

ROUTINES RESISTANCE: HOW CONFLICTS WITHIN TRANSACTIVE MEMORY OBSTRUCT ROUTINIZATION

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Routines resistance: How conflicts within transactive memory obstruct routinization

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ABSTRACT

Routines resistance is observed among groups of experts that experienced a significant redefinition of their tasks and organizational goals within in a large French government agency. To expose the origins of such resistance, we investigate the processes by which transactive autobiographical memory supported organizational identification as an organization of technical experts, and how this memory structure led to the failed memorization of new action patterns which contradicted the pre-existing expert identity. We find that transactive autobiographical memory is deeply related to a complex process of identification, via the association of different contexts of identity, narrative and temporality, reflecting the levels and functions of autobiographical memory. More specifically, problems arose when managerial directives for new coordination actions conflicted with the pre-existing embedded sense of expert identity, related goals and relationships, leading to dis-identification among employees. The result was failed memorization and routine resistance, driven by conflicts with pre-existing transactive autobiographical memory. We propose a model of the micro-foundations of routines which explains these effects.

Keywords: Routine, Transactive memory, Identity, Knowledge Sharing, Organizational Goals.

JEL classification : D8, M12, B31, B32, J28

INTRODUCTION

Routines, defined as repeated sequences of actions and recurrent action patterns (Pentland and Feldman 2005), allow organizations to function smoothly and coordinate behaviors. Thus defined, routines are relatively easy to identify and their significance is clear. Yet, the origin and role of routines continue to captivate scholars, including why the adoption of new routines or routinization fails in some circumstances. From one perspective, proponents of “the practice and capabilities perspectives” try to discover useful complementarities for scrutinizing organizational routines (Parmigiani and Howard-Grenville 2011); from another perspective, the micro-foundations of routines are questioned and debated (Lazaric 2011; Pentland 2011; Winter 2011). Our approach is at the confluence of these two approaches, as we seek to explain the “why” and “how” of resistance to new routines in relation to their micro-foundations. To expose the origins of such resistance, we investigate the processes by which transactive autobiographical memory (TAM) supported organizational identification among technical experts within a large organization undergoing significant change (see Becker et al. 2005), and how memory conflicts led to the failed memorization of new action patterns which contradicted the pre-existing expert identity.

We build on Nelson and Winter’s (1982) classic book, in which routines are neither simply the result of behavioral ‘lock in’ nor the product of past behaviors, but rather a source of knowledge which is constantly renewed and understood in order to make sense and achieve suitable coordination within organizations. We also follow Michael Cohen’s (2007) recommendations to focus on psychological foundations for investigating individual memorization and routines. In the same vein, Winter (2013, p. 214) suggests that scholars pay more attention to the critical problem of transmission of organizational structure by looking through the individual perspective as “the routine will bear trace of their influence of many individuals back along the historical track.” Following these advices, we import novel insights from the literature on socially co-created autobiographical memory (Pasupathi 2001), and examine its fundamental role in group transactive memory (TM) and the

memorization of routines. However, observing the micro-origins of routines in this fashion does not mean adopting the methodological individualism espoused by some scholars (e.g. Felin and Foss 2005). Rather, we focus on the permanent trade-offs that individuals make to resolve the tensions of being both an organizational member and an individual with a social identity, and possessing both personal and professional goals.

In summary, building on prior research, we accept that TM plays a significant role in this process (Pentland et al. 2012). For example, Hecker (2012) argues that TM forms the basis of collective knowledge and is micro-foundational to organizational routines. Similarly, Pearsall et al. (2010) show the fundamental role of TM within role identification behaviors and the development of routines. Our study investigates related processes, as we seek to uncover reasons for the failure to adopt new routines during periods of organizational change.

Indeed, TM is foundational to many micro-foundational studies of organizational learning and change. In order to succeed as explanations, micro-foundational accounts must specify credible transformational mechanisms whereby individual-level phenomena are transformed into organizational forms and behaviors (Hedstrom and Swedberg 1996; Winter 2011). TM is one such mechanism that is well understood. Many studies show how groups of persons collaborated in the storage and retrieval of transactive memories for organizational purposes (Ren and Argote 2011). Among the topics covered in this literature are organizational learning (Lewis et al. 2005), team performance and information management (Peltokorpi 2008), while Liao et al (2012) theorize about the organizational role of TM from a social identity perspective.

We also employ TM as the mechanism for transforming individual-level memories into the organizational memories, as part of the routinization process. Going further, we examine what happens when the process of transactive memorization fails or is incomplete, owing to conflicts with pre-existing TAM within groups. In particular, we study the impact of conflicting identification caused by organizational changes which entail alien identities and behaviors (Pearsall et al. 2010). We observe that members of the organization possess a historically derived sense of collective identity, goals and relational bonds, grounded in TAM. Members felt increasingly alienated and disconnected when unwelcome behavioral changes are imposed. Notably, their resistance is deeply related to the

implied shift in identity, goals and relationships, away from being a group of technical experts to a more administrative or corporate system. Important phases of the identification process are thus incomplete. As a result, members were uncomfortable and had difficulty enacting actions patterns and fully memorizing them.

Our case study documents these processes as they appear within one large organization. We uncover the origins of shared social identity (being a technical expert) in TAM, and how the attempted imposition of novel administrative routines during organizational change met with consistent resistance. Employees who considered themselves technical experts perceived these new behaviors and related roles as inconsistent with their sense of collective identity, goals and relational bonds, and hence they resisted the adoption of new behaviors. In this respect, they demonstrated a dysfunctional identification process, leading to the failure to memorize new routines. We show that when the implied identity, goals and relational bonds of new actions are in conflict with the transactive autobiographical component of TM, then memorization of such new actions is resisted.

Routine resistance here is observed with an historical lens allowing us to scrutinize group behaviors and to identify their organizational reactions. Undeniably, individual enactment is a critical dimension as routines are not set in stone but subject to change (Feldman 2000), thus giving individuals a possibility to show resistance in their performance (Feldman 2004). Indeed, the question is put: what happens when routines do not work smoothly and when they are not able to really coordinate behaviors as they are supposed to do (Parmigiani and Howard-Grenville 2011). Yet despite prior insights on routines resistance, few empirical contributions address the source and potential outcomes of resistance in organizations. Our contribution addresses this need by capturing some of their key elements of resistance that impact on routinization.

In the next section, we review the relevant literatures on routines and their micro-foundations, and transactive and autobiographical memory. We then report a case study of a large organization that sought to impose new coordination mechanisms called “cross cutting” during periods of change, and how these efforts failed owing to conflicts grounded in TAM. Next, we generate a new explanatory model for the micro-foundations of organizational routines, incorporating the role of autobiographical

TM. This is followed by a discussion of the implications of our model for future research into the topics.

CONCEPTUAL FRAMEWORK

Routines and their micro-origins

At the start of the debate about the origins of routines, Nelson and Winter (1982) insisted on organizations' ability to memorize individuals' skills and to encode them within the organization, so as to be able to respond coherently to changes in their environment. Likewise, these processes draw on organizational knowledge built through social interactions and collective goals, shared identity and relational bonds, because routinized behavior resides in individual aspirations co-shaped within organizations. Routinization therefore requires coherence between the individual and organizational layers—or between micro and macro levels of analysis—which has been recently debated in the literature as a key element for the development of routines (Rerup and Feldman 2011; Salvato and Rerup 2011). In short, “diving further into individual behavior, cognition, and emotion to more deeply understand the day-to-day enactment of routines might help scholars[...] to connect individual influences-and those of employers not just managers-to the firm performance and routines use.” (Parmigiani and Howard-Grenville 2011, p. 444) .

Following this direction, we also investigate this perspective on routines within the history of an organization and then open the organizational “black box” by scrutinizing the role of TAM in relation to group identification (see Pasupathi 2001). When combined with earlier findings that collective identity and identification play a major role in routinization and organizational learning (Kane et al. 2005), we uncover new insights into the reasons for routine resistance. We find that the successful memorization and routinization of tasks at the individual and group levels relies heavily on transactive autobiographical memories, according to internal and external requirements (Lazaric 2011; Miller et al. 2012). Yet when new action patterns imply conflicts with pre-existing TAM, the result is disidentification, failed or partial memorization and routine resistance (see Nag et al. 2007). In this way, the TAM shared by members of a group can help to explain resistance to the adoption of new action patterns.

Transactive memory and routines

Collective memorization is central in the adoption and adaptation of routines (Lazaric and Denis 2005; Miller et al. 2012). Indeed, historical memory matters, not only for understanding organizational culture, but also for enlightening the context in which TM is enabled within groups and organizational contexts, as routines require the effective storage and retrieval of both declarative and procedural memories (Winter 2013). Memories held by individuals have different forms and different uses. Various forms of encoding into memory can be observed at individual and collective levels (Cohen and Bacdayan 1994; Lazaric 2008; Lazaric and Denis 2005; Miller et al. 2012). Knowledge can be used for non-purposeful reasons and their simple accumulation in the “case of.” This kind of memorization, more exhaustive and related to the “know-what,” is labelled the declarative memory and concerns more specifically the recollection of facts, events and propositions (Anderson 1983; Cohen 1991). It is not linked to a specific use and can be used for several purposes. In particular, it can be “re-organised” in order to find the solution to a problem.

Declarative memory mobilizes facts and technical or scientific principles that are different forms of knowledge and help individuals to interpret the world and to make sense of it. This memory is more flexible and more subject to evanescence as it is neither anchored nor encoded inside individuals or organizations. Procedural memory, on the other hand, concerns “know-how,” how things are done, the knowledge that is put to use. It has a strong degree of consistency as it has been encoded by individuals or organizations. Contrary to declarative memory this “know-how” is less subject to decay but also “less explicitly accessible and less easy to transfer to novel circumstances” (Cohen and Bacdayan 1994, p. 557). Part of the “know-how” has a strong degree of inertia and tacitness, rendering its components hard to observe. However some fragment of this procedural knowledge should be communicated inside organizations and distributed among a group of individuals in order to be retained by organizations and its members. Such distribution, storage and retrieval of memories within groups are facilitated by TM.

Via TM, persons can access information and know-how stored in other minds by virtue of knowing that other people store such information—that is, by storing the external address of the relevant memory (Wegner 1987, 1995; Wegner et al. 1985). TM therefore supports the “who knows

what” acquired through social interactions which complement personal knowledge (Ren and Argote 2011). Groups use TM to specialize their knowledge and enables individuals to extend their own limited knowledge (Lazaric 2008). More precisely, TM consists of three dimensions: specialization, credibility and coordination (Argote and Ren 2012). Specialization refers to the level of memory differentiation within the team, credibility refers to team members’ beliefs about the reliability of other members’ knowledge. In this fashion, members of the group retrieve and integrate a range of differentiated memories (Argote and Ren 2012). And importantly, TAM is equally significant for organizational adaptation and learning (Bryant Forthcoming; Ibarra and Barbulescu 2010).

Furthermore, there are two major components of TM which Wegner (1987) terms differentiated and integrative. Differentiated TM occurs when *different* items of information are stored in different individual memory stores, but the individuals know the general labels and locations of the items they do not hold personally. In contrast, integrative functions of TM occurs when the *same* items of information are held in different individual memory stores, and the individuals’ memories thus overlap. In this fashion, members of a group can retrieve and integrate a range of differentiated memories about shared experience (Argote and Ren 2012). Integrative functions of TM therefore support the coordination of memorization, memory retrieval and related behaviors within groups. Moreover, these processes are ubiquitous, reflecting a general process of external memory storage. From an organizational perspective, integrative functions of TM—including integrative TAM as a significant component of TM—are important to collective processes and group coordination. We focus on these important effects of the integrative functions of TAM in this study. Yet very few scholars have considered this topic within organizations (Bryant Forthcoming). This neglect is best explained by the emphasis on the differentiated functions of TM.

Autobiographical Memory

Autobiographical memory is defined as the memories individuals possess of their personal lives and experience (Conway et al. 2004). Such memories are fundamental for the psychology of human identity and personhood. Autobiographical knowledge constrains what the self currently is, has been in the past and can be in the future. It integrates a person’s self-concept in an autobiographical knowledge base which consists of three levels arranged hierarchically: the deepest level of life story

schema with life-long temporal scope; lifetime periods possessing periodic temporal scope; and general event memories within lifetime periods (Conway et al. 2004). Experience triggers retrieval from this knowledge base, usually beginning at the level of general events which intersect with lifetime periods and the life story schema. Such retrieval processes stimulate a goal-based framework which guides memory search, retrieval and storage, including the processing of transactive memories.

Furthermore, we now understand that autobiographical memory is not simply an individual process, but co-created through social interactions and influences three major areas of human functioning: social, self and directive (Bluck et al. 2005). Regarding social effects, the co-creation of autobiographical memories underpins social bonding, the forging of meaningful relationships and the consistency of cultural norms (Conway and Pleydell-Pearce 2000). Concerning the self, co-created autobiographical memory reinforces social identity by providing a shared sense of psychodynamic coherence and continuity over time. While regarding its directive influence, the co-creation of autobiographical memory provides the foundation for collective sense-making about the experience of self and others, thereby guiding present and future behavior, especially in relation to motivation, goal setting and problem solving.

Identification

When shared as integrative TM, therefore, autobiographical memories of life story schema, lifetime periods and general events provide a deep foundation for collective identity, goals and relational bonds. Notably, the same psychosocial characteristics—identity, goals and relational bonds—also fulfill critical functions in organizational identification. As Social Identity Theory (SIT) shows, individuals attach themselves to an organizational group by identifying with its deeply shared sense of superordinate identity, goals and relationships (Gioia et al. 2013b). When individuals identify with or are categorized as members of a social group, they are more likely to define themselves in terms of their membership in that group (Kane et al. 2005). Identification is also an enabling condition for unlocking knowledge transfer among individuals and contributing to the reinforcement of both procedural and TM (Argote et al. 2003; Pearsall et al. 2010). In this regard, organizational members' sense of identification is deeply associated with the collective memory and the memorization of new routines, because identification facilitates knowledge transfer and a sense of belonging, rendering

feasible knowledge sharing among members of the organization (Anteby and Molnár 2012; Kane 2010). Moreover, as explained above, integrative TAM supports the development of a deeply shared superordinate identity, its related goals and relational bonds. For this reason, TAM will play a key role in organizational identification and the memorization of new routines (cf. Liao et al. 2012).

Resistance to routinization

Yet processes of identification and memorization of new routines are not always successful; indeed, disidentification can occur when shared identities, goals and relational bonds are fragmented or undermined (Ashforth et al. 2008). When this occurs in relation to the memorization of new action patterns, routine resistance is then likely (Feldman 2004). As Nelson and Winter (1982, p. 118) noted, “routines operation is consistent with routinely occurring laxity, slippage, rule breaking, defiance and even sabotage.” To explain these and similar effects, scholars increasingly look to micro-foundational processes (Abell et al. 2008; Felin et al. 2012; Thomas et al. 2011). For example, studies show that a sense of collective group identity is an important pre-condition for routinization (Kane 2010), as well as shared values, goals and relational bonds (Liao et al. 2012). Thus organizational members’ sense of collective identity is associated with routines (Dutton and Dukerich 1991; Nag et al. 2007), because identification facilitates knowledge transfer and sense of belonging to the organization (Kane 2010).

We focus here on the micro-foundational processes relating to failed routinization. We investigate the patterns of disidentification triggered by conflicts with TAM, resulting in failed or incomplete memorization and routine resistance. Therefore we ask the following question: how do the contents of a group’s pre-existing TAM limit or prevent the adoption or adaptation of routines? In particular, how do conflicts between new action patterns and historically grounded TAM disrupt the memorization of such action patterns into TM, and hence prevent the adoption or adaptation of these actions as organizational routines? How do such dysfunctions reflect conflict with pre-existing patterns of shared identity, goals and relational bonds? And what are the typical narrative and temporal structures associated with such dysfunctions?

Addressing these questions, we examine how integrative TAM supports the content and strength of shared identity, goals and relationships, and how these memories can trigger disidentification responses to conflicting action patterns. We find that when organizational change calls for identities

which are inconsistent with pre-existing TAM, people resist change (London et al. 2005). New behaviors are not successfully adopted as routines and the pre-existing truce breaks down (Lazarcic and Raybaut 2005).

RESEARCH CONTEXT

Our discussion of integrative TAM and its role in routines' development draws on, and is illustrated, by findings from an empirical study of a large state organization. As such, our study is an inductive inquiry carried out through an in-depth, longitudinal analysis of a revelatory case that provided an excellent research setting (Yin 1994). We investigated a French government agency—hereafter denoted by the pseudonym ENV—that had recently (within the three previous years of the study) initiated a large change program. ENV is a multiunit organization, with distributed knowledge and capabilities between geographically dispersed teams in 3 central headquarters (CH), 26 regional branch-offices, and 4 representative offices. It covers a wide range of technical expertise, both at upstream and downstream levels of innovation processes, from basic/applied research to market dissemination. Its activities involve the promotion of clean technology, waste management and recycling; the prevention and clean-up of soil contamination; and the reduction of air pollution and noise. ENV plays a role of technical expert for industrial firms, citizens, local authorities as well as for ministries in order to assist them in the preparation of regulations and in international relations.

As a result of successive mergers of preexisting agencies, ENV was created in 1992. ENV's context has been marked by major periods of organizational change, with successive reconfigurations of organisational routines and capabilities. Given its central position in carrying out the French public environmental policy and the multi-localized (geographically dispersed) organization of capabilities and expertise, this government agency is a good field site for research on collective memory, organizational identity and routines. ENV's historical evolution provides the backdrop for the organization's recent change attempts. Figure 1 illustrates the timeline of ENV, providing an overview of major organizational changes it has gone through.

Insert Figure 1 about here

ENV's Historical Roots

The history of ENV could be tracked back to the early 70's, when the negative consequences of successive oil crises prompted the creation of specialized public organizations. The latter were carrying a large national ambition around the energy savings and the development of renewable energies. For example, ESA (1974), AG1 (1976), and SEA (1978) were founded to undertake specific missions respectively on, energy-saving, waste recovery/recycling, and photovoltaic energies. Employees of these organizations were often recruited from the powerful elite engineering corps and other research institutions.

In the wake of the 1979 "oil shock," the newly elected government in 1981 launched an energy program. Immediately afterwards AG3 was founded by merging ESA, SEA, and other governmental agencies specialized in raw materials and geothermal energy. AG3's activities were nested in a new network configuration of private/public partnerships. It combined both research and market orientations, funding and supporting basic and applied research, and the diffusion of innovations.

However, in the mid-1980's, the public sector had gone through a wave of profound restructurings, with intense decentralization and regionalization. Meanwhile, some governmental agencies were being closed. Some of those agencies which were maintained experienced a redefinition of their means and objectives, with the incremental introduction of new rules of public management. AG1, AG2, and AG3 survived this "crossing the desert" period but were impacted by significant transformations in their respective core competencies accompanied with budget cuts. For example, AG3 was reorganized, following a redundancy scheme decided in 1987, with the departure of one third of its staff. During this same period, AG1 was also restructured and had to drop part of its activity and become more competitive, with the obligation to find alternative funding. An ex-AG3 manager remembered the redundancy scheme: "What was upsetting, though, was to think that we had this tool, AG3, which had worked really hard, and all of a sudden we were told that it was no longer of any use. There were these cycles and then almost ten years later, we hired 140 staff. In some ways it raises questions as to the legitimacy of the organization and most of all it's a disappointment. It's worth saying that it was to do with ministerial decisions, and budgetary cycles, whereas the issues of

energy and the environment are still there” (A03, Head of Department, Div. 1, Site 1).

The subsequent period spanning the 1990s and 2000s marked a turning point, with many events that helped mobilize new resources around new issues. Under pressure of international agreements and the EU, national strategies were drawn up with implications on the legislative framework relating to priority areas (e.g. energy efficiency, renewable energy, buildings and transport sectors, soil contamination). In 1992, organizational history repeated itself when AG1, AG2, and AG3 were merged into a new organization: ENV. The same year, a few months after the merger, the “waste management” field was been propelled to the forefront, with the adoption of a significant Act on Waste, which boosted the field during a ten years period (1992-2002). Later on, the “air pollution” followed with the adoption of Waste Pollution Act (1996).

This dynamism continued in the 2000’s, with the advent a major changes in areas like energy, air pollution, soil contamination (cf. National Plan against Climate Change 2000, National Strategy for Sustainable Development 2003, “*Facteur 4*” 2003, “*Grenelle Act I*” 2009 and “*Grenelle Act II*” 2010). The legislative framework has been extensively modified to incorporate new issues and policy objectives. Other important changes are related to a process of modernization in the public sector. Especially, the budgetary system was revised with the application of the “*Loi Organique Relative aux Lois de Finances*” (LOLF, first adopted in 1 August 2001 and under mandatory application since 2006). Inspired by New Public Management, the LOLF is one of the elements supporting the incremental performance orientation of public organizations, with a focus more on results and accountability. In the public sector, this significant transition driven by LOLF is still debated. The allocation of public funding to organizations like ENV is henceforth voted by programs based on precise strategic objectives. A host of indicators, both qualitative and quantitative, are set to evaluate the performance of public organizations. For example, since 2007 ENV, elaborates multi-annual strategic plans with the State and local authorities around research priorities, performance-goals, and funding. These new type of strategic plans are an integral part of ENV’s charter, a binding agreement resulting in closer compliance with objectives negotiated at the State and regional levels.

In this dynamic context, the adaptation of government agencies which are intensive in knowledge is crucial, as they must collect, process and provide information to a diverse audience. Moreover,

while the demand has “gone through the roof” in ENV, the LOLF more recent Reforms include a host of new instruments and practices such as budgeting, management by objectives, contract management, performance assessment, cost accounting, quality management and benchmarking. As illustrated by a senior-manager, these recent events imply some disruptions in the course of action: “We’re much more hampered nowadays by regulations, laws and international targets...The upshot are that we’ve moved from a restricted circle to the general public. This change of scale has been going on for two or three years, and the change has been considerable. It shakes thing up a bit.” (A03, Top-Manager, Div. 1). As a consequence, the members of the organization have to carry out complex new administrative tasks, which have raised the individual workload. In part, this complexity is due to the need for agents to alter their work habits and learn new procedures and tools.

These important disruptions led organizational members to question ENV’s place and role as a public expertise agency. In response, top management undertook various initiatives to foster organizational flexibility and effectiveness. According to managers, the successive restructurings that have punctuated the history of ENV are illustrative of these managerial attempts to fit to the changing context. In 2003 the top management initiated a general adaptive strategy, with the aim of leveraging cross-cutting expertise and organizational memory by means of increased coordination, both within and between teams. The strategy typically involves deliberate experiential learning, via knowledge transfer. However, despite the efforts made by the management, these successive initiatives did not yield expected results: teams members failed to share and integrate each other’s specialized expertise. In 2006, three years after a new organizational restructuring, two of us were mandated to undertake research in order to understand the patterns of action and interaction that explained the reluctance of individuals to adopt these novel coordination routines. Among the many apparent inconsistencies that emerged at ENV, we focus here on salient patterns illustrating why and how the memorization of these new coordination routines was resisted.

Data gathering

In this longitudinal study, we collected data sequentially, over a period of three years, from three overlapping sources: archival data, semi-structured interviews and participant observation. The data collection process followed three distinct phases. In the first round, the focus was on understanding

the evolution of the government agency and how its history matters. During the first six months, data collection included archival documents, paper and electronic, comprising annual reports, strategic plans, internal work conventions, information related key facts and specific projects. In organizational archives we found historical interviews of 14 former top-managers and CEOs. Archival data was complemented by a series of 9 preliminary individual interviews, with tenured organization members including 2 top-managers, 4 unit managers, and 3 specialists from various technical fields and historical backgrounds (see Table 1 for details of our participant sample).

Insert Table 1 about here

This historical perspective allowed us to gather a rich amount of data covering the different periods and major events in the ENV's life. In the second round, we conducted additional semi-structured interviews. Over 7 months, we interviewed 18 informants from distinct sites and backgrounds. In order to provide as large a scope as possible, we explored broad preliminary themes. For example these themes included questions about informants' role in the company, the evolution of organizational activities and their link with organizational goals. Another set of questions specifically focused on coordination mechanisms and interaction patterns in order to understand the processes of knowledge creation and transfer. Our objective was to understand the individual, collective and organizational levels factors enabling or hindering the memorization and enactment of new action patterns. The third and final round of data collection lasted 6 months and consisted of a series of 4 in-depth interviews with pre-retiring experts. The focus in this last stage was to collect autobiographical memories about the evolution of members' specific areas of expertise. The explicit demand of ENV at this stage was the help design a methodology for the collection, recording, storage and retrieval of individual experiences.

During the research process, two of us visited 2 sites (CH1 and CH2) and participated directly in five meetings, with an internal steering committee. At each session, a mixed group of participants included between 8 and 12 people occupying different management positions (5 top-managers, 1 unit manager and 2 deputy directors). While each meeting session involved direct interaction with local

informants, it included participants from other sites, via videoconferencing. This was an opportunity to discuss patterns emerging from progressive analyses of collected data, via preliminary results submitted (e.g. 4 research reports) at different stages of the project. All these meetings were also recorded and transcribed for inclusion in the analysis. Visits to the various sites were also an opportunity for observing and interacting with actors *in situ*, with many informal discussions. Multiple individual and group discussions were crucial for feedback and trustworthiness of data interpretation. In an iterative process, the definitions and the scope of interpretative accounts evolved as intermediary analysis were produced (Miles and Huberman 1994).

Data analysis

All interview data was audio-recorded (over 65h) and transcribed for analysis (about 1400 pages). Including the 14 interviews found in archives, our total dataset comprised 45 interviews. By a sampling process, part of this material was gradually translated by an independent native English professional, as we went along our analysis. Following prior research (Gioia et al. 2013a; Miles and Huberman 1994), we inductively identified major thematic codes either by using *in vivo* codes (i.e. the language used by informants), or with simple descriptions. Each of us coded independently and generated themes that from the data, resolving occasional differences through discussion. Much of our coding utilized the NVivo software program. Participants' responses were coded based on memory contents that have been tested in previous studies. A memory theme was categorized by referring to both the thematic nature of significant facts relating to personal experiences, social events (collective activities in the workplace or other social groups like teams, departments, etc.) and historical events focusing on descriptions of major changes that happened at organizational or institutional levels. To uncover the shared content in individual memory themes, we followed the recommendations of psychologists to identify in Self/Others Ratio (searching for co-occurrences of first person singular and plural pronouns) in the frequency of references that participants made to themselves and other people (Wang and Conway 2004). We developed a coding scheme accounting for both memory volume and memory theme.

Importantly, we found clear evidence of pre-existing integrative TAM among participants. Many of them shared similar memories and understood that these memories were commonly held by others,

evidenced (as explained above) by the regular use of first person singular and plural pronouns (Wang and Conway 2004). These memories reflected the three major categories of autobiographical memory. Firstly, many of the individual reports included evidence of shared life story schemata as technical experts, typically based in their early technical training and ongoing professional experience within the organization. Secondly, many reports also showed evidence of common lifetime periods around career progression, such as doctoral training and early career assignments. Thirdly, many also reported similar memories of general events, especially relating to the historical transformation of the organization and career changes. Table 2 reports representative quotes as evidence of these memories.

Insert Table 2 about here

In the following step of our analysis, as we combined related patterns into sub-themes, we investigated the potential links between the emergent themes. Based on their differences and similarities, we grouped themes into categories, which we then iteratively tested against all available data. Each of these main thematic categories identified in the data across all informants were then compared and cross-referenced in order to identify common patterns. Finally, we analyzed the interaction between significant categories and the identified related constructs (e.g. TAM, identification, memorization, and routinization). We inferred the association between categories and constructs based on informants' statements and relevant theoretical work. By analyzing the relationships between overarching themes and categories, we were able to understand the multi-level and recurrent nature of the underlying processes involved in the enactment of new actions patterns and resistance to them.

The Micro-foundations of Routine Resistance

As following sections explain, our results show that when integrative TAM supports identification, new actions are more likely to be memorized. Knowledge is learnt by groups when members possess a shared conception of identity, expertise and capabilities (DeShon et al. 2004). However, such shared cognitions do not develop spontaneously. We find that shared cognitive frameworks, including identities, goals and relational norms are preconditions for such organizational learning. Hence,

conflicts with pre-existing TAM may lead to learning failures. Thus the articulation of new knowledge via TM is a precondition for organizational change to have legitimacy (Lewis et al. 2005). This routinization process unfolds in a sequence of phases depicted in Figure 2. We first summarize each phase of the process in Figure 2, then discuss them in depth. We also provide examples of supportive data.

Insert Figure 2 about here

Phase1a. In the first phase of the process, members of a group socialize and develop TAM. This happens naturally, and independently of routinization. These memories include shared life story schemas, lifetime period memories, and general event memories, which become an inherent part of the group's TM (Bryant Forthcoming; Sutton 2006). This memory structure defines the addressing system for memorizing future experiences and knowledge. In our study, we demonstrate that the resulting integrative TAM fulfills a critical function by supporting the development of shared superordinate identity, goals and relational bonds. Within ENV, such memories supported the shared identity of being experts, and the related goals and relationships associated with this identity. Table 2 has already given representative quotes as evidence of these transactive autobiographical memories.

Phase 1b. Also at the start of the process, new action patterns emerge or are imposed. These actions imply types of shared identity, goals and relationships (Feldman and Rafaeli 2002), which may or may not be consistent with the pre-existing TAM, and especially its integrative components.

Phase 2. In the second phase, members of the group experience identification (or disidentification) with the new action patterns, by comparing TAM with the implied identities, goals and relationships associated with new actions. This identification process will occur at two major levels: at the content level in relation to identity, goals and relationships; and at the temporal level in relation to life story schema, lifetime periods and general event memories.

Phase 3. Depending on the overall degree of identification that is experienced by group members, they will then process the new action into TM. If identification is relatively low (that is, members strongly disidentify), then memorization will be weak or may completely fail, meaning failed

routinization. Whereas, if identification is relatively high (that is, members identify), then memorization will be strong and may be complete, meaning successful routinization. In this fashion, the pre-existing autobiographical content of integrative TM either enables or prevents the incorporation of new actions into TM.

Phase 4. If memorization and routinization are partial or fail, then the outcome is likely to be a form of resistance to the new action pattern, such as reduced trust, and passive or even active resistance. Cross-cutting measures may also be adopted to accommodate new action patterns and to mitigate the effects of dis-identification. When memorization and routinization are successful, then the outcome is likely to be acceptance of the new action pattern, enhanced trust and an effective truce.

The process just described also lays the groundwork for subsequent TM development, in terms of the ongoing resistance to, differentiation and coordination of task related memories. This leads to the development of “elaborated knowledge structures that represent how a member’s own knowledge fits with and builds on other members’ task-related knowledge” (Lewis et al. 2005, p. 584). Team members attempt to figure out with whom they need to work to perform their tasks, potentially through work around or subversive strategies, and what information they will need to share. In this fashion, team members arrive at an effective truce or active conflict (Nelson and Winter 1982). In this context, experts’ resistance in activating new interaction patterns for coordinating their knowledge inside and between teams can be explained by individual goals and values and social identities. Their personal beliefs, knowledge and identity are critical for absorbing knowledge at individual and group levels.

Identification and memorization

The first clear pattern is that many interviewees referred to the same historical experiences within the organization as critical for their professional careers and roles within the organization. A number recalled the early history: “there was also a lot of autonomy. There were a lot of new arrivals back then and we were left to our own devices. It was a bit stressful but it was also really good!” (Engineer A10, CH2, Div. 2, Dept. 4). However, they also spoke about organizational mergers and changes as defining moments in their work experience. As one manager said about the merger in 1991, “...my experience at ENV barely lasted a year. We were suddenly in this big machine really. A lot bigger a

lot more cumbersome. We were decentralized, the centre of gravity moved to Paris from Angers.” (Engineer A15, CH2, Div. 2, Dept. 4). Such remarks point to the existence of a shared history, and importantly, it’s integration into personal autobiography as well. In these respects, the data demonstrates TAM about key lifetime period memories defined in terms of the organization’s history.

Notably, many participants highlighted technical expertise as a defining feature of both their social and organizational identity. As one unit manager remarked, “Today I’m considered as a national expert, even an international one, because I speak in public quite a lot. I attend the conferences, I get asked to speak on things like transport. I think that my public speaking goes down well, so I’ve become an expert.” (Unit Manager A01, CH1, Div. 1, Dept. 1). Moreover, when the organization changed, roles were redefined or people moved, this was sometimes viewed as a threat to expert status. As one interviewee said, “I know people who did their job well in research and left to join a regional delegation where you don’t do any! That’s a typical example of disbanding expertise.” (Engineer A18, CH3, Div. 1, Dept. 6). The following statement summarizes this core feature of collective memory:

“The other aspect is the expertise role, which is the core of the Agency’s work. It’s the expertise that justifies us. You have to manage both sides. And it’s true that our continuation, our activity, is linked to the expertise we acquire. This aspect of acquiring knowledge is obviously important for that.” (Unit Manager A02, CH1, Div. 1, Dept. 1)

A closely related pattern is how the shared memory of personal history, that is, integrative TAM, plays a key role in the formation and coherence of organizational and professional identity. Many interviewees mentioned these topics in relation to both the organization’s history and their personal career path. In contrast, after one of the mergers, another said about the merged organization: “There is a feeling of more intense bureaucracy. To start with we had a lot more autonomy, less formalities and procedures. In reality, the fact that engineers are more or less totally free is because we don’t have any precise orders, we do what we want, and we hardly think about it. On the other hand, we sometimes feel like we’re leaping into the unknown a bit.” (Engineer A18, CH1, Div. 1, Dept. 6). These quotes point to a number of patterns in the data. Firstly, major organizational changes

corresponded to cultural changes and especially an increase in bureaucratic values and norms. Secondly, the professional identity of being an expert was threatened by these changes. Thirdly, the changes led to greater uncertainty about the future and a sense of alienation from the organization they had known in the past.

Numerous interviewees also linked organizational history to their goals and motivation as experts in the field. Speaking about the organizational culture, one said, “People are individually motivated. It’s obvious that we don’t just work here for our monthly pay cheque, because we’d be better off elsewhere. We work here because we are drawn to subjects that we really believe in and because of ENV’s disinterested, independent and a priori objective position. That’s our main force.” (Engineer A08, CH1, Div. 1, Dept. 2). In these ways, interviewees linked their shared autobiographical memory or the organization to the personal and collective motivation. Evidence (exemplified in Table 3) therefore suggests that integrative TAM is associated with related continuities and discontinuities in individuals’ sense of collective and personal identity. These related processes are depicted in Phases 2 and 3 in Figure 2.

Insert Table 3 about here

In summary, the results illustrate how the integrative TAM within ENV is deeply related to the three major areas of influence on social functioning: relational bonds, self and directive (Bluck et al. 2005). The sharing of autobiographical memories in ENV appears to underpin shared social identity as technical experts, social bonding within teams of experts, and the forging of meaningful motivations and goals in relation to these identities (Conway and Pleydell-Pearce 2000).

Patterns of routine resistance

Another important pattern that emerges is the conflict between the identity, values and norms of being an expert, and the changing priorities of organizational management. In this regard, the characteristics of TAM sometimes conflict with the more transient goals and processes of administration. As summarized and exemplified in Table 4, patterns of resistance can vary from passive resistance (a form of intra-organizational cold war) to moderately active resistance (a form of

guerilla activity), to open aggressive resistance (open conflict or hot war). These patterns are also depicted as Phase 4 in Figure 2.

Insert Table 4 about here

Conflicts are apparent in relation to concepts of identity, values, relational norms and collective goals and motivation. For example, experts value autonomy, independence, science and mission outcomes, while administration requires management reporting, documentation and political outcomes. For example, interviewees said:

“And when you transform someone who has added value, know-how, or a capacity for technical expertise in a sector, and you oblige him to fill in files, you’re wasting his time, everyone’s wasting their time.” (Engineer A27, Regional Branch Office 2, Div. 5)

“To the new people, each time you have to explain to the management why you do what you do, even though technical projects are a-political.” (Engineer A28, CH3, Div. 1, Dept. 8)

Moreover, these conflicts were deep and enduring, as numerous waves of change swept across the organization. At the origin of these tensions, the evidence suggests that the ENV tries to face new missions, i.e. and to become an organization more concerned by providing information and advices to a large audience while preserving some part of know-how and expertise. This shift is materialized by hiring new top managers from prestigious French School (*Polytechnique, Ecole Nationale des Administrations*) instead of promoting internal engineers and experts. This new employment policy was driven by the idea of bringing cultural change, and provoked a transformation in the way of implementing strategic goals inside ENV which has a long tradition of militants inside prior organizations (AG1, AG2, AG3 SEA and ESA). For achieving this goal, ENV’s newly engaged top managers designed new methods to combine and integrate various parts of distributed knowledge. The enactment of these new organizational goals encountered resistance and triggered conflict.

Cross-cutting is a very good illustration of the difficulty of enacting new actions patterns (Jansen et al. 2009). It concerns the willingness of new top managers to make the organization more reactive, i.e. more able to communicate on interdisciplinary issues required by sustainable development and its

management. Cross-cutting can be considered typically as routines based in hierarchy with critical issues at individual and organizational levels. As one engineer tried to identify this problem:

“Be careful, it’s not good to do too much expertise, we need to be cross-cutting, we’re there to show the way that the different areas connect, etc. OK, it’s true, but if it’s to the detriment of expertise, then it’s no longer based on anything. (...) If you’re content to stick to superficial knowledge, then your cross-cutting approach is no longer based on anything and isn’t solid. My feeling is that you need a bit of both and sometimes there’s too much of a tendency to denigrate expertise” (Engineer A11, CH2, Div. 2, Dept. 4).

These new actions patterns require enlarging the scope of expertise for encompassing various fields and for experts to accumulate more declarative knowledge to the detriment of some procedural knowledge. Broadening the scope of knowledge was to the detriment of its breath, as one engineer remarked: “What level of expertise on waste should we retain if we know that it’s no longer a priority? It’s a complex issue. It’s true that there’s a core profession, a core of knowledge, like the landfill experts and the incineration experts. If they were to leave, we’d be in a bit of trouble on the technical expertise side for example. It’s a real issue. But at the same time, expertise that isn’t fed with everyday work isn’t expertise” (Engineer A14, CH2, Div. 2, Dept. 4).

Cross-cutting implementation appears to be very effortful, as we can see in Table 4 with the enactment of passive resistance. At the source of this resistance, resides the defensive mechanism nurtured by the disappointment of agents. Indeed at the individual level, absorbing new knowledge—either declarative or procedural—implies to become less of a specialist in one specific field, and thus to experience a partial loss of identity as an expert. This frustration correlated with a feeling of not being considered as a real expert and consequently less visible and less prestigious within the organization. When confronted with these consequences for identity, participants expressed passion and emotion and sometimes open, aggressive resistance (see Table 4 for examples).

At the organizational level, cross-cutting generates new links with new departments for sharing key issues required by top management and ministries and new recurrent interactions patterns between teams that do not always make sense for organizational members, and which thus encounter explicit resistance, as shown in the following quote:

“When I was head for six years, that really hit me: the resistance to working together, and to making your information available (....). That doesn’t mean that people don’t talk and discuss things, but there’s no accumulation effect. There is no cognitive accumulation of knowledge even though there’s a strong sense of culture in this company” (Engineer A17, CH3, Div. 4, Dept. 7).

In fact, knowledge sharing when occurring in ENV had always being established in an “underground manner” with personal networks. By this way, knowledge has been able to circulate informally with chosen relationships selected by organizational members themselves. To be fulfilled, cross-cutting necessitates the emergence of TM for articulating procedural knowledge and exchanging about declarative knowledge among organizational members. This process cannot be simply governed by rules or institutionalized, but has to be accompanied by organizational means and performed efficiently. One of the first preconditions is to share superordinate identity for motivating the process of knowledge sharing (Gioia et al. 2013b; Kane 2010). Without a clear understanding and approval of goals and values concerning knowledge transfer, notably espousing and sharing of superordinate identity, cross-cutting may have few chances to be adopted and endorsed by organizational members.

DISCUSSION

Our paper’s major contribution is to the literature on the micro-foundations of routines. We find that routines resistance—resulting in the incomplete or failed memorization of new action patterns—is at least partly explained by conflict between pre-existing integrative functions of TAM and the novel identities, goals and relational bonds implied by new actions. When such conflict with TAM arises, members of organizations resist novel actions. They exhibit anxiety and a lack of ‘ontological security,’ a lack of confidence, mistrust, and the impression of missing critical resources for the enactment of new action patterns. Memorization and routinization fail, organizational truces fracture and change is impaired. Indeed, routines resistance is more likely to occur in a context for protecting existing practices that provide meaning and ‘ontological security’ to organizational members, being a stable mental state derived from a sense of continuity. As Giddens (1991) writes, ontological security refers to a sense of order and continuity in regard to an individual’s experiences, give meaning to a person’s life.

The findings we report indicate that routines resistance is related to the disidentification of experts in the face of unwelcome new routines as action patterns. Routines are “emergent accomplishments” that should make sense to actors, in order to be deployed as they should be (i.e. requiring minimal vigilance over their application) (Feldman 2000). New routines should be compatible with the pre-existing TM, and especially with TAM as a significant component of TM. ENV experienced such resistance when organizational members had to defend their personal knowledge and expertise against directives from senior management, including new divisions of tasks. This cognitive reluctance is debated by authors who emphasize the importance of anxiety during the enactment of new actions patterns (Cheng and Petrovic-Lazarevic 2005). Thus conflict between integrative TAM and the contemporary experiences of organizational members may disrupt the “expected emergent accomplishment” in the organization, impairing the change process desired by management (Feldman 2000).

This dynamic of recalling the past also helps organizational members to make sense when encountering organizational changes. Subgroup identity appears to be a protection against “identity threat or loss and occurs when a subgroup perceives itself to be more similar to, typical of, and normative for the inclusive superordinate identity category than the other group” (Fiol et al. 2009, p. 47). When these processes fail, the result can be lack of trustworthiness between organizational members as they defend the prior subgroup identity. As Knights and McCabe (1998) claim, resistance is enhanced when people’s identities are challenged with their daily task (see Feldman 2004). The source of resistance is therefore interpreted to be “identification of schemas that can no longer be enacted” (Feldman 2004, p. 306).

This tension impeding a smooth coordination between organizational members is also accentuated by the fact that ENV, like many large government agencies, is highly dependent on the ‘pendulum swing’ of policy making driven at the national level. Notably, some budget allocations may favour some subgroups to the detriment of others. The entanglement of decision making within a broader institutional context accentuates the potential distance *vis à vis* the group’s superordinate identity. The arrival of new types of managers coming from the French “*technostructure*” reinforced this gap at

ENV, generating a lack of organizational identification towards new values (and notably the loss of militancy values endorsed by ancient experts) and new goals.

Additionally, organizational change and resistance invite individuals to re-examine what is usually taken for granted (Thomas and Davies 2005; Thomas et al. 2011). Anxiety and loss of identity can be generated by changes in organizational routines that are not aligned with a clear redefinition of jobs or a reconsideration of the availability of resources: “Failure to consider this aspect of the changes seems likely to produce cynicism and lack of trust on the part of the employees” (Feldman 2004, p. 307). ENV illustrates this clearly. Changes introduced by top managers challenged transactive autobiographical memories, and were driven without having a close eye on expertise and technical knowledge. Thus the effective enactment of new actions patterns like cross-cutting was perceived as “top down” and were resisted. In short, resistance to routinization is due to permanent tensions between TAM and new action patterns. Indeed, as Wegner (1987, p. 205) writes, “Many difficulties in organization management can be traced to the improper matching of TM structures to organizational tasks. The wise manager would consider the properties of each of these structures in planning the layout of an organization.” In the same direction, Feldman (2004) indicates that some “naïveté” is often present when management designs new organizational schemata to implement within an organization. Most of the time, insufficient resources are allocated to impeding actions in order for them to be really effective. Without this organizational prerequisite, members may have the feeling that the hierarchy ignores them, denying them the chance to interpret new actions patterns in their own manner with their own goals. Our findings demonstrate the importance of integrative functions of TAM—hitherto a neglected component of organizational TM—in explaining these phenomena.

Limitations and Conclusion

Like many qualitative studies of a single case, the findings of this study do not support strong claims about the general population of organizations. Moreover, because the data are gathered in one culture historical period, findings may also be limited in potential generalizability. Furthermore, it is not yet fully clear how integrative TAM is created within organizations. While our data captures memories of past events, it is largely retrospective and not direct evidence of ENV’s initial autobiographical memorization process. Given the inherent limits of this kind of approach (Miller et

al. 1997), our results show that TAM warrants further investigation. Future studies, therefore, should explore these issues in greater depth, ideally during the period when integrative TAM is first formed, and then trace its development over time during periods of organizational evolution, testing how pre-existing transactive memories generate resistance and obstruct routinization.

Given these limitations, however, our findings emphasize how much social identity within organizations is deeply embedded within integrative TAM, and these two aspects of organizational life are inter-dependent. Hence, routines stored within TM need to be consistent with both the overall TM of an organization, and also with the superordinate identity grounded in TAM. These insights speak to research into organizational change and adaptation, and to what degree organizational memory and identity are more or less variable (Anteby and Molnár 2012; Meyer et al. 2002). We suggest that part of the collective memory system—namely TAM—is deeply stable and integrated within a sense of shared identity. At the same time, other forms of organizational memory—such as episodic and event memories—are inherently more adaptive and less integral to superordinate identity. That said, when new event or action patterns contradict these deep memory structures, we find that agents are more likely to resist memorization and oppose changed routines.

By thus exposing the role of TAM, we demonstrate that TM plays an even deeper role than previously thought in processes of memorization and routinization. We have shown the way in which identification during periods of change is deeply dependent on pre-existing integrative TAM. The same may be true of dominant organizational goals and inter-personal relationships, which also rely on autobiographical memory (Bluck et al. 2005). If so, then our research implies that novel changes to superordinate identity, primary goals and group dynamics, will all trigger resistance, if they contradict the underlying TAM. In this regard, we provide new insights into the psychological micro-foundations of routines and the origins of routines resistance, as recommended by Cohen (2007). Future research should investigate these processes more deeply. They may shed new light on the explanation and management of routinization, especially during periods of organizational change.

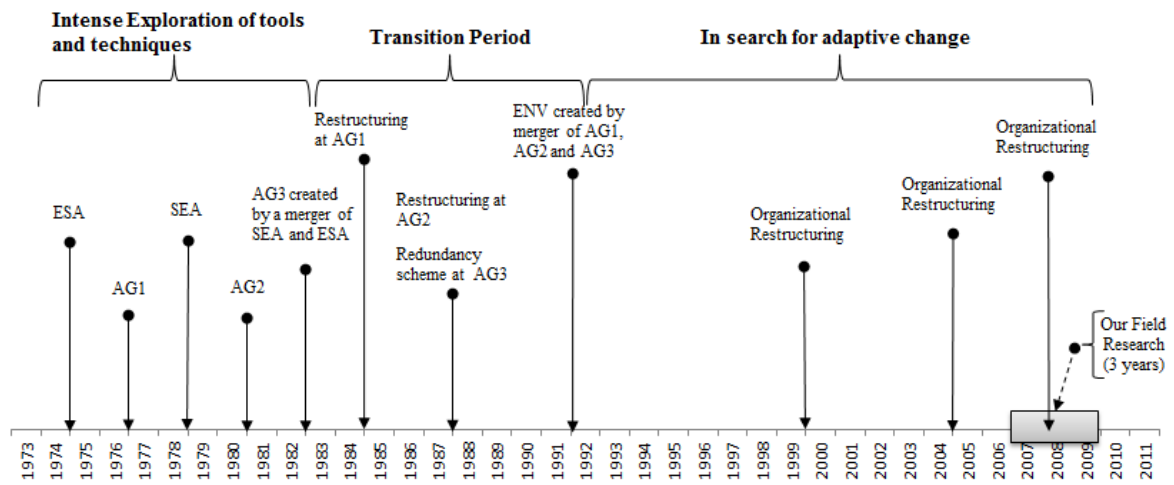
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Figure 1
ENV's Timeline*



*The names of all organizations in this paper are pseudonyms.

Figure 2
Model of the micro-foundations of routine resistance

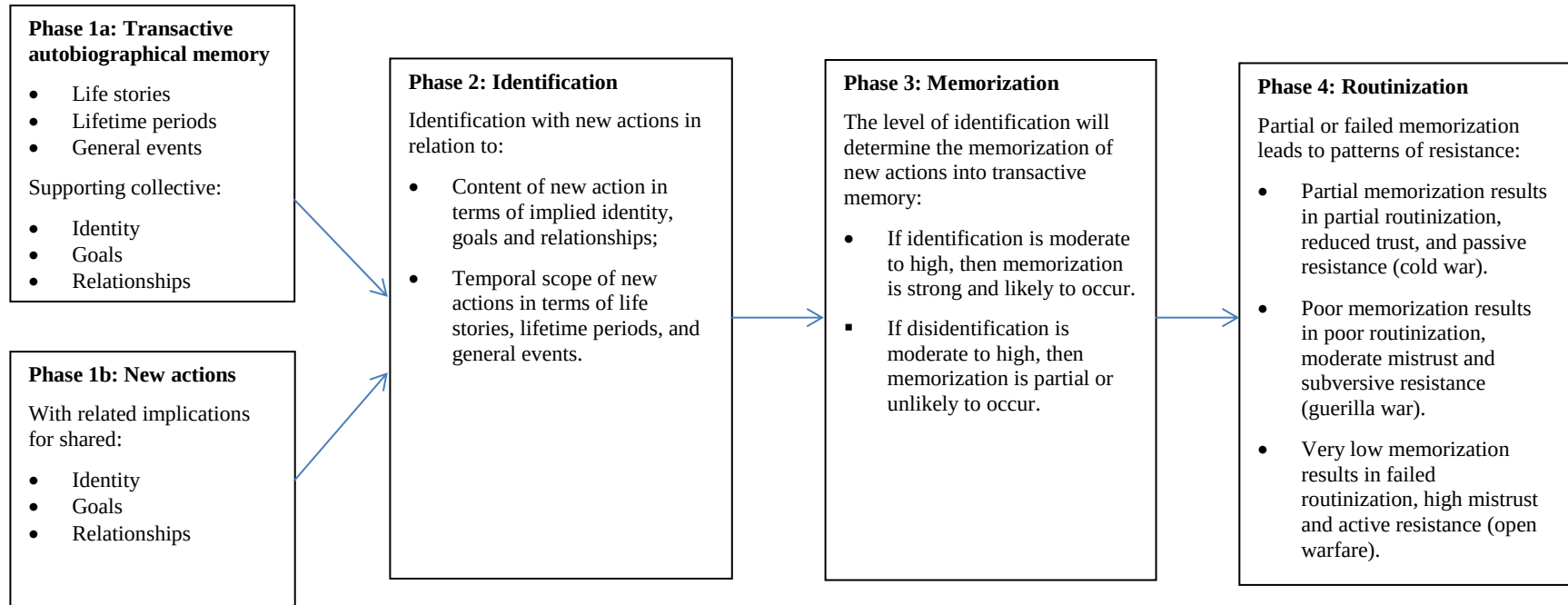


Table 1
Field Sample Details

Indiv. Id.	Site	Length of interview (minutes)	Gender	Tenure (years)	Background	Position	Unit	Division	Prior
A01	CH1	81	Male	26	SEA	Unit Manager	Dpt.1	D1	AG3
A02	CH1	149	Male	24	AG 3	Unit Manager	Dpt.2	D1	AG3
A03	CH1	132	Male	27	SEA	Top Manager	D1	NA	AG3
A04	CH2	140	Male	28	AG 1	Engineer	Dpt.3	D2	AG1
A05	CH2	274	Male	26	AG 1	Unit Manager	Dpt.4	D2	AG1
A06	CH2	135	Male	29	AG 1	Top Manager	D2	NA	AG1
A07	CH1	151	Female	9	ENV	Engineer	Dpt.2	D1	ENV
A08	CH1	195	Male	27	ESA	Engineer	Dpt.2	D1	AG3
A09	CH1	213	Male	7	ENV	Engineer	Dpt.2	D1	ENV
A10	CH2	116	Female	15	ENV	Engineer	Dpt.4	D2	ENV
A11	CH2	136	Male	18	AG 1	Engineer	Dpt.4	D2	AG1
A12	CH2	74	Female	9	ENV	Unit Manager	Dpt.5	D3	ENV
A13	CH2	154	Male	25	AG 1	Engineer	Dpt.4	D2	AG1
A14	CH2	110	Female	15	ENV	Engineer	Dpt.4	D2	ENV
A15	CH2	133	Male	17	ENV	Engineer	Dpt.4	D2	ENV
A16	CH3	188	Female	31	ESA	Engineer	Dpt.6	D1	AG3
A17	CH3	76	Male	25	AG 3	Engineer	Dpt.7	D4	AG3
A18	CH3	111	Male	25	AG 3	Engineer	Dpt.6	D1	AG3
A19	CH3	99	Male	25	AG 3	Top Manager	D4	NA	AG3
A20	CH3	139	Female	8	ENV	Engineer	Dpt.8	D1	ENV
A21	CH3	137	Female	9	ENV	Engineer	Dpt.8	D1	ENV
A22	CH2	148	Male	7	ENV	Engineer	Dpt.4	D2	ENV
A23	RBO1	84	Male	32	AG 3	Unit Manager	BO1	D5	AG3
A24	RBO1	95	Male	18	AG 1	Engineer	BO1	D5	AG1
A25	RBO1	103	Male	7	ENV	Engineer	BO1	D5	ENV
A26	RBO1	63	Female	1	ENV	Engineer	BO1	D5	ENV
A27	RBO2	163	Male	21	AG 1	Engineer	BO2	D5	EG1
A28	CH3	218	Male	25	AG 2	Engineer	Dpt.8	D1	AG2
A29	CH1	124	Male	28	SEA	Engineer	Dpt.2	D1	AG3
A30	CH3	199	Male	26	AG 3	Engineer	Dpt.9	D6	AG3
A31	CH3	154	Male	27	SEA	Engineer	Dpt.10	D7	AG3

Table 2
Representative quotes supporting Transactive Autobiographical Memory

Level and Content of Autobiographical Memory	Relating to shared self-identity, relational bonds, goals and motivations
Life story schema: being an expert	“I think that my “expertise”, if it can be called that, has evolved. It’s true that I used to be an expert in the solar, thermics and photovoltaics domain. Today I’m considered as a national expert, even an international one, because I speak in public quite a lot. I attend the conferences, I get asked to speak on things like transport. I think that my public speaking goes down well, so I’ve become an expert. And because journalists like hearing what ENV has to say on transport because they say that constructors can’t be trusted, they need to have something from someone neutral and objective, so they come and ask me for certain information. So the expertise comes from there, from the demand from the media and certain local groups and scientific organizations to have this neutral, objective view on the situation. Often ENV plays an expert role, not necessarily because we’ve got more technical or technological knowledge than anyone else, I don’t think that ENV engineers know more than PSA or Citroën engineers in their field, but they have a greater objectivity about what’s happening, and an overall view of R&D in France, technological progress and an analysis of the situation; they’re not blinkered. That’s why ENV, or people from ENV, often possess less sharp, technical or leading-edge skills than people in business, but they have a wider range of skills and expertise that make them experts in their field.” (Unit Manager, CH1, Div. 1, Dept. 1)
Lifetime periods: career phases at ENV	“What really struck me at ENV was all the network and coordination aspect. I remember that at the time we had dozens of teams working on, for example, ventilation or air renewal. As you know, ventilation is a major source of energy loss. So we had a lot of projects in that domain and one of the jobs I was focusing on was to create a group called ABC (study group on air ventilation and renewal). It was an informal group and I got French teams involved in the area to work together to create a kind of cross-fertilization and also to avoid working on the same thing in our separate corners. I did the same for heat emitters. At the time the challenge was to find out if an electric converter had a higher yield than a water radiator, etc. I did the same thing by creating DEF (research group on heat emitters), which was a way of getting teams to work together on what was a thorny topic back then. So there was all this coordination work.” (A03, Top-Manager, Div. 1)
General events: cycles of organizational change	“The way things are run and the organization continue to be highly linked to the personality of the top managers and especially the most important one, in other words, when there’s a boss who’s really digging in his heels, you can feel it. On the other hand, when the boss is only interested in a certain side of things or when he or she had a more autocratic style or is more focused on a subject, and we’ve seen all of these in the past, you can feel it in the way the whole organization operates. To give some concrete examples, after Mr A we had, what was his name, . . . , whose major mandate was redundancies. You could really feel it, even though he was someone chosen to do a job and not for his convictions. After, there was a bit of a blur, Mr B and Mrs C. Mr B didn’t really stay working because he had health problems, but he was politically engaged and had a militant training. But he was swiftly eclipsed by Mr D, who was a hardcore civil servant and only interested in one subject, the only one he knew about: waste. So everything went really well for waste, but he dropped the rest.” (Engineer A08, CH1, Div. 1, Dept. 2)

Table 3

Representative quotes supporting themes and categories

Thematic Categories	Representative Quotes
Self/Professional Identity	“To start with I was a renewable energy expert – “expert” being a big word. So I managed to go where there was a lot of renewable energy, I had the right profile. (...) Well, people see me as an expert, if you like, very modestly. It’s true that if you put my name into Google, you get five or six pages with articles but mainly press interviews, in the media. Things like “PC said so and so.” (Unit Manager, CH1, Div. 1, Dept. 1)
Social Bonding	“When I joined AG1, there must have been twenty or thirty of us altogether; there were around twenty of us in Angers at the Agency’s headquarters. It was new, AG1 had only been in Angers for six months. So there was a young team, a brand new agency, which was obviously looking to leave its mark and make progress, a very friendly atmosphere with nearly all of us hard-line environmentalists, in any case with a vocation for the most part. As an agency it grew pretty quickly. I remember it as convivial, and certainly pretty piecemeal compared to an agency of nine hundred staff that’s now been running for thirty years or thereabouts, out of synch with the landscape. (...) I mean that at the time we were taken to be harmless dreamers, we were really “post-1968” greens. We weren’t, but that was definitely the image we gave out.” (Top-Manager A06, CH2, Div. 2)
Goals and Values	“What characterizes those who work in the environment sector is clearly that you have to be proactive. It’s a bit of a militant attitude actually, and that was always the mindset at ENV and AG3 before: “Push, push forward to make progress”. It helps to explain that knowledge is acquired almost naturally. We always need arguments to push our ideas.(...) We don’t control the work here, we have to fight to work. It’s a bit like the way a good ENV engineer works: you have to really impose yourself to get things moving. Sometimes, you have to fight to move forward and work. It’s this “militant” aspect of fighting, this team spirit, and this idea that, “ENV can do it and will do it!” (Unit Manager A02, CH1, Div. 1, Dept. 2)
Breakdown of cooperation	“We’re not really capable of defining projects for several people to work on. People tend to have their own one-off objectives, there are the big Dept. objectives, but sometimes the intermediary links are missing.” (Engineer A11, CH2, Div. 2, Dept. 4) “I’ve noticed that when we work on subjects that straddle two well-defined themes, we still make no progress. (...)It’s difficult to know who has the information and who is the best placed on slightly cross-cutting subjects. You could probably find the information, but you’d have to know who to ask.” (Engineer A25, Regional Branch Office 1, Div. 5)
Lack of confidence towards management	“It’s true that you start off being really militant and then you lose steam. (...) I think that’s because of the technocratic approach. Most people come from ENA. They’re very nice, but apart from putting into place the plans they learned at university... after that it’s all relative, some things are less rigid, etc. I remember a chairwoman who started out with this “cross-cutting” idea, but I’ve been cross cutting since the eighties, I’ve always gone and seen my colleagues, etc. I don’t need a chairwoman to come and tell me that I should probably go and speak to other people.” (Engineer A08, CH1, Div. 1, Dept. 2)
Superordinate Identity	“But I’d say that it’s an ideological culture, they don’t have a professional culture. There’s a genuine ideological culture, like cement, a genuine way of working. But it’s what I’d call ideological. There are no common working methods, there’s no pooling of work, or accumulation of knowledge, etc.(...) There’s not corporate or administration culture. Because the administration has the resources to capitalize. There’s always been something of a besieged fortress background here. I mean, the idea that someone might take things away from us and perhaps reduce our missions, etc., so a kind of fear of...”(Engineer A17, Div. 4, CH3, Dept. 7)

Table 4

Representative quotes supporting routine resistance

Degree of resistance	Significant Quotes	Origin of the resistance	Performance and expression of this resistance (behavioral outcomes)
Passive resistance (Cold war)	“It’s true that five years ago when the company was restructured, they talked about cross-cutting. Well, they talked about it between themselves. (....) As a result, there’s a kind of grey area which means that each time a question comes up on the subject out on the field, it goes back to the head offices to try and ascertain the position, etc. but there’s no clear response. (...) It’s difficult to know who has the information and who is the best placed on slightly cross-cutting subjects. You could probably find the information, but you’d have to know who to ask” (Engineer A25, Regional Branch Office 1, Div. 5)	Lack of TM	Goal ambiguity in the implementation of cross cutting and no implication of experts and engineers
Moderately active resistance (Guerrilla activity)	“The way I capitalize is by organizing a cross-cutting seminar that gathers all of those people for two days. [.....]We created a zip file that was pretty heavy. It all serves as a common knowledge base. Of course it has a limited life span of a few months. We’ll be doing it again in June this year. I think that it will be along the same lines as last time, but there will be new information, new exchanges and opportunities. That’s what I try to do in an underground way”. (A02) “So I’m trying to recreate what existed before. I think that the configuration we had then was more suitable. I’m very cautious in working on those aspects because I’m going against the flow.” (Unit Manager A02, CH1, Div. 1, Dept. 1)	Incoherence in managerial directive and governance gap Frustration concerning the past and notably prior organizational set up	Underground way of memorizing knowledge
Open and aggressive resistance (Hot war)	“Sometimes I hate the fact that the emphasis is on a cross-cutting approach, without taking into account the fact that cross-cutting can only be based on top expertise, at least in my opinion. If you take a cross-cutting approach and you consider that’s what you’re there for, and you don’t have the expertise that’s needed, then you start saying any old thing. (...) If you’re content to stick to superficial knowledge, then your cross-cutting approach is no longer based on anything and isn’t solid. My feeling is that you need a bit of both and sometimes there’s too much of a tendency to denigrate expertise” ((Engineer A11, CH2, Div. 2, Dept. 4)	Identity of experts and willingness to preserve the content of the expertise	Cross cutting is actively opposed and not enacted by experts

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