturbances" on micro-organizational processes.

In Laughlin's approach, the micro-organization considered as a whole is understood as reaching a balanced or coherent state where its *inert characteristics* are aligned. Laughlin (1991) expounds a threefold categorization of inert characteristics: interpretive schemes (lifeworlds), design archetypes (steering media) and sub-systems.<sup>3</sup> In the balanced state, interpretive schemes provide coherence and orientation to design archetypes, which in turn ensure coherence internally vis-à-vis underlying values and beliefs by constituting intervening artefacts between interpretive schemes and tangible sub-systems. Where the inert characteristics are aligned, the more intangible elements thus give direction to and link the subsystems (Laughlin, 1991; Tucker, 2013, p. 244). Laughlin (1991) emphasizes how environmental disturbances can shift an organization's inert characteristics so that it enters an imbalanced or 'schizoid' state:

"...where say some small group may be split off from the remainder of the organization to absorb the kick but become colonized by its logic. This has the potential to split different elements of the organizational lifeworld into two...which can set up a battle for lifeworld supremacy, the outcome of which becomes uncertain...these change scenarios are not unitary and static but multi-faceted and dynamic" (Laughlin and Broadbent, 1993, p. 346).

Let us turn to look more closely at Laughlin's (1991) identification of three possible pathways, i.e. organizational responses implicating transformation of organizational subsystems, design archetypes and interpretive schemes, engendered by disturbances

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<sup>3</sup>Interpretive schemes represent core values, norms and cultural beliefs of organizational participants (including shared basic assumptions about other organizational functionings), organizational rules and mission statements. Design archetypes are intangible structures, accounting processes and accounting systems. Sub-systems include more tangible elements like people and also buildings and machines (Laughlin, 1991).

threatening to entail negatively construed colonization.<sup>4</sup> In *rebuttal*, disturbances are externalized and/or deflected in efforts to protect and maintain the organizational status quo (Tucker, 2013). Here, changes to sub-systems, design archetypes and interpretive schemes are negligible: change is substantively minimal or temporary. In *reorientation*, the organization adjusts its internal infrastructure but so that “...the real heart of the organization is basically unaffected...” (Laughlin, 1991, p. 218). In *strong colonization* the interpretive schemes absorb the disturbance. This latter formal colonization is not chosen by the organization. It is forced on it by those with power over the design archetypes, and engenders major shifts in the very heart of what constitutes the organization: “...a small group, on the back of an environmental disturbance, creates lasting and fundamental change in both...visible and invisible elements...” (*ibid.*, p. 219). Here, change initially affects the design archetype and sub-systems’ elements and then penetrates the interpretive schemes’ layers, “formulating a totally new underlying ethos for the organization as a whole” (*ibid.*). The three pathways, rebuttal, reorientation and (strong) colonization, can be seen as progressive in strength. And it is possible that they could occur in sequence, stronger following weaker forms (as we later suggest occurs in our case analysis).

If Laughlin (1991) theoretically defined the elements of each pathway and their interactions, Broadbent and Laughlin (2005) recognized that Laughlin’s framework lacked empirical flesh. They saw empirical work as potentially helping refine the theorizing towards appreciation of relational dimensions. Pursuing a different tack, but with the same interest in developing appreciation of the relational, Tucker (2013) emphasizes the relevance of elaborating theoretical insights for appreciating the relational prior to future empirical work it can inform. He illustrates this relevance in a review of prior research. In developing his argumentation, Tucker (2013) draws from SNT.

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<sup>4</sup>If the disturbance becomes seen as thus not threatening, Laughlin sees the change as accepted without coercion in a fourth ‘evolution’ path. In our case study, disturbances provoked resistance, evolution scarcely applying.



## Mobilizing a more relational and social framing: Tucker, SNT and associated theorizing

Tucker (2013) draws upon SNT to articulate how an appreciation of the significance of networks, and a greater emphasis on the relational, advances Laughlin (1991). SNT emphasizes the *relationships* of nodes (the people, groups or organizations that make up a network), tending to see the relationships of nodes as more important than their attributes. SNT thus engenders a shift in emphasis in organizational theory. Notably, here, it suggests that the trajectory of a disturbance's impact is influenced much by networks.

Tucker (2013) promotes SNT by indicating that it can help better model the expression of interpretive schemes within Laughlin's (1991) approach. He elaborates how networks impact the velocity of intra-organizational information dissemination. And he especially stresses the relevance of network *ties* for explaining organizational change. Following Granovetter (1982), Tucker emphasizes the significance of a network's strong and weak ties. Strong ties are likely to be found within a 'cluster' (people who interact frequently, e.g. an organizational unit, typically). They generate substantial homogeneity, cohesion and collective identity. They are seen as serving to maintain and reinforce prevailing interpretive schemes *intra*-cluster. Weak ties are *inter*-cluster ties. They provide access to information/resources to people beyond those available in their own cluster and constitute a medium via which changes to interpretive schemes can be promulgated throughout the organization. They enable a high level of connectivity across the network as a whole (Watts and Strogatz, 1998; Kogut and Walker, 2001; Kilduff et al., 2008). In networks where weak ties are numerous, information is seen to be transmitted efficiently throughout the organization. Strong and weak ties are thus both important in networks. Mohrman et al. (2003) emphasize how strong and weak ties interact in networks to impact: information concerning potential disturbances is seen as becoming more widely disseminated and understood via weak ties and, via transmission through the clusters' strong ties, the information can become internalized within clusters.

Strong ties may here help assimilate and contextualize knowledge of disturbances (see Crossley, 2008; Tenkashi and Chesmore, 2003).

Tucker (2013) also helps to refine Laughlin's theorizing by articulating the different disturbance-induced pathways of Laughlin's model vis-à-vis different network arrangements, illuminating *why* particular pathways are followed. He emphasizes here the significance of network density, measured by the mean number of ties to other network members per network member. As density increases, closer coordination is probable and consequently information diffusion across the network is likely facilitated (Galaskiewicz and Wasserman, 1989). High density, following SNT logics, could facilitate resistance to a negatively construed disturbance. Rebuttal would then be more likely.<sup>5</sup> In contrast, in organizations characterized by less dense networks, access and opportunities to probe, clarify and understand information are lower. This could predispose the organization to adopt pathways of reorientation or (strong) colonization (after relatively low and high levels of disturbance, respectively) (see Tucker, 2013, p. 250; Galaskiewicz and Wasserman, 1989).

Tucker (2013) thus delineates, through attending to network influence, potential advances for explaining *how* change occurs and *why* it occurs vis-à-vis the particular pathways the change follows. He clarifies well that structural characteristics alone provide a quite incomplete explanation of the organizational processes interesting us. As Tucker (2013, p. 243) notes, change is 'a significantly social and relational phenomenon' (see also Hopwood, 1990; Chenhall and Euske, 2006): it is embedded in properties of networks defined by the relational aspect of two or more persons.

In seeking to build upon as well as follow the lead taken by Tucker (2013) as far as appreciation of networks is concerned, one can give more emphasis to other dimensions of

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<sup>5</sup>In high density networks, only change supported in 'evolution' pathways would here engender lasting change to interpretive schemes.

networks treated in SNT. In our analysis, for instance, we draw more upon appreciation of the significance of trust in relationships and we stress more a concern to focus on processual detail as facilitated by modes of network analysis. In SNT, trust in change propagators can be key in shaping outcomes (Krackhardt, 1992). And, for Krackhardt and Stern (1988), strong network ties can constitute a basis of trust that can reduce resistance to severe change and provide comfort vis-à-vis associated uncertainty.<sup>6</sup> Attending more to the processual detail of change, as facilitated by network analysis, can help us appreciate more complexity and garner more insights in theorizing accounting colonization. For instance, taking more seriously Laughlin's interest in actor positions in organizations, from a dynamic network perspective we can trace processes of migration of actors in networks as they move from one position to another. It may in this respect be significant if accountants, in a position previously isolated from R&D, migrate from a network periphery to the organization's central operational core so as to more substantively interact and 'live with' R&D.

Regarding the concern to further appreciate processual detail, while this is facilitated by network analysis one should also acknowledge that it builds upon and can learn from the prior concerns of Laughlin's own analysis and indeed that of Dent (1986, 1991). Dent's three stage analysis (sequencing-momentum-cumulating), which Laughlin re-works in building his colonization framing, already indicates detail of relational and social dynamics underlying change pathways. In Dent, 'sequencing' includes securing Directors' status, creating interactions and consolidating emerging reality via symbolic events. 'Momentum' refers to Directors overcoming the resistance of General Managers and carrying their ideas deep into

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<sup>6</sup>Uncertainty creates conditions of possibility for trust's emergence (Rousseau et al., 1998): with great certainty there is no need/possibility for trust (Lewis and Weigert, 1985).

the Regions via Regional Managers. ‘Cumulating’ refers to a more social (contagion) process within Regions.<sup>7</sup>

From the above, taking processual detail seriously is consistent with seeking to understand *where a change originates* and *how quickly it migrates from one location to the rest of the organization*. Krackhardt’s (1997) principles of *peripheral dominance* and *optimal viscosity*, respectively, can help articulate these aspects. *Peripheral dominance* suggests that change will more likely be adopted throughout the organization where adopting agents occupy a peripheral cluster with relatively few bridges to the organization than if they occupy a position at the organization’s centre. Thus, McGrath and Krackhardt (2003) suggest that in the case of severe change the change agent is better initiating change from a relatively secluded cluster (e.g., an isolated R&D division).<sup>8</sup> *Optimal viscosity*, concerns the rate of migration from a cluster. For instance, change agents at the periphery, with limited contact and exposure to the rest of the organization, can more safely establish a change, demonstrate its effectiveness, and then spread the word to one neighboring subunit at a time. But, if they spread themselves out too quickly and thinly, they can inadvertently mobilize backlash and diminish change prospects (McGrath and Krackhardt, 2003).<sup>9</sup>

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<sup>7</sup>Dent’s H.O. Directors initially had low network influence. The Directors-Executive relationship developed, effectively the steering medium shifting from structural to relational. Structural and relational elements initially emerged near the organization’s apex without colonizing its operational core. During (in Laughlin’s terms) reorientation more legitimized Directors migrated to operations: participating in formal control; appointing representatives. Then (in strong colonization), Directors strengthened relationships with Regional Managers who then persuaded employees to change regionally: Managers resisting were replaced by those identifying with the new culture. A social (contagion) element of the steering medium was enhanced by conversion in the Regions via developed network ties. Directors became very influential. With strong colonization, the steering medium, institutionalized in rules and routines, was taken-for-granted by organizational actors.

<sup>8</sup>For Krackhardt, this peripheral location is less likely to attract early backlash from non-adopters who, given initial numerical superiority, can overwhelm adopters. Controlling movement between clusters containing original adopters and clusters of non-adopters allows change’s establishment among adopters before its introduction to non-adopters (McGrath and Krackhardt, 2003).

<sup>9</sup>If change agents are too isolated change will not diffuse. If viscosity lies below a lower bound of a finite window, migration is slow: little conversion occurs (non-adopter majority remains). If it lies above the higher bound, the larger non-adopter group is alerted, invading and dominating adopters, tending to the status quo. If it is within the window, adopters convert non-adopters at a greater rate than conversely: change is adopted.

Krackhardt (1977) arrived at his insights after conceptualizing migration and colonization along an S-shaped curve (the naturally occurring logistic population growth curve, see Audekirk et al., 1996) and then probing his model with several parameters and structures. The model (figure 1) uncovers key change phases and indicates the rate of migration.<sup>10</sup> Krackhardt (1997), in a further contribution to the SNT diffusion of innovations literature in sociology (see also Rogers, 1983), found severe disturbance yields no automatic outcome, again indicating the need for further empirical research.<sup>11</sup>

<Insert figure 1 here>

Some prior analyses of accounting change may be considered related studies to the above in offering insights that can advance theorizing of accounting colonization through appreciation of networks. For instance, Malmi's (1999) analysis attends to processual detail suggestive of an S-curve's stages and the SNT diffusion of innovations literature. Malmi offers a three-stage conceptualization of an activity-based costing system in Finland: early adoption, take-off and subsequent adoption. Early adoption reflects the innovators' socio-political moves (e.g., coalition building) to construct/anchor the innovation. Take-off is concerned with the relatively rapid adoption among those accepting the innovation, while subsequent adoption is fuller adoption.

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<sup>10</sup> Colonization-like, a structural mechanism develops first. Krackhardt's (1997) change model uncovers structural conditions where a small group takes over the organization. From simulation, Krackhardt found severe change (e.g. strong colonization) representable graphically, plotting social system change as the cumulative adopter population over time via an S-curve. The simple numerical conception summarizes key aspects of change, highlighting the rate of migration's significance. Those accepting change are adopters: those not, non-adopters. At any moment a proportion accepts.

<sup>11</sup> His study characterizes change by gradual diffusion, initially among innovators, until about half the population adopts: then, diffusion slows. Adoption is seen as more related to social forces around a potential adopter/non-adopter than personal objective experience of the change. Change proponents/opponents balance at saddle-point (A), a standoff. Krackhardt (1997) found the S-pattern resulting from structural characteristics. Among adopters/non-adopters, individuals are taken to randomly seek out others in their location to confer with on their beliefs about the change. If finding agreement they retain beliefs, otherwise tending to convert. Krackhardt (1997) surprisingly found change sustenance relatively insensitive to particular micro-level parameters but related to: the original change proponents' location; permissible bridges intra-cluster; the rate at which people were likely to visit other clusters.

Masquefa's (2008) accounting study, which also attends to processual detail in an analysis of stages drawing from similar insights and inspirations to those drawn upon by Malmi, here serves as a synthesis of prior associated studies. Masquefa (2008) appreciates relational aspects of change in terms of the following stages: grounding (seeking to legitimize the change); takeoff (the process involving change acceptance); and, standoff and lagging (points/phases where change slows right down to then gradually advance again towards stronger colonization). Malmi's 'early adoption' is here substantively captured by 'grounding', while Malmi's 'subsequent adoption' is refined and split into two phases: 'standoff', reflecting uncertainty around the diffusion outcome (per Krackhardt, 1997, indicating the difficulty of predicting the outcome of adopter/non-adopter confrontation), and 'lagging', or late adopters' mimetic behavior regarding the innovation (Masquefa, 2008).

As indicated above, the relational perspective can also be extended by giving more emphasis to and developing a social (contagion) perspective. The latter is described by researchers studying threshold models of social behaviors (Abrahamson and Rosenkopf, 1997; Granovetter, 1978; Valente, 1996). For Abrahamson and Rosenkopf (1997), what are termed *bandwagon* behaviors originate when information generated by adoptions creates stronger pressure on others to join the 'bandwagon', with more adoption ensuing. Individual adoptions here depend on the relevant threshold vis-à-vis bandwagon pressure strength: "a potential adopter will give in to a bandwagon pressure to adopt only if it exceeds this potential adopter's threshold—the point at which the strength of the bandwagon pressure to adopt is greater than the potential adopter's predisposition against adopting" (*Ibid.*).<sup>12</sup> In such

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<sup>12</sup>"Fad" bandwagon theories assume innovation profitability ambiguous especially in a complex environment (Kimberly, 1981; Abrahamson, 1991).

appreciations, who has adopted the change, more than the change itself, can generate and reinforce bandwagon pressure (*Ibid.*).<sup>13</sup>

In our case analysis, we draw upon and illustrate these SNT conceptions. We also integrate refinements reflecting intra-organizational dynamics observed/experienced by the on-site researcher. The elaboration on SNT here underscores our earlier identification of the need for more empirical work to develop and refine nascent theoretical positions.

The above discussion, while bringing out how SNT can generate better contextual appreciation, also indicates how social analysis more generally can enhance such appreciation. For instance, contextual dimensions highlighted by Gallhofer et al. (2015) in their synthesis of social analyses of accounting dynamics (which, like Laughlin, seeks to develop a critical theoretical framing of accounting), may here also be integrated: including issues pertaining to what they term the aura, usage, form, as well as the content of information flows. This can develop the critical theoretical emphases of Laughlin's framing.

Consistent with the above, a focus on the constructs of 'emancipatory accounting' and 'enabling accounting' – which can be related through a critical perspective – can more particularly develop the critical theoretical emphases of Laughlin. We now turn to this.

#### *Critical reflections on the notion of an Accounting that Enables*

Having developed appreciation of accounting colonization through network analysis, we can link the intricate complexity arrived at to a critical theoretical appreciation of the dynamics of 'enabling accounting'. This integrates theorizing of enabling/emancipatory accounting into theorizing of micro-organizational processes. It is a critical theoretical refinement and advancement in theorizing accounting colonization, towards a more complex and

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<sup>13</sup>Influential adopters likely facilitate conversion of fellow cluster members (cf. Dent's Regional Managers).

multidimensional perspective (Gallhofer and Haslam, 1991, 2003; Gallhofer et al., 2015; Oakes and Berry, 2009).

To appreciate this advancement's significance we should here initially note that in the critical literature accounting colonization is typically seen as negative (Dent, 1986, 1991; Laughlin, 1991; Power and Laughlin, 1992; Tucker, 2013). This view de-emphasizes enabling dimensions of accounting and the potential thereof - just as, mostly, has work specifically focusing on the interface between creativity and financial control/accounting.<sup>14</sup> Indeed, critical studies of accounting more generally tend to displace notions that accounting might function to progressive and positive effect, as Gallhofer and Haslam (2003) argue.

The above tendency in the critical accounting literature, however, is a narrow rendering of a critical theoretical approach. Gallhofer and Haslam (2003) emphasize that critical theory not only articulates negative properties of social phenomena but also their actual and potential positive dimensions, these sometimes being termed *emancipatory*. In critical accounting literature articulations of 'emancipatory accounting' have been rare and typically constrained to a focus upon *external accounting* and often unconventional forms thereof (e.g., Tinker, 1984, 1985; Gallhofer and Haslam, 1991, 2003; Broadbent et al., 1997).

Tinker's (1984, 1985) Marxist treatment envisaged a radical emancipatory accounting that would serve as an instrument of *revolutionary* praxis. Perspectives more relativist and pragmatic on emancipation/emancipatory accounting in terms of a post-Marxist continuum

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<sup>14</sup>Laughlin's (1991) Habermasian thesis emphasizes accounting as negative, corroding positive organizational values (see Power and Laughlin, 1992), if more benevolent accounting potential is explicit in Broadbent and Laughlin (1994).



thinking, or thinking in terms of a continuous spectrum, have since emerged (Gallhofer and Haslam, 2003; Gallhofer et al., 2015; cf. Alvesson and Willmott, 1992).<sup>15</sup>

Gallhofer and Haslam (2003) and Gallhofer et al. (2015) unravel the logic of the more pragmatist critical approach<sup>16</sup> to articulate a multi-dimensional appreciation of accounting. In this articulation, accounting is understood *at any given moment* as a mix of forces partly emancipatory and partly repressive, an ambivalent phenomenon in this sense.<sup>17</sup> And accounting's *dynamics* are here theorized so as to add complexity to earlier approaches: vis-à-vis the intertwined dynamics of context and accounting, how accounting can become *more* emancipatory or *less* so is appreciated (Gallhofer and Haslam, 1991, 2003; Gallhofer et al., 2015). The continuum thinking (see Prokhovnik, 1999) orientation of this shift in critical thinking leads the critical theorist to see a broader range of accounting change phenomena as actually and potentially progressive (Gallhofer et al., 2015).

On occasions, critical discourse has translated visions of accounting's progressiveness in terms of a notion of a (typically external) accounting that enables, or an *enabling accounting* (see Broadbent et al., 1997). The notion loosely intersects with the more pragmatist perspective on emancipatory accounting in its pragmatic progressiveness.

There is a differing usage of the construct 'enabling accounting' found in the management control literature. This usage has ostensibly scarcely been consistent with a critical perspective. Ahrens and Chapman (2004), Wouters and Wilderom (2008), Mundy (2010) and Wouters and Roijmans (2011) apparently steer clear of the more radical enabling accounting promoted by Broadbent et al. (1997). Their conceptualization is, *on the surface*, simply

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<sup>15</sup>Thus debates about, e.g., whether social accountings are emancipatory or not have been joined, from a critical perspective, by debates about *how and to what extent* such phenomena are emancipatory or oppressive (see Gallhofer and Haslam, 2003; Gallhofer et al., 2015).

<sup>16</sup>They are informed (per Critical Theory's tradition) by theoretical developments in the humanities and social sciences (including Laclau and Mouffe's post-Marxist thought).

<sup>17</sup>This is even so for 'conventional' accounting, if Gallhofer and Haslam's analysis clearly has broader scope.

consistent with accounting furthering official/functional micro-organizational goals. In this regard, it might be noted that Broadbent et al. (1997) suggested that some notions of enabling accounting may be less radical, or more conservative, than others, pointing to how from a critical perspective the enabling accountings of the management control literature were scarcely meaningfully enabling.

Yet, if Gallhofer and Haslam (2003), with Broadbent et al. (1997), appreciate some accountings as more enabling (emancipatory) than others, the trajectory of their post-Marxist critical thought leaves them more open than earlier critical perspectives to seeing meaningful enabling moments in a wide range of accounting dynamics. And indeed this includes vis-à-vis internal accounting. Via the lens of their critical pragmatist continuum theorizing, one can see affinities and a degree of reconciliation between perspectives on ‘enabling accounting’ in the management control literature that previously appeared as contrary positions to critical perspectives. Such affinity or reconciliation is potentially useful, notably in that a critical perspective may then gain insights from re-reading the rich literature of management control.

We can delineate some dimensions of affinity here. Gallhofer and Haslam (2003) and Gallhofer et al. (2015) point to enabling (emancipatory) dimensions of *any* accounting functioning. Thus, what is analyzed as enabling in apparently more conservative management control studies may well in some respects overlap with the enabling dimensions articulated by Gallhofer and Haslam in their more radical perspective.<sup>18</sup> More specific affinity can be indicated. Enhanced rational communication arising out of interaction with and through an accounting that is enabling from the ostensibly conservative perspective may yet also constitute an emancipatory moment at least in some limited sense (following continuum thinking). Ostensibly conservative ‘enabling accounting’ may carry potential for radical

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<sup>18</sup>If some enabling accountings are more conservative than others, close reading of Ahrens and Chapman (2004), Wouters and Wilderom (2008), Mundy (2010) and texts influencing these (notably Adler and Borys, 1996), suggests a more nuanced appreciation of enabling accounting not reducing to a functionalist one.

development.<sup>19</sup> General insights from studies seeing ‘enabling accounting’ in an ostensibly conservative way may suggest forms of radical praxis: Gallhofer and Haslam (1991, 2003) hold that research into accounting in action in general can yield insights for praxis. The post-Marxist perspective here encourages attention to detail including the ambiguous and ambivalent functioning of phenomena below the surface of a crude appreciation (see here Alvesson and Willmott, 1992; Gallhofer and Haslam, 2003).<sup>20</sup>

Prior research on accounting and financial control in relation to innovation and creativity at the micro-organizational level (a research area that began to take off relatively recently per Bisbe and Otley, 2004) has indicated the potential in seeing meaningfully positive dimensions of accounting’s functioning even in unlikely contexts. While much of this prior research has substantively paralleled studies of accounting colonization in emphasizing conflictual struggle between cultures seeing accounting/financial control as negative<sup>21</sup>, a few studies have, consistent with Gallhofer et al.’s (2015) logics, articulated a complex multi-dimensional interaction between accounting and domains of innovation and creativity. Accounting here is not reduced to a negative force. For example, Jeacle and Carter (2012) indicate some ways accounting actually facilitated creativity in analyzing a domain of fashion (see also Nixon, 1998). Bisbe and Otley (2004) cite studies finding a co-existence and compatibility between

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<sup>19</sup>Note the logic of the pragmatist continuum theory: an emancipatory/enabling accounting for Gallhofer and Haslam (2003) and Gallhofer et al. (2015), albeit their continuing commitment to meaningful themes of social progress, justice, countering repression and alienation, creating opportunities and promoting holistic well-being, no longer needs to be *revolutionary* in its consequences to be deemed a positive social force.

<sup>20</sup>The point, of course, applies to social phenomena generally. The case of the business organization is illustrative. Suppose this is observed to be making profit in a capitalistic system. A crude critical appreciation may see little positive in this. A new pragmatist critical approach through analysis of more detail may uncover multifarious positives. And it may recognize that business organizations might make profits (e.g. the same profit) in different ways with different impacts on stakeholders, society and the environment (suggesting a re-reading of Wouters and Wilderom, 2008, and Mundy, 2010).

<sup>21</sup>R&D is typically seen here as innovative, creative, unstructured and intuitive – and ostensibly difficult to manage/control (Kerssens-van Drongelen and Cooke, 1997). Accounting (seen as conventional quantitative accounting techniques) has been deemed inappropriate and counterproductive in R&D (Hayes, 1977; Pappas and Remer, 1985; Roussel et al., 1991), while accounting practitioners and academics have tended to promote conventional techniques, neglecting the more behavioral and qualitative. Research illustrates how accountants and R&D scientists have diverged in conceptions of R&D control in terms of numbers versus taste and instinct. In Nixon (1998), divergence engendered antagonism, R&D becoming isolated from organizational networks so that Finance and R&D knew little about each other (Szakonyi, 1994).

product innovation and formal management controls.<sup>22</sup> Clark and Fujimoto (1991) highlight the positive potential in a balancing of creativity/freedom with discipline/control.

Nixon's (1998) analysis goes beyond the unidimensional appreciation as it highlights the interconnection of social and technical in analyzing close collaboration between project members from distinct functional areas through a complex network of interactions. Accounting for Nixon (1998) here, as a central element of the organization's interpretive schemes, has a positive role in being necessary to ensure collaboration and co-ordination among project participants (Chenhall et al., 2010). The collaborative, democratic and integrative act in this context was challenging, implicating much discussion and negotiation among organizational members. One may suggest here that the language of accounting not only clarified meanings and reduced ambiguity and contradictions but also opened up representations, suggestive of more radical enabling processes (see Alvesson and Wilmott, 1992; Forester, 1992; Power and Laughlin, 1992). The interface delineated in these studies, consistent with our articulation, thus suggests a more enabling accounting in R&D (and beyond) that may have more radical implications and possibilities. Such insights can inform a study focusing on accounting vis-à-vis R&D in a micro-organizational context.

Prior studies of interactions of cultures of creativity and control have typically remained silent about the detail of *pathways to* a more enabling accounting. And studies deploying 'enabling accounting' as a more progressive notion have scarcely taken seriously organizational and social processes related to a dynamic whereby accounting *becomes* more enabling (or the opposite). A few studies have theorized dynamics of emancipatory accounting contextually and empirically, thus providing something to build upon in taking organizational and social

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<sup>22</sup>They also cite several studies reporting conflict and/or how key are other processes and informal controls.

processes more seriously (see Gallhofer and Haslam, 1991, 2003, Oakes and Berry, 2009; Gallhofer et al., 2015).

Laughlin (1991) and related work here constitutes a key contribution to build upon. It is shaped by a critical perspective affording an emancipatory interest to accounting and develops a thesis of accounting colonization intricately linking accounting to organizational change. And it suggests structural (and, in its development, as delineated above, relational and social) dimensions, thus promising to also enhance contextual understanding of ‘enabling accounting’ dynamics.

We would expect dimensions of ‘enabling accounting’, shaped by and reflecting an entanglement of differing and contradictory forces, to differ in the different types of accounting/organizational change we have considered, for instance in the states Laughlin (1991) demarcates as rebuttal, reorientation and (strong) colonization. Similarly, where such states follow sequentially (along a continuum) we would expect shifts in dimensions of the enabling accounting. And, as network and social aspects influence colonization, we would expect dimensions of the enabling accounting to be influenced by relational and social as well as structural mechanisms.<sup>23</sup>

Prior to our case analysis, we next overview the research methods we deem appropriate for our study.

## **OVERVIEW OF RESEARCH METHODS**

### *Research design*

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<sup>23</sup>Our perspective suggests accounting having a mix of dimensions, positive and negative from a critical view, in all of Laughlin’s (1991) paths: accounting’s consequences are only *relatively* negative in colonization. Such thinking may help better explain a sequential process (e.g. where rebuttal is superseded by reorientation or, indeed, where colonization is superseded by evolution, a possibility acknowledged in the pragmatist thinking).

To explore shifts in structural, relational and social mechanisms during a process such as accounting colonization, and link these to dynamics of ‘enabling accounting’, a longitudinal case study approach was deemed appropriate. Relational patterns embedded in networks and network ties are challenging to observe over time: in-depth researcher involvement, as in action research, was considered an appropriate strategy for data collection. This strategy allows the tracing of individuals involved in a change process and the capturing of the character of their relationships over time. One of the authors was on-site researcher.

This research was thus designed as action research. The entry point was the company’s Finance Department. The on-site researcher spent five to seven hours at the research site each day, about thirty hours a week from August 2003 until August 2004. From September 2004 until March 2005, this researcher made several calls and visits to follow up on the change process. While staying at the company, the researcher was given an office with wide access to information and the company’s intranet. Involvement was close to that detailed by Eden and Huxham (1996, p. 526): “research action results from an involvement by the researcher with members of an organization over a matter...of genuine concern to them and in which there is an intent by the organization members to take action based on the intervention...involvement with practitioners over things which actually matter to them provides a richness of insight which cannot be gleaned in any other ways”. Action research helped to research processes in-depth, to garner detailed information about structural, relational and social aspects of colonization and to uncover and mobilize enabling dimensions of accounting therein.

#### *Data collection and analysis*

Various data collection methods were used. During the first three months of on-site research intervention, internal documents were obtained (e.g. concerning strategic planning and budgeting, project management reports). And knowledge about systems and structures was

acquired, including from meetings to facilitate the on-site researcher's involvement in Finance Training (*subter*). Preparation and presentation of interactive training sessions familiarized the on-site researcher with the organization and some of its R&D employees.<sup>24</sup>

By the design and implementation stages of the PMS, the on-site researcher was an active project team member, participating in most project aspects: preparing the proposal, interviewing, discussing and coordinating with different organizational members, attending meetings, communicating follow-up information, and participating in feedback and support meetings. Qualitative data were obtained from participation in management meetings, company documents and informal interaction with organizational members (see table 1).<sup>25</sup>

<Insert Table 1 here>

Data was gathered at 101 meetings, lasting approximately 86 hours in total (table 1). The on-site researcher took notes and prepared reports for each meeting indicating the date, approximate duration and attending employees. There were four types of meeting (see table 1). Firstly, there were functional meetings between Management Controllers who were project team members, occasionally involving the Finance Director. These concerned PMS design and implementation from a management control perspective. Secondly, there were project team meetings (involving Management Controllers and Systems Planning Engineers). Here, a project proposal was elaborated, implicating who to involve in the project and the scope of change. Thirdly, there were inter-functional meetings linking the project team and R&D. Here the project team sought to obtain feedback, support and validation from R&D. Fourthly, there were meetings between Council members (*subter*) and the project team to discuss change issues in a formal setting.

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<sup>24</sup>Training included cost management, management accounting and control, financial accounting and project management. It provided R&D personnel with knowledge of "who was who?" and "who did what?" in Finance.

<sup>25</sup>Given the study's participant observation dimension and negatives of the colonization theorized one might read elements of a confessional in the analysis.

The on-site researcher also garnered insights about key changes occurring in the two decades preceding on-site involvement, facilitating reconstruction or reconstitution of key prior pathways implicating accounting in the prior context. The insights came from various archival materials (e.g. key council meetings' minutes and memoranda) and interviews with those cognizant of prior changes. Our reconstruction became integral to our theoretical appreciation.

Besides participation in meetings, data were variously collected while on-site, via: observations, semi-structured interviews, documents and classified information. The aim was to generate a rich source of internally validated field data (Yin, 1984). Change was traced attentively by tracking the individuals becoming involved and when, how and why. Networks, network ties and their relational content were closely analyzed over the change process. After on-site participant observation, two follow-up visits were made and a phone interview was conducted prior to March 2005 when the system was operationalized.

Our stance as researchers is here relatively open (see Laughlin, 1984, 1988), around our theoretical appreciation of accounting colonization and enabling accounting. The research process was thus highly iterative, involving going back and forth between theory and empirics (Miles and Huberman, 1984), consistent with Ahrens and Chapman (2006, p. 836): "Problem, theory, and data influence each other throughout the research process. The process is one of iteratively seeking to generate a plausible fit between problem, theory, and data".

The research method has limitations that we sought to counter. One relates to the reconstitution of the prior pathways, which relies extensively on interviewees' recollections. Various other data sources were used in an effort to mitigate the potential effect here. Another limitation is in the single case study. This does not permit systematic generalization, if it



permits 'contextual' generalizability (Lukka and Kasanen, 1995, cited in Granlund, 2001). We sought insights beyond the surface-level by intensive focus on process detail (Yin, 1984).

## **CASE ANALYSIS AND DISCUSSION**

### *Research context*

The on-site research was conducted at the R&D site of Sygmatech (fictitious name) – a company operating predominantly in the travel and tourism industry - situated in the telecom valley of Southern France. The Valley, one of Europe's largest high technology clusters, is recognized as having developed a remarkable entrepreneurial and innovative spirit. Multinational R&D activities there take place in, for example, units of telecommunications, electronics, information technology and pharmaceuticals, elite engineering schools, public universities and research laboratories. Sygmatech's R&D site was the Valley's largest employer with approximately 1600 employees. Its R&D operations comprised two activities: developing new software and maintaining existing packages.

A long tradition of freedom vis-à-vis financial control persisted at Sygmatech's R&D site. This may partly reflect the French context: Engineers here were an elite whereas accountants suffered from a relatively low status (Lambert and Pezet, 2011). Over 2003-5, the tradition was to be substantively challenged when changing the dominant "laissez-faire" and entrepreneurial culture towards raised financial awareness became a key objective of the accountants (Management Controllers) at Sygmatech's R&D site.

This cultural change was attempted when the industry faced considerable turbulence. At the turn of the century, after over a decade of double-digit growth, a series of events profoundly affected Sygmatech's industry. Epidemics, 9/11, the Iraqi war, US industry deregulation, and the entrance of low-cost airlines into the market triggered new strategic orientations regarding cost consciousness and competitiveness.

The scope of the change at Sygmatech involved the entire R&D function, consisting of development divisions, three marketing divisions closely related to development activities and development divisions of two strategic business units (see Figure 2).

<Insert figure 2 here>

The Head of Management Control (the Controlling Manager) proposed change as follows. There was to be formal and quarterly *financial awareness training* for project managers and R&D line managers. And a PMS for the software development cycle, the *Software Development Cycle Control (SDCC) project*, was to be developed and implemented. The PMS was to provide a *process* view and engender greater visibility of the new software development process. The proposed change was challenging given the systems and social structures *in situ* before the SDCC project's initiation.

Through our reconstructions of key developments implicating accounting in the context preceding the on-site visit, we came to appreciate key aspects of the history of the organizational context. We became aware of the prior trajectory of a traditional budgeting system and its modification into an ostensibly more ambitious system of budgetary control. And we came to understand the significance of decisions to adopt international accounting standards and mobilize a new project management approach.

Below, we draw upon our theoretical appreciation of colonization and enabling dynamics in theorizing changes prior to the on-site visit and changes entailed in the trajectory of the management control initiative over 2003-5. We elaborate the changes in terms of the three pathways delineated by Laughlin (1991), which we see as occurring sequentially in our case (see figure 3a). Between 1989 and 1999, substantively a *rebuttal* pathway is followed. *Reorientation* manifested in the years immediately preceding the on-site visit. *Stronger colonization* occurred in the context of the Management Controllers' efforts to introduce the

SDCC project. We elaborate how each pathway or episode added new elements that developed the steering medium. We articulate how change witnessed during the on-site visit entailed Management Controllers interacting and linking up with R&D employees. The process initially substantively reflected structural elements of colonization but then more in-depth network development (development of the relational mechanism). The relational mechanism came to develop into the social mechanism as R&D employees and their related teams came on board with the SDCC project.

<Insert figure 3 here>

The process of implementing the SDCC project that occurred during the on-site visit is here elaborated in terms of the four stages articulated by Masquefa (2008) (*supra*): “grounding”, “takeoff”, “standoff” and “lagging” (figure 3b). And we consider the change process in terms of ‘enabling accounting’ dynamics. We now turn to elaborating the reconstitutions followed by an account of change witnessed during the visit.

### *Rebuttal*

Reconstitution of developments prior to the on-site visit suggests a rebuttal at Sygmatech’s R&D site. In the period spanning much of the 1990s, attempts were made to more substantially mobilize the traditional budgeting system, which involved feeding forward information about R&D Divisions’ spending. This corporate-orientated financial control system, managed and maintained substantively by the Management Controllers in Finance, was so successfully rebutted that it had become scarcely perceived as a threat by R&D engineers and scientists. The R&D site, pushing to grow in the context of pressures upon Sygmatech, virtually undertook all R&D projects that project managers deemed would be successful, without considering financial viability.

The structural and relational elements of the budget system (the steering medium) here translated into network relationships between Management Controllers, R&D Divisions' directors and the corporate office that in practice meant that the budgeting system did not penetrate or migrate into R&D. The steering medium remained in embryonic form.

Subsequently, in the years immediately before the on-site visit, a more elaborate and in-house Sygmatech Budget Control (SBC) system was introduced. Going beyond traditional budgeting, it connected a time-reporting interface from the time-reporting system, designed internally by Information Systems, with Finance's traditional budgeting. Yet, if it was a response to the latter's failings, it scarcely enhanced the Finance Department's role.

Financially-orientated rationality grew at Sygmatech given the wider contextual pressures. This was reflected throughout Sygmatech, including at the R&D Divisional level. But rather than Finance personnel, it was Information Systems Engineers and Systems Planning Engineers who drove the development of the SBC system, a system which came to furnish the main reporting tool, capable of constructing and providing analytical views of the global activity by projects, products, markets and customers. Information Systems Engineers were responsible for overall system architecture/management. Systems Planning Engineers took charge of controlling R&D projects. The SBC system involved two interdependent committees, the technically-orientated SBC Definition committee and the SBC Council. The Definition committee was composed mainly of Information Systems Engineers and Systems Planning Engineers and some R&D Divisional representatives. It had only one Management Controller representing Finance. The Council was initially composed of representatives/spokespersons of/for the R&D Divisions (see Fig. 2). There was no representative from Finance. Each R&D Divisional representative was responsible for:

*"...providing advice and guidelines within their...Division; centralizing all...requests*

*within their Division (projects, products, improvements, problems); enforcing procedures and rules within their Division; helping the manager to integrate new users in their Division; validating the suggestions made at the SBC Council and implementing the actions; communicating...relevant information."* (Sygmatech internal document)

Using their influence within their respective R&D Divisions, and in the context of increased emphasis on the financial, each representative's role was to promote and enforce the SBC system (which became the new steering medium).

Given the role of Information Systems, accountants in Finance (who had controlled the traditional budgeting system) lost formal control or ownership of the system or steering medium. This engendered tension that interestingly in effect entailed Finance itself holding up accounting colonization. The SBC system's creator recalled that Finance was the "most difficult partner to enroll in SBC implementation" and that "The Finance Division was against the SBC system".

R&D Divisional representatives on the SBC Council provided the formal link between the SBC system and the R&D Divisions. Management Controllers' absence from the Council prevented them from interacting with these key representatives. The structural and relational mechanisms, the SBC system as a steering medium, thus constituted a fragile construction. Concurrently, given R&D's involvement, the steering medium's potential to gain in influence was becoming more apparent.

In the SBC system's early life, rebuttal continued: R&D employees largely rejected the SBC system. R&D's innovation culture continued to dominate. For the Information Systems Division's manager: "The company's culture...[remained]...flexible with a high dosage of laissez-faire". The former R&D Vice President (who had an engineering and entrepreneurial

orientation) continued not to ‘embrace’ financial reporting (per the Cost Study Manager of the Systems Planning R&D Division).

These early efforts towards accounting colonization of R&D were largely unsuccessful. Accounting here remained substantively non-intrusive, interfering little with R&D interpretive schemes. Financial aspects of R&D projects and products (e.g. NPV calculations) were barely considered. Cost was scarcely a concern. Technological innovations were prioritized. Hence, the SBC’s trajectory mirrored the rebuttal path of the traditional budgeting system. Moreover, accountants, physically located in the same unit, were in effect isolated from company operations and had little interaction with R&D employees.

### *Reorientation*

Two important and interrelated developments subsequently manifested. Their reconstitution here indicates how they came to engender a reorientation at Sygmatech’s R&D site. Firstly, in anticipation of EU-led regulations, there was an organization-level decision to adopt the IAS/IFRS framework which led in R&D to deployment of IAS 38 “Intangible Assets”, a standard governing the accounting treatment of R&D expenditure. Secondly, paralleling and informed by this decision, a project management approach, the *New Project Management* (NPM), was implemented. It aimed to better measure and capitalize R&D spend. A *Business Project Department* and a *Project Management Office* were created in this context.

NPM was built into the SBC system. Its aim was to control the company's strategic projects more effectively and efficiently. It was articulated around linear and sequential project

*phases*. Consistent with IAS 38, phase expenditures were categorized into capitalized expenditure or expense (table 2).

<Insert table 2 here>

Systems Planning Engineers designed and developed NPM. Financial Accountants had an ostensibly technical role, deciding on NPM phase expenditure's capitalization and extracting information from the SBC system to determine the amounts for R&D, involving estimates and complex calculations.

Concurrently, one accountant, the Financial Accounting Manager (Financial Accountant 1), was appointed to the SBC Council. She was responsible for authorizing capitalized R&D expenditure and sought to facilitate implementation of NPM phases by making formal presentations around IAS 38 to the teams of R&D Divisional representatives on the Council. She explained to R&D personnel the change process and reasons for the change from a financial accounting perspective. A senior manager of the Product Management R&D Division (also a SBC Council member) recalled:

*"...implementation of the NPM phases was really difficult. People thought...we wanted to know what they were doing. But when we explained to them that it was necessary to allocate resources and determine the amount of R&D expenditure to capitalize, it has been much easier to implement. People told us 'ok'...To help, the Financial Accounting Manager [Financial Accountant 1] came to make presentations on capitalization (IAS 38) and people understood the change's importance."*

Over the years involved, the SBC system and Council members gained more influence. Systems Planning Engineers and Information Systems Engineers linked to the SBC system initiated interactions with Council members. The SBC system was steering R&D Divisions towards a culture of financial discipline and control. The overall structure was gradually

colonizing R&D. The steering medium's increased significance is reflected in the Quality Engineer Team Leader's<sup>26</sup> view:

*“At the top of the SBC organization, there are people that have seen the birth, the growth of the [SBC] system. They appreciate and live from the system. The system confers them legitimacy, a central role, and a certain power”.*

There remained much conflict and resistance. Regarding the greater accounting colonization of the SBC system and obtaining support for this, the Quality Engineer Team Leader added:

*“Any attempt to change the SBC system creates resistance to change...In sum, we have dinosaurs [established R&D directors] that do not want to change and other R&D directors who arrived more recently that do not want to risk change.”*

Another factor impeded colonization. Systems Planning Engineers and Information Systems Engineers remained dominant within the SBC structure. While Financial Accountant 1 was on the SBC Council, she remained quite isolated among Council members (if interaction with the Council enabled her to become more centrally located within operational networks). Accounting's mobilization here was regulation-driven, reflecting the need to adopt IAS 38 rather than any direct attempt to transform R&D culture. Nevertheless, accounting's potential was here strengthened and those mobilizing NPM enlisted accounting's support.

The Systems Planning Engineers linked to the SBC system formally drove the objective of introducing a performance culture in project management. In any case, conversion of R&D continued to be arduous and was lengthy, as the Cost Study Manager (an R&D Systems Planning engineer) underscored: “It took five years to get other R&D Departments to cooperate and implement the New Project Management”.

Besides the significant effort involved in institutionalizing the NPM-directed SBC system, which was the new steering medium, further effort was required to counter resistance and

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<sup>26</sup>Two years before the efforts to develop a process-based PMS this Team Leader (Quality Testing) had pursued a similar initiative then rejected by the Council.



ostensibly dysfunctional practices at an operational level. There were several instances of resistance. For example, several R&D Divisions' employees persisted in variously entering time erroneously in the SBC system as illustrated by the following quotes:

*“Every month, managers have problems with their team to check if they have entered correctly their time...I, myself, do not like to fill in my time at the end of the period. So I do not expect others to fill in their time. It is very complicated.”* (SBC Council member representing Business Unit 1 in a SBC meeting)

*“My direct superior asked me to enter 100% of my time spent on ‘Construction’ [one NPM phase] and occasionally I allocated time spent on ‘Recurring’ [another phase] although it was ‘Development’...”* (A Software Engineer)

*“The former SVP<sup>27</sup> used to say: ‘Let people log their time: it is their responsibility’...it takes much time for people to enter their time...many finally do not do it. If you know the difficulty we had when we tried to implement the SBC system...it took us several years...I see a lack of interest from managers. They should operate regular reviews.”* (An Information Systems Senior Manager and SBC Creator)

Individuals and groups within R&D mobilized their power, often with support from hierarchical superiors, to continue to resist SBC system adoption. As indicated, the degree of institutionalization of the SBC system differed between R&D Divisions. Some became sympathetic to the system, others opposed it. This engendered a “schizoid” state (Laughlin, 1991; Laughlin and Broadbent, 1993). The SBC Council member representing Business Unit 1 illustrates differing institutionalization:

*“Why don’t we give rewards to people for entering their time correctly? Maybe that would change something [with ironic emphasis]...Business Unit 1 is the ‘bad’ R&D Division and Product Management is the ‘good’ one. At Business Unit 1, people do not care about filling their time in the system”.*

Thus, time entered in the SBC system used to prepare accounting reports is not only erroneous but inconsistently so between units: analysis of time entered on NPM phases

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<sup>27</sup>This Senior Vice-President of Development (SVP) had retired before this research. The new Executive Vice-President of Development (EVP) knew the company well having founded and managed the French R&D site.

(figure 4) revealed abnormalities: 'Construction' and 'Concept and Planning' phases accounted for almost 70% of overall R&D expenses time, an unrealistic over-estimation.<sup>28</sup>

<Insert figure 4 here>

The influence of an ostensibly technical and regulation-driven accounting (IAS 38) is here interwoven with the social and political. The ostensibly objective and tangible accounting elements, for example, are shaped by subjective elements of the structural, relational and social. Financial Accountants influenced the steering medium substantively here. The developing interaction of Financial Accountants with SBC Council members helped to constitute relational patterns around the steering medium. Financial Accountants, if somewhat distant from R&D Divisions, penetrated or migrated within operational networks even if they were not formally aiming to transform the existing culture in a constitutive way. If a strong accounting colonization had not yet manifested, this was a reorientation.

Moreover, if Systems Planning Engineers failed at this stage to *substantively* convert R&D engineers and scientists to a culture of performance and control in project management, implementation of the framework of financialized NPM phases was facilitating cultural development. And several SBC Council representatives were beginning to convert their teams. A social mechanism was more evidently now functioning within several R&D Divisions in this regard. Overall, this may be termed a reorientation. Subsequently, and by drawing on and developing structural, relational and social elements of the steering medium, Management Controllers effectively initiated strong-form colonization, to which we now turn.

### *Stronger Colonization*

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<sup>28</sup>Similarly, Major and Hopper (2005, p.226) found that "determining activities and cost allocations leads to confusion amongst employees and arbitrary, subjective allocations, which compounds reliability problems. This was reinforced by employees' resistance which leads to late and inaccurate allocations of time to activities. ABC's reliance upon employee inputs is its 'Achilles heel', especially in a climate of job cuts and work intensification".

The trajectory of the Management Controllers' initiative, observed during on-site research, came to constitute stronger colonization. The initiative was a response to the external disturbances experienced by the industry in the early 2000s (*supra*). Financial control of R&D activity then was prioritized, especially in relation to software development costs.

Prior to the initiative, R&D directors could not give very precise cost figures beyond the project level, reflecting the project-oriented nature of the NPM-led SBC system. And phase reporting did not permit managers a transversal view of software development cycle process activity (e.g. requirements analysis, coding and testing). Further, several *process* activities overlapped NPM *phases* (see figure 5). Controllers thus came to identify with the idea that a PMS reflecting a *process* view would increase visibility and uniformity and provide costings for the process of developing new software across R&D Divisions. The changed focus implied significant further modification to the steering medium.

< Insert figure 5 here >

Controllers initially faced a serious challenge in seeking to implement a process view. For, in parallel to the Financial Accountants, Management Controllers had a low status at the R&D site. One Controller in this regard complained about the perceived uselessness of his work:

*"Software developers and project managers do not submit their projects to Management Controllers for evaluation. They wait until the project arrives at completion to contact Financial Accountants to capitalize R&D...They bypass...Management Control...in the decision-making process. Therefore, controllers must go 'hunting for projects' to be able to work".*

In frustration, this Controller added: "In my former company, other departments would have paid to obtain our information". Per a recently recruited Controller:

*"Where I worked previously, we used to sit down around a table and analyze the situation from different perspectives (R&D, Marketing, Finance, Manufacturing). Project managers were accustomed to contact you when they needed to prepare a Business Case. Here we have to run after them. We feel of little use".*

In the context in which the process view was being advanced, one Controller emphasized the lack of financial culture in relation to capital budgeting decisions (*supra*):

*"When we participate in project evaluation, R&D directors intend to persuade us about the soundness of their investment proposals and manipulate the model's inputs to come up with positive NPVs".*

Lack of serious financial awareness was also evident in an R&D employee's view: "[regarding cost consciousness]...Oh really! In my case, my R&D director gave me the 'go ahead' regarding my spending: spend all the money you need, this is not a problem!" (conversation with a Project Manager).

Management Controllers were thus at the organization's margins, isolated from operational networks with limited interactions with R&D employees. Through the outworking of the Controllers' initiative, stronger colonization was brought about. We elaborate upon this below using a framing of grounding, takeoff, standoff and lagging.<sup>29</sup>

Grounding: processes of construction and support-building

Management Controllers sought to legitimize the process view initiative (see Dent, 1991). Given the complex technical nature of the PMS being designed, the Controlling Manager and on-site researcher here referenced external and internal sources they consulted, e.g. Quality Testing Engineer feedback<sup>30</sup>, computer science and engineering journals. They prepared a draft PMS and introduced it to the Cost Study Manager (from the Systems Planning R&D Division) for feedback and to enlist his support. The Controlling Manager and the Cost Study Manager knew each other well, having collaborated on various projects. The Cost Study Manager provided positive feedback on the project content and advice on whom to seek

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<sup>29</sup>These stages refer specifically to the Controllers' initiative to colonize R&D. The Controllers, however, drew upon structural, relational and social parameters developed *earlier* (by Systems Planning/Information Systems Engineers and Financial Accountants). This built upon and reinforced the SBC system.

<sup>30</sup>The Quality Engineer Team Leader knew Sygmatech's processes well, having participated in implementing ISO norms. Involved early on, he helped the on-site researcher and Controlling Manager design/build the PMS.

acceptance/support from. He also warned the Controlling Manager of potential obstacles, notably the recording issue: “From the company’s culture, it is most likely that people will not report their time in the system. You run a risk of bumping into a wall”.

Following the Cost Study Manager’s suggestions, the Controlling Manager presented the initiative to the Systems Planning R&D Division’s Business Project Manager (the Planning Manager). The latter acknowledged project reporting’s inaccuracy prior to the process view initiative:

*“Today, we have no visibility over the software development cycle. The reality is that we do not know how to measure it although we are all conscious that it is necessary. Top management [the Corporate Board] has asked several times for the cycle’s cost and its contribution to the overall business model”.*

The Planning Manager was interested in the Controlling Manager’s project. Together, they agreed to prepare a joint proposal. Subsequently, a project team (the Team) emerged, constituted by the Controlling Manager, Planning Manager, Controller 2 (a Management Controller), Engineer 2 (a Systems Planning Engineer) and the on-site researcher. The Planning Manager and Engineer 2, from R&D and with ample experience of the SDC’s technical aspects, became strong allies of the Controlling Manager, Controller 2 and the on-site researcher. Through repeated meetings, the Team formed a proposal to monitor and control the SDC.

The Team approached an SBC system administrator (Administrator 1), who was also a member of the Systems Planning R&D Division, to learn about how to implement the proposed process-oriented PMS within the SBC system. Team members, especially Controller 2 and Engineer 2, knew Administrator 1 well as both worked closely with her on different projects. Reflecting her experience, Administrator 1, the link between the Team and SBC Council members, commented on change implementation within the SBC system: “The issue is not technical. I could just create Work Units but every SBC representative must agree

with the proposal. The problem comes from the individuals”. In a meeting with the on-site researcher, she added:

*“The implementation phase is relatively easy but getting acceptance is the most difficult part of it. You have to take into account employees at lower-levels in the hierarchy if you [Management Controllers] want...relevant information. You must obtain validation from above but you must absolutely work with people at lower-levels. It will be fundamental to organize meetings with teams and make presentations”.*

Before introducing the change widely, the Management Controllers secured the support of allies. Repeated interactions between Controllers and Planning Engineers enabled collaboration and preparation of a joint proposal. Here, network relations strengthened. Consistent with Krackhardt’s (1997) principle of peripheral dominance (and Dent’s, 1991, observations on Business Directors’ isolation at European Railway), the relatively isolated location of Controllers here facilitated change.

At the initial project stage, with permissible bridges few (limited to project team members and trusted peers), strong inter-unit network relations were carefully selected and used to reduce uncertainty and avoid potential detractor backlash. This engendered a time-consuming process, represented by a slow start along the extended time interval [1;8] (figure 6; table 3).

<Insert figure 6 here>

During grounding, Team members agreed not to disseminate information without mutual consent. Documents were handled carefully and referred to as “drafts”. No email copies were sent, an effort to avoid mass-diffusion. These rules sought to prevent detractors from using information detrimentally. The Team could here control the change’s speed and spread.

<Insert table 3 here>

During grounding there were few communication channels. This constituted a highly viscous environment with low migration. Accounting was here relatively isolated and drew upon relational mechanisms to initiate colonization. There was as yet less than strong colonization.

“Take-off ” and the importance of weak (inter-divisional) ties

Since each R&D Division had its own SDC, the Team had to obtain information from each Division to construct the new PMS. This created the context for interactions (see Dent’s, 1991, “sequencing” dynamics).

Administrator 1 invited the Team to introduce the proposed change to SBC Council members at one of their monthly meetings. The ensuing brief presentation triggered different reactions. Council members raised several behavioral and technical issues. For instance, Business Unit 1’s representative exclaimed:

*“We have a great deal of difficulty now...increasing the system’s complexity would be too difficult. I am against this project! It will be a nightmare. People find the system [NPM phases] already very complicated”.*

The Product Management R&D Division’s representative commented: “People will cheat on the system”. As communication developed at the presentation meeting, conflict arose between Council members. By the end of the meeting, the issue remained unsettled, with Council members split over the change.

Controllers initially differed on how to operationalize change: again, obstacles to colonization here came from within the domain of accounting itself. The Controlling Manager had a “high-level” perspective, insisting on inviting only influential employees (whether SBC Council members or not) to discuss the process view: “We should not be too democratic...There are some people we have to obtain validation from. Others' validation would be good to have but is not indispensable”. Convinced of the process view, he dismissed negative reactions to the

proposal: “Some people see problems everywhere”. In contrast, Controller 2 and the on-site researcher hoped that involving SBC Council members would provide a forum for constructing the PMS *collaboratively*.

The Controlling Manager initially saw the change as an implementation from the top of an “authoritative/expert” innovation rather than something to be democratically decided. For instance, he attempted to directly enroll Business Unit 1’s director, by-passing Business Unit 1’s Council member (the project’s strongest opponent). Business Unit 1’s director, however, advised the Controlling Manager to initially discuss the change with the Council member’s immediate superior (that is, Business Unit 1’s manager, who had already heard negatives about the project from the Council member). Subsequently SBC Council members accrued greater recognition as the bridge between the Team and R&D Divisions.

Support and feedback sessions thus came to be held with each R&D Divisional Council representative.<sup>31</sup> These sessions offered constructive communication channels for discussing and improving the proposal. There was much give and take in ostensibly seeking to build a coherent proposal reflecting all R&D Divisions’ views. Seeking the desired support, the Team first held meetings with representatives initially indicating preparedness to accept the innovation. The latter’s support was seen to strengthen the initiative before meetings with representatives indicating a more negative attitude took place.

It was clear from the sessions that SBC Council representatives from Core 1, Business Unit 2, Product Management and Information Systems were impatient to see the proposal. Core 1’s

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<sup>31</sup>Before the next Council meeting, the Planning Manager convinced the Systems Planning director (his superior) of the project’s suitability.



representative was eager to explore the proposal's relevance and communicate this to his team.<sup>32</sup> He explained to the on-site researcher:

*"I wanted to see where the change would go. Now, I see...it makes sense. If you want, I can check with Core 1 R&D director to see if he has feedback before you present the change to the R&D directors' Meeting. It would be good to have his view...I have a team meeting in two weeks...if there is a change I want to explain it to my team".*

Meetings with representatives initially more negative to the change went better than expected for the change drivers. Business Unit 1 and Core 2 representatives were apparently influenced towards acceptance by being invited by Controllers to the feedback and support meetings. With the Controlling Manager initially failing to convince Business Unit 1's R&D director (*supra*), negative rumors had spread among this unit's senior employees. And Management Controllers had expected conflict in and after the feedback and support meeting. Instead, things moved towards acceptance. Regarding Core 2's representative, in Council meetings he was always isolated, apathetic or resistant to issues potentially impacting his R&D Division. The Controlling Manager reported of him: "This is what worries me. I have not heard good things about him, neither outside nor inside his R&D Division. He is also involved with the labor union". The Team worried, knowing the project would not be implemented without acceptance by Core 2, the oldest and largest R&D Division. Further, Core 2's director was influential and potentially a serious obstacle to the change himself. Yet, Core 2 was more positive towards acceptance than anticipated.

The Team understood it needed all representatives' positive feedback for successful change. The SBC Council meeting facilitated the Team's liaison with each R&D Divisional representative, yielding more acceptances. Thus, *takeoff* can be located in the feedback and support meetings. It is reflected in the steepest ascent along S-curve interval [9;18]. During takeoff, Controllers developed further the steering medium's structural mechanism (the

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<sup>32</sup>The Team, seeking support, had earlier agreed to keep documents under wraps to avoid the proposal's uncontrolled diffusion (*supra*). This changed with these meetings.

structure of the network ties), inadvertently drawing upon the SBC's social structure or organization initially developed by Financial Accountants, Systems Planning Engineers and Information Systems Engineers. In the process, Controllers gained centrality within operational networks.

The relational mechanism also developed during takeoff. Network relations between Controllers and R&D Divisional Council representatives had mostly been underdeveloped except where representatives were more accepting of the project. Representatives' increased support and frequent meetings created a climate of trust. Relational ties strengthened.

The social mechanism was developing. However, only representatives more positively viewing the change initiated conversion within their R&D Divisions. As several representatives retained more negative views, a feeling of uncertainty and unpredictability regarding the project's outcome dominated. But access to the SBC organization, especially to all R&D Divisions, engendered high velocity via weak (inter-unit) ties.

Thus, colonization was underway. Facilitative bridges were more numerous (e.g. SBC Council meetings). Information diffusion was closely monitored and centralized by the Team. The viscosity parameter was lower than during grounding and information sharing became more relaxed.

“Standoff” and “lagging” and the importance of intra-divisional ties

For the Team, the Council and feedback and support meetings, which provided it with communication channels to transmit the project to all R&D Divisions, became an unexpected source of support (see Dent's, 1991, “momentum” dynamics). Six of the nine R&D Divisional Council representatives (of Core 1, Business Unit 2, Quality Testing, Product Management, Information Systems and Customer Support) introduced the project to a superior (manager or

director) in their Divisional hierarchy and obtained support therefrom.<sup>33</sup> In these six divisions, the Team made no contact with other employees to garner support, relying on the existing trusted relationship between Divisional representatives and their superiors.

Where representatives resisted more, as in Business Unit 1 and Core 2, the process was more unpredictable.<sup>34</sup> We have already traced the initial progress of Controllers during takeoff. Building on this, Controllers drew on their relationships with Systems Planning Engineers to access trust, a critical resource during severe change. Regarding Business Unit 1, Controllers had anticipated a negative reaction from the unit's manager. So the Planning Manager and Engineer 2, who had known Business Unit 1's manager for over ten years, conducted the feedback and support meeting with her. The proposal was carefully reviewed and changes were made facilitating acceptance. The meeting's impact subsequently surprised the Controllers: Business Unit 1's manager did not oppose the change. Hence, Systems Planning Engineers could provide a bonding tie when Divisional council representatives negatively viewed Controllers.

Regarding Core 2, no Team members knew either Core 2's Council representative or his superiors well. The Team asked this representative to recommend influential colleagues. Two Core 2 team leaders (1 and 2) were contacted for feedback on the proposal but none answered the Controllers' calls. Then, the Controlling Manager sent leaders 1 and 2 a provocative e-mail, copying in their manager, including the text:

*"We...received feedback from all the other groups. We are just waiting for feedback from Core 2...We need to have it before the end of April because in May we are*

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<sup>33</sup>After multiple Council meetings, a bandwagon effect occurred: Information Systems and Customer Support representatives previously absenting from several Council meetings joined the initiative.

<sup>34</sup>Surprisingly, Financial Accountants opposed the project, feeling excluded despite calculating R&D capital spend (per IAS 38). Their split from Controllers divided Finance until both sides met in week 42 to settle R&D capitalization issues. Half of Finance adopted in week 12, the rest in week 42.

*planning to review the proposal with the Executive Vice President. It would be really unfortunate if Core 2 was the only Division not giving feedback".*

Over subsequent days, leaders 1 and 2 responded more positively. With new modifications, the proposal was then approved by the R&D EVP and the R&D directors.

A gradual, social (contagion) change was manifesting within the R&D Divisions (see Dent's, 1991, "cumulating" dynamics). While Controllers made extensive presentations to R&D Divisional Council representatives and their teams, the representatives continued their influential Divisional role. The representatives had developed network relations with their team members, their dense and trusted network facilitating change. Controllers, confronted with the challenge of enacting severe change (accounting colonization), drew upon a key resource, direct and indirect trusted network relations, to initiate the lifeworld's conversion.

Financial Accountants' sense for steering in the case emphasized the "regulative" sense, while Controllers steered in a "constitutive" sense (Power and Laughlin, 1992), more directly penetrating R&D's operational core to sensitize R&D personnel to financial issues and engendering stronger colonization.<sup>35</sup>

Several features of standoff, represented by the interval [19;22] (figure 6), can be delineated in the case. At the start of this phase, the steering medium's structural mechanism was nearing completion. Controllers continued to gain centrality in operational networks. Regarding the relational mechanism, Controllers now interacted with Council members so that network relations between them strengthened (Council members opposed or indifferent to the change had underdeveloped or negative relationships with Controllers).

A conversion process was occurring in most Divisions, engendering an imbalanced or schizoid state: some R&D Divisions supported and others opposed the change. The process

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<sup>35</sup>By the end of the on-site research, the change was still being internalized by R&D employees.

reached a "standoff", an unstable and temporary "equilibrium", depicted by the "saddle" (inflection) point around [19], once an initial mass of support had accrued. During standoff, the social mechanism was becoming pivotal. Advocates and detractors brought network relations or trusted relationships into a conflictual struggle to convert colleagues. This had been escalating,<sup>36</sup> engendering an uncertain and unpredictable project outcome.

To transform detractor resistance and enter the *lagging* phase the Team drew upon trusted inter-unit network ties (see Tenkasi and Chesmore, 2003). After gaining Business Unit 1's support, the Team had faced covert resistance from Core 2. Here, the highest uncertainty manifested, the Team having no trusted ties with Core 2 employees. Impatient with slow movement, a coercive email was sent to settle the issue, potentially jeopardizing the project. By the end of standoff, communication channels were more numerous but selective. Viscosity had lowered.

The lagging phase is dominated by the social mechanism, engendering a cumulating/levelling off process or bandwagon effect as per interval [23;42] (figure 6). At commencement of lagging, communication channels were open and viscosity was low, as reflected in Controller 2's view: "It is going in all directions now". Some Divisional Council representatives (e.g. for Customer Support) were laggards in absenting from several Council meetings. But subsequently they wanted the chance to validate the project before top management approval. Laggards' "wait and see" attitude meant monitoring how far ahead the proposed change would propagate and engaging actively when it more seriously threatened.

Slowly, however, during lagging, an internalization process manifested within R&D Divisions. And the representatives' continuing effort to implement SBC systems and structure was facilitated by their influence within their R&D Divisions. The high density of strong ties

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<sup>36</sup>Detractors' reactions are not obviously irrational. Business Unit 1's resistance reflected concern to maintain prevailing systems and structure. Acquired by Sygmatech, the unit was a promising start-up company from the US Northeastern area with culture averse to financial discipline.

within R&D Divisions produced a "snowball" effect (as per the S-shape curve). An organization-wide conversion was underway. Uncertainty reduced. Seven years after the SBC system's creation, accounting colonization advanced.

The S-curve illuminates further insights into the change. The S-pattern exhibits a colonization pathway occurring through a dynamic social process wherein people influenced each other over the change's value (Krackhardt, 1997). The attempt to colonize the R&D site's lifeworld differed from rational processes because potential adopters' minds changed back and forth as they were exposed to different social forces from supporters on the one side and detractors on the other (see Krackhardt, 1997).

Figure 6 suggests that, after grounding, accounting's propagation within a functionally-oriented structure tended to begin rapidly before slowing until the entire organization adopted the change. Given the high density of strong ties within R&D Divisions, once a R&D Divisional Council representative accepted the innovation, attitudes within R&D Divisions converged rapidly (see Davis, 1963). Conversely, when these representatives perceived the project more negatively, R&D employees resisted it. This process explains the curve's shift and saddle point. With reduction in prevailing tension, other R&D Divisions adopted change successively through a social contagion or bandwagon process. Thus, the S-curve's shape reflects structural, relational and social mechanisms.

#### *Accounting colonization: a summary account*

Table 4 displays rebuttal, reorientation and strong colonization pathways. Each pathway, with its identifiable pattern, is engendered substantively by different environmental disturbances. Here, stages overlap. Each new stage can be understood to build on the previous one, achieving greater colonization in depth and breadth. For example, in the last episode of substantive change, Controllers drew upon an existing structural and relational resource, the

steering medium or SBC structure initially developed by Financial Accountants and Engineers. Unexpectedly, Controllers here also enhanced the steering medium's legitimacy, which had started to build, by extending its relational and social characteristics. Progression in colonization is observed. And, substantively, we find that the structural mechanism precedes the relational, which in turn precedes the social.

<Table 4 here>

Consistent with Tucker (2013), accounting centrality increased with development of the SBC system and social structures. The network position of accountants, particularly the Controllers, progressed. Initially, the latter had underdeveloped network links with R&D individuals but, once tied thereto (the development of a structural characteristic) they became more central within the SBC system (the steering medium). They developed the relational aspect of their network with R&D Divisional Council representatives. The latter brought change to their Divisions via a social (contagion) process.

Similarly, progression of viscosity is observed. In an uncertain environment, the change migrated very slowly via thick communication channels until a critical mass of R&D individuals adopted it. Thereafter, the change's trajectory was difficult to follow. Multiple communication channels were used to propagate the change. Migration speed increased significantly. So, structural mechanisms expressible through principles of peripheral dominance and optimal viscosity, with relational mechanisms associated with strengthening networks and social (contagion) mechanisms, explain accounting colonization's trajectory in R&D. We elaborated the change in terms of grounding, takeoff, standoff and lagging, stressing relational and social aspects and building upon prior analyses.

*Dimensions of Enabling Accounting*

Our appreciation of ‘enabling accounting’ noted its various connotations and usages in the literature, some more meaningful than others from a critical perspective. Yet, we also suggested that these variations can be properly placed on a continuum rather than be seen as absolutely different or opposites (*supra*). If more radical mobilizations differ from more ostensibly conservative ones, we articulated (per continuum thinking) a domain of mutuality between these conceptions of enabling accounting so that both are envisaged as contributing (including concurrently) to well-being, in limited or more substantial senses.<sup>37</sup> We also noted that one can appreciate enabling dimensions of *actual* as well as of *potential* accountings and their functionings and that this line of theoretical development can be extended to accounting colonization (*supra*). Thus, (meaningful) enabling accounting dimensions are acknowledged before, during and subsequent to colonization, alongside the substantively negative forces tending to divert organizational activity from creativity/innovation and the organization’s substantive *raison d’être* (see Oakes and Berry, 2009).

Our case appears to furnish little evidence of the more radical enabling accounting of Broadbent et al. (1997), Oakes and Berry (2009), Gallhofer and Haslam (2003) and Gallhofer et al. (2015). Rather, an ostensibly conservative enabling accounting is more evident. Yet, we can trace, at least in a limited sense, consistent with our framing, some actual and potential (meaningful) progressive dimensions of accounting’s mobilization. We elaborate upon this below.

It is reasonable to argue from various organizational actors’ views in the case (*supra*) that, in some respects, creativity/innovation in R&D and accounting/financial control were coming to form a better balance. Such organizational and social change is enabling in a limited and more conservative sense but also suggests more progressive *dénouement*, consistent with some

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<sup>37</sup>Compare the notion that there are corporate responsibilities in the social, environmental *and* economic spheres (Gallhofer and Haslam, 2003). Consider interfaces between constructs of moral or cultural economy with political economy, coming not to see morality and markets as opposites (Jackson et al., 2009).



research into the interface of cultures of creativity and financial control (see Davila et al., 2009b; Jeacle and Carter, 2012).<sup>38</sup>

Our analysis also indicates transformation of Sygmatech's accountants from "bean-counters", with low status and isolated from organizational networks, towards more proactive, centrally located, professionals. The new role means accountants are more positively viewed by R&D scientists and engineers and valued more. The accountants' increased collaboration with the latter provides a sense of their usefulness, likely improving their job satisfaction as well as how they are perceived. In itself, this reduced alienation of the accountants as workers may be seen as a constrained enabling dimension of accounting. It is notable how the accountants, as people/workers, came to feel less alienated and more liberated.<sup>39</sup> Yet this change also had a wider enabling significance via its impact on the interaction between accounting and R&D.

Enabling dimensions are found in the development of better communicative interaction and greater trust between accounting and R&D. The change suggests that, in R&D, accounting artefacts and technologies became more seriously and less crudely understood, critically examined and questioned. Further, a new breed of accountants capable of reflecting on, gaining new insights into and transforming their activity was to some extent engendered. If, on the one hand, a more balanced interface between sensitivity and control manifested, on the other, the nature of the (accounting) control also changed towards better governance. This change in some respects and potentially brings about more meaningfully enabling accounting helping engender more creativity and innovation - consistent with more emancipated organizational and social functioning.<sup>40</sup>

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<sup>38</sup>Control is here sometimes linked to creativity being valued and even liberated more. R&D may focus on innovation with less financial worry. The new balance/interface may impact socio-economic activity (e.g. things that would not have been produced are), something meaningfully positive.

<sup>39</sup>See treatments of accounting as labour (Roslender, 1996; Cooper and Tinker, 1998).

<sup>40</sup>The change manifested as accountants initiated inter-functional ties with R&D. This challenged R&D and accountants. Organizational barriers/silos and antagonistic interaction of cultural forces made it more difficult

In the micro-organizational context focused upon, to strengthen networks vis-à-vis the new role of accounting/accountants space had to be given to increased communicative interaction, e.g., via SBC Council and feedback and support meetings. Accounting and accountants moved from the technical towards the social-organizational and a more communicative role (Alvesson and Willmott, 1992). R&D issues were here coming to be resolved *in some ways* through development of a working consensus involving enhanced communicative interaction, support-building and liaison work that began to integrate technical, business and creative dimensions (see Forester, 1985, p. 212). Accounting/Finance at times itself delayed colonization, facilitating reflection. Resistance may have appeared counter-productive to Controllers, especially the Controlling Manager, who initially refused to involve all the Divisional Council representatives. Yet change opponents and proponents to some extent constructed the PMS collectively and democratically and the SBC organization provided space for communicative action. R&D engineers and scientists here also saw a benefit in accounting, not only in its expertise in project evaluation and organizational performance measurement but also in that R&D engineers and scientists became more actively involved in designing and constructing the PMS. The increased satisfaction of the interacting workers, with the other positives, is in part consistent with not only accounting facilitating achievement of conventional organizational goals but with ‘profits being made in better ways’ and we would stress the profound character of the change (*supra*).<sup>41</sup>

This interaction attended to beliefs and furnished greater possibilities for a consensual approach, with related enhanced communication getting better and deeper and similarly enhanced trust manifesting between interacting parties. In the case, Controllers and R&D individuals needed to keep interacting, engendering dimensions of collaboration, information-

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for R&D and accountants to combine to build accounting more *facilitative* of creativity/innovation (and potentially more radical outcomes).

<sup>41</sup>Suzuki et al.’s (2010) analysis is apposite here.

sharing and mutual trust. The tendency of work organizations to devalue, corrode or appropriate lifeworld values was to some extent challenged and reversed here (see Alvesson and Willmott, 1996, p. 118). This enabling dimension manifested even in an accounting colonization process. It suggests an enabling accounting at least in a limited sense. But also, especially potentially, it suggests a meaningful enabling accounting in a more substantial sense, realizing wider possibilities of better communicative practice (indeed beyond the micro-organizational context) - reflecting the tenets of a critical theoretical appreciation.

Our case indicates how dimensions of enabling accounting can *change* in colonization. An instance of this in our case is manifest in the shifting character of networks and its impact, including the episode where the severity of change engendered backlash from densely connected groups. This furnished insights facilitating appreciation of contextual factors associated with accounting becoming more or less enabling. We at least glimpse here how typologies and patterns, structural in character, interact with the relational, social and cultural to engender transformations in elemental dimensions of accounting (such as the way accounting is seen by organizational actors). Shifts in the dynamics of enabling dimensions of accounting occur, with, as we have seen, significant consequences, including in terms of potentially more radical implications.

## **CONCLUDING COMMENTS**

Building on prior work while seeking to avoid any dogmatic tendency to theoretical closure, we outlined a framing of accounting colonization (drawing mainly upon Laughlin, 1991, and Tucker, 2013) and the dynamics of enabling accounting (drawing on Gallhofer and Haslam, 2003; Gallhofer et al., 2015). Through a case study, we articulated the theory empirically. We found evidence of rebuttal, reorientation and stronger colonization. There was interrelation between these if each had an identifiable pattern. We traced processes entailing progression in

the accountants' network position, with accountants developing relational aspects of their networks. Insights were yielded via applying the principles of peripheral dominance and optimal viscosity. We enhanced focus on the relational and social through theorizing colonization in terms of grounding, takeoff, standoff and lagging. We also appreciated the multidimensional and relativistic character of accounting's 'enabling dimensions'.

Vis-à-vis notions of more enabling and emancipatory accounting, study of the sub-system, the local and micro-organizational, is underdone. We readily acknowledge that overlooking more global structures is neglectful but our argument is that analysis should nevertheless be concerned to appreciate more deeply the micro-organizational, and with particular reference to 'enabling accounting' dynamics. Our study sees micro-organizational contexts as rich in complexity and potential: understanding these contexts' cultures, identities and communicative practices is crucial to praxis. Our study interweaves this micro-organizational focus with an appreciation of points of reconciliation between ostensibly different conceptions of enabling accounting found in the literature.

Our research has generated insights into the complex phenomenon of change within an organizational context. Despite contextual differences (e.g. regarding culture, industry, history and change origin) our research shares insights with Dent (1991). This reinforces our findings. Yet, our study and Dent (1991) are limited to large, highly differentiated structures organized by Regions or Divisions with few inter-unit ties. Further research could highlight how structural, relational and social mechanisms operate within organizations with distinct structures (and how this affects the S-curve). Future research could also further investigate

dynamics of accounting's enabling dimensions in large R&D structures and related sites.<sup>42</sup> Our study also suggests wider implications in encouraging a more pragmatist and multidimensional approach to enabling progress in and through accounting.

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<sup>42</sup>If the evidence suggests a still strengthening enabling accounting on the on-site research's completion, one should caution against overly confident interpretation. More enabling (if conservative) accounting may be facilitated in a small company with limited differentiation/resistance between subcultures (e.g. Nixon, 1998).

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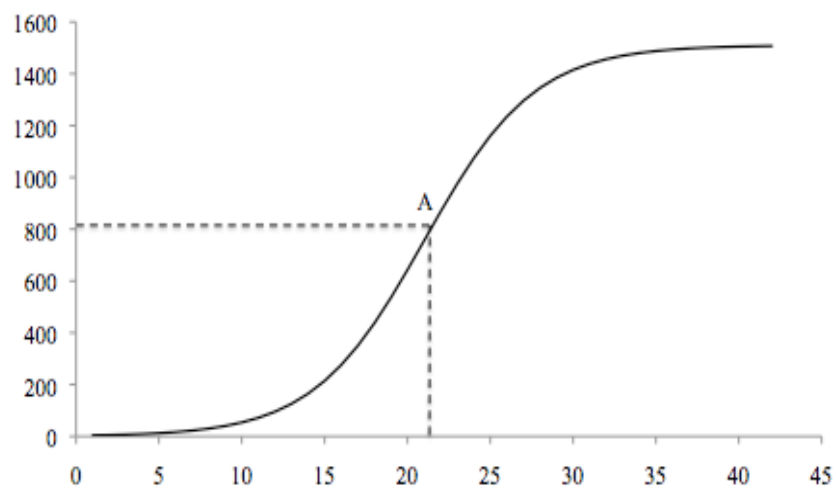


Figure 1. Diffusion curves for rational and controversial innovations (Krackhardt, 1997).



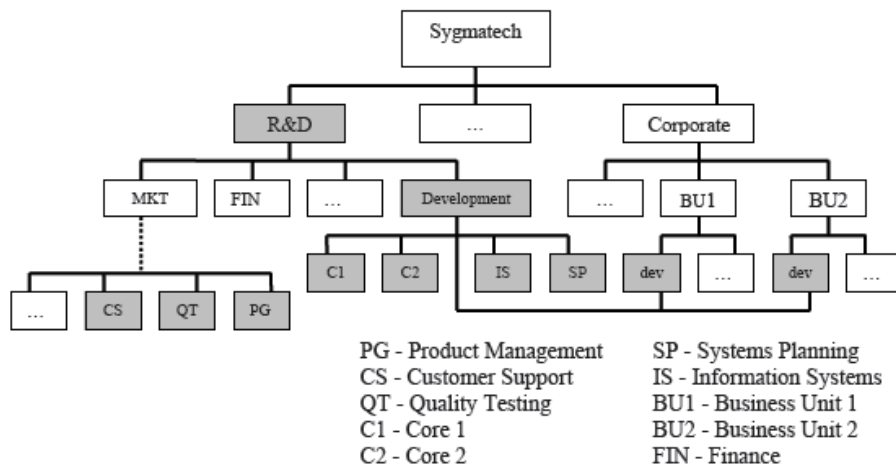


Figure 2. Sygmatech organizational structure (R&D divisions in grey).





Fig 3a. Evolution of the colonization process of accounting

1989	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Budgetary System (Rebuttal)							SBC System NPM - IAS 38 (Reorientation)				SBC System - SDCC (Colonization)		

Fig 3b. Timeline of the Researcher's intervention (SDCC project)

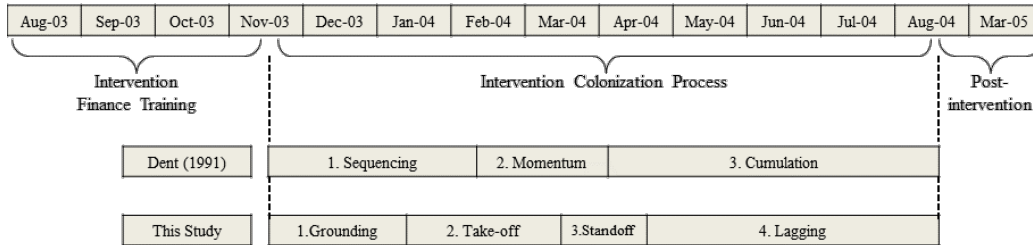


Figure 3. Colonization phases of accounting (3a) of and time line of the research (3b)



Activity Type	Activity	Total	Percentage within all activities	Percentage within DEV activities
Development	ADP_Project_Effort	12979.16	2%	5.4%
	DEV-Acceptance	23442.59	4%	9.7%
	DEV-Concept & Planning	39981.27	7%	16.5%
	DEV-Construction	114645.42	21%	47.4%
	DEV-Management & Coordination	21434.03	4%	8.9%
	DEV-Product management	11811.39	2%	4.9%
	DEV-Proposal phase	6074.52	1%	2.5%
	DEV-Training received related to project	510.77	0%	0.2%
	DEV-Transition	3159.07	1%	1.3%
	(blank)	8025.87	1%	3.3%

1) The concentration of reported manpower. 64% of R&D manpower is reported against two activities. A set of groups that represent 68% of the R&D manpower reports more than 80% of its time against mainly two activities.

2) Deviation between homogeneous groups. Groups that have similar tasks report time in a different way

3) Current activities (NPM phases) are leading to some ambiguities as some groups that are heterogeneous report the same way

Figure 4. Inconsistencies of time spent in the SBC system (Sygmatech internal document)



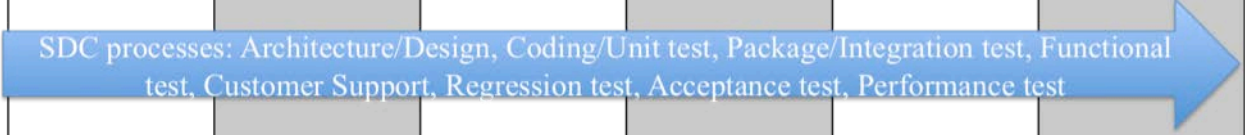
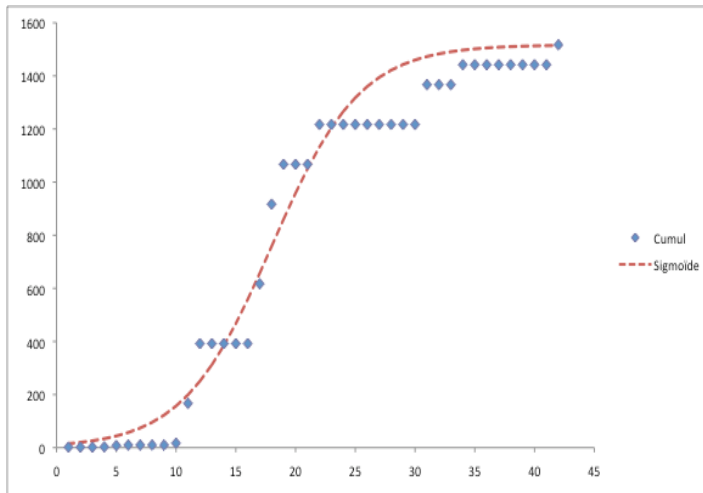
NPM Phases	Proposal	Concept & Planning	Construction	Acceptance	Transition
SDC processes: Architecture/Design, Coding/Unit test, Package/Integration test, Functional test, Customer Support, Regression test, Acceptance test, Performance test 					

Figure 5. NPM vertical project phases versus SDC transversal processes.





Weeks	Adoption of individuals/groups	n	Σn
Week 1	Controlling Manager & Researcher	2	2
Week 4	Cost Study Manager	1	1
Week 5	Project team constitution	5	8
Week 6	SBC Administrator 1/Quality Engineer	2	10
Week 10	SBC Definition Meeting	7	17
Week 11	Quality Testing	150	167
Week 12	Systems Planning	150	392
	Finance (MC)	75	
Week 17	Information Systems (Technical)	75	617
	Core 1	125	
Week 18	Product Management	150	917
	Business Unit 2	150	
Week 19	Business Unit 1	150	1067
Week 22	Core 2	150	1217
Week 31	Customer Support	150	1367
Week 34	Information Systems (within R&D)	75	1442
	Core 1		
Week 42	Financial Accounting	75	1517

The x axis represents the time at which R&D representatives became adopters of the Management Controllers' proposal and y axis represented by the dots indicates the cumulated number of adopters over time. The red S curve approximates the propagation of the change. R&D divisions were considered adopters when R&D representatives and their respective hierarchical superiors had validated and adopted the PMS. This argument is consistent with both Dent (1991) and Tucker (2013), in that, given the dense network of strong ties in which R&D representatives are embedded, if the R&D representative's had a positive attitude towards the change, he/she was likely to exert a positive influence over members of his/her R&D division and persuade/convert them. To avoid a potential bias in the graphical illustration, the 10 R&D units were all represented as having 150 members to reflect approximately the size of the R&D unit at that time.

Figure 6. Diffusion curve for the PMS change.



Phase	Main Activities	Type of meetings	Meetings* / Time (h)	Total
<b>Pre-Project</b> Finance training	Cultural awareness Knowledge acquisition about systems, structure and current practices	Immersed in Finance Department Meetings with Corporate Strategy, Marketing Intelligence, Systems Planning		
<b>Grounding</b> 18-Nov / 14-Jan (week 1 – week 8)	Development of Management Controllers' draft Meetings with Systems Planning Engineers Coalition formation (Project Team) Development of joint proposal	Functional (within Finance) Project Team (PT) Inter-functional SBC Councils	7 / 5h 4 / 6,5h 3 / 4h -	14 / 15,5h
<b>Take-off</b> 15-Jan / 22-Mar (week 9 – week 18)	Introduction of SDC proposal to SBC Councils Validation Finance/Systems Planning Directors Pilot tests sessions (Core 1, Business Unit 2, Product Management) Follow-up with SBC representatives	Functional (within Finance) Project Team (PT) Inter-functional (including Pilot tests) SBC Councils	14 / 8h 5 / 4h 12 / 11h 4 / 8h	35 / 31h
<b>Standoff</b> 23-Mar / 15-Apr (week 19 – week 22)	Pilot tests sessions (Core 2, Business Unit 1) 'Battling through' opponents to the change Follow-up with SBC representatives	Functional (within Finance) Project Team (PT) Inter-functional (including Pilot tests) SBC Councils	9 / 5h 2 / 1h 11 / 7h 4 / 8h	26 / 21h
<b>Lagging</b> 16-Apr / 15-Aug (week 23 – week 42)	Last pilot test sessions (Customer Support, Management Accounting, Information Systems) Integrating SBC members' propositions/final draft Top management support	Functional (within Finance) Project Team (PT) Inter-functional (including Pilot tests) SBC Councils	9 / 3,5h 1 / 1,5h 13 / 9h 3 / 6h	26 / 20h

\*Does not include emails, short phone calls or informal exchanges, Corporate or Departmental meetings and social events.

Table 1. Qualitative data gathered during the researcher's intervention.

<b>NPM Phase</b>	<b>Budget Production line</b>	<b>Capitalized R&amp;D</b>	<b>WU association</b>	<b>Description</b>
Productive activities – Accounted R&D activities				
DEV - Product Management	Development	No	Mandatory	Management of Product globally, towards a market segment, or towards customer segments. This is typically the on going work of Product Managers or Market Managers. It also includes Corporate Marketing initiatives which are aimed at the promotion of products, Sales Brochures – printed or online, Sales Multimedia, etc. Deliverable: Product Concept Document, CR, Product Plan, Rollout Plan, Marketing Plan, Promotional Material and Media.
DEV - Proposal phase	Development	No	Mandatory	Applies for projects and product evolution (CR process). During the Proposal phase, the business case for the project is established and the project scope is defined. At the end of the Proposal phase a decision is made whether or not to start a project or a development. Deliverables: Project proposal, Business case, Feasibility study.
DEV – Management & Coordination	Development	Yes	Mandatory	Management & coordination: E.g. planning, project control, follow-up, communication for the project, coordination meetings, CR management, sizing. Should start after the Proposal phase is finished. This is a Capitalized activity.
DEV - Concept & Planning	Development	Yes	Mandatory	Applies for projects and product evolution (CR process). The goals of the Concept and Planning phase are to analyze the problem domain, establish a sound architectural foundation, develop the project plan, and identify the highest risk elements, the cost, schedule, and quality goals of the project. At the end of the Concept and Planning phase, a decision is made whether or not to proceed with the project or the development. Deliverables: Project plan, Business plan, Contract, Marketing implementation plan, Product strategy, Initial product concept, Requirements document, Updated Feasibility Study, Product specifications, System architecture, Operational concept, Customer care plan. Includes A01, initial A02, when produced.

Table 2. Extract of NPM phases, capitalization decision and related description.

<b>S-Curve Stages Characteristics</b>	<b>Grounding</b>	<b>Take-off</b>	<b>Standoff</b>	<b>Lagging</b>
<b>S-curve shape</b>	Slow start	Steepest ascent	Inflection point (saddle)	Levelling off
<b>Velocity</b>	Low Inter-unit strong ties	Fast (increasing) Inter-unit weak ties	Fast (decreasing) Intra-unit strong ties	Low Intra-unit strong ties
<b>Adopters / Detractors</b>	Low / None	High / High	High / Highest	Highest / Low
<b>Uncertainty</b>	Low	Medium	High	Low
<b>Mechanisms</b>	Relational	Structural*/Relational	Structural/Relational/Social	Social
<b>Viscosity (channels)</b>	High (few but selected)	Medium (several selected)	Low (many)	Lowest (all)

\* Management Controllers drew upon established structural elements of the SBC system (steering-medium) by Information Systems Engineers, Systems Planning Engineers and Financial Accountants.

Table 3. Stages towards Management Controllers "Strong Colonization" form

<b>Type of change</b>	<b>Rebuttal</b>	<b>Reorientation</b>	<b>Colonization</b>
<b>Subunits change</b>	No change	-Few changes/tangible elements	-Change/invisible elements
<b>Design archetypes (Steering media)</b>	-Isolated accounting systems/ structure -Low centrality of accountants	-Emergence of accounting as steering medium -Interaction Accounting & R&D -Higher centrality of accountants	-Accounting as steering medium. -High centrality of accountants
<b>Interpretative schemes (lifeworld)</b>	-No effect	-Limited effect -Accounting penetrating R&D -R&D unit resistance	-High effect -Towards culture hybridization
<b>Structural / relational / social perspectives</b>	-Creation structural patterns -No relation with R&D -High viscosity	-Developing structural patterns -Initiate relations with R&D -Medium viscosity	-Institutionalizing structural patterns -Emergence of strong ties with R&D -Social patterns (contagion) -Low viscosity

Table 4. Evolution of the core elements of social development for distinct type of changes