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Changing landscape: new ICTs and strategy.

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Introduction

During the last two decades information and communication technologies (ICTs) have moved to the heart of most economic and organizational activities, as organizations have become what Bar and Simard call 'network firms' (2006); organizations that operate in networks enabled by ICTs, both in regards to production, cooperation and communication. This has ensued as ICTs have enabled faster response time to market changes (Lucas, 1996), better maintenance and access to organizational memory (Morton, 1991), improved leverage of organizational knowledge (Carayannis, 1998; Finholt, Sproull and Kiesler, 2002), greater employee participation, rapid scheduling and enhanced communication across and within hierarchical levels and dispersed groups (Sproull and Kiesler, 1991) - causing a restructuring of existing organizational processes (Evans and Wurster, 2000; Gates, 1999; Hammer and Champy, 1993; Shapiro and Varian, 1999).

These empirical developments call for sustained theoretical attention to the consequences of new ICTs' increasingly important role within organizations. In this article, we engage in a discussion of the consequences of ICTs in relation to a particular organizational phenomenon, namely strategy and strategy making. In line with Greenstein, Lerner and Stern (2013), we will leave aside the more historical question of how and why new ICTs have become so central, and instead focus on their consequences for strategy.

To address the issue of consequences, the article has a dual focus. First, it reviews how the strategy literature has conceptualized the relationship between ICTs and

strategy since 2000. Secondly, it illustrates how a range of empirical phenomena relating to ICT may recast central concepts and debates from the strategy field in ways that are not captured by the existing literature. In particular it touches upon the way theories about 1) control over company strategy, 2) boundary drawing between organization and environment and 3) strategic decision-making may be in need of a reformulation. These are fundamental problems that can be addressed in a variety of ways, depending on theoretical inclination. Below, we will make the argument that from a position that emphasizes the constitutive role of technology, control, boundary drawing and strategic decision-making can be seen in a new light.

Obviously, this argument should be seen as a continuation of the debates about the more general question of the relationship between technology and organization, which has been theorized and investigated thoroughly. The introduction of contingency theory (e.g. Woodward, 1958; Thompson and Bates, 1957; Thompson, 1967) played a big role in cementing the importance of technology in organizational activities. By advocating that technology formed one of three determinants of organizational structure, along with organizational size and the environment, the contingency theory paradigm brought attention to the relationship between technology and organizational activities within the organizational theory field. Woodward (1958) contributed particularly with investigations into manufacturing technology, while Thompson (1967) introduced the concept of technological interdependence. Following, a vast array of investigations on different aspects organizing and technology were introduced (see e.g. Galbraith, 1973; Perrow, 1967).

Parallel to this attention to the intertwinement of organizations and diverse technologies, technology also became a central theme within the strategy field. Here, technology was conceptualised as one of the central factors to consider in deciding the firm's strategy. Scholars like Abell, (1980), Maidique and Patch (1988) and Porter (1983) argue that an organization needs to capitalize on its technology and seek technological advantage over competitors. As such, technology is viewed as both a weapon and a threat, forcing the organization to constantly match its competitors by making the most out of, or develop, its technological possibilities (see also Cooper and Schendel, 1976; Foster, 1986; Abernathy, 1978; Tushman and Anderson, 1986; Anderson and Tushman, 1990).

The present article adds to this literature on technology and strategy making in two ways. First, it narrows the broad discussion of technology down to a focus on ICTs, to look at the particular issues ICTs raise in relation to strategy. Second, it argues for the fruitfulness of a theoretical approach to the issue of ICT and strategy that recognizes the constitutive role of technology. A common trait of the above-mentioned contributions to the theorizing of strategy and technology is that they portray technology either as a resource with which to carry out a specific strategic actions (for instance, a tool to use and control) or a constraint in doing so (for instance, a structure that the organization has to operate within). It is rarely seen as an active agent that makes a difference in relation to what strategy may be or how strategizing processes take place.

We will argue that the potential active role of technology in strategy and strategy making has become even more important to investigate with the rise of new ICTs. New forms of software (e.g. Google, Facebook, Netflix, Wikipedia and YouTube) and hardware (e.g. smartphones, tablets, touchscreens and 3D print) have recently made interactions between clients and servers more dynamic, webpage displays and applications more interactive and participative, and user-to-user interactions more direct (Harrison and Barthel, 2009). As we will illustrate below, new ICT's have an agency that makes it problematic to conceptualize them as mere resources or constraints in relation to pre-existing strategic goals. They have particular affordances which may, for instance, alter a company's relationships with customers or users, offer new types of information sources and analyses of companies' environments, or create new conceptions of strategic necessities.

To sum up, the two main question this article raises are: How has the rise of new ICTs been approached in the field of strategy research, and how might a recognition of the constitutive role of technology help us shed light on the new issues ICTs raise in relation to strategy and strategy making? To address those questions, the main part of the article reviews the literature on new ICTs and strategy published in the most influential strategy journals since 2000. Here, it is argued that most contributions consider ICTs an opportunity that companies should engage with strategically. They fall largely into two categories; articles treating how ICTs can be an important element to consider in relation to strategically handling an organization's environment and articles detailing how ICTs may become a central element in strategically handling an organization's internal operations. The literature

review concludes with a problematization of the fundamental view of technology that runs through most articles. This is a view that conceptualizes technologies as passive tools and intermediaries and thereby fails to recognize the constitutive role of technology, i.e. ICTs' shaping of strategy and strategy processes.

The section following the review therefore argues that a stronger focus on the constitutive role of technology would make it possible to identify new issues that are worth bringing into strategy thinking. It does that in two ways. First, it shows how this point has already been successfully articulated in recent discussions of technology in the field of organization studies and it argues that some of the theoretical insights from this work could productively be transferred to the strategy literature. Secondly, it illustrates the empirical relevance of such a transfer through empirical observations stemming from a range of our own field studies dealing with the relationship between ICT and organizing. Rather than full empirical case analyses, these empirical examples should be seen as illustrations of our point about the constitutive role of new ICTs in relation to strategy and as tentative suggestions about interesting new research themes to explore.

Method for the literature review

To answer the question of how the rise of new ICTs has been approached in the field of strategy research, we have followed previous inquiries into 'the field of strategy research' (see Azar and Brock, 2008; Cumming and Daellenbach, 2009; Furrer et al., 2008; Nag et al. 2007), focusing on the debate as it plays out in academic journals.

For the selection of which journals to include, we adopted a list of ten journals which have the highest impact factor as presented by Azar and Brock (2008) in their study of rankings and impact factors of strategy journals. Our decision to include these journals is also consistent with the journals Furrer et al. (2007) and Nag et al. (2007) have deemed most influential within the strategy field. Furrer et al. employed the method of content analysis to arrive at a similar list, while Nag et al. surveyed strategy scholars. The included journals are *Strategic Management Journal*, *Journal of Economics and Management Strategy*, *Long Range Planning*, *Technology Analysis and Strategic Management*, *Advances in Strategic Management*, *Strategic Organization*, *Business Strategy and the Environment*, *Journal of Business Strategies*, *Research Methodology in Strategy and Management*, and *Business Strategy Review*.

To initiate our literature review, we looked at all published articles in these ten journals from January 2000 till April 2013. The time period represents a little more than a decade, from the burst of the dotcom bubble until today, representing a period where organizations, and hence also scholars, saw an upsurge of new ICTs, prompting renewed investigations into the role of technology. In searching for the articles, we used the database Scopus. For each individual journal, we searched for articles that contained one of the following key words 'information and communication technology', 'ICT', 'social media', 'new media' and 'web 2.0'. By employing these key words, we aimed at not only including articles that directly referred to 'information and communication technologies' or used the term 'ICT', but also investigated closely related, if not overlapping, concepts like social media, new media and web 2.0. Further we chose to search not only the abstracts, but the

whole article including references. This was intended to ensure that any contribution to the debate, were included: Both where ICTs were at the centre of the inquiry and where they were simply seen as one of many components. Following this broad search, we conducted a content analysis (Budd, Thorp, and Donohew, 1967) of the articles employing one or more of the key words. In the content analysis we focused on 1) in what organizational context new ICTs are seen as an important factor for strategy (NB: could we say: Which organizational contexts have prompted inquiries into the relationship between ICT and strategy? – or something more precise? It seems to me that we did something else; can somebody recall a third version of the question?) , and 2) what role the author(s) assign to new ICTs in organizational strategy and strategy making.

We have deliberately chosen to not to include popular publications and textbooks in the literature review, such as Scott's *The new rules of Marketing and PR* (2007), Eggers' *Government 2.0: Using Technology to Improve Education, Cut Red Tape, Reduce Gridlock, and Enhance Democracy* (2005), Li and Bernoff's *Groundswell: Winning in a world transformed by social technologies* (2008), Golden's *Social Media Strategies for Professionals and Their Firms: The Guide to Establishing Credibility and Accelerating Relationships* (2010). Methodologically, this choice was based on the premise that fundamental ideas would be captured in journal articles, and that vital textbook contributions would have spilled over into the debate in journals, and vice versa. However, as the production of popular publications and textbooks have by now become its own enterprise within the strategy discipline (Clegg et al., 2011), it could be an interesting research question in itself to look into the relation between

academic knowledge and business strategies in this field, and look into the performativity of particular understandings of new ICTs.

Findings from the literature review

As table 1 show, the ten journals included in the study published 4.282 articles from January 2000 – April 2013. Of all these, 387 were identified as employing one or more of the key words, representing only 9% of the total sample. *Long Range Planning* and *Journal of Business Strategies* are by far the loci of most contributions to the debate, while *Strategic Management Journal* and *Journal of Economics and Management Strategy* are at the lower end. Prior to the data collection, we had expected that the journal *Technology Analysis and Strategic Management* would be a primary spot for investigations into the role of new ICTs in strategy and strategy making, especially considering its aim to be an outlet for 'research on the analysis and assessment of technologies, their potentialities and impacts' (Technology Analysis and Strategic Management, 2013). It can be seen as a surprise that only 14.8% of the articles were identified as referring directly to any of our key words. And it might be seen as equally surprising that the highly interdisciplinary journal *Strategic Organization* had published only 13 articles during its ten-year life directly addressing the role of new ICTs on strategy making. But both journals fit the general tendency: there has been only a minor focus on new ICTs within these journals since 2000. The topic is almost absent in some outlets, while only two out of ten are responsible for the publication of more than 1/5 of the publications.

Table 1

<i>Key words:</i>	Information and communication technology	ICT	Social Media	New Media	Web 2.0	Total	Total pub. articles	% of total
<i>Journals:</i>								
Strategic Management Journal	13	14	2	11	0	40	1258	3,2
Journal of Economics & Management Strategy	6	4	0	1	0	11	433	2,5
Long Range Planning	18	42	10	6	8	84	405	20,7
Technology Analysis & Strategic Management	0	77	1	4	2	84	567	14,8
Advances in Strategic Management	0	3	2	6	0	11	197	5,6
Strategic Organization	1	2	5	4	1	13	114	11,4
Business Strategy and the Environment	11	11	0	3	0	25	466	5,4
Journal of Business Strategies	32	0	19	22	0	73	290	25,2
Research Methodology in Strategy and Management	1	1	0	1	0	3	62	4,8
Business Strategy Review	10	4	11	10	8	43	490	8,8
Total no articles	92	158	50	68	19	387	4282	9,0
% of total	2,1	3,7	1,2	1,6	0,4			

From the content analysis of the 387 articles several unifying themes emerged in relation to the question of which types of organizational context new ICTs are seen as important for. The most dominant were e-commerce, stakeholder-relations, intra-organizational coordination, management, production and communication. As such, it can be concluded that scholars identify a wide variety of situations where new ICTs play an important role in the strategic efforts by organizations, much in line with what earlier scholars like Carayannis (1998) and Sproull and Kiesler (1991) pointed

to. The content analysis also reveals that the majority of the articles reproduce earlier scholars' exclusive focus on either strategy issues relating to the 'inside' of the organization or the 'outside' of the organization.. This becomes evident in relation to the question of what role the author(s) assign to new ICTs, where two dominant answers emerged: the articles have a focus either on new ICTs as a tool for strategic positioning (outside), or as a device for the strategic orchestration of organizational processes (inside). With few exceptions, which we will return to later, the articles selected from the most influential strategy journals thus place themselves on each side of a inside/outside continuum as exemplified in the following two subsections.

New ICTs and the strategic handling of the organization's environment

Representative of a large group of articles in the sample is Lanzolla and Anderson's 'Digital Transformation', published in 2008 in *Business Strategy Review*. In the article, it is argued that new ICTs challenge organizations by enabling ubiquitous digital interaction, distribution and reach out to its environment (the outside). According to the authors, these challenges have been overlooked by traditional strategy research. They argue that new ICTs '...are pervasive, and [...] companies have no choice but to leverage them' by making it a competitive priority to create new value chains and become the trusted gateway through which users interact with content, on platforms controlled by the organization (Lanzolla and Anderson, 2008: 76). The article depicts how the rise of new ICTs has created a new market, with a new logic that organizations needs to take advantage of. The same observation is offered by Wirtz et al. (2010) in their 'Strategic Development of Business Models. Implications

of the Web 2.0 for Creating Value on the Internet' where they argue that new ICTs have changed the way in which value is created and captured, and thus 'regular' corporate positioning strategies, in this case business models, need to be abandoned in favour of the new market logic. The authors present four possible Internet business models (focused on content, commerce, context, or connection), which have all been affected by the characteristics of the web 2.0, namely social networking, interaction orientation, user-added value, and customization.. It is argued that each of the four business models might be differently affected by the web 2.0 characteristics and might be more or less challenged by them. The abandoning of old positioning strategies in favour of a new logic in the strategic handling of the organization's environment is equally stressed by McGrath (2010) in the same issue of *Long Range Planning*. The author further advocates that organizations should adopt a 'discovery driven' approach in developing new strategies, since in highly uncertain, complex and fast moving environments, strategizing is as much about rapid experimentation and evolutionary learning as it is about traditional skills of planning and execution (McGrath, 2010: 247).

Like we point out in the introduction, these authors also point to the lack of attention strategy scholars have given new ICTs. A notable exception is a 2002 special issue of *Journal of Business Strategies* devoted to the question of what the new market opportunities offered by new ICTs consist of, and how they should be addressed,. In the introduction, Mehta and Kline (2002) state that organizations need to focus on how to play – and not *whether* to play – by the new logic. They emphasize the need to distinguish between the web as a tool and as a marketplace,

and by focusing on the latter; they construct factors outside of the company as the most important to take into consideration in relation to new ICTs. Echoing previously mentioned scholars like Abell, (1980), Maidique and Patch (1988) and Porter (1983), they argue that the failure of dot.com firms showed that there is another logic in the 'e-business marketplace' than in traditional markets, and that companies need to adapt their positioning strategy accordingly (Mehta and Kline, 2002). This line of argument is substantiated by Lee & Gosain (2002) in the same special issue, where they examine the difference between how internet and 'brick-and-mortar' companies connect to the market, concluding that internet business requires a more dynamic positioning strategy leveraging on the internet's 'great potential as a medium to reach consumers' (2002: 56).

This notion of strategically utilizing new ICTs as a way of connecting with the market and the organization's stakeholders is also a main point for Anderson et al. (2013).

Investigating the effects of new ICTs on the music industry they argue that understanding the opportunities of new technologies to connect with customers is strategically crucial for the survival of the industry. Regarding the potential for what they call 'mass intimacy', they advocate that organizations can use social media platforms to position themselves and create loyalty and a sense of exclusivity, by engaging customers in exchanging emotions and experiences with the organization. The argument about the importance of creating such an exchange is parallel to an article published in 2009 in *Technology Analysis & Strategic Management* by Olivier Glassey. He found, in an investigation of how early signals of new market trends appear and stabilize over time, that the exchange of emotions and experiences by

stakeholders is a major force in the establishment of the new markets. Through the active participation of possible future costumers in processes concerned with making sense of new innovations and businesses, these possible future costumers become pivotal to the formation of the marketplace on which the new trends become formalized (Glassy, 2009).

These authors echo arguments made by several other scholars included in the sample who see new ICTs as a tool for the strategic positioning of the organization. They either argue for the potential for organizations to enhance their competitive advantage in existing markets by utilizing new ICTs, or for the possibilities for organizations to venture into the market of new ICTs. In general, it is argued that the challenge is to understand and leverage the new market logic brought about by new ICTs in order to stay (or become) competitive. And in the pursuit of enhancing the organization's positioning strategy, several of the articles offer measures for and guidance to e-business success. For example, Chandy and Ramdas (2013) offer guidelines on 'how to make it successful'. They present four steps: 1) ideation; you need to have a good business idea, 2) development; you need to continuously develop the product or service you are offering, aiming at making your organization a 'gate way', parallel to Lanzolla and Anderson's (2008) above-mentioned argument, 3) launch; you need to have a strategy for how to present the product or service, and finally, 4) scale up; you need to have a plan for how to 'piggyback' others who have 'made it big' (Chandy and Ramdas, 2013: xx).

Basically, we may conclude, in these types of contribution to the debate, strategy remains basically the same, although it needs to respond to a new element in the environment. To use Anderson et al.'s words, 'despite the emergence of new technologies, successful strategy still involves establishing an overall direction that incorporates five key elements – vision, customer and industry insight, leveraging competences and weaknesses, consistent implementation, and a drive towards continuous innovation and renewal' (2013: 58). This reaffirmation of what strategy is, is also characteristic of the contributions dealing with strategy aspects explicitly relating to organizations' internal operations, to which we will now turn.

New ICT's and the strategic handling of the organization's internal operations

The second strand of research identified in the literature review operates with an understanding of new ICTs as devices for the strategic orchestration of organizational processes, implying a focus on inside of the organization. Carayannis (1998) and Sproull and Kiesler (1991) capture this line of thinking by pointing to how organizations may use new technologies to enhance communication across dispersed intra-organizational groups, control organizational knowledge, or as a management tool.

With regards to management and communication, Birkinshaw and Crainer (2009) argue that new ICTs have changed the role of management. Inspired by the term 'web 2.0', they introduce 'management 2.0': traditional management needs to be transformed into a new kind of management, moving away from hierarchy to a networked understanding of the organization. In doing so, they argue, everyday

management should be concerned with creating the optimal setting for communication. They suggest that management do three things: create an online community, develop a wiki and write blogs to involve the whole organization in different aspects of the company's operational and developmental activities. The idea of creating a blog is suggested by other scholars as well. For instance, Esteves (2008) argue that through blogging, top managers can keep a direct dialogue with both employees and customers. As such, Esteves claims, new ICTs bring about important changes to the whole organization, in particular with regards to how people feel and behave, because new ICTs give them the possibility to more actively participate in strategic processes they would otherwise feel remote from.

Regarding communication within organizations, telecommuting is seen as another important potential brought about by new ICTs. Telecommuting refers to working from somewhere else than an in-office work-space in an organization. In the article 'Telework: What Does it Mean for Management?' published in *Long Range Planning*, Illegems and Verbeke (2004) argue that telecommuting (they use the term telework) has an impact on strategic issues. The article highlights effects on the organization's strategic resources and (human resource) competences, organizational efficiency and the relationship to the environment. The authors suggest that managers should consider telecommuting and its benefits in relation to the specificity of their organizations. They argue that telecommuting is not suitable as a large scale program for reengineering work, but rather seems to be beneficial for small knowledge-based organizations, where employees have trust in wider HRM practices. Similarly addressing the issue of telecommuting, Madlock (2012) argues

that new ICTs have a direct influence on leadership style, forcing managers to emphasise tasks more than relations in their day-to-day work.

This focus on tasks over relations is also a concern in Kakabadse et al.'s article on how work and firm performance may be contingent upon new ICTs (2007).

Addressing the issue of how new ICTs allows managers and employees to be constantly available, and how this can create an 'addiction' (both from social pressure and self-induced work norms), they argue that managers need to focus on the usage of new ICTs as it may have damaging effects on employee performance and well-being. Kakabadse et al. warn that if management does not properly address this issue, organizations may be held liable for negligence and face lawsuits (2007).

The issue of how management deals with the introduction of new ICTs is also at the centre of several other articles, e.g. Kodama (2009) and Szulanski et al. (2004).

Somewhat related to the themes of new ICTs and communication and management is the promise of digital visualization tools to enhance the strategizing of internal organizational operations. In a 2008 article in *Long Range Planning* Whyte et al. focus on how ICT enabled visualizations can be used to manage strategizing and planning activities. They argue that visual tools can help to generate and manage work projects due to the affordances of visualization techniques that allow organizations to make sense of unstructured problems and processes. As such, they offer an approach to the relationship between ICTs and strategy in which organizational knowledge is seen as a 'practice' that emerges between people and the technologies they use.

However, they do not introduce technology as an active agent that has particular effects on strategy. Somewhat more straightforwardly, they see visualizations as tools to 'convey meaning' that can be deliberately used by the project-managers in intended ways, much in line with the above cited scholars. As Whyte et al. state 'Managers need greater visual literacy to understand, manipulate and use the materials that are right in front of their eyes'. (2008). Eppler and Platts argue for a similar understanding of the role of new ICTs in their 2009 article 'Visual Strategizing: The Systematic Use of Visualization in the Strategic-Planning Process' published in *Long Range Planning*. Here visualizations, such as models, graphs, flow diagrams and alike, are seen as products of managers' and employees' deliberate attempts at influencing internal strategizing processes. To sum up, a large part of the literature portrays new ICTs as pivotal tools to be used by organizational members in their strategic pursuit of power and control over the organization's internal operations (see also Krogh et al., 2001; Tippins and Sohi, 2003).

TOWARDS A NEW LANDSCAPE

The articles reviewed so far seem to base their reasoning on two common assumptions: That organizational boundaries neatly define an inside and an outside of organizations and that strategy is made by humans. However, some scholars question precisely these assumptions. A few scholars, in particular, portray ICTs in a way that implies a dissolution of the divide between inside and outside. One example is Kim and Mahoney's 2006 article, 'Mutual commitment to support exchange: relation-specific IT system as a substitute for managerial hierarchy', in

Strategic Management Journal, where it is argued that new ICTs have changed the mode of governance in companies, in particular in relation to the question of organizational boundaries. An argument Jarvenpaa and Lang echo in an article in *Long Range Planning* (2011), pointing to how the establishment of online communities has made a difference for boundary logics and boundary management in organizations. According to them, new ICTs are forcing management to continuously negotiate identity, power and competence in order to harvest the potentials of online communities. ICT, here, becomes a potential part of a business strategy, and the more general lesson for strategy is that new types of social dynamics among customers in a growing amount of both non-commercial and commercial online fora demands strategic consideration.

On the human centricism of strategy, a few other scholars portray new ICTs in particular, and technology more generally, as a component in very human-centric processes of strategy making. With a few exceptions, the articles consider ICTs tools for corporate growth and competitiveness, and not as technologies possessing some kind of agency, in the sense that their properties and affordances can have performative effects in relation to the way strategy processes are envisioned. So, ICTs may be seen as challenging organizations to strategize differently, but this 'differently' only refers to taking advantage of the possibilities new ICTs create, not in seeing new ICTs as changing the actual process of strategizing. This observation is in line with Haefliger et al. who argue that 'strategy scholars seldom include the properties of ICT in their theorizing on strategic thinking, firm growth and its boundaries, or the strategies for creating ICT infrastructure' (2011). Also Greenstein

et al.'s (2013) soap box commentary in *Strategic Organization* calls for more attention to, and further research into, the properties of new ICTs in strategy making. But even though they point to the strand of research conducted in the neighbouring field organization studies, and the heightened attention to the material, they fail to flesh out how technologies and new ICTs become actual active agents in the process of strategizing. For instance in Haefliger et al.'s paper, they conclude that strategy scholars need to see 'the role of technology both as a tool and a mediator between managers and users' (2011: xx). But by reducing the role of technology to a mediator, a medium, they fall short in their effort to assign agency to the ICTs. In addition, by seeing technology as a mediator between management and users, they also end up implying that strategy is only made at a management level.

Might the ideal of control become seriously disturbed?

The literature review above indicated that control over strategy processes is often conceptualized as something that is located in human beings. In fact, the most common impulse in the strategy literature has been to assume that strategy processes are steered by a manager or a group of board members. This is why new ICT's are often conceptualized as tools in the hands of such individuals and groups. They are seen as something that the managers need to gain control of and turn to an advantage in carrying out their strategic vision.

The notion of socio-materiality, however, suggests a need to depart from such human-centric approaches to control. On this theoretical account, control over

strategy processes need to be seen as distributed across a network of human actors and material devices that in combination shape the strategy process. Technologies are not just opportunities or threats in relation to a pre-defined strategy. They are active players in continuously shaping strategy processes because they afford specific modes of thinking about the organization and its relation its stakeholders. In our work, we have encountered this phenomenon of distributed control in two quite different empirical contexts that are increasingly encountered by organizations and companies.

The first context is strategy processes where social media platforms are part of an organizations communication with its external partners. The conventional approach in the strategy literature would suggest thinking of such platforms as a tool in the hands of a group of communication strategists. On this theoretical account, such a group would be seen as having a vision of the message to be communicated and a strategy for transmitting this message through the new medium. Gulbrandsen's (2012) study of the online meaning formation about the Danish pharmaceutical company Novo Nordisk, however, questions this take on organizational control in strategic processes and suggests the need to draw on the mentioned literature in organization studies to make sense of this specific empirical phenomenon.

The first finding that questions the impulse of locating control in the communication division of Novo Nordisk is that the organization accounted for only 5.8 % of the activity on the company's profiles on Facebook, YouTube, Flickr and Wikipedia from 2005 till 2011. The fact that external stakeholders accounted for 94.2 % suggests

that the communicative process concerned with the organization is predominantly marked by an on-going negotiation of meaning between these stakeholders. In addition, Gulbrandsen points out that though the processes are marked by an unequal distribution of resources, where one single actor may hold a privileged controlling position on some platforms, no single actor controls the process in its entirety (Gulbrandsen and Just, 2013), certainly not the organization. This implies that new ICTs challenge control of strategic resources such as reputation, inasmuch as, by being open, fluid and dynamic, they disentangle the control of the resource, the platforms in this case, from the control of the process in which this resource is involved, the online meaning formation in this case.

Gulbrandsen's study illustrates the importance of conceptualising control as something that is distributed across a socio-material network. The technological infrastructure of new ICTs, in this case social networking sites, is an active participant in the meaning formation because it orders the social interaction in specific ways. It is the nature of the concrete entanglement of humans and technology on each platform that determines the collaborative process, and not just one of the two. For instance, Novo Nordisk effectively controls their reputation work in the technological infrastructure provided by Facebook, while having no control over the reputation work happening in Wikipedia.

One reason for this difference is that the material infrastructure of Facebook forces users to create a profile in order to access the platform. The platform hence provides actors with the possibility to privilege themselves as profile holders by controlling

what can be contributed with on their profile page. Whether or not this affordance is utilized is dependent on social practice, making the interplay between the material and the social extremely evident, since the technology itself is no more determining for the reputation work than the social practice of the profile holder. This creates a situation where the actors who are not holders of the profile, are limited to whatever the holders let them do. In the case of Wikipedia, however, the ICT provides the affordance for individual actors to submit own material and to edit others, but this also means that others can edit the actor's own. The platform is open and marked by what Gulbrandsen calls a forced collaboration, as the technology provides no potential to protect or privilege your own submission. As such, the entanglement produces a situation where the organization's stakeholders and the organization have equal opportunity to contribute with and edit the reputation work.

The second context in which we have encountered that control over strategy processes is distributed control across socio-material networks is when organizations choose to interpret their environment through the aid of 'Big Data', which is here taken as a reference to the massive amounts of behavioural traces that people daily leave on, for instance, Google, Twitter and Facebook. Madsen (2013) have studied this emergent trend across different organizational context and he argues that the decision of an organization to 'see' its environment through such interfaces raises questions about the distribution of control over the strategy process.

An example of an organization that is experimenting with the strategy of using digital traces to scan environments, in which they are engaged, is the United Nations.

More, specifically they have established a methodological innovation lab named Global Pulse that that explores opportunities for repurposing real-time digital traces—such as tweets—to understand changes in human well being and get feedback on whether or not UN policies and programs are working as planned.

Madsen's study illustrates how the decision to repurpose data from existing communicative infrastructures—rather than producing the data through surveys and other traditional methods—influences the conditions for strategy processes.

This influence is explained though a socio-material analysis that involves attending to the affordances of the involved technologies. More specifically Madsen identifies three core properties of Big Data technologies that will play a constitutive and active role in relation to the way strategies for crisis management are handled in the UN.

First, Big Data has a volume that makes it possible to rely on data-driven and inductive categorizations of populations. Second, it has a velocity that requires it to be harnessed by automated algorithms. Third, it is tied up in ownership structures that makes it less transparent than the kind of data the UN have traditionally built their crisis-monitoring systems upon.

The relevant behavioural data accordingly requires a rethinking of the strategy for producing knowledge within the organization. It raises questions about the level of control needed over the resources that is used to frame possible states of crisis because control of data is not in the hands of those organizations using it

strategically, or at least not completely. Control over data might thus be negotiated between different parties, sharing interests in it and it will be distributed across complex socio-material networks that include automated algorithms and privately controlled meta-data systems.

Might strategic choice be challenged by sociotechnical constructions of necessity?

The second strategic theme that we want to raise in this discussion of the relation between new ICT and strategy concerns the idea of strategic choice. Whereas we have already seen that the existing literature typically depicts strategic choice as the domain of managers, or at least something an organization needs to be able to make in informed ways, choice tends to be transformed into a sociotechnical construction of necessity in the face of new ICTs. This can be seen in relation to gaming interfaces and online 3-dimensional immersive environments. In many organizations or businesses, there is call to embrace such elements into their communication platforms, although these new technologies are developed for purposes such as entertainment and particularly gaming. Technological developments are pushing how digital communication is thought of in various professions and organizations, because interactive communication and the convergence of digital media formats and platforms have produced credible alternatives to pure informational practices of storing, processing and sharing data. Gaming interfaces and online 3-dimensional immersive environments point to the 'poverty' of pure informational communication, and those technological elements hence contribute to establish 'necessary' next steps in companies' communication activities.

This point is illustrated empirically in Plesner's (2010 & 2012) studies of the introduction of new ICTs into architecture. In architectural companies, communication relies both on the precision of technical information and on the ability to share spatial visions or predict physical experiences. Traditionally, the technologies used in architectural communication have been hand-drawings of plans and elevations, along with cardboard models of buildings and environments. The first phase in the digitalization of this communication mostly addressed the informational side of the communication task, with the introduction of Computer Aided Design, Computer Aided Manufacturing, and the linking of databases to 3-dimensional drawings. With inspiration from computer game interfaces, however, architectural companies are faced with possibilities of upgrading communication on the immersion side – possibilities which are approached with mixed feelings, due to investment demands, differing aesthetic standards, and a new role for users. But with the affordances of gaming technologies, i.e. the technical possibilities and constraints they offer to actors who interpret them, it should come as no surprise that entrepreneurial companies experiment with and try to launch new modes of architectural communication. For instance, in Plesner's study, the small company Utopian City Scope develop models of changing cityscapes in a game engine, whereby developers, citizens, and other interested parties can enter a game-like environment as avatars, and get a sense of a future development as a basis for their engagement. At Utopian City Scope, the necessity of incorporating technologies with such affordances are framed with a sense of urgency: The strategic move of using them is seen as inevitable, and this company's actions revolve around meeting future market demands, which are constructed as inevitable, while at the same time

struggling to create this market. When architects at Utopian City Scape claim that features and functionalities of the gaming industry create user expectations to advanced aesthetic experiences and immersed engagement, and present this as what their users/customers want, they thus engage in a socio-material construction of necessity – a construction where technological elements and interpretations are interwoven. It is obviously still humans debating issues like, 'When touch screens exist, we must make touch screen solutions...' or 'When interactivity on our homepage is an option, we must integrate it...' However, human intentionality and power to decide freely become interwoven with technological elements and by extension restricted by the strength of the network a particular technological element is connected to. If a particular technological element is woven together with standards, expectations, hardware and other commonly used software, everyday practices, and so on, it is able to challenge the idea of strategic choice as an activity of managers.

The issue of the urgency that often accompanies the embracement of new ICTs in a lot of different contexts raises the question of how specific technological advances or the possibilities they offer become constructed as a justification for particular strategies. If a particular technological element has become so pervasive that it seems like an urgent necessity, what is left to strategic choice? It seems that a range of technological elements and dominant discourses of technological advances co-construct 'necessity' in a way that challenges human actors' agency and control over company strategy. This conclusion indicates that the concept of 'choice' needs to be revisited and not just taken for granted, as it seems to be in the reviewed literature.

Might boundaries erode more visibly?

One of the conclusions of the review of the literature on ICT and strategy was that it has been a popular theoretical move to either see ICT as something that create new structures in the external market that organizations needs to position themselves within or as something that provide new tools with which to manage internal processes in organization. In fact, the review showed that a taken-for-granted assumption in strategy research is that any given company needs to position itself vis-à-vis competitors, customers, and suppliers which are external, and that all strategic resources, decisions, and production processes are internal.

Our empirical work shows that new ICTs challenge the traditional understanding of organizational boundaries as something that divides a specific organization from the environment. The abovementioned examples with Novo Nordisk and The United Nations has already indicates that new ICTs allow users, citizens and other stakeholders to be involved in strategy processes in ways that challenge traditional divisions between the organization and its context. Questions about control have intimate ties to questions about organizational boundaries and we want to illustrate that through the findings of two further empirical studies that each have distinct ways of showing how new ICT's erode boundaries that have for some time been taken for granted in the strategy literature.

The first study concerns the news field. Raviola—in a project together with professor Pablo Boczkowski—has studied a French online-only news organization, *Rue89*,

which has been pioneer in exploring the possibilities of web 2.0 for producing news (Raviola and Boczkowski, 2012). Started as an independent news website by four newspaper journalists in 2007, *Rue89* was launched as the place in which readers, experts, and journalists would co-participate in the production of generalist news. Through the years, readers and expert bloggers producing content on *Rue89*, deciding some of the news subjects, participating to their annual celebrations, and being able to directly access via email and on the phone all the journalists, from the editor-in-chief to the latest intern, have developed a community that feels ownership over the website and expects to be and partly is involved in strategic moves, such as the redesign of the website.

The participation of non-employees in everyday and not-everyday activities of *Rue89* is made possible by the features of the website. Every registered user on the website has his/her own personal page and can select friends and favourite topics. Each personal page shows the updated activities of friends and favourite journalists, like the newsfeed on Facebook. Everybody can publish his/her comments directly under each articles and the conversation is moderated only a-posteriori. These technical affordance has allowed the development of a very active community of commentators, who often access the website through their personal pages rather than through the homepage and read their friends' updated comments rather than the journalists' article. This shifts the core product of the news organization from news to community and platform management.

This case, typical in many ways, raises questions about how the organizational boundaries are defined and who they include. It illustrates how new ICTs and their openness and impossibility to be fully controlled by one party, challenge the very conception of what an organization is, what it does and whom it involves. If in traditional organizations one would distinguish between management, workers, and customers, and one would assign strategy to management, what would be the valid distinction for *Rue89's* open strategic processes?

Raviola's study of Rue89 challenges the divide between inside and outside the organizational boundaries and thereby illustrates the drawbacks in this distinction that permeated the reviewed strategy literature. In sum, it illustrates how Internet and social media have introduced alternative ways of producing and distributing news, in which the traditional distinction between producers and users, between professional journalists employed in news organizations and readers paying to receive the journalist-produced news, has been questioned (Raviola, 2010; Raviola and Boczkowski, 2012).

Another empirical illustration of the problematic aspects of working with a hard distinction between an organization and its context can be found in Kamstrups' ongoing work on 'Innosite', which is a digital idea generation platform designed for enabling firms in the Danish building industry to interact with a community of users. The point of Innosite is to let these users - the crowd - offer ideas to problems uploaded by firms, thereby calling on the power of crowdsourcing as problem solving strategy.

In the literature sites like Innosite are classified as 'innovation intermediaries', which refers to organizations that seek to enable innovation of other organizations by intermediating on the inter- (or intra-) organizational level. The typical core task of such an innovation intermediary is to establish networks and facilitate the knowledge flow in these. This is often done by introducing a digital technology (e.g. a database, a webpage or an online forum) to support, monitor and regulate these flows. Kamstrup's work shows how the existence of innovation intermediaries raises questions about organizational boundaries that are not adequately captured by existing strategy literature: ICTs allowing firm and crowds to collaborate and innovate are to a wide extent seen as tools that strategically can be applied and used by the R&D departments to capture the wisdom hidden in the crowd.

In the case of Innosite communication on the site is afforded through comment boxes, uploads of .jpg and .pdf files and a simple rating system, which on the other hand means that large files (movies and animations) cannot be uploaded, but has to be embedded from an online movie sharing site (e.g. YouTube). Instant chatting, videoconferences and dynamic conversations are not afforded and dialogue between community members and firms are restricted to the simple comment boxes. Kamstrup's work points toward how these multiple affordances influence the collaboration between crowd and firm and following this also how inviting stakeholders and the even more fuzzy *crowd* to participate in firm core business through a digital platform makes it hard to distinguish a single 'within firm' place

where strategy-making takes place – rather, strategy making becomes distributed taking place both in board rooms as well as in temporary digital spaces.

CONCLUSION

This paper has argued that the previous decade of strategy literature on new ICTs have been characterized by two major trends. The first trend is that the dichotomy between the inside and the outside of a firm is highly present in strategy journals, where strategy and strategy-making is either referring to the handling of the organization's environment or its internal operations. The second trend is that there is a widespread assumption in the literature that technology is either a tool, a threat or a possibility that companies need to handle with due diligence. The literature has implicitly portrayed management – or humans, more broadly – as *the* active agents determining strategy processes and technologies as the passive mediators through which strategies are realized.

In order to nuance this picture, this paper has introduced a set of empirical studies that points to instances where new ICTs play different role in relation to the strategy process. More specifically it has drawn upon qualitative studies conducted by the authors to highlighted situations where ICTs have performative effects on elements of companies' strategy processes that are not adequately captured by the existing literature. The paper identifies three such effects. The first is that new ICTs create situations where control over the strategy process is more distributed than is usually assumed in the strategy literature. The second is that new ICTs have the consequence that strategic choices may be challenged by socio-technical

constructions of necessity. The third is that new ICTs challenge the traditional understanding of organizational boundaries as something that divides a specific organization from the environment.

The point drawn from these effects is that new ICTs might change what organizations 'actually' do, rather than just changing how they do it. For instance, relying on Google elaborations instead of analysing self-collected data means that the World Bank does not see internal analysts, but rather Google-experts, as providing strategic expertise. In a similar vein, as much news content is produced by non-employees and non-journalists by means of a facilitating platform, Rue89 considers development, and use of the platform as well as community management, as strategic expertise for its business: For them this are the new necessary skills in journalism.

These are just two example of the ways in which new ICTs have performative effects. They come to question established expertise in organizations and open for new forms of expertise, which might become strategic. This means that organizations need to consider the strategic consequences of new ICTs in terms of their organizational design as well as their identity and politics. Such strategic consequences of new ICTs are, however, not adequately captured by the existing strategy literature. The paper therefore suggests a new theoretical direction for studies of strategy and ICT that is inspired by a specific strand of Science and Technology Studies as well as organization studies.

More specifically the paper suggests seeing technology and humans as thoroughly entangled. The term entanglement implies a distance towards a technological determinist position, but it also implies a rejection of the view that only humans possess agency in strategy processes. Of course, human agency is crucial in strategy, but we propose that only focusing on this type of agency produces a simplistic view of new ICTs and strategy. Adding a concern with the *affordances* of ICTs – i.e. the actions they enable and constrain, together with actors' interpretation and use of them – allows us to analyse strategy processes in a manner that produces new insights on taken-for-granted categories like decisions, boundaries and control.

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