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A DUAL METHODOLOGY TO ADDRESS CENTRAL CHALLENGES IN IS RESEARCH

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ABSTRACT

This paper makes the case for the application of the dual methodology in the IS field. Leonard-Barton (1988) has initially used this design to investigate innovation processes. A research project devoted to organizational impacts of intranet practices provides an illustration of the appeal of the method in our discipline.

The dual methodology combines multiple - retrospective – broad case studies and a single – processual – fine-grained one. Its advantages come from the combination of the two kinds of cases whose strengths and weaknesses mutually compensate. They also derive from synergies between multiple and single cases which are valuable to build a dialog between empirical evidence and literature review.

The dual methodology seems especially suitable to address three core challenges of the IS field. First, it provides both broad and deep observations. Second, it helps students to reintroduce ITs and organizations in their investigations. Researchers take in consideration the specificities of technological artifacts under scrutiny while not overlooking central aspects of collective action. Third, rigor and relevance may be balanced. Criteria of rigor may be achieved thanks to the two kinds of cases. Simultaneously, the method requires frequent access to diverse fields. Constant back-and-forth between data collection and analysis and numerous reports to academic as well as managerial audiences prove invaluable to establish rigorous and relevant findings.

1. INTRODUCTION

Numerous debates, relative to the subjects (technical artifacts and / or their transformation in specific organizational contexts), or the aims of research (getting a thorough understanding of how Information Technology (IT) enters the organizational realm and / or helping managers to find out innovative ways to use technology), have divided the IS field (Banville & Landry, 1989; Benbasat & Weber, 1996; Hirshheim et al., 1996; Zmud, 1995). Prominent authors in the discipline adopt qualified views, arguing that the specificity (and difficulty) of the IS field lies in the need to explicitly and subtly take into account the technological dimension of organizational change (Orlikowski & Iacono, 2001) and to be able to draw rigorous as well as relevant results (Benbasat & Zmud, 1999; Lyytinen, 1999). Such balanced positions require that students have recourse to suited methodologies.

This paper proposes the dual methodology of case studies, adapted from Leonard-Barton (1990)'s work, to handle some of the main challenges in IS research. This research design combines two kinds of cases : multiple, broad and retrospective cases and a single, in-depth, processual one. Specific benefits of this dual methodology come from complementarities and synergies between the two kinds of case studies. Strengths and weaknesses of single and multiple cases compensate. Moreover, the combination of inquiries guarantees that the phenomenon under study is scrutinized through multiple lenses. This text argues that the dual methodology may address three core dilemmas in the IS field : the need for broad and deep observations, the reintroduction of IT and organization in investigations

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and the combination of rigor and relevance. An application of the dual methodology in our field illustrates the potential advantages of the method as well as its difficulties, in particular the risk of data overload and the management by the researcher of two distinct positions relative to the fields.

In the remaining part of the introduction, I briefly present the research project that has applied the dual methodology of case studies. In the second section of this paper, the two kinds of case studies are examined, focusing on methodological choices for each kind and on the ways to combine to enhance complementarities and synergies between them. The third section argues why this dual methodology is well-suited to address three main challenges of research in the IS field. Finally, the fourth part of this paper considers the main limitations of the proposed methodology.

The dual methodology of case studies, originated in Leonard-Barton (1988, 1990)'s study of the implementation process of innovation inside firms (innovation for production systems rather than ITs), has been applied in a three-year research project. Because the core of this communication is to make a case for the dual methodology in the IS field, this project is only presented to understand its context and methodological options.

This work has aimed at investigating how intranet practices contribute to the construction of organizational boundaries. Intranets are internal networks based on internal standards that provide informative, collaborative, productive and logistic tools to the whole firm and / or some of its internal groups (Eder & Igbaria, 2001, O'Flaherty & Williams, 2000). For purpose of this study, I have distinguished three types of intranet practices : implementation, management and (end)-uses of intranets. The notion of practice has been of increasing appeal in the IS field (Orlikowski, 2000; Schultze & Boland, 2000) for practices of technologies contribute to the reproduction or changes in structural properties of social systems such as organizations. In this project, boundaries are conceived as constructed (that is, as enacted, reproduced and transformed by central organizational practices and, in particular, by intranet practices).

Studying the construction of organizational boundaries by intranet practices has involved the examination of what it takes to make a firm and how a company is made of internal separations and relations. The conceptual objective of the study has been to refine a conception of organizational boundaries and to develop a vision of how intranet practices take part in their construction. At the more applied level, the goal has been to provide an analysis of intranet practices through lenses that highlight frequently ignored aspects of IT practices. In particular, the study has aimed at identifying why and how intranet practices frequently reinforce existing separations inside the firm. Expected results have been a series of propositions to be tested by further research concerning the construction, articulation and transformation of boundaries with intranet practices.

2. A DUAL METHODOLOGY FOR IS RESEARCH

The case study, as a generic research method, has been applied in various ways (Yin, 1993, 1989), notably in the IS field (Cavaye, 1996). The case study has seemed a well-suited research design to carry out the project on the construction of boundaries by intranet practices. The research question was an 'how and why' one. There was initially a lack of empirical work on both topics of boundaries and intranets. Moreover, the objective was to grasp processes. However, most qualitative researchers – and some quantitative ones also – work with cases. Cunningham (1997) then rightly points the need to specify the investigations realized. He differentiates seven kinds of cases to be judged by specific principles. In our field, various guidelines have been stated. For instance, Lee (1989)'s post-positivistic orientation differs from Klein & Myers (1999)'s interpretativist one.

Leonard-Barton (1990) propounds a dual methodology that combines a single-processual case and some multiple-retrospective case studies to investigate the same research topic from diverse angles and which proves especially useful to advance "grounded theories" (Glaser & Strauss, 1967). Advantages of this research design derive from the complementarities and synergies of the two kinds of cases, which are frequently considered as two distinct approaches to choose between (Dyer &

Wilkins, 1991; Eisenhardt, 1991; Yin, 1989). This section presents the two kinds of case studies separately and then exposes the combination of data collection and analysis.

Multiple retrospective case studies

Fourteen retrospective case studies : Each case corresponds to an organization that has developed an intranet for at least two years. The unit of analysis is the intranet practice (implementation, management and use). Undertaking multiple case studies suited the research subject because of the exploratory character of this work : published academic reports on intranets have been scarce so far and the notion of boundaries from an organizational standpoint (and not only from the perspective of boundary-spanners) has been little studied yet. Moreover, these cases have allowed to meet actors from diverse occupational and organizational worlds and to investigate intranet practices in various contexts. They have provided a view of shared and specific patterns of intranet practices in and across organizations.

Sampling : Researchers select their cases according to criteria that : 1) ensure their investigations concern the phenomena they want to study, and, 2) provide a controlled diversity of inquired situations (Eisenhardt, 1989, Yin, 1989)

For the reported work, I have chosen one minimum criterion and three diversity criteria. The shared feature was that the intranet had been implemented for more than two years at the beginning of data collection. The rationale behind

Criteria	Characteristics of the sample of case studies.	Number of case studies
Date of creation of the first intranet	1995 / 1996	4
	1997	7
	1998	3
Kind of organization	Private	10
	State-owned or public-related	4
Economic sector	Industry	4
	Services : banking and insurance	4
	Services : Public-related	3
	Services : other	3
Size of the organization	Less than 1 000 employees	3
	1 000 / 20 000 employees	2
	More than 20 000 employees	9
Age of the firm	Less than 10 years old.	2
	10 / 100 years old.	6

Table 1 : Criteria of selection for multiple case studies

this criterion was to avoid facing programmatic but too general discourses on intranets. Furthermore, students of intranets (Kane, 1999; Scheepers & Damsgaard, 1997) have noted their changing nature, in terms of content, structure, audiences and uses. Diversity criteria provide a sense of the variety of contexts in which intranet practices unfold. Four criteria have been considered likely to induce different intranet practices : status, sector, age and size of the firm.

Number of case studies : Addition of cases stopped once redundancy was obtained (Eisenhardt, 1989). The fourteenth case, N, did not provide any surprising pattern but confirmed earlier observations.

Collected data : Interviews have followed a common pattern in order to get comparable data across cases and to ensure that relevant perspectives are taken into account. In each company, I

	Collected data for multiple case studies
Semi-structured interviews	From 5 to 15 interviews for each case. With firm CEOs, webmasters, from diverse departments. With end users of the intranets.
Statistical data	Of available pages and of consultations.
Consultation of intranet sites.	Observation, at a given moment, of the content and structure of intranet sites of the organization.
Diverse documentation	Reports on meetings. Official communication concerning the intranet.
Archives	Archives on the implementation and evolution projects.
Screen savings.	To get « snapshots » of a given state of the intranets (to make cross cases and temporal comparisons).

Table 2 : Collected data for multiple case studies

have met at least one member of the general management, two webmasters (content + IT professional) and diverse end-users, from different parts of the firm. The number of interviews (from 5 to 15) has

depended on the organization's size. Additional sources of data have included, for each case : official documentation, statistics of uses, browsing of available sites, archives, site observation.

Data reduction and analysis : Following some of Miles & Huberman (1984)'s recommendations for qualitative data management, for each case a formatted report and a chronological matrix have synthesized information. The creation of tables, inspired by the spirit of Ragin (1987, 2000)'s comparative method, has served the progressive drawing of comparisons. Comparisons and analyses have been realized in relation with the single case study.

Main results : The fourteen case studies have provided insights on the main processes followed by intranet practices. More specifically, four major trajectories characterize intranets' implementation and management : continuous decentralization, initial decentralization then streamlining and relative centralization, continuous centralization, initial centralization then increased autonomy. Furthermore, while more than on hundred different intranet sites may be available in a single firm, a shared pattern of uses has been identified : employees tend to consult only two main kinds of sites. The first one is the intranet portal that publishes information about the whole company and offers links to various specific sites (which are, save for the following exception, largely overlooked by end-users). The

Cases	Selection criteria					Main observations
	Kind *	Sector	Creation firm	Employees	Creation intranet	
A	Pr	Services. Insurance	1820	28 000	1996	Intranets developed in a decentralized then streamlined way. Great diversity of uses, but salient uses are occupational. Intranet practices have followed the firm's mutations - privatization then reorganizations and mergers - from a functional structure to a differentiation of entities according to the types of customers.
B	Pr	Industry Mechanics	1994	400	1997	Intranets implemented and managed to be a showcase of the firm, externally as well as internally. The intranet is perceived as an example of the firm being at the edge of technological progress. At the same time, the intranet excludes a substantial fringe of employees, those who do not work with computers.
C	Pr	Services Media	1826	30 000	1997	Intranet sites developed from various parts of the firm. Intranet sites represent diverse localizations, occupations and official entities. The intranets are mostly used to accomplish work. Insiders nevertheless consider that their site is known by outsiders.
D	Pr	Industry Chemistry	End of 19th century	65 000	1997	Intranet sites developed in a decentralized way. Two main kinds of sites : sites of R&D project teams' sites and official entities ones. Mostly occupational uses of intranets. Main change in the intranet to signify, give concrete expression and speed up a major merger with the corporation and another chemical firm.
E	As	Services Occupational association	Beginning of 19th century	87	1997	Intranet developed in a specific entity of the association. Then, power conflicts to develop sub-sites. Sub-sites used by insiders to get information on their local group and to collaborate with other parts of the association.
F	Pr	Industry Construction	1881	56 000	1997	Intranet sites developed in a highly decentralized fashion. Headquarters have failed to unify the more than 100 available sites. Intranets management and uses reinforce the perception of the fragmentation of the corporation.
G	Pr	Services. Bank	1863	51 000	1997	More than 100 sites developed by specific entities, in troubled times for the corporation. Insiders use their intranet, sometimes to accomplish tasks. Intranet practices have exacerbated power struggles and conflicts among different logics of organizing.
H	As	Services certification	1988	280	1997	Intranet initially developed by headquarters and then has been expanded thanks to local initiatives. The intranet is used to transfer work in-progress from one department to another one. Intranet created almost at the same time as the association : co-construction of their structures and preeminence of occupational dimensions.
I	St	Services Housing	1945	280	1997	Intranet implemented in a centralized then slightly more decentralized way. Intranet practices have revived a sense of occupational community at the expense of the traditional bureaucratic functioning. Employees from diverse localizations get closer to each other thanks to the sharing of tools and information.
J	Pr	Industry Electricity and mechanics	1886	61 000	1997	Decentralized intranets sites. Webmasters wish their site is known by the rest of the firm, but sites are used by insiders. Sites concern mostly official entities, but users assert their site is occupational. Factory workers do not have access to the intranets.
K	St	Services Railroad	1936	170 000	1998	Intranets developed in a centralized then slightly more decentralized way. Intranet uses have reinforced the sense of belonging to regional groups. One region has gained greater national visibility thanks to the management of its intranet.
L	St	Services Ministry	1945	15 000	1998	Intranets developed in a centralized then slightly more decentralized way. Intranet uses have balanced between the reproduction of the preexisting bureaucratic logic and the increasing importance of the occupational logic of organizing. Intranet uses have made closer dispersed occupational groups.
M	Pr	Services Insurance	1951	6 000	1998	The diverse functional departments of the firm have developed their intranet. The CD - single processual case study - is one such functional department. Intranet sites have reflected the main official separation in the organization. Intranet uses have been diverse but the most frequent ones have been oriented toward the achievement of tasks.
N	St	Services Post	1945	300 000	1998	Intranets developed in a very decentralized way. Intranet practices have reflected and reinforced the separation of the firm's core businesses. Headquarters have failed to favor the emergence of a shared identity in the organization. Intranets used by insiders of the entities these sites represent. The majority of employees does not have access to the more than 100 intranets of the organization.

* Kind of organization :
Pr = Private   St = State-owned   As = Association

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second one is the site that concerns the smaller entity in which the employee works. End-uses of intranets reflect (and reproduce) employees' sense of belonging to the whole firm and to their occupational group. Conversely, uses of two sites – and absence of uses of the majority of available sites, reveal relevant organizational boundaries.

Limitations of these case studies : These case studies have provided a broad vision of the dynamics of intranet practices. Nonetheless, they lack precision concerning temporal order and face the risk of omission and ex-post rationalization. This potential drawback is especially salient for IS research because of the evolutionary nature of IS in firms. Save for newly created companies, Information Systems pre-exist to intranets, and they alter over time. Moreover, intranet uses change with employees' increasing experience of the technology. Another limitation of these case studies comes from their over-reliance on interviews to investigate practices. Substantial aspects of practices – the most deeply rooted ones - are tacit and taken for granted by their authors. Interviews do not convey the most idiosyncratic features of practices. The processual single case study has thus complemented these multiple ones.

The processual single case study

Case selection : I have selected the site for in-depth real-time investigations from the multiple cases' sample. Thanks to preliminary meetings with managers as well as familiarity with firms' contexts, this sample in process of construction has proved convenient to make an informed choice of the in-depth case. I wanted to study a context in which official and occupational boundaries (that had been emerging from multiple cases as particularly crucial to employees) have evolved and in which intranet practices have played a role. Direct daily observation aimed at considering how intranet practices contribute to the reproduction and changes in boundaries.

Collected data for the processual single case study	
Participant observation	6 months, 3 days a week. Daily functioning of the CD, its counterpart and the project team of a new intranet.
Interviews	18 CD members, 10 D2 members.
Key informants	An old-timer from the CD and a member of the project team of the new intranet.
Statistical data	Of available pages and of consultations.
Consultation of intranet site.	Observation, at a given moment, of the content and structure of intranet sites of the organization.
Diverse documentation	Reports on meetings. Official communication concerning the intranet.
Archives	Archives on the implementation and evolution projects.

The selected site is the Computing Department (CD) of an insurance company that has experienced since 1998 one major reorganization (involving changes in official and occupational roles) and a project of merger with another department (D2). The intranet devoted to the CD, created in 1998, has accompanied and has reinforced the main alterations in the department. Following, day after day, intranet practices by CD members has guided the recognition of how they take part in the construction of the boundaries of the department.

Data collection : I was involved for six months, three full days a week, in a participant observation of the CD. Investigations took place in 2000, at a time of a – finally suspended – merger process and of final repercussions of an earlier reorganization for the CD. I was the onlooker of the daily functioning of the CD as well as of the activities of the project team in charge of the implementation of a new intranet, symbol of the merger. To a lesser extent (because, politically, entry to this second site was less easy) I had access to D2 that was to merge with the CD. In addition to direct observation, I realized semi-structured (1 – 1.5 hours) with : the general managers of both departments, the project manager of the new intranet, 18 CD members and 10 D2 employees. These interviews have been transcribed and coded. Other data sources have included two key informants, numerous informal conversations with workers, archives, documentation and browsing of the intranet site.

Data reduction and analysis : To manage this exceedingly voluminous amount of data, transcripts of field notes and interviews have been progressively summarized. Memos and mid-term reports have been presented to diverse audiences (from the field as well as the academic world). The case has been

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refined first over the course of the six months of investigations and afterwards thanks to greater distance with the site. Above all, analyses of the single and multiple cases have been tightly linked. The enormous volume of data has been the sure counterpart of a fine-grained observation of intranet practices in the single case. Multiple case studies have then proved precious to extract relevant and meaningful patterns from these data.

Main results of the CD case

The intranet has been implemented and transformed during a period of reorganization of the department. Some old-timers have expressed their opposition to the reorganization by totally overlooking the intranet. While refusing to use it, they have not been informed of its new rules and have contributed to exclude themselves from the new organization.

Moreover, the intranet has been used to coordinate the different stages of computing projects, in relation with other departments of the firm as well as internally. Members employ the intranet to systematize but also to deshumanize their relations with other departments. File transfers have been replacing direct interactions among employees. In the CD, the intranet has linked the two kinds of teams that are successively in charge of the project : design and realization (implementation) teams. Design teams have included old-timers and newly-hired qualified salaried workers, whereas temporary workers have constituted the bulk of realization teams. Implementation tasks are considered by all CD members as adding little value and as not requiring strategic specific knowledge. Intranet practices have widened the emerging gap between salaried and temporary workers.

Finally, intranet practices have accompanied the hazards of the merger process between the CD and D 2, another department. As long as the merger seemed certain, the project of a new intranet made fast progress and both parties were willing to share all contents. However, the merger process soon came up against difficulties due to power conflicts between executives of the two departments. The intranet project then encountered its first delays and the content of the future site became the center of bitter discussions. Lastly, with the postponement of the merger the project of new joint site became the project of a new site entirely devoted to the CD.

Combining multiple and single cases : the dual methodology

Specific features of the dual methodology come from the association of the two kinds of case studies. Such combination has unfolded during the whole process of data collection and analysis.

During data collection : Access to the single site has been negotiated after a first wave of investigations in different firms. The field for in-depth observation has been spotted from an initial sample of ten case studies. Access as a participant observer has been established on account of my presumed acquired knowledge on intranets in diverse firms. Conversely, investigations in the remaining four firms (multiple cases) have been greatly facilitated by my previous experience in the single site. My presence in an intranet implementation team has given me more credit to study intranets in other contexts. Legitimacy is particularly precious in the IS field where consultant firms are sometimes more present than researchers.

Data collection phases have rotated for the two kinds of cases. The first wave of investigations has involved ten cases. Then, six months have been devoted to the single case. Finally, the ten early cases have been complemented in line with single site observations. Moreover, four confirmatory cases have completed the sample and regular news have been heard from the single cases. Alternative stages of data collection have warranted complementarity between the two kinds of case studies. They have opened the way to combination of analyses as well.

During data analysis : While for obvious practical reasons phases of data collection for the two kinds of case studies have alternated (I was the only full-time involved student in the project), data analysis has permitted greater interactions among cases. Benefits of the dual methodology arise from constant back-and-forth between methods. Strengths and weaknesses of the two kinds of cases compensate each other. Multiple case studies have provided a very broad, but rather superficial, picture of intranet practices. For instance, diverse types of intranet sites representing different parts of the firm have been identified (general intranet or specific ones representing an official entity, an occupation, informal groups, thematic interests). The construction of the whole intranet, sum of these sites from diverse origins, has been retraced. Nevertheless, these cases have been totally retrospective and have not permitted to fully investigate processes. On the other hand, thanks to the processual single case, I have

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grasped more substantial paths through which intranet practices enter and modify a particular organizational context. The CD case has hinted conflicts of interests and negotiations leading most intranet practices. It has then displayed detailed accounts of the political stakes surrounding intranet implementation and management. This disclosed importance of the political dimension has opened the way to renewed interpretations of observations.

Not only do strengths and weaknesses of the two kinds of case studies compensate, but synergies emerge from dual analyses. For example, according to multiple cases, employees use only two kinds of sites (the general site, representing the whole firm and the specific site devoted to the close occupational entity to which they belong). The single case has confirmed this pattern and has led to the suggestion that employees do not only use what they perceive as 'their' intranet, but that they also ignore other sites and assimilate employees for other more or less distinguished parts of the firm, as 'them'. This *us* / *them* distinction has been of help to further analysis of multiple cases. 'Us' represents the small occupational group while 'them' include others whose belongings in the firm are to be official. For instance, 'we' belong to the group in charge of the production of our product, but 'they' belong to the marketing department.

The analysis process has benefited from synergies between the two kinds of case studies. Going back-and-forth from one case to the others to interpret observations in new light has helped the building of a dialog between existing literature and empirical work. Early literature review on the notion of boundaries had revealed that most streams of research in management consider boundaries in a very abstract and general way. Investigations have suggested that boundaries are of different types (official / occupation, in particular) and are reflected and enacted by intranet practices. These findings have initiated a conceptual questioning of the enactment of boundaries and the reproductive / transforming role of intranet practices. They have specifically echoed Brown and Duguid (2001)'s assertion that clusters of shared practices make distinct communities inside organizations.

This section has presented the main features of the dual methodology of case studies : the two kinds of case studies and their combination for data collection and analysis. Let us now turn to the potential interests of this method for the IS field.

3. THE DUAL METHODOLOGY ADDRESSES CENTRAL DILEMMAS OF THE IS FIELD

The dual methodology seems especially germane to deal with some of the main challenges of IS research. Benefits of this approach stem from complementary and synergistic inquiries and questionings. It may in particular be employed to address three central challenges of our field : combining broad and deep investigations, (re)-introducing both ITs and organizations in research works and balancing rigor and relevance.

Combining broadness and depth of investigations

Most social scientists dream of getting simultaneously comprehensive (covering a wide variety of situations) and fine-grained (to investigate the roots of the phenomena under scrutiny) observations. Nevertheless, such exhaustive examinations require time, skills and resources that individual researchers or small research teams frequently lack (Miles, 1979).

The dilemma between broad and deep investigations is especially severe in the IS field because of the conjunction of : (1) fast alterations of IS in firms and frequent introduction of new technologies and, (2) increasingly sophisticated conceptual frameworks to explore the relationships between IT and organizational change. In particular, the structurationist framework (Orlikowski & Robey, 1991; Poole & DeSanctis, 1990) points out that IT influences structural properties of the firm and is influenced by them. It calls for delicate investigations to trace these emergent processes (Poole & DeSanctis, 1994).

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So far, research works from the structurationist stream have favored depth over broadness (e.g. Yates, et al., 1999). Nevertheless, this has come at a cost, that of overlooking whole organizational contexts and / or only studying processes of initial uses and then assuming that later mutations are in line with early ones. However, the structurationist conception stresses that processes do not reach an a priori end and that composition effects appear from one level to another one. On the other hand, conducting inordinately broad examinations would lead to overly general conclusions.

The dual methodology seems apt to address this issue without exercising undue pressure on the researcher. The latter may take advantage of the sample of multiple case studies to gain access to the site devoted to in-depth inquiries. Moreover, she or he may be able to constantly link precise and general observations, for data from the two kinds of case studies are not too far apart.

Of course, other designs may help to integrate broad and deep observations. In particular, some researchers have successfully connected the results of a questionnaire and a case study (Gable, 1994). However, given scarce resources to achieve research projects, the choice of the dual methodology may prove a specifically sensible and fruitful one. The joining of investigations from the two kinds of cases is indeed not contrived since they both regard the same kinds of data and provide different lenses on comparable situations. Thus analyses for both sorts of cases can be truly merged and not just be pieced together. The identification of a shared pattern of intranet uses and its gradually refined analysis has illustrated this point.

This combination of broad and deep observations has its own drawbacks. The level of detail and generality is likely to be intermediary which suggests that the dual methodology especially accords with 'middle-range' investigations and theorizing. Moreover, even if performing the two kinds of case studies is not too tough for the researcher who mobilizes close abilities, it nevertheless results in a sizeable amount of data.

Reintroducing IT and organizations in the IS field

Students of our field have already noted that empirical works tend to ignore either IT or the organizational sphere, or, at least, not to pay sufficient attention to the peculiarities of their interaction (Orlikowski & Iacono, 2001). A second central challenge that IS researchers face today is then to reintroduce both IT and organizations in their work. Most projects in our field are somewhat torn between computer science on the one hand and sociological approaches on the other. Dealing with this dilemma lies at the core of the IS discipline (Avison et al., 2001; Baskerville & Myers, 2002). Without taking in consideration the technical ground of its subjects, researchers are confused by what really emerges from new systems. When disregarding the organization, on the other hand, one may be stuck in a descriptive examination of technical tools. Of course, such an opposition is presently slightly exaggerated, but, to some extent, we all face this challenge and have to deal with it.

The dual methodology encourages the reckoning of the technology under scrutiny and of crucial organizational processes as it allows for the researcher's increasing awareness of both grounds. Notably, one may examine the specificity of IT through up to date observations (snapshots from multiple cases) and more stable and / or gradually evolving IS management concerns (single case study). For instance, intranets stand for, at the same time, a new kind of computing networks - based on internet standards - and the latest expression of 'drifting' Information Systems (Ciborra, 2000). This duality has been documented by multiple cases (that have disclosed the gap between discourse and reality of intranets as the innovative overall IS infrastructure) and the single one (that has shown evidence of the correlated transformation of intranet and the general IS infrastructure over time). Besides, the most fascinating dimensions of IT are that its introduction occasions changes in structural properties of companies and it renders visible otherwise hidden - because taken for granted - organizational dimensions. In the mentioned study, while the intranet is commonly presented as the instrument to overcome all barriers in the firm, the two types of cases have highlighted the remaining importance of different sorts of barriers (especially hierarchical, occupational and geographical ones)

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and the duality between separation and relation among these groups. Complementary cases make possible the re-introduction of this central dimension of collective action. Multiple and single cases have provided insights on intranet practices at three interdependent levels : employees, small groups, whole firm.

Because of its dual nature that avoids being caught in a single perspective, be it technological or organizational, and because it gives room for constant dialog among and between cases as well as with the literature, this methodology is thus particularly opportune to simultaneously consider IT and organizations in IS research.

Balancing rigor and relevance

Unquestionably, recently, the most disputed quandary in our field regards the relative importance of rigor and relevance of investigations (Benbasat & Zmud, 1999; Galliers & Land, 1987; Lyytinen, 1999). Of course, IS students do not have to choose once and for all between these two crucial objectives. Exclusive focus on relevance would not differentiate the researcher from the consultant, while searching for rigor at the expense of relevance would hamper the connection between practitioners and the academic world. Pursuing both aims is essential, but performing balanced inquiries is demanding. The dual methodology seems a well-suited – and still under-utilized – method to engage in rigorous as well as relevant investigations.

First, the dual methodology offers the opportunity to pursue rigorous investigations. Constant reference to the fields provides grounded evidence to the reader. The latter can trace the researcher's argumentation and go back to data sources. This takes honesty from the researcher and guarantees that observations are not disconnected from their context.

Moreover, Leonard-Barton rightly points how criteria of rigor may be satisfied while realizing the two kinds of cases. In particular, complementary and synergistic case studies contribute to the founding of external and internal validity. Multiple cases increase the variety of studied contexts and hence the generalizability of conclusions. For instance, the sample of fourteen case studies depicts the variety of organizations that have implemented intranets. The shared pattern of uses of intranet sites, depending on the situation of employees, has been widely observed. It thus applies to contexts beyond the sample. On the other hand, the single processual case provides necessary ground for internal consistency of findings. Following a process step by step, observing it directly and getting feedbacks from varied parties opens the way to analyses of IS changes that result in and nourish organizational dynamics. In particular, in the CD case, management practices and uses of the intranet have strengthened the emerging segregation between salaried and temporary workers.

The dual methodology warrants relevance as well. Practitioners allow entry to their company provided they perceive an interest in the study. To access firms, the researcher exposes her or his project in ways that are not at odds with managerial concerns. Of course, the need to establish a link with the managerial world occurs for all methods involving access to fields (such as, in particular, questionnaires or 'unitary' case studies). Nevertheless, it is especially appreciable for the dual methodology. Multiple case studies require frequent access to varied companies. The researcher may then present her or his work in progress in different ways, 'testing' the relevance of its formulation. Besides, entry to the single in-depth case study is more costly for the involved firm. The researcher has then to convince executives of the usefulness of her study and of her legitimacy to study this topic. In this regard, also, the familiarity gained thanks to the first case studies is valuable.

Third, frequent presentations of the work-in-progress to managers and researchers simultaneously support rigor and relevance. Reports to executives provide occasions for discussions on the topic. In the mentioned study, it was commonly the perspective of a study of their intranets and their main practices that convinced managers to let me investigate their company. Over the course of the fieldwork, however, as we begun to discuss my investigations as well as their organization, the issue of boundaries became prevalent. The notion of "boundaries" rings a bell in practitioners' daily

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concerns and summarizes reasonably well a set of dilemmas they face when dealing with intranets. The dual methodology offers students the opportunity to get frequent and various feedbacks. These feedbacks concern multiple and single case studies and are more or less grounded in managers' experiences. Different kinds of conclusions may then be 'tested' in front of different audiences and at various stages of the research process.

Finally, this dual methodology, thanks to privileged links between researchers and managers, is especially well-suited to build a community of interest among them. Actors from investigated firms may meet and discuss results in-progress with researchers as well as the transformation of IT and their own context. In the mentioned study, provisional findings have been submitted to managers and to researchers during devoted seminars. Discussions between the two parties have been the occasion to refine analyses and to ensure that results interested managers and could be of help for them to transform their policies. Such communities of interest, built upon a research project and gathered thanks to the two kinds of case studies, initiate exchanges between managers and researchers. Ultimately, they contribute to the making of rigorous and relevant studies and to the founding of research as "conversation" between academics and practitioners (Huff, 1998).

4. AN UNWIELDY METHODOLOGY

The dual methodology helps to address three central dilemmas in the IS field thanks to the distinctive association of the two kinds of case studies. It then comes as no surprise that this method is rather unwieldy. In particular, anyone applying it faces two kinds of hindrance. How to handle voluminous amounts of data ? How to manage distinct roles with regards to two kinds of fields ?

The risk of data overload

The dual methodology does not relieve but, on the contrary, exacerbates one of the most widely shared issues among qualitative researchers : the excessive amount of collected data (Becker, 1998; Miles, 1979). In the study on intranet practices, about 150 interviews have been realized and have been compared to other collated sources (field notes, documentation, intranet browsing, etc.). So far, finding ways to reduce these data and extract their meaning has turned out to be the most difficult task of the project. Investigations per se ended more than one year ago, but the analytical process is still under way. Nevertheless, going constantly back-and-forth the two kinds of case studies allows for a gradual selection of germane observations. Besides, recommendations and tools to handle qualitative inquiries (Miles & Huberman, 1984) are greatly useful for studies that mobilize the dual methodology.

Managing different roles in the two kinds of case studies

Second, and this difficulty is more specific to the dual methodology, the researcher has to hold two slightly different positions in the fields. These two postures (in the multiple / single sites) condition actors' behaviors and expectations as well as data collection.

For instance, with regard to multiple cases, I could keep a rather neutral stance but was dependent on what my informants were willing to tell me… or not to tell me. Moreover, I could get broad views of organizations under scrutiny, but lacked details of the "real" organizational life. On the other hand, I was a participant observer of the unique case and I was involved to some extent to the alterations of the CD context. This commitment had two related implications. First, my attendance to the field influenced actors' attitudes and feelings toward me and I could not deny being somehow emotionally affected by what happened in the field. To attain more neutral and still deep knowledge of the CD case, I then had to become aware of both transfers. It appeared that actors tended to consider me as a member of the department's chief's staff while I pictured myself on the temporary workers' side. Second, my project was far from action-research or design science for its aim was to gain a theoretical understanding of how organizational boundaries are constructed and reproduced over time.

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Nevertheless, actors had "hired" me partly on the basis of my cognizance of intranets and then expected recommendations from me. To remain legitimate in the field, I had to take part in discussions regarding potential changes of the intranet while simultaneously trying not to interfere too much in decisions on the management of the intranet. Such balance was of course precarious.

5. CONCLUSION

The aim of this paper was to indicate how the dual methodology may be usefully applied in the IS field to study processes of implementation, management and uses of Information Technologies. It has made the point that the dual methodology is especially suited to help researchers to address three of the main challenges of our discipline : the combination of broad and deep observations, the reintroduction of IT and organizations in research and the balance of both objectives of rigor and relevance.

In the end, it is up to each of us to appropriate and to adjust this suggested design according to one's ambitions (be they, for instance, descriptive, explanatory or corroborative). While the establishment of a unifying and exclusive paradigm in IS research seems as out-of-reach as inappropriate (Robey, 1996), the dissipation of approaches, methods and epistemological stances has periodically been the subject of great concern and debate (Banville & Landry, 1989; Benbasat & Weber, 1996; Lyytinen, 1999). This paper does not contend that all IS studies should follow the dual methodology, but it rather makes a call for the exploration of new 'hybrid' methods that are justified by the researcher's objectives. Such informed methodological choices would respond to Landry and Banville (1992)'s call for "*disciplined methodological pluralism*" in our field.

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