Translating leading edge theory into bleeding-edge practice: The InterPARES experience

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InterPARES is an international, collaborative, multidisciplinary research project whose primary purpose is to find solutions to issues presented by the long-term preservation of digital records. It began in 1998 and is now in its third phase. While the first two phases aimed at the development of new theories and methods, the goal of the third phase, InterPARES 3, is to **enable small and medium-sized** public and private **archival organizations and programs to preserve** over the long term **authentic records** that satisfy the requirements of their stakeholders and society's needs for an adequate record of its past.

The InterPARES 3 TEAM selected as its primary research methodology **action research**, a set of disciplined, material practices that involve collaborative dialogue, participatory decision making, inclusive democratic deliberation, and the maximal participation and representation of all relevant parties. This choice was based on the assumption that the type of organizational setting and culture of the organization or unit we would work with to implement InterPARES 1 and 2 findings would have an impact on what can be implemented and how. In other words, whether the test-bed a) has a hierarchical or flat structure; b) is writing-based or meeting-based; c) works following standardized workflows, routine processes and procedures or according to creative processes and unstructured or semi-structured procedures; or d) is service-oriented or knowledge-oriented matters a great deal to its willingness and ability to make certain choices regarding the management and preservation of its records. This assumption was supported by several sociological and organizational theories that have examined the nature of organizational

cultures, the behaviour of people in social contexts, the interaction of structure and function, the impact of technology on organization, etc.

We identified as relevant to our implementation purposes in a variety of organizations the theory of structuration, and adaptive structuration theory. The theory of structuration is relevant because of its idea of the **mutual interaction between structures** (i.e., the organization), **functions** (which may include, *inter alia*, records management processes, methods and tools) **and actors** (e.g., the users of a records system), each factor changing in response to the others.[1] Adaptive Structuration Theory (AST) is relevant because it draws on the concepts of the theory of structuration to study the interplay existing between social structures, human action and advanced information technologies (e.g., an ERMS). Particularly relevant is Orlikowski's concept of "**duality of technology**," which allows us to see technology (including "records and archival technology") as created and changed by human action (i.e., an **outcome**) and, at the same time, as a structure that both facilitates and constrains human action (i.e., an **instrument**).[2] Also useful to InterPARES 3 purposes is Hofstede's views of **organizational culture—**that is, the specific collection of values and norms that are shared by people and groups in an organization and that control the way they interact with each other and with stakeholders outside the organization—as well as the dimensions of national and regional culture he identified and, above all, his categorization of organizational typologies.[3] We used this understanding to develop the specific action research methodology that guides our case studies.

[1] Anthony Giddens, *The Constitution of Society. Outline of the Theory of Structuration* (Berkeley: University of California Press, 1984).
[2] Wanda J. Orlikowski (1992), "The Duality of Technology: Rethinking the Concept of Technology in Organizations," *Organization Science* 3(3): 398-427; JoAnne Yates and Wanda J. Orlikowski (1992), "Genres of Organizational Communication: A Structurational Approach to Studying Communication and Media," *Academy of Management Review* 17: 299-326.
[3] Geert Hofstede, *Culture's Consequences. Comparing Values, Behaviors, Institutions, and Organizations across Nations* (Thousand Oaks: Sage Publications, 2001). See the analysis of Hofstede's ideas in Gillian Oliver (2004),

In action research, test-bed organizations are *active* co-participants and stakeholders in the process of inquiry, rather than *passive* research subjects. The goal of this highly interactive and inclusive research approach is to transform readily and immediately the research into practical, reflective, pragmatic action directed toward solving 'real-world' problems.

The specific methodology selected to conduct action research is **ethnographic** in nature. Creators of records, their users, records managers and archivists form a community of practice—**the archival environment**—for which social interaction creates meaning and defines values. The InterPARES researchers place themselves within an archival environment that has identified digital records preservation objectives or issues to **gain the cultural perspective** of those responsible for records. **Observation** of the environment results in detailed description of the test-bed, its administrative and managerial framework, and the digital entity/ies under study, supported by extensive **interviewing and analysis** of the test-bed's documents. The descriptions are formalized in a "Contextual Analysis," a "Diplomatic Analysis," and an "Activity Model," while the interviewing results in the answers that the researchers provide to three sets of questions: on the existing policy/ies, record system(s), and records. The analysis of this material by all InterPARES researchers produces action items that are implemented, the outcome of which is reported back to the TEAM. The process continues in an iterative way until the archival environment and all TEAM researchers are satisfied with the solutions found for the identified objective or issue and the case study is completed. The entire process is guided by a case study flowchart, which ensures that all steps are followed in the correct order, and is concluded by a final report. Each document produced in the course of the case study is structured as to form and content on the basis of a template used for all case studies of InterPARES 3, so that the findings

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"Investigating Information Culture: A Comparative Case Study Research Design and Methods," *Archival Science* 4: 287-314.

can be compared. However, this highly controlled methodology is yielding results that are far from controlled or, as it turns out, controllable, well beyond the expectation of high variability of outcomes that constituted its fundamental tenet.

The already mentioned concept of "duality of technology"[4] had prepared us to see technology as created and changed by human action (outcome) and, at the same time, as a structure that both facilitates and constraints human action (medium/instrument). We also knew that the creation of digital records takes place in a less systematic fashion than that of traditional records, being in most organizations a decentralized process that is often in the hands of people who did not receive a proper administrative education. If it was not for the rules built in the computer technologies that people use for creating their records (e.g., templates that prompt uniformity in records' form, or work flows embedded in records systems), today's 'bad records' would lead to badly performed functions—which may still be the case when those developing information technology tools have no understanding of administrative or archival requirements. This is the reason why our researchers studied the mutual relationships existing among the three components of a structurational model: 1) technology (i.e., archival tools and methods); 2) human agents (e.g., archivists and records managers, developers of IT-based recordkeeping systems, users); and 3) institutional properties of organizations, including organizational culture and ideology, control mechanisms, management strategies, as well as external stakeholders' interests, socio-economic conditions, and the legislative and regulatory environment. This study helped us to cope with the unexpected, but did not entirely prepare us for what we found. In one case study, the final report identified "institutional culture" as one of the factors which impeded the completion of the case study. In another, the existing organizational culture was perceived as "uncommitted to good records management practices." In three completed case studies aiming to

[4] Orlikowski, "The Duality of Technology," 406.

establish controls on the creation, management and preservation of e-mail, where the stakeholders were the same type of institution, with identical mandate and functions, in the same geographic, administrative and legal context, the issues, methods for addressing them, and solutions resulted to be drastically different. As a consequence of this latter situation, InterPARES started a general study on e-mail management—whose findings will be presented this afternoon by Maria Guercio—which attempts to deal with the gap between what international and national standards recommend and what can be achieved "given the circumstances." In most cases it will be necessary to make quite different small steps towards similar, but still customized, targets.

In other case studies heading towards completion, the purpose of which was to help three cities—also in the same geographic, administrative and juridical context—move from an anarchic digital records situation to a proper recordkeeping system, the process has been fundamentally different, although equally complex, and the results are also quite different, although all of them legitimate and appropriate to the environment.

I could make several additional examples, including some regarding arts institutions, but these should be sufficient to illustrate my point. It appeared quite clear that, among the diverse circumstances that conditioned the e-mail case studies and the recordkeeping case studies, the factor having the major impact was organizational culture. Therefore, we decided to conduct a general study on organizational culture, the objective of which was **to develop a consistent framework to analyze its impact on recordkeeping and preservation practices** across various case studies in InterPARES 3 within the national context of Canada. Findings gleaned from this research may also be applicable to a general study of the dynamics among organizational cultures, recordkeeping and preservation practices for all the other countries participating in InterPARES 3.

The lead researchers for this study are Victoria Lemieux and Ronald Cenfetelli, with the assistance of doctoral student Elaine Goh, from the National Archives of Singapore.

The research uses both deductive and inductive methodology and is anchored in grounded theory. The literature review has drawn upon aspects of organizational culture from organizational theory, sociology, information systems and information management perspectives, while the field work consists of semi-structured interviews with members of test-bed partners (archivists, records managers, records creators, IT specialists, and senior management). There is also an analysis of issues relating to organizational culture based on a review of the discussion of the case studies contained in the proceedings from the InterPARES plenary workshops, existing research and documentary sources from the case studies, such as the final reports, answers to research questions, and contextual analyses. Definitions for key terms gathered from the literature—such as organizational culture, organizational climate, subculture and professional culture—as well as replies from the participants in the research are coded and analyzed using NVivo software to provide an in-depth qualitative analysis.

The research questions were the following:

- How does organizational culture **affect the selection and implementation of recordkeeping and/or digital records preservation systems?**
- To what extent does organizational culture **affect the ability of InterPARES 3 in carrying out its research in the test-bed sites?** What conditions would be necessary with respect to organizational culture for InterPARES 3 to carry out its research in the test-bed?
- What are the **fundamental similarities and differences** in organizational culture with respect to recordkeeping and/or preservation practices of different organizations within

and across similar industries? Within the same organization, what are the **variations of sub- or professional cultures** that shape recordkeeping and/or preservation practices?

- What are the **varying levels of expectations** stakeholders have in terms of their roles and responsibilities in recordkeeping/and or preservation as well as their expectations of other stakeholders?
- What are the **methodologies** for facilitating the selection and implementation of recordkeeping and/or digital records preservation systems?

Of the five hypotheses guiding the research, two have been partially supported, while three have been fully supported. Let's look at them briefly.

Hypothesis 1: Corporate and/or occupational subcultures may lead to tensions and conflicts amongst stakeholders and are a significant barrier towards the successful implementation of recordkeeping and/or preservation system.

This was partially supported. Indeed, there are many layers of culture operating within an organization. At one level, there is a corporate culture which distinguishes a government organization from that of an academic institution. Generally, there seems to be greater level of compliance in recordkeeping within a government setting, whereas in an academic environment there is a greater sense of academic freedom and this has resulted in individuals not being able to distinguish between personal and corporate records. At another level, one should also be aware of the underlying subcultures that can co-exist within an organization and recognize that the classic four types of cultures (based on power, role, task and person) are "not exclusive". For example, there are occupational subcultures which are administrative and secretarial in nature, where there is a "professional need" and "higher level of interest" in terms of recordkeeping. At the other end of the spectrum, there are the blue collar and the more operationally oriented

subcultures which are focused on taking care of the parks, or putting out the fire, or cleaning the streets. These tend to be located away from the central administration area and tend to allocate a lower priority to records management. Operating somewhere in between in terms of emphasis accorded to recordkeeping and preservation are the professionally oriented occupational subcultures which have a degree of specialized knowledge: they understand recordkeeping and its value in relation to their business activities and work processes, but do not want to spend too much time on it as they perceive it as not the main focus and interest of their job. There can also be a situation of multiple subcultures operating within a same department in an organization.

However, there are also other internal and external environmental factors which can hinder the implementation of a recordkeeping or archival preservation system. Themes that have emerged from the interviews are 1) the general low awareness by records creators in terms of recordkeeping and preservation issues, 2) the lack of access control resulting in situations where records are inadvertently deleted and overwritten, 3) a belief that a new organization has more time to deal with digital preservation issues and its focus should be on creating records rather than on long term preservation, 4) blind trust in the ability of technology to enable organizations to better manage their records, and 5) reliance upon the institutional memory of staff to "find things" rather than on a records management infrastructure for sharing corporate knowledge and for continuity of business operations. One external factor that has impeded the development of a recordkeeping and preservation system is the fiscal climate: Even when senior management recognizes the contributions of the archives and records management program in serving the administration of the organization, it is often perceived that their services have little impact on their major stakeholders and customer base and therefore resources and staff allocated to the archives and records management program are affected. For example, there is the perception that

developing an electronic recordkeeping system is more expensive than paying staff to laboriously plough through the hard copies of email in the event of FOI or e-discovery request. Thus, when developing a business case for a ERMS, beyond determining the cost of procuring and maintaining a system, archivists and records managers should conduct a risk assessment with respect to the costs of litigation in the event that records cannot be located and accessed.

Hypothesis 2: An organizational climate that values the sharing of knowledge with multiple stakeholders in an organization is more receptive towards developing a sustainable records and/or preservation infrastructure.

This also was partially supported. Organizations that are collaborative and have the support of management for recordkeeping and preservation still encounter difficulties in developing a records and/or preservation infrastructure due to lack of support from their users. Nevertheless, most of the interviewees cited the importance of obtaining senior management support to promote awareness on records management and preservation issues and to embark on a record management program. To have an "advocate' of records management and/or preservation among the members of senior management is also crucial. Interviewees have described instances of a particular senior manager who made the effort to raise the profile of the records management program. However, in order for this support to be sustainable in the long run there must be a proper governance structure in place to ensure that records professionals are actively involved with all potential users, preferably during the conception and implementation stages, in the development of any recordkeeping infrastructure or initiative in an organization. In fact, "commitment" more than support is the term that indicates the strong, active role top management must play in the project from initiation through implementation. Otherwise, this

may lead to a halt situation described by an interviewee as “when the champion gets hit by a bus on the way to work”.

Senior management commitment must then be accompanied by acceptance and buy-in by all staff: organizational silos still exist if there is no governance structure for both IT and records management to work together. However, building awareness for change does not necessarily translate into a desire for change. It is essential to explain why a change is needed and the pros and contras of each choice made. After that, the staff needs to be held accountable for its actions; there should be an incentive program as well as a performance monitoring program to institute change within the organization. A governance and monitoring tool needs to be established to ensure that the organization moves towards a shared vision in terms of actively building a recordkeeping compliant culture.

Hypothesis 3: The varying levels of support amongst the stakeholders of an organization are an impediment to the successful completion of research and product implementation.

This hypothesis is fully supported by the interviews. The records professionals responsible for conducting research into recordkeeping and preservation to guide the choices of their own institution or unit play multiple roles, including upholding the values and assumptions of the organization they work for, their professional subculture as records managers or archivists, as well as the culture of the research community, which includes academics, and they sometimes experience an internal conflict among those roles, especially vis-à-vis the other subcultures of the organization. This often pushes them to withdraw from one or more of these roles, especially when one or more of those subculture rejects their importance for the organization.

Hypothesis 4: There are both converging and diverging views of records as well as recordkeeping and/or preservation issues among various subcultures and within the same subculture.

This hypothesis is also fully supported by the interviews. There may be subcultures which identify more strongly with the prevailing institutional culture, while others may associate with their professional subcultures in the form of professional organizations and networks outside the formal structure of the organization. Just like there is not a common understanding of what a record is across subcultures of the same organization, the interviews show that there is not a commonly agreed or unified concept of record even among archivists and records managers across organizations and even within the same organization. Some archivists and records managers base their view of records on archival science and diplomatics, while others have chosen to identify themselves with the specific needs of what they perceive to be the dominant subculture in the organization rather than with their occupational/professional subculture. An interviewee identified herself with the users of the organization and decided to "save" the records as she perceives them to be, that is "useful information" even when not created by her organization.

Hypothesis 5: Different groups of stakeholders have differing understandings and expectations of their roles and responsibilities in recordkeeping and/or preservation as well as the roles and responsibilities of other stakeholders in recordkeeping and/or preservation. These differing levels of expectation are potential sources of tension and barriers for the successful implementation of a recordkeeping and/or preservation system. The implementation of a recordkeeping and/or preservation system in itself can bring about a change in the organization which can be a source of tension.

This last hypothesis is also fully supported by the interviews, which so far indicate that there appears to be an absence of "shared assumptions" about the objectives of recordkeeping. This is especially true when it comes to the role that IT departments play. Some creators think that IT should play a leading role while others believe that they should not be involved; yet others see IT has having a function of support for the records professionals. Interestingly enough, IT people are often in disagreement about their role, even within the same organization. This shows that members of the same professional and occupational group can also have differing expectations about the roles and responsibilities not only of other stakeholders but also of themselves as a subculture. The interviews also show that different groups of stakeholders may have different goals and objectives in terms of developing a recordkeeping infrastructure.

This divergence in worldviews results in a cultural conflict and sometimes in a clash. This scenario fits into what is referred to as a "contribution conflict": for example, the perceived relevance or irrelevance of IT to complement the group values. This cultural conflict can be manifested in the form of "system conflict," where values implicit in the IT system comes into conflict with the values held by members of other groups. For example, some records creators perceive the objective of the recordkeeping and preservation system to be to keep as little paper as possible. This potentially conflicts with a current behaviour and mode of working which might still be very much paper oriented: thus, the ERMS system by itself can be associated with a value system that can either conform or conflict with the values upheld by stakeholders.

In addition to what discussed so far, this study has shown that, when developing or using digital technologies, archival environments (i.e., creator, records manager/archivist, users) are conditioned, not only by the institutional properties of their organizations, but also by the structural properties of records and archives management, the purpose for which the technologies

are used. Through their development and use of technologies, the archival environments act upon both types of properties (cultural and structural), either reinforcing or transforming them.

The study is still in course, but some outcomes can already be summarized and some conclusions can already be drawn.

By focusing on human agents and on the consequences of their appropriation actions, we confirm the great importance of archival knowledge. To make it possible that the principles of archival science are reaffirmed and, by being produced and reproduced over time in the same way in any use and/or instantiation of digital records technology, become part of the institutional properties of an organization, it is crucial for archivists, creators and users to be "knowledgeable and reflexive."[5]

As researchers of Adaptive Structuration Theory have proven, developing, learning and teaching how to use the structural features of an application or a system is important, but even more important is learning the **spirit** behind those features. Users who are not acquainted with archival principles and methodologies may—intentionally or unintentionally—appropriate, for example, a function-based classification system "unfaithfully" (e.g., by naming files according to subjects) more easily than records professionals. The "members' degree of knowledge and experience with the structures embedded in the technology"[6] is actually one of the factors influencing how a group appropriates a given technology. Nevertheless, traditional tools are usually quite 'structured' and this should be enough to ensure that, to a certain extent, groups use, adapt and reproduce the system consistently and 'faithfully.'

On the contrary, with digital tools, like e-mail applications and ERMSs, which are mostly developed by IT experts outside the organizations that will use them and often without

[5] Ibid.
[6] Gerardine DeSanctis and Marshall S. Poole (1994), "Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory," *Organization Science* 5(2): 130.

consulting archival professionals, unfaithful appropriations are likely to happen more frequently. In cases where the features and spirit of an e-mail directory and retention schedule or of an ERMS do not reflect correctly archival theory and methodology, users who are "knowledgeable and reflexive" may try to adapt the system features to their understanding of records/archives.

The degree of "interpretive flexibility"[7] of any technology is another variable that should be considered when evaluating how groups appropriate available structures. Should the structural features of the system be inflexible or should users perceive the system as a 'black box,' then rigid and routinized views of, and interactions with, such technology will develop. However, if the system additionally is unsatisfactory, an extreme possibility may occur: its rejection. An "avoidance behaviour" or "sabotage"[8] is expected particularly when users are records professionals.

With reference to the spirit of a technology, it often happens that the training for users of applications and systems "emphasizes details of use rather than general philosophy."[9] Consequently, even an application or system that correctly embeds some of the structural properties of archival science may easily be appropriated unfaithfully. One of the findings of AST research is that the moment of the launch of a new system is very critical for its success, as in the beginning the interpretive flexibility of the system is higher and its spirit more vulnerable. The time factor is therefore another variable to be taken into consideration when studying how technology is appropriated as well as how organizational change occurs, and we must be very careful in respecting these variables in our case studies.

[7] Orlikowski, "The Duality of Technology," 408.
[8] Ibid.
[9] A. R. Dennis and M. J. Garfield (2003), "The Adoption and Use of GSS in Project Teams: Toward More Participative Processes and Outcomes," *MIS Quarterly* 27(2): 304.

In addition, we must pay more attention to knowledge management literature. The truly new insight offered by such literature is that the organizational knowledge that constitutes "core competency" is more than *know-what* (i.e., explicit knowledge that may be shared by several users). A core competency requires the more elusive *know-how*, which is "the particular ability to put know-what into practice."[10] Fostering this more complex form of organizational capital should be the focus of our case studies. However, decision makers in at least two of the mentioned test-beds may favour the explicit knowledge that is incorporated in organizational artifacts like processes, structures, documents and technologies, at the expense of contradictory tacit knowledge, for the reason that the former is viewed as more legitimized by virtue of being recorded. Such a position is actually often taken, despite the fact that the institutionalization of knowledge may result in a rigidity and an inflexibility that would hinder, rather than improve, an organization's performance.

Partially as a consequence of this kind of managerial decision, it has been common to design systems primarily focused on the codified, explicit organizational knowledge. Management reporting systems, decision support systems and ERMSs, are all focused on the identification, collection and dissemination of this knowledge type. It has become evident through the action research conducted so far that the outcome of our efforts will be successful only if we are able, on the one hand, to make the creators and users understand the spirit of what we recommend and, on the other hand, if the research group is able to incorporate into it the outlook and the way of working of those whom it intends to serve.

[10]John Seely Brown and Paul Duguid (1998), "Organizing Knowledge," *California Management Review* 40(3): 91.