Strategic Alignment: What Else? A Practice Based View of IS Value

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STRATEGIC ALIGNMENT: WHAT ELSE?

A PRACTICE-BASED VIEW OF IS VALUE

L'alignement stratégique : quelle autre perspective ?

Une vision orientée pratiques des valeurs du SI

Completed Research Paper

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Abstract

Literature about IS strategic management or IS strategic value is abundant. Nonetheless, the bulk of existing studies are focused on the concept of alignment. They do not make sense of a strategic value "in practice" and still draw on notions such as activity or process to make sense of alignment. By means of a practice-based view of technology, three praxis are suggested here for the modeling of strategic value: legitimacy-related (based on adoption praxis), assimilative (related to design and acceptance praxis) and appropriative (linked to local adaptation and improvisation praxis). They are introduced by means of a "thought experiment" (a short story about a rifle).

Keywords: Strategic alignment, IS strategic value, Practice-based views, strategic value in practice, thought experiments.

Résumé

Pour l'essentiel, les recherches traitant des valeurs stratégiques du SI restent dans le paradigme de l'alignement stratégique, et utilisent des notions telles que celles de "processus" ou "d'activités". En s'appuyant sur la perspective offerte par les théories de la pratique, cet article offre une alternative en distinguant trois formes de praxis et des valeurs spécifiques.

Introduction: Strategic Alignment as a Dominant Paradigm for the Study of IS Strategic Value

What is IS strategic value? Over the last twenty years, the field of Information Systems has generated numerous and valuable insights into the strategic evaluation of information systems (Katz, 1993; Carlson and McNurlin, 1992; Ciborra, 1997, 1999; McGarry, 2006; Neirotti and paolucci, 2007; Wonseok and Pinsonneault, 2007). Nonetheless, the notion of "strategic value" is still rarely defined and becomes more and more a kind of buzzword. Strategic value

is often synonymous with "competitive advantage" (see Scott Morton, 1991), and is assumed to result from "strategic alignment" (Venkatraman, 1989), or is an implicit part of improvisations and "tinkering" in organizations (Ciborra, 1997). Furthering Michael Porter's vision of strategic value, the bulk of the studies about IS strategic value draw on notions such as "activity", "process" or "infrastructure" to understand the mechanisms of alignment and value creation (see for instance Henderson and Venkatraman, 1994). The Porterian vision of value, as a margin depending both on a legitimate price and a specific structure of costs sustained by some organizational activities and process (see Porter, 1980), is still, implicitly or explicitly, at the forefront of today's IS literature (in particular in the strategic alignment literature). From this perspective, IS is an infrastructure which supports the overall value chain in a rather static way (Stevenson and Wolstenholme, 1999).

In continuation to the practice-turn emphasized by Whittington (2006, 2007), one can wonder if the aforementioned conceptualization of strategic value, in particular that of IS strategic value, should not be reconceptualised. Beyond the "value chain" of Porter (1980) and its related "activities" or "processes", does the view of organization and strategies in practice imply a new vision of strategic value, in particular IS strategic value? This is the thesis which will be defended here. We will argue that a practice-based view of IS illuminates the multifaceted nature of IS strategic value, originating from various praxis (adoption, appropriation, assimilation). Alignment becomes then a type of value among others.

The article is organized as follows. First, various practices from which IS strategic value originates are introduced by means of a thought experiment. They are detailed and linked to specific values (legitimacy-related, assimilative, and appropriative). Then, a practice-based model is put forward to combine all these facets over time and space. Lastly, the contributions, limitations and perspectives of this new model are discussed.

Strategic Alignment as a Form of Value Among Others

Defining the strategic value of an artefact or a practice is quite a difficult exercise. Strangely, most research on the subject has put this problem aside (see for instance Katz, 1993; Ciborra, 1997, 1999; Neirotti and paolucci, 2007), and this naturalism is rather disturbing. What assumed value does an IS have? What is particular to the idea of a 'strategic' value as compared to a more 'operational' one? What is the difference between IS-based competitive advantage and IS strategic value?

There are numerous conceptualizations of value defended in economics by Marx, Ricardo and Smith (see Silem, 2005), in anthropology by Miller (2008) or in philosophy by Dewey (1969). But here we will be mainly interested in the organizational perspective offered by strategic management literature. Drawing on two general visions of strategic values suggested in the field of strategic management (shareholders or stakeholders' oriented, see Johnson, Scholes and Whittington, 2005), some answers can be given to the aforementioned questions. Pursuing a Porterian vision (see Porter, 1980; Lorino, 1989; Barney and Hesterly, 2006), IS strategic value can be first be defined as *the portion of the legitimate price (i.e. the final price a customer is willing to pay) a given stakeholder (mainly customers) can correlate to IS artefacts or IS activities as implemented by a firm*. In this context, value is always a subjective element related to a given point of view, and objectified in a price. The distance between this price and the actual cost supported by a given stakeholder (i.e. a margin) materialises this value. The manufacturing and sale of a car, a book, an umbrella, a service, always involves, directly or indirectly, the design and use of ICTs or more broadly, an IS. Customers will be more or less satisfied with these elements and additional services depending on their preferences. A strategic value is then an 'economic' value. Ultimately, "competitive advantage" is "the difference between the economic value a firm is able to create and the economic value its rivals are able to create" (Barney and Hesterly, 2006; p 12)

The previous perspective directly links value to the customers' point of view. Another way to proceed is to adhere to the point of view of the dominant organizational stakeholder including customers' or shareholders' priorities. In this case, strategic value can be defined as a "renouncement value". From this perspective, IS strategic value is *the price for which the dominant stakeholder (with a mandate or property over the organization) would be willing to waive IS infrastructures and routines*. Strategic value can thus be defined as the result of an extreme situation (no further use of an IS) and the overall valuation of its consequences according to a key-stakeholder category.

For this research, we rely more on a modified version of the first, customer-centred conceptualization of IS strategic value, arguing that it always imply an intent (instead of "preferences") to appraise a sociomaterial practice and that it can be shaped through three specific praxis (adoption, assimilation and appropriation) of actors, among those, customers who will be the key vector of valuation practice. From the perspective of organizational stakeholders, a

strategic value in practice of IS will be thus considered as *the teleological positive appraisal in practice of an IS, including the anticipated valuation of its outcomes by a third party (the so-called "customer").*

A Short Story About a Rifle…

We would like to use a short story, a "thought experiment", to introduce our argument. Introna and Whitley (1997: 483) define thought experiment as "coherent narrative of an unrealizable experimental situation, commensurate with the current paradigm, that is explicitly constructed in order to destroy the current paradigmatic position or to support an emerging paradigmatic position." A classic thought experiment is that of the desert island which will be used here.

Ten people, stuck in a conflictual situation, have been shipwrecked on a deserted island in the middle of the Pacific Ocean. They are alone, remote from any human civilization, and without the accoutrements of modern artefact. Here we have a pure, autonomous, 'atechnical' world. It will also be assumed that the individuals involved in the story are opportunist[1]. This setting will be an interesting way to progressively introduce technology and value into the analysis, by means of seven archetypal situations (de Vaujany, 2005).

On the first day *(situation 1)*, one of the castaways discovers a rifle on the beach… In a way, he instantaneously gets the upper hand. He is feared by the other members of the group and has easier access to the fruits and small game available on the island. But are there bullets in the rifle? Does he even know how to use the gun? He has got a rifle, everybody knows what it is and what it can do, and that is all that the others consider.

On the second day *(situation 2)*, one of the 9 un-armed castaways discovers a case on the beach. She opens it and finds 9 rifles, all similar to the one discovered by our "leader" (we call "the leader" for the rest of our story the actor who first discovered the rifle). The situation then becomes more balanced, as all members of the party possess the same weaponry. The fragile value, based on the simple possession of the artefact by the leader has vanished, along with a sort of legitimacy.

Gradually *(situation 3)*, the former leader is able to recover his dominance over the group. In the past, he has learned how to use a rifle. By means of intensive practices and training, he becomes an excellent hunter. Moreover, his performance and prowess with his rifle intimidates the others, and once again, he comes to lead the small group and island's scarce resources. The leader develops good routines in using the artefact. Everybody's got a rifle but the leader uses his in a more effective way.

Weeks pass. Through observation and dialogue, four individuals finally reach the same level of control of their rifles as that of the leader *(situation 4)*. The leader does not dominate any more. Several actors have rifles and use them in the same way…

Time marches on, and the leader regains his dominant position within the group *(situation 5)*. Naturally more agile (i), blessed with better eyesight (ii), faster than the four other actors (iii), he also demonstrates drops and drabs a growing charisma (iv). Thanks to these specific resources (related to the rifle or not), the leader also innovates (for instance with new shooting positions based on combinations of his unique physical capabilities). The leader has the upper hand again and probably for a longer period.

Four months later the domination of the leader is no longer questioned. However, this status quo is thrown into doubt when a new case is discovered on the beach and is opened by three men. It contains a new weapon! A rocket launcher! The three lucky castaways adopt the spoils and think that they have finally found a means of dominating the remainder of the small community, who are terrorized by the presence of this impressive weapon *(situation 6)*.

However, it soon becomes apparent that the game the three manage to kill with their rocket launchers cannot be eaten (the flesh is terribly damaged by the weapon). Furthermore, during a hunting party, the three men accidentally kill one of the inhabitants of the island *(situation 7)*. They decide to go back to using the old rifles…

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[1] In a way, the forthcoming story and its likelihood is based on two classic assumptions for that kind of exercise (at least in economics): the rarity of resources (i) and the opportunistic nature of human agents (ii).

From Our Short Story to Seven Archetypal Situations…

This short story illustrates 7 archetypal situations (see table 1):

Table 1. Seven archetypal situations.	
Archetypal situation	**Description**
S1: Legitimacy value	Value related to the simple adoption (deliberate or not) of an artifact. The idea: one only needs to display it, not necessarily use it. 'Technological fetishism'.
S2: First level competitive parity (i.e. competitors have the same resources at their disposal) or first level isomorphism (idem)	Caused by the progressive penetration of technology. The higher the perceived distribution of an artifact, the lower its "legitimacy value".
S3: Assimilative value	Value related to the assimilation of a relevant, adapted, innovative technology (and some expected practices). The idea: end-user only needs to mimic previous or expected practice.
S4: Second level competitive parity (i.e. competitors combine and position resources the same way) or second level isomorphism (idem)	The artifact is widely distributed among actors and used in a similar way.
S5: Appropriative value	Value results from specific resources and routines, often (re)combined through a 'play' with the artifact. The idea: one has to re-adapt continuously his/her behavior and draw on social and technical resources.
S6: First technical alternative	Differentiation (based on legitimacy or assimilative values) by technical substitution (this *differs from Situation 1 in that we are no longer in an atechnical environment, there are technical alternatives*).
S7: Illusory value	The aforementioned adoption may not bring the legitimacy or the assimilative values *expected* by organization's dominant stakeholder. A value expected by one stakeholder may ultimately not be acknowledged by a key third-party.

Legitimacy value (archetypal situation 1) is linked to the adoption practice. Whether technology is actually used or not, or is 'properly' used or not, is not at all important. Here, the gist of the matter is to possess technology and to display it in front of legitimizing stakeholders: IS is a sum of more or less legitimizing objects (which have 'enacted intrinsic' properties). The overall valuation process will depend on a lot of inter-organisational practices, such as interactions in professional conferences, evolution of articles, or evolutions of meditated discourse. Acquiring legitimacy value relies on detecting future 'hot' objects which are part of a promising "organizing vision" (Swanson and Ramiller, 1997). For instance, the car-manufacturing sector is extremely important in France, with leaders such as Renault and Peugeot employing thousands of people directly or indirectly (first or second level equipment suppliers). Increasingly, car manufacturers are looking for ways to integrate inter-organisational processes with new tools, such as EEP (for "Echange Electronique Professionnels"). In 2004-2005, several equipment providers were thus involved in the deployment of new IS technologies, so as to become part of the car-manufacturers' IS or broader inter-organizational processes. For many of them, such projects were completely ineffective, and sometimes, were hardly implemented. But the value was not at all related to IT *implementation* or *use*. It was related to IT *possession*. Most second level equipment providers had to display such activities if they wanted to go on working with the first level equipment providers and car manufacturers. It was 'only' a question of legitimacy. Institutionalist frameworks are likely to make sense of the generative mechanisms of this legitimacy in practice (see DiMaggio and Powell, 1988 or Scott, 1995). From an institutional perspective, organizations are seen as part of broader "organizational fields" (DiMaggio and Powell, 1988) and system of roles, culture, organizational resources and local practices are not sufficient to understand all IS appropriations. It is necessary to make sense of IS institutional inscriptions (within society, industries, professions…). Technology valuation is thus dependant on inter-organizational, authorized discourses on technology. Medias, professional societies and organisations, business schools, consulting firms, IT sellers… all these stakeholders produce "organizing visions", i.e. focal ideas about the way IT should be implemented and used (Swanson and Ramiller, 1997). In short, IS value is related to societal values of the objects it includes and their legitimacy with regard to the institutional mechanism valorising some object and neglecting others. This results in a kind of fetishisation of technology, good or bad *per se*.

Assimilation value (situation 3) makes more sense of IS design or parameter-setting activities. Here technology has to be co-aligned with organizational and environmental variables (see Venkatraman, 1989, 1991; Scott Morton, 1991; Henderson and Venkatraman; 1994; Lincoln, 1991; Gallier and Newell, 2003; Avison et al, 2004). Value is thus assumed to be inscribed into technology in a more or less participatory manner. But this is only the first step of IS value creation. Technology then has to be accepted and assimilated by the actors concerned (mainly end-users). It is only at this stage, through "mimeomorphic actions" (i.e. action which we "either seek to or are content to carry out in pretty much the same way, in terms of behaviour, on different occasions", like switching on the light, Collins and Kusch, 1998) that value is 'realized'. In this case, value is mainly a question for resource designers or assemblers. IS value is 'out there', built by the relevant, more or less participative work of co-design between IS and the organization. It is waiting for actualisation through acceptance and use. The alignment school thus has a faithful partner in those approaches interested in IT acceptance and assimilation, as found in the Technology Acceptance Model (Davis, 1989; Davis, Bagozzi, Warshaw, 1989). Ultimately, value is generated by rich exogenous practices which are then followed by actors who mimic some expected practices without drawing on any kind of tacit knowledge (Hedesstrom and Whitley, 2000). Some recent developments of the study of IT productivity paradox (shedding light on the importance of IT implementation and some aspects of ERP parameter-setting, see Aral, Brynjolfsson and Wu, 2006) may also be related to this value.

The third and last strategic value (situation 5), makes some endogenous practices the starting point of value creation. In a provocative way, one could say that technology itself (as a material artefact) is not a problem. Users' innovativeness and empowerment is much more important. Value is created through drifts, bricolages, improvisations, local adaptations of technology (Lévy-Strauss, 1968; Weick, 1988; Desanctis and Poole, 1994; Orlikowski, 2000, 2007; Ciborra; 1997, 1999, 2000; Alter, 2000). Interestingly, the concept of design can be replaced by notions such as "in-use design" (Lin and Cornford, 2000) or "technology in practice" (Orlikowski, 2000) and more generally "polimorphic actions", i.e. autonomous meaningful actions (Collins and Kusch, 1998). Hedesstrom and Whitley (2000, p 4), suggest "polimorphic actions are characterised by the fact that they usually involve varying behaviour to carry out the same action in relation to a situation" (examples: writing a research article, telling a joke, teaching…). Assimilative practice can draw on artefact or set of practice which are themselves the result of tacit knowledge embedded, polymorphic actions. Furthermore, assimilation and mimeomorphic actions are a way to spare cognitive (and emotional?) resources for other polymorphic action. We do not need to adjust our behaviour all the time, but only for some valuated actions. Conversely to mimeomorphic action, appropriation probably implies a relationship based on hostility with technology, which is an alien within the sociotechnical

system. It has not been "digested" yet. Mimeomorphic actions (assimilation for instance) imply a cognitive control, and a relationship of hospitality between the host and the guest (see Ciborra, 1997 and his use of these Heideggerian notions).

Appropriation as a polimorphic action is illustrated by Bansler et al (2000) in the case of Intranet implementation. Users are reported to design the technology, its content (on forums, database, e-mails…) and effect its' urbanization. Initially, technology is a kind of 'empty shell', which will be filled by IT uses and local redesign activities. In a way, the strategic value emphasised in this third situation is very coherent with some key tenets of the resource-based view (Powell and Dent-Micaleff, 1997; Wade and Hulland, 2004). According to Wonseok and Pinsonneault (2007), the resource-based view assumes that resources "confer a competitive advantage to a firm only when they are firm-specific, valuable, rare, inimitable, and non-substitutable". It is through (re)combinations of rare resources and routines through their appropriation, and the inscription of technology in a specific socio-technical context, that a sustainable value can be obtained.

Let us now come back to the general definition proposed for IS strategic value in practice. In the context of the three aforementioned facets, IS strategic value is related either to a 'fetichisation' (legitimacy brought about by the set of artefacts included in the IS), an assimilation (the degree to which the system is accepted and used) or to various emergent competencies and adaptations (improvisations or drifts). Whatever the value, it always involves a third party who acknowledges or not (see situation 7) the value 'practiced' by a given actor. The valuation of a technology thus depends on an intent which feeds appraisal of technology. But this appraisal (by customers or internal stakeholders) can be more or less reflexive (depending on the kind of action, polymorphic or mimeomorphic). Furthermore, the strategic valuation of technology by internal stakeholders is always an indirect one, extrapolating recursively the possible valuation of technology by customers.

The previous short story illustrates three core IS concepts (assimilation, adoption and appropriation). By coming back to the IS literature, they can be defined this way.

Adoption is evoked in numerous theories, such as neo-institutionalist frameworks (Swanson and Ramiller, 1997), IT stage-based models (Cooper and Zmud, 1990) or the absorptive capacity model (Cohen and Levinthal, 1990). Basically, adoption will be defined here as *the practices which put an artefact at the disposal of potential organisational users.* Investment and implementation are part of adoption practices, which can thus be both polymorphic (in the search and choice of some rising technologies) or mimeomorphic (in applying some organizational procedures).

The assimilation concept is heavily implemented in IS research. It is rooted in well-established theoretical frameworks such as Roger's (1995) theory of innovation diffusion, Davis' (1989) Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989) or its extensions (such as the Unified Theory of Technology Acceptance as developed by Venkatesh, Morris, Davis and Davis, 2003). Assimilation corresponds to *practices of accepting and regularly using a technological artefact within an organisation.* This mimeomorphic action implies a cognitive control over the artefact.

Lastly, appropriation is used by various IS sociological frameworks. Structurational approaches such as adaptive structuration theory (as offered by Desanctis and Poole, 1994), innovation sociology (Alter, 2000), or communication sociology (Proulx, 2001) draw on the notion. Appropriation can be defined as *the practices through which an artefact is made locally useful for a given purpose by an actor.* It is a highly situated action, depending on moods, emotions and reflexivity (Ciborra and Willcocks, 2006). Appropriation implies bricolage, improvisation, tinkering (Lévy-Strauss, 1966; Weick, 1995; Ciborra, 1997, 1999) and more generally, polymorphic actions.

These three concepts do not follow a sequential logic. It is tempting to assume that appropriation involves assimilation, which itself requires adoption. But an ICT artefact or IS can be assimilated without any adoption by the organisation. For instance, by means of his/her navigator, an employee can download software directly from the web. He/she can also install private software on his/her laptop without any 'official' agreement. Conversely, software adopted by a specific dominant stakeholder of the organisation may never reach its expected end-user. Appropriation may also occur without any assimilation or even adoption by the organisation. The artefact will be made useful for a given purpose without the material presence of the software. This can occur at the earliest stages of an ERP implementation for instance. The technology is not here yet, but some stakeholders will use the idea of an ERP to frighten other stakeholders. Appropriation does not imply cognitive control over the artefact. **From an analytical point of view, it is thus extremely important to distinguish between appropriation, assimilation and adoption, even if these concepts are often superimposed "in practice" (in particular in small sized structures).**

In contrast to most current debates about IS strategic values, which focus directly on IS artefacts, we would like to emphasise a different, practice-based view of technological artefacts and their related strategic value.

Making sense of IS values in practice: between praxis, practice and actors

How can adoption, assimilation and appropriation be combined over time? First, the general praxis and practice centred visions of organizations will be detailed. Then, the contributions, limitations and avenues for further research will be discussed.

A Practice-based View of IS Strategic Value: the Application of Whittington's lens

Practice-based views keep expanding within managerial research (Whittington, 2006), in particular in the field of Information Systems and Strategic Management. This expansion is fuelled mainly by Giddens' structuration theory (Orlikowski, 1992, 2000; Walsham, 1993; Desanctis and Poole, 1994), but also the theory of practice (Levina and Vaast, 2005), Actor-Network Theory (Scott and Wagner, 2003; Sarker, Sarker and Sidorova, 2006) and the theory of social critical realism (Morton, 2006; Dobson, Miles and Jackson, 2007) to name but a few.

The practice-based perspective is interested in examining how actors involved in the organizational process "act and interact with the social and physical features of the context in the everyday activities that constitute practice" (Jarzabkowski, 2003; p 23). Practice is assumed to be the core of social structure maintenance, reinforcement or transformation. Still, in continuation to Jarzabkowski (2003, 2004), if strategies are not something organizations have or possess, but rather something which is spontaneously done, this is also the case with ICT and more generally, IS. However, this "evolution" of practice may change the way both IS and its related value should be conceptualized. **If value is no longer a *property*, something which is possessed, something a given technology (more or less properly aligned) has, but something in practice, a valuation depending on an intent (see Dewey, 1969), the conceptual scaffolding of IS strategic value (as conceptualized for instance in the value chain) should submit to a complete revision.**

The practice-based model elaborated here is a first step in this direction as it focuses on the three key IS practices of adoption, assimilation and appropriation as well as on broader organizational practices.

First, according to Whittington's perspective, practices can be described as "the way we do things around here" (Whittington, 2002). According to Jarzabkowski and Wilson (2002), there is also a teleological dimension in practice, i.e. a practice is always goal-oriented (so there are clear affinities between Collins and Kusch's vision of action and Whittington's definition of practice). The ongoing stream of activity constituting a practice can be bracketed by means of a helpful distinction provided by Whittington (2006).

Still according to Whittington, the three main topics of practice theory are: the *practices* of organizations and their wider socio-economic environments; actual activity (which he terms as *praxis*), and *practitioners*. Drawing on Reckwitz (2002), Whittington (2006: 619) defines practice as "the shared routines of behavior including traditions, norms and procedures for thinking, acting, enduring "things". He then defines praxis as "the intra-organizational work required for making strategy and getting it executed" (Ibid). Along these lines, we define organizational IS praxis as the *everyday work required for producing, maintaining and adapting IS infrastructures in organizational practice.* Contemporary organizational praxis is aimed at sustaining and improving organizational practices (in mimeomorphic or polymorphic ways) to meet intra- and inter-organizational socio-economic demands. Similarly, IS praxis is commonly aimed at and implicated in programs involving significant organizational change (Boudreau & Robey, 2005; Markus, 2004), and thus having the same *teleological* explanation as strategy praxis. A praxis, thus transforms, reproduces, maintains, reinforces, manipulates, and circumvents practices. It is inseparable from a practice, which is, in turn, the infrastructure of praxis. Practices are thus the medium and the outcome of praxis. This is clearly consistent with Giddens' (1984) view of social structuring, which is used by Whittington as a sensitizing device in many of his writings. In addition, Whittington (2006) suggests that praxis can draw on both organizational and extra-organizational practices, such as those enacted by professional networks, business schools, and software editors. Lastly, practitioners are "people who perform this activity praxis and carry its practices" (Whittington, 2006; p 619)

In the field of IS, and more precisely when trying to understand strategic value as related to IS, adoption, assimilation and appropriation can constitute praxis or practices. IS praxis corresponds to a continuous, everyday

flux of activities, involving the reproduction and transformation of broader practices which include dimensions of legitimization, domination and signification. Adoption, assimilation and appropriation practices are both the medium and the outcome of adoption, assimilation and appropriation praxis. For instance, they can be part of a strategic plan which is regularly enacted through praxis. These practices draw upon both organizational and extra-organizational elements. Professional networks, IS conferences, business schools, software editors, and IS consultants all convey and activate buzzwords and practices which can be produced or reproduced locally by praxis (Ramiller and Swan, 1997). Furthermore, practices may be "put into action" by IS practitioners to a greater or lesser extent (thereby producing or transforming a perceived strategic value) and a local value may remain a 'potential' value for customers. For instance, a local improvement of a sub-process, by means of reinterpretation of a software or new parameter-setting, may improve its efficiency without any global improvement of the process or identification of an improvement by customers. Thus, we would like to emphasise the layers which exist in the emergence of strategic value, and a distinction between 'potential' value and 'realized' value. 'Realized' we used in the sense that a local valuation is acknowledged by customers, which may imply specific intra-organizational praxis like communication. At a lower level, realization means also that some organizational capabilities can be actualized (or not) and strengthen through praxis.

The sociotechnical system and its related actors may have more or less potential: actors' individual or collective level of innovativeness may be low or high (Alter, 2000), organizational mindfulness may be more or less developed (Swanson and Ramiller, 2004) and the technology adopted by the sociotechnical system more or less relevant depending on its' location in the organizing vision cycle (Swanson and Ramiller, 1997); the fit between sociotechnical system features and its strategy and environment more or less coherent and the overall sociotechnical system more or less assimilated by end-users (Henderson and Venkatraman, 1994).

Actors' innovativeness corresponds to a capacity to innovate, imagine uses and applications, or develop original uses through interactions with the artefact. Organizational mindfulness (see Swanson and Ramiller, 2004) depends on the reflexivity level of organizational actors with regard to their practice and environment. Are they stuck in routines or are they able to take their distance from them? ICT location in the "Organizing Vision" cycle relates to technical fads and fashions as part of the conditioning context (Swanson and Ramiller, 1997). Are ICTs possessed by organizational members on the eve of a broad diffusion, and are thus extremely strategic? Are they marginal artefacts? Or are they already a declining concept? Lastly, the harmony between technology and the environment can also been seen as a generative mechanism. Coherence or fit can be a source of fluidity.

Thus, the generative mechanisms we have just described correspond to a potential value. Following on from Huat Goh and Kauffman (2006), it is helpful to distinguish between 'potential' and 'realized' values. It is as a result of communication with and adoption by legitimizing actors, through assimilation, appropriation and the exercise of innovativeness, through investment decisions and actualization of mindfulness, that potential values are realized or not. Realization depends mainly on the combination of legitimacy, assimilative and appropriative praxis, and the overall integration and communication with customers. Besides, at the level of economic performance, one actualization praxis can still counterbalance or impede another. Social conflicts can pose several potential problems. They can impede the actualization of innovativeness and the appropriative value introduced in the first part. They can obscure the potential of the organizing vision and thus the legitimacy value. Or they can deform the fit between IS and the environment and as a result the assimilative value. The interactions between these three sets of ICT-related practices are therefore more or less helpful depending on the situation. Some negative values related to non-technological or technological fields may also counter-balance a given value. Finally, 'realized' values can be acknowledged, unacknowledged, disputed or misinterpreted by broader extra- or intra-organizational praxis… and thus be still 'potential' values or 'illusory' values from the point of view of some stakeholders. Customers may thus be unaware of the societal value of some technologies involved in the product or service they acquire. The overall performance of an organization may also emerge without making sense of some of the technical sources of its' performance (such as appropriative value). Customers may be ill informed of new possibilities offered by organizational IS (such as a new service offered by the website or new delivery cycles).

Interestingly, the global dynamic and the move from potential to realized value is praxis based. Praxis is actually at the basis of the models' dynamic. Appropriation, adoption and assimilation praxis reinforce or weaken generative mechanisms. An actors' innovativeness will thus be reinforced, or not, through actualization in the appropriation praxis or more generally, through technology enactment. An appropriation praxis will thus be a good opportunity to exert and strengthen actors' innovative potential.

Ultimately, two sets of practices are at the core of a practice-based view of IS-related strategic value and performance. One at T_1, involves adoption, assimilation and appropriation praxis originating IS strategic potential and realized values. These praxis and their identification result in a more or less legitimate price from the customer's point of view. Another one at T_2, draws upon the long-term emergence of IS strategic values (and their impact on margins), and consists of constructing organizational performance. In contrast to Porter's (1980) vision of technology as a static infrastructure sustaining a value chain, a practice-based view of value emphasises a practical chain in the valuation of technology by customers.

IS correlated economic performance represents, perhaps, only a part of realized values (from the customers point of view), given that the impact of realized values depends on potential value (which is in itself, a kind of opportunity scope). Furthermore, realized values may be conflated with potential values. But realized values may also be more than potential values as customers' praxis itself may leverage them.

Lastly, the part of economic performance related to IS practice is itself enacted, produced, transformed and maintained by organizational stakeholders. Organizational performance is thus (and typically from the perspective of most practices-based approaches) subjective and objective. The subjective enactment of technology is thus a constraint and an enablement for action.

Discussion: Implications, Limitations and Avenues for Further Research

This study has several implications for research and practice.

From a research standpoint, it results in a practice-based vision of IS values likely to overcome the classic alignment perspective (which becomes a case among others). IS strategic values result from the valuation of practices through praxis involving both organizational stakeholders and customers. And this practice-based valuation is multilayered. A value created and acknowledged by a given stakeholder can be unacknowledged, disputed, misinterpreted or leveraged by another key stakeholder (the customer). Organizational capabilities are not necessarily realized and reinforced through praxis. A realized value (more comfort in on-line reservation making, for instance) may be counter-balanced by other praxis (such as recurrent strikes). Besides, high levels of strategic values do not necessarily generate economic performance. Some organizational or extra-organizational praxis may impede or leverage the transformation of value into performance: appropriative or assimilative value of competitors, new laws, exogenous shocks such as an oil crisis… This conceptual scaffolding may be a way to go beyond notions such as "process" (see Whitington, 2007) or "activity" (as described by Porter 1980 in his value chain) to make sense of those "practices" sustaining the legitimation of price from the customer's perspective. In the continuation to Whittington's (2007) call for a "problematization of performance", this work is a first step towards a new vision of value and performance in practice ("At stake here is the competence and credibility of individual practitioners in performing their roles, rather than some notion of organisational performance", Whittington, 2007; p 1583). It is also a way to emphasize a broader perspective than that present in many studies focused on a local and structural vision of usage-related values (see for instance Burton-Jones and Straub, 2006).

Furthermore, this research has emphasized the multifaceted nature of IS strategic value, whose very nature can change according to the intra or extra-organizational praxis of some leading actors originating the value. These actors, their identity and capabilities, can be reshaped by their praxis.

This research has thus been a way to answer the call made by Chan and Reich (2007) for new theoretical perspectives on IS alignment and IS strategic analysis. They say "It has been argued by many a reviewer that current alignment research is largely atheoretic. Because of its heavy reliance on the strategic management reference discipline and contingency theory (which some do not consider as a theory), it is not rich in the use of theories such as institutional theory, the resource based view of the firm and stakeholder theory. Greater use of well-established theories in alignment research is needed." (p 311). Maybe practice-based views of IS are among these possible reliable frameworks.

From a practice standpoint, this research also offers some landmarks for practitioners. Praxis can be the direct target of IS management where IS can be re-designed in use, and a place where IS value can be leveraged, or not. Adoption is not an instantaneous, rational choice, it is undertaken in open social systems, where fads, fashions and isomorphism impact the dynamic of strategic value. New sets of indicators for IS managers (more praxis oriented) would probably be useful in order to help guide management of IS strategic value 'in practice' and its related performance.

Besides, the overall practices-based, integrative model results in a specific vision of IS strategic management. IS strategic value can never been taken for granted. It is a fragile, provisional, fluid construct, which should be continuously re-enacted through training of end-users, communication, redesign of interfaces, new parameter-setting, and meta-structuration (see Orlikowski, Yates, Okamura and Fujimoto, 1995). Managers should focus on three key points: IS strategic potential, IS realized values, and final economic performance. All this should then be considered as a complex 'system in practice'.

This research has limitations that should be overcome in future IS research.

First, we do not propose any means to precisely 'measure' potential and realized values (in contrast with Katz, 1993 or Carlson and McNurlin, 1992). The set of events or non-events related to this latter layer and their relationship with competitive advantage is absent from our model.

Secondly, the short story we used to elaborate our argument can be questioned. Individuals are not organizations. A rifle is not an information system or an information technology. Nonetheless, we believe it was a helpful caricature to introduce and clarify our typology. As a thought experiment, it was a "constructive elucidative" device (Introna and Whitley, 1997), i.e. a way to clarify our emerging argument.

Then, the notion of IS strategic value in practice is a paradox. If IS is everywhere today, in every single sociomaterial practice, is there a specifically IS strategic value anymore? If IS artefacts are continuously re-enacted and recombined through socio-material practice with other artefacts and resources, does the canvas presented here still make sense? We think so. Firstly, it is an extreme, archetypal situation, where the legitimate price is sustained clearly and mainly by IS-related practice. Then, another way to overcome this criticism is to suggest that beyond IS artefacts and resources, the conceptual framework elaborated here applies to all material and symbolic artefacts and resources (furniture, clothes, buildings, mobile phones…).

Finally, the practice-based view emphasized in this article may downplay the role of design and designers in a dangerous way. From an appropriative perspective, technology, per se, can never bring value (even the legitimacy value is based on a social construction). The technology and IS enacted in this paper is always a "technology in practice" (see Orlikowski, 2000) i.e., conceptualized through the lens of simultaneous adoption, assimilation and appropriation practices. There is no such thing as strategic materiality on the one hand, and social enactment of IS artefacts on the other. Instead, "the social and the material are considered to be inextricably related - there is no social that is not also material, and no material that is not also social" (Orlikowski, 2007; p 1437). Even from an assimilative perspective, users need to practice technology so as to make its potential come true. Compared to rational views on technology, a practice-based view results in some provocative outcomes which should not be misunderstood. Designers keep playing an important role here, but maybe in a more continuous way. IS projects have no temporal or spatial boundaries. An on-going collaboration with so-called end-users is absolutely necessary (see Ciborra, 1994).

Future research should thus encompass problems such as the relationship between praxis and value, not only resources and their combinations, or the fit between strategy and IS. An emerging stream of research has just begun this process (such as Ranganathan and Brown 2006 who focus on the value created through specific decision practices at the purchase stage). But more empirical studies, mainly longitudinal and praxis-focused, should be done.

From a more theoretical perspective, other works should also result in combinations of IS concepts and integrative paradigms about value and performance (see Fichman, 2004 on this point). Another interesting research agenda might be the use of a critical realist perspective as a sensitizing device to go deeper into the potential-realized value distinction, by means of the multi-layered vision offered by this perspective (distinguishing between "real", "actual" and "empirical" realms). Bhaskar's (1979, 1989) transformative model of social action or Archer's (1995) morphogenetic approach could be extremely helpful in carrying out this task.

In conclusion, this study was primarily aimed at overcoming the notion of strategic alignment and investigating how IS can result in strategic value in practice. To answer this complex question, we came back to the notion of strategic value and developed a practice-based approach which makes alignment a form of value among others. By offering some exploratory guidelines for studying IS strategic values 'in practice', we hope to spark further interests in and debate on the topic. On-going discussions with our colleagues in strategic management, marketing, economics and anthropology will be extremely helpful in refining and extending the argument.

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