

Consistency Encounters Contingency. The Application of PowerPoint for Knowledge Management Purposes and Its Differentiation as a Genre of Organizational Communication.

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Abstract

In this paper, PowerPoint presentations are analyzed in their application as project documents for knowledge management purposes. The analysis is conducted by means of an empirical case study in co-operation with an international business consulting firm. By drawing on the Luhmann's theory of social systems (1995; 2000) as well as the distinction between media and genres of organizational communication (Yates & Orlikowski, 1992), it can be shown that the application of PowerPoint presentations in project documentation leads to the emergence of a genre conflict between consistency and contingency-centered modes of communication. From a knowledge management perspective, the focus on a consistent narrative can be considered as suboptimal if mistakes and alternatives to decisions are masked – all of which can embed highly relevant knowledge for future decisions on similar project matters.

Keywords: knowledge management, organizational communication, theory of social systems, decision contingency, PowerPoint presentation genre, case study approach

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Introduction

Microsoft PowerPoint, the well-known software application for the creation of business presentations, has only recently started to gain attention in academic discussions, primarily in the context of business communication (e.g., Tufte, 2003; Yates & Orlikowski, forthcoming). This comparably late reception is somewhat surprising, given the fact that PowerPoint is assumed to hold a share of 95 percent in the market of “slideware” with an estimate of 30 million presentations being generated by help of it day to day (Parker, 2001). If taken into consideration that PowerPoint increasingly enters educational settings from high schools to universities (Worley & Dyrud, 2004), its dispersion is assumed to even increase in future years.

The role of PowerPoint in business communication has initially been questioned in an essay by Tufte (2003). Tufte’s main hypothesis is that PowerPoint shapes business communication by establishing a rather simplistic and context-reduced form of communication. In a recent account on PowerPoint, Yates and Orlikowski (forthcoming) disagree with Tufte’s assumption that it is the software as such which is able to determine organizational communication. Instead, they draw on the distinction between media and genres of organizational communication (Yates & Orlikowski, 1992) to show that PowerPoint’s effects as a medium are always limited by its recurrent social adaptation practices. With reference to empirical studies, the authors underline that PowerPoint increasingly enters business communication settings which it originally had not been designed for – for example, in replacement of the classical report genre. In consequence, and as lined out later in more detail, it can be assumed that PowerPoint presentations also play an increasingly important role in the replacement of project reports for the purpose of knowledge management. The lack of empirical investigation of this matter represents the starting point of this paper.

The paper is structured along central theoretical arguments which finally lead to an empirical investigation of these considerations. In a first step, the paradigmatic perspective of the study is outlined, i.e., to grasp knowledge management as a particular sub-form of organizational communication. The distinction between textual and oral forms of communication leads to the estimation that the knowledge management approach initiates a renaissance of textual forms of organizational communication. This focus on textual communication is analyzed with reference to the concept of contingency. In Luhmann’s theory of social systems (1995; 2000), the term contingency relates to the alternatives inherent to any decision – alternatives that can

turn out to be relevant for future decisions on similar matters. With this concept in place, it can be asked to what extent textual communication practices in organizations promote or suppress the explication and observability of decision contingency within organizations. Considering the increasing importance of PowerPoint as a textual medium in knowledge management processes, its role is investigated by an empirical case study. The results are interpreted with reference to the theoretical framework of this paper. In conclusion, an outlook is given on future research opportunities.

Knowledge Management as Organizational Communication

The history of knowledge management as an academic field can hardly be seen as a linear progress of theory development. Its history is characterized by various disruptions. The first publications on knowledge management in the early 1990s originate mainly in information sciences and management studies (Ponzi & Koenig, 2002). These early publications are typically driven by an optimistic outlook on the manageability of knowledge. Knowledge is basically seen as an economic resource which does not fundamentally differ from other economic resources, and can therefore be managed in a similar (deterministic) fashion. Framed like this, knowledge very much equals information packages assumed to be transferable from one person to another (Schneider, 2004, p. 14). If the receiver opens a package, he acquires exactly the same knowledge that the sender has submitted. This approach can be exemplified by the classical definition, “knowledge management is about getting the right knowledge to the right person at the right time” (e.g., Petrash, 1996).

In a second phase of knowledge management as an academic field, this early optimism is put into question.¹ The scepticism of this phase is supported by critical reports of knowledge management “averages” in the practice of organizations (Wohland, Huther-Fries, Wiemeyer & Wilmes, 2004). Moreover, these reports illustrate that the early, mainly IT driven knowledge management approaches fail to take the inevitable social and communicative embeddedness of knowledge management processes into account (Zorn & Taylor, 2004). As Borgatti and Foster (2003, p. 997) summarize: “The current mantra is that knowledge creation and utilization are fundamentally human and above all social processes.”

¹ See Currie & Kerrin (2004) for a recent overview on this stream of knowledge management literature.

Most fundamentally, the reified notion of knowledge as an information package is rejected by the knowledge management publications of the second phase (Swan & Scarbrough, 2001). Instead, knowledge is grasped as a system's structure (bound to either individuals or organizations) which cannot be transferred between systems (Baecker, 1998, p. 85). Communication then mediates knowledge exchange, not in terms of facilitating one-to-one copies of knowledge structures, but establishing the possibility for individuals to construct their own knowledge from the knowledge of other organizational members (Schoeneborn, 2004).

Although the publications of the second phase of knowledge management undeniably provide a closer-to-practice estimation of the social and communicative barriers of knowledge management, most of them fail to embed this criticism in a coherent theoretical framework and therefore are not able to substitute previously dominant frameworks based on the reified notion of knowledge as an information package. One of the rare articles which both addresses the importance of communication in knowledge management and embeds its argument in a broader theoretical framework is a recent article by Zorn and Taylor (2004). The authors emphasize that knowledge management needs to be grasped as a particular sub-form of *organizational communication*. They underline that any forms of knowledge exchange within organizations are based on collective sensemaking by means of communication (Zorn & Taylor, 2004).

This understanding of knowledge management as a communicative phenomenon links back to the "constitutive perspective" of organizational communication (Theis-Berglmair, 2004). According to this perspective, organizations are fundamentally constituted by acts of communication and, vice versa, acts of communication tend to promote the emergence of organizational structures (Taylor, 2003). As Weick puts it, "the communication activity *is* the organization" (Weick, 1995, p. 75; own emphasis added). What makes this perspective especially attractive is that it opens common ground for the cross-disciplinary study of organizations as communication phenomena (Putnam, Phillips & Chapman, 1996, p. 396).

The Dominance of Textual Communication in Knowledge Management

If knowledge management is framed the way Zorn and Taylor (2004) do, one of the traditional questions of organizational communication research can be related to knowledge management: To what extent do oral or written forms of communication vary in their ability to enhance knowledge management processes and cross-project learning? A satisfying answer requires taking a closer look on Zorn and Taylor's notion of the term "text" which is the central concept in their argumentation. In their article, Zorn and Taylor (2004) use a comparably broad definition of the text concept: "All communication is mediated by text construction, either expressed orally or in one or another graphic medium, such as writing, pictures of diagrams. That is, regardless of how we communicate – writing, speaking, or drawing – we are in the process of creating a product [...]. The process is text construction and the product is text" (Zorn & Taylor, 2004, n.p.).²

Zorn and Taylor (2004) explicitly do not distinguish between oral and written forms of textual communication. But the distinction between these sub-forms is re-introduced in their more fine-grained analysis of knowledge management processes. The authors emphasize that flexible and more successful forms of knowledge management approaches highly correlate with oral forms of communication: "As a number of empirical studies have shown [...], tightly coupled professional communities function on the basis of a well-understood distribution of responsibility and authority, mediated by verbal channels of communication. Paperwork is largely absent. Oral modes of interacting are the prevailing style" (Zorn & Taylor, 2004, n.p.).

Although Zorn and Taylor's criticism of written forms of communication for the purpose of knowledge management appears to be valid and their estimation is also in correspondence with practice reports³, the authors do not seem to consider one crucial

² Furthermore, the authors apply their notion of text in their analysis of knowledge management by linking it to the mechanisms of justification within organizations: "[...] both researchers and practitioners should consider the role of text more fully and consider how texts are used to justify knowledge within organizations." (Zorn & Taylor, 2004, n.p.).

³ For example, Leseure & Brooks (2004, p. 112) report: "The companies that benefited from post-project reviews indicated that the major benefits are not archived reports: instead it is the culture of information sharing that is being built, the training in discussing controversial issues, in reaching consensus, and the knowledge of each team member opinions, which generates true value."

advantage of written forms of communication: The ability of written texts to constitute the organizational memory⁴ in the long run.

To investigate the specific characteristics of written text, Zorn and Taylor's (2004) definition of text can be contrasted to the one introduced by McPhee (2004). McPhee (2004, p. 356ff.) limits the text concept down to manifested forms of communication by lining out three defining properties of texts: 1) the composition of signs and symbols, 2) permanence, 3) a coherent structure. While the composition of signs and symbols as well as a coherent structure can also apply to oral forms of communication, it is the aspect of permanence which narrows it down to manifested forms of communication: "It is important to recognize that texts are not the only permanent elements in societies, not even the only enduring symbolic realities. The memories of organizational members can include words and performed discourse. Moreover, all sorts of material contextual features are permanent and thus can constrain us, remind us of organizational matters that a text might also capture, etc. But texts are distinctively functional in their accessibility to multiple people, their ability to be preserved in a legitimate form, and their flexible utility. Minutes are kept of organizational meetings simply because of these advantages of text over the memories of members present at the meeting" (McPhee, 2004, p. 359).

This "extra-temporality" of manifested texts (Smith, 1984, p. 60) is the distinctive feature which predestines them as the backbone of organizational memory. Much more than oral interaction, manifested texts can serve as a long-lasting reference for future decisions of the organization. In practice, companies like Aventis (Oldigs-Kerber, Shpilsky & Sorensen, 2003) or Hewlett-Packard (King, 2005) invest in monitoring systems which allow them to track their employees' written communication in digital form and to proceed full-text searches on the knowledge gathered in these conversations. Its value for organizational memory might explain the dominance of textual communication in organizations and especially in knowledge management. As McPhee emphasizes: "Perhaps the biggest change in organizational life in developed countries is our growing powers and practices to work with texts" (McPhee, 2004, p. 367).⁵

⁴ For an overview on the metaphor of organizational memory see Olivera (2000), or Blaschke & Schoeneborn (forthcoming).

Textual Communication in Organizations and the Suppression of Contingency

The dominance of textual communication in knowledge management leads to the question how different textual media and genres of organizational communication (Yates & Orlikowski, 1992) vary in their ability to make the knowledge generated in a specific project observable for other organizational members. An evaluation of media and genres for this purpose requires an appropriate set of evaluative criteria. These criteria can be derived from critical streams of knowledge management research compatible with the organizational communication perspective underlying the argumentation of this paper.

In the critical stream of knowledge management literature, mainstream project documentation approaches are accused for their strong attention to “success stories” and “best practices”. Instead, it is argued that much more knowledge can be gathered if knowledge management concentrates on “learning from failure” (Sitkin, 1992; Fortune & Peters, 1995; Zhao & Olivera, forthcoming). The claim for a focus on failure rather than success links back to March’s assumption that organizations rely on “foolishness” to assure their flexibility and adaptability to a changing environment (March, 1988).⁶

Although the principle “learning from failure” seems to resemble a commonplace, the principle is far from realized in organizational contexts of today’s time. Hodgson (2001) uses the term “negative knowledge” to signify the falsification principle common to the sciences but representing “one of the most readily overlooked parts of a company’s knowledge assets” (Hodgson, 2001, p. 45). As practice reports show, the observability of foolishness within organizations is often hindered by natural human resentments.⁷ To examine the potential of the “learning from failure” principle more closely, the principle will be re-described here by drawing on the notion of contingency in the theory of social systems by Luhmann (1995; 2000).

The theory of social systems by Niklas Luhmann (1995; 2000) is one of the theoretical frameworks highly compatible with the constitutive perspective of organizational

⁵ McPhee (2004, p. 358) goes even further when he explains: “[...] writing is so different a practice that it deserves to be called a separate technology – it does not spontaneously emerge through children’s social experience.”

⁶ As Blaschke & Schoeneborn (forthcoming) show in a simulation study, organizations not only rely on memorizing but also on forgetting to a certain extent in order to maintain their flexibility and adaptability in the sense of March (1988; 1991).

⁷ For example, Michailova & Husted (2004) illustrate this issue in a study of knowledge management practices in the states of the former Soviet Union.

communication introduced in the beginning of this analysis.⁸ Both perspectives agree on the assumption to grasp organizations as consisting of (nothing more and nothing less than) interrelated sets of communicative episodes (Taylor, 2003, p. 12; Luhmann, 2000, p. 59). This understanding of organizations leads to the counter-intuitive conclusion that individuals are part of the organizational environment. Nevertheless, their participation as organizational members is necessary for the continuous reproduction of organizational communication (Luhmann, 2000, p. 86). In its focus on communication as the essence of organizations, the theory suggests giving attention to *autopoietic* (i.e. self-reproducing) processes of organizations as social systems.

Luhmann identifies one specific aspect that differentiates organizations from other forms of social systems⁹: *the communication of decisions* (Luhmann, 2000, p. 63). In other words, the first and foremost function of organizations is the continuous processing of decisions.¹⁰ Decisions, in turn, are understood as communicative acts which process distinctions between theoretically indefinite, but practically constrained alternatives (Luhmann, 1984, p. 596). One key to achieve an understanding of decisions in this sense is Luhmann's notion of the term contingency (Luhmann, 1984; 1993; 2000).¹¹ Reaching back to Aristotle in its tradition, the term contingency signifies what is "neither necessary nor impossible" (Beyes, 2003, p. 10). Framed this way, the term is directly related to decisions. Decisions are contingent by definition because in a decision usually "only one conclusion [is] reached but others could have been chosen." (Andersen, 2003, p. 245).

According to Luhmann (2000), decisions can only be identified as decisions if their contingency is made visible, at least in form of one or more alternatives explicitly taken into consideration: "Decisions can only be communicated [as decisions] if the rejected alternatives are communicated, too." (Luhmann, 2000, p. 64; own translation). This implies that the communication of decisions, and with this, the self-reproducing capacity of the organization as a social system, depends on the transparency and the observability of *decision contingency*. The observability of decision contingency can be

⁸ See Schoeneborn (2005) for a detailed analysis on the correspondence between Luhmann's theory of social systems (1995) and the constitutive perspective of organizational communication (Taylor, 2003).

⁹ In distinction to, for example, interactions on the micro-level, or society in general on the macro-level (Luhmann, 1986, p. 173).

¹⁰ In his focus on decisions as the constitutive element of organization, Luhmann stands in a long reaching tradition of the behavioral organization theorists (March & Simon, 1958; Cyert & March, 1963) but he transcends their work by the radical communicative character he ascribes to organizational decisions.

¹¹ It is important to emphasize that in Luhmann's theory of social systems (1995; 2000) the term contingency does not equal the notion of the term in what is known as contingency theory (e.g., Lawrence & Lorsch, 1967; Donaldson, 2001).

understood as the key to set free the organization's self-observing capacities. This, in turn, can be relevant to ensure the organization's ability to learn from its own history.

Luhmann's notion of contingency now allows for a re-description of the principle "learning from failure". The observability of decision contingency enables the organization to remember past paths of decision making and to evaluate past decisions in relation to the alternatives taken into considerations – alternatives which can turn out to be relevant in future decisions on similar matters.¹² As Baecker puts it, "rationality invisibilizes the contingency of the world [...] intelligence, in contrast [...] uncovers contingency" (Baecker, 1999, p. 340; own translation).

If the observability of decision contingency can be of high importance for organizations, why is it that in practice this observability is constrained in most cases? First of all, the explication of decision contingency consumes time and effort – investments which rely on realistic return expectations. Second, it needs to be distinguished between a failure-tolerant and failure-intolerant organizational culture.¹³ In organizations that react rather intolerant to individual and group failure, the observability of decision contingency is risky for organizational members because failure can be linked to their persona and constrain their career opportunities within the organization (Luhmann, 2000, p. 102). Organizational members, therefore, tend to limit the transparency of the circumstances of a specific decision they had to make. In failure tolerant organizations, these effects can be diminished. Finally, the established failure-tolerance culture can be confounded with recurrent practices of organizational communication.

To investigate these manifestations more closely, it can be useful to take a look at the role of textual forms of communication within the organization. In the following section, a research proposal is developed how to analyze textual documentation in its relation to the observability of decision contingency. The observability of contingency serves as a main evaluation criterion for the degree of reflection reached by the knowledge management solutions of the sample company analyzed in form of a case study.

¹² This idea gains additional relevance if seen in the light of path dependence theory (for an overview, see Garud & Karnoe, 2001). The theory of path dependence emphasizes the historicity and interdependence of organizational decisions over time. A decision made in the past sets points of reference for future decisions by predetermining the spectrum of possible alternatives. One of the common phenomena described by path dependence theory is the so-called lock-in: Paths of interdependent decisions which have led to sub-optimal dead ends. The unlocking of such situations for the sake of more efficient solutions requires the reconsideration of alternative decisions at previous steps of the decision process. Again, the observability of decision contingency is the key to unlock the organizational capacity for self-observation.

¹³ Compare to Near & Miceli's notion of "whistle-blowing" (1996).

The PowerPoint Presentation Genre and the Suppression of Contingency

In this paper, knowledge management is grasped as a sub-type of organizational communication (Zorn & Taylor, 2004). In consequence, the role of textual communication in knowledge management is seen as a special case of its role in organizational communication in general. In the more detailed analysis, a further differentiation of textual forms is necessary to grasp the complexity of communicational forms in an appropriate way. One traditional distinction in organizational communication research that can help to differentiate between various textual forms of communication is the one between *media* and *genres* introduced by Yates and Orlikowski (1992).

According to the authors' definition, *media* represent the pure communication instruments, while the term *genre* specifies a typified and recurrent practice of a medium's application: "A genre of organizational communication (e.g., a recommendation letter or a proposal) is a typified communicative action invoked in response to a recurrent situation. The recurrent situation or socially defined need includes the history and nature of established practices, social relations, and communication media within organization" (Yates & Orlikowski, 1992, p. 301).

Framed like this, the distinction between media and genre allows for the analysis of the evolution of communicative practices in organizations over time. The authors illustrate this distinctive feature by drawing on the example of the "memo genre" in the evolution of organizational communication (Yates & Orlikowski, 1992). Its predecessor, the business letter, was typically held in a rather formal style, directed towards an external audience. The memo¹⁴ instead has emerged as a new genre that establishes informal communication practices exclusively applied for internal purposes. In recent years, the occurrence of the new medium e-mail has given rise to an increasing importance of the memo genre within organizational communication. These close interrelations in the evolution of media and genres are described as being typical: "Any time a new communication medium is introduced to an organization, we expect that existing genres of communication will influence the use of the new medium, though the nature of this influence will reflect the interaction between existing genres and human action within specific contexts" (Yates & Orlikowski, 1992, p. 318).

¹⁴ A short form of the latin word *memorandum*; literally, "to have to be memorized".

In a subsequent article, Yates and Orlikowski (forthcoming) underline the increasing importance of the *PowerPoint presentation genre* in organizational communication in recent years. This links back to a discussion initiated by Tufte (2003). Tufte argues that PowerPoint presentations tend to elevate format over content. He illustrates this hypothesis by drawing on the case of NASA's Columbia disaster in 2003. Tufte develops the argument that the application of Microsoft PowerPoint by NASA's technicians for documentation purposes led to an underestimation of the crucial fault which caused the accident in the end: The only hint to the causal failure was hidden in form of a bullet point on the fourth sub-level (Tufte, 2003, p. 8).

In their account on PowerPoint presentations as a genre of organizational communication, Yates and Orlikowski (forthcoming) disagree with Tufte's assumption that it is the software as a technology which is able to determine organizational communication. Instead, they base their analysis on Giddens's structuration theory (1984) which emphasizes the duality of genres as a social structure: Genres both shape *and* are shaped by the practice of organizational communication. In line with their framework, the authors theorize genres as evolutionary dependent from past genres: "[...] the business presentation genre emerged in response to the recurrent requirement to share complex information with multiple people in face-to-face meetings" (Yates & Orlikowski, forthcoming).

With reference to empirical studies, Yates and Orlikowski highlight that in the evolution of communicative practices in consulting firms, PowerPoint presentations have gained increasing importance in replacement of the traditional business report genre: "We have also found that in many consulting firms, the written report that traditionally served as a final 'deliverable' to the client (sometimes in conjunction with an oral presentation) had been replaced with a PowerPoint 'deck', or stack of paper printouts of PowerPoint slides" (Yates & Orlikowski, forthcoming). If considered that written reports use to serve as the communicative memory for organizations, it appears to be valid to assume that PowerPoint presentations also find increasing usage as project documentation for internal knowledge management purposes.

These interrelations between PowerPoint presentations and documentation processes can be assumed to apply especially for project organizations¹⁵. Here, the textual documentation of project results has been established in order to enhance cross-project learning and to avoid a repetitive “re-invention of the wheel” in new projects. This is based on the painful experience that „knowledge is generated in one project and then lost” (Leseure & Brooks, 2004, p. 103). But as Newell (2004) points out, it is knowledge about procedures or processes (“procedural knowledge”) much more than knowledge about the actual outcome of a project (“product knowledge”) which is essential for cross-project learning.¹⁶ Thus, it can be asked to what extent the increasing usage of PowerPoint presentations for project documentation is appropriate to make procedural knowledge and, with this, the contingency of project decisions observable.

If Nass is right in his estimation that “PowerPoint gives you the outcome but it removes the process” (cited by Parker, 2001) it seems valid to assume that PowerPoint plays a rather unfruitful role in making decision contingency observable. In case PowerPoint presentations serve as the only textual reference of what has actually happened in a specific project, a conflict of genre functions is likely to emerge, i.e., the conflict between the external presentation function and the internal documentation function: “This informal presentation practice and the PowerPoint deck challenge aspects of both the PowerPoint presentation and the business report genre. In particular, the deck of PowerPoint slides is expected to serve two different purposes: first, to function as a visual aid supporting an oral (informal) presentation; and second, to perform as a stand-alone deliverable (in many cases the only deliverable) reporting the results and conclusions of a project. PowerPoint texts created with this dual purpose typically have too much content to be effective presentation aids (which should support, not overshadow, the speaker, according to the genre norms of the business presentation) and too little content and context (and too few references and appendixes) to fulfill expectations for the report genre” (Yates & Orlikowski, forthcoming).¹⁷

¹⁵ For a definition on project organizations, see Shenhar (2001, p. 394): “Today, virtually all construction, product development, or engineering efforts are using some formal project management structure, typically defined as a temporary organization that has been established to complete a specific goal.”

¹⁶ The necessity to document project processes can arise from the opaqueness of performance of an organizational routine like regular project meetings. In cases like this only (textual) artifacts allow to observe in retrospect what actually happened in the project (Feldman & Pentland, 2003, p. 104).

¹⁷ In the focus on a consistent instead of a contingent project narrative, PowerPoint presentations seem to fulfill the organizational requirement of a post-hoc legitimization of decisions made in the past (March, 1988, p. 254; Luhmann, 2000, p. 432).

To summarize the theoretical considerations outlined above, the central research questions which guide the empirical part of the analysis can be formulated as follows: Is it valid to assume that the importance of PowerPoint presentations in project documentation for knowledge management purposes has increased in recent years? Can Tufte's (2003) assumption of a diminishing textual information quota per PowerPoint document be validated in observation of the documentation practices of an actual organization? And, finally, how does the PowerPoint presentation genre develop between its partly contradicting functions – on the one hand, to create a linear, consistent, and ambiguity-reduced “storyline” in communication to the client, or, on the other hand, to make the process of project decisions observable to other organizational members which involves the consideration of alternatives, doubts, and side-paths?¹⁸

The considerations outlined earlier on the role of PowerPoint in organizational communication allow setting up some preliminary propositions about the role of PowerPoint in project documentation:

- Proposition A: The application of PowerPoint presentations in project documentation is generally increasing in organizations in recent years.
- Proposition B: The increasing usage of PowerPoint presentations in project documentation leads to a decrease in textual information per document.
- Proposition C: The application of PowerPoint presentations in project documentation leads to a decrease in the observability of decision contingency.

All propositions have in common that they lack an empirical validation in real-life organizational settings so far. While propositions A and B can be directly derived from the findings of Yates and Orlikowski (forthcoming) or Tufte (2003), proposition C is developed with reference to new theoretical considerations outlined above. The propositions are used to guide the empirical study introduced in the next section of this paper.

¹⁸ In other words: Does the application of PowerPoint presentations for documentation purposes lead to a suppression of contingency communication – in order to create the impression of consistency? Or does the opposite turn out to be the case: Does the application of PowerPoint presentations lead to a promotion of contingency communication – to make alternative options of decisions transparent?

Empirical Case Study: Methodology and Results

In the study outlined below, the research questions are examined in the light of empirical data taken at an international business consultancy firm. The decision to select a consulting firm for this analysis is grounded on the assumption that this business segment heavily relies on project-based work as well as what has come to call a “knowledge-based” type of work (Werr & Stjernberg, 2003). Moreover, the specific company selected has a business focus on information technology which increases the chances to find extensive project documentation stored in electronic databases. The case study involves a quantitative analysis of project documents drawn from such databases as well as additional qualitative interviews with employees.

In the *quantitative* part of the study, the analysis concentrates on existing documented forms of project communication. Considering the dominance of textual forms of communication in organizations committed to knowledge management, the documents can moreover serve as indicators of the established decision contingency communication practices within the organization.¹⁹ In the sampling procedure, two company-wide project databases were selected and a random sample set of PowerPoint presentations were drawn. The selected documents were then analyzed in comparison to other forms of electronic documentation for knowledge management purposes. The analysis involved variables on basic project data (e.g., project date and client), document characteristics (e.g., medium type, file size, and word count) as well as newly constructed indices for the explication of contingency in these documents. For example, a critical or negative reflection of the own project and explication of alternatives considered were defined as indicators for a contingency-centered project documentation.

In the *qualitative* part of the study, interviews were conducted with company members in order to understand the broader contexts of project documentation and database usage within the sample company. The interviewees were selected by means of theoretical sampling (Glaser & Strauss, 1967, p. 45) – following the aim to cover a maximum of the variance of given perspectives on project documentation processes in the sample company. Furthermore, typical and extreme cases of project documentation were examined in a more detailed qualitative document analysis. Finally, existing

¹⁹ To paraphrase it in the words of Luhmann, the study follows the aim “to observe how the organization observes itself” (Luhmann, 2000, p. 470; own translation).

database usage statistics provided by the sample company were considered to cover also the user side of project documentation processes.

As the study is still ongoing, the results of both quantitative document analysis and qualitative interviews are preliminary. Some first results of the study show that PowerPoint presentations indeed play an increasing role in the documentation of project work in the sample company (Proposition A). The percentage of PowerPoint presentations in use as the main reference document for what has actually happened in a project has increased significantly in all analyzed databases in recent years. This finding is underlined by interviewees stating that, because of given time pressures, it is common practice to submit the final client presentation to the project database without proceeding major modifications which would take the target group of internal audiences into account.

These results correspond with the analysis of PowerPoint's assumed tendency to diminish the textual information per document (Proposition B). In this part of the analysis, word count and file size were set in relation to the number of slides per document. The file size variable is here seen as an indicator for a rather extensive use of graphical elements.²⁰ In examination of the development of this quota over a period from 1997 to 2004, the results testify that the file size per slide is gradually increasing in recent years (from an average of 30 kilobyte to 50 kilobyte per slide). But at the same time, the amount of words per slide remains constantly in a range between 90 and 100 words per slide during the same period.²¹ In consequence, the assumed tendency of a diminishing textual information quota over the past years cannot be confirmed. Only in cross-media comparison it can be shown that PowerPoint's word per slide quota is about one third of comparable project reports in Word format (with an average of 300 words per page). The only indication for a tendency of stronger visualization instead of a textual documentation of project processes is the increasing file size per slide quota. These results slightly confirm the impression of a stronger emphasis of the presentation function in comparison to the documentation function of the analyzed PowerPoint files.

²⁰ The applicability of file size as an indicator for this purpose is limited by the usage of vector graphics in PowerPoint presentations (which decreases file size) as well as by the automatic backup of meta data proceeded by the software in cases of collaborative creation (so-called "versioning" which increases file size). Considering the comparably low degree of standardization of project documentation in the sample company, the effect of vector graphics and versioning can at least be assumed not to be systematic.

²¹ With this, the word quota of the analyzed document is more than twice as high as in the average of PowerPoint presentations reported by Tufte (40 words per slide), in this case drawn from a Google based Web search. But the results indeed do lie in the range of NASA's PowerPoint based report related to the Columbia tragedy (97 words per slide; Tufte, 2003, p. 12).

Moreover, the empirical investigation shows that the explication of decision contingency can only be found in rare and rather exceptional cases (Proposition C). In most of the analyzed documents, the main narrative of the PowerPoint presentation, originally oriented towards an external audience (i.e., the client), is not varied for the purpose of internal reference and cross-project learning. This correlates with the primary function of the documents found in the analyzed databases: Most PowerPoint presentations are submitted to the project databases primarily to support future acquisitions of new clients much more than to serve as an internal reference for project quality enhancement. In consequence, a critical project reflection in documented form is seldomly the case. In most of the documents where such an additional project reflection is included this is done by means of one or more “lessons learned” slides. However, it can be shown that these slides often lack a critical perspective on the project. But in contrast to the proposition derived from theory, in the rare cases where a critical project reflection can be found this in fact usually is based on a PowerPoint presentation.

In general, the study uncovers a comparably low degree of standardization in the project documentation practices of the sample company. This can be partly explained by the company’s recent history which is characterized by significant acquisition activities. Nevertheless, the rare cases in which a critical, contingency-centered project documentation can be found are usually based on a minimum degree of standardization – be it an explicit slide titled “what could have done better” or an equivalent field in a project summary table. This indication of path dependence in project documentation corresponds with Yates and Orlikowski’s findings (forthcoming) that the creation of a new PowerPoint presentation typically starts with copying slides from a previous presentation.

The understanding of the results is enriched by employee statements gathered from qualitative interviews. The interviews confirm the impression that the rarity of critical project reflection in documented form is promoted by shorter gaps between project finalization and the start of a new project. This “restlessness” does not allow for a critical project reflection in the end of a project even if it could create significant learning value for other members of the company. Another explanation for the deficit of critical project reflection lies in the change of payment and incentive structures in the company in recent years as well as in the lack of a standardized project documentation methodology, as the interviewees highlight.

In accordance with the theoretical considerations outlined above, Tufte's assumption (2003) of a diminishing information quota can only be partly confirmed in the empirical analysis. What cannot be confirmed is Tufte's assumption that it is the medium as such which determines the specific communication practices applied in the company. Instead, and in accordance with the assumptions of Yates and Orlikowski (forthcoming), the study shows that in the history of project documentation in the analyzed company various recurrent communicative practices evolve which can be further differentiated as sub-types or sub-genres of project documentation. The genre conflict between a consistent storyline and a contingent reflection of a project is only in very seldom cases resolved by establishing a hybrid solution which involves *both* the narrative of a consistent project outcome *and* the explication of mistakes, side-paths or alternatives taken into consideration. In most cases the genre conflict is dissolved by remaining in the external communication mode (focus on consistency) also for the purpose of internal project documentation.

These results gain additional theoretical relevance if interpreted with reference to the systems theory framework of Luhmann (1995; 2000). As introduced earlier, Luhmann grasps organizations as a closed communicative system that mainly process decisions. Organizations are continuously facing the challenge to proceed decisions on the "undecidable"²² – which applies to all situations where there is no clear solution that could be deduced logically and where a decision needs to be based on insufficient information (Andersen, 2003, p. 246). This creates the necessity to handle a paradox: on the one hand, to visibilize contingency in order to make decisions identifiable as decisions, on the other hand, to invisibilize contingency in order to avoid a paralysis of the organization in facing an overarching contingency and complexity. In this context, the analyzed PowerPoint presentations can be assumed to serve the function of *deparadoxification*. They seem to do so in emphasizing the consistency aspect (contingency invisibilization) much more than the contingency aspect (contingency visibilization) of decisions in the processes of project documentation.²³

²² Compare to von Foerster's classical term: "Only questions that are in principle undecidable, we can decide" (von Foerster, 1992, p. 14).

²³ As Bloomfield & Vurdubakis (1994, p. 462) line out in a comparably early article on this issue, "to a certain extent the style of reports may serve to immunise them against ambiguity. [...] The price to be paid for allowing the frame to become to expansive would be to open up gaps: the possibility of alternative readings and therefore disagreements about the solutions."

This masking of contingency in textual project documentation can be seen as a natural process of organizations (March, 1988) but it can become problematic from a practical knowledge management perspective. How to ensure that the knowledge inherent to decision processes (“procedural knowledge“; Newell, 2004) remains observable for organizational members? On a more abstract level, the invisibilization of decision contingency can also be interpreted as a constrain to the self-observing capacity of the organization. The organization’s self-observing capacity, in turn, can be relevant to avoid lock-ins of suboptimal communication practices in the evolution of organizational communication.

Concluding Remarks and Outlook on Future Research

In the study outlined here, PowerPoint presentations are analyzed in their application as project documents for knowledge management purposes. The analysis is conducted by means of an empirical case study in co-operation with an international business consulting firm. By drawing on the social systems theory framework of Luhmann (1995; 2000) as well as the distinction between media and genres of organizational communication (Yates & Orlikowski, 1992), it can be shown that the application of PowerPoint presentations as project documentation leads to the emergence of a genre conflict between consistency and contingency-centered modes of communication. From a knowledge management perspective, the focus on a consistent narrative can be considered as suboptimal if mistakes and alternatives to decisions are masked – all of which can embed highly relevant knowledge for future decisions on similar project matters.

The theoretical and empirical investigation of PowerPoint’s role in project documentation can have implications for both knowledge management practitioners and researchers. From a knowledge management practitioner’s point of view²⁴, the results can provide reflection points on the role of PowerPoint presentations in business communication. Moreover, the study suggests to put existing project documentation practices into question. This relates to questions like: How to establish a failure tolerant culture in the organization? How to promote the observability of

²⁴ Keeping in mind given applicability limitations of scientific results in the practice or management; see Nicolai (2004) for an emphasis on these constraints.

mistakes, failures, and side-paths in cross-project learning contexts? And, finally, how to unlock alternative narratives of projects which can enhance the self-observing capacity of the organization?

From a knowledge management researcher's perspective, further research opportunities lie in a comparative research on various organizations and genres of organizational communication. Considering that the empirical part of the study is based on the observation of only one sample company, the study suggests to conduct further research in comparison of different types of organizations. Furthermore, it could be promising to analyze organizations that have recently faced significant phases of growth – in the assumption that a necessity of a consistency-centered project documentation does not equally apply to small organizations that rely on modes of personal interaction as it is the case for growing, more anonymous organizations. This necessity can even increase in organizations with high fluctuation rates of organizational members.

The analysis of genre development and differentiation over time allows reflecting on how collaborative media interact with their recurrent application practices in the visibilization of decision contingency. In this context, it can be relevant to observe how the PowerPoint presentation genre will develop in future years in organizational communication settings – finding its path in between the consistency versus contingency dilemma. A more detailed analysis of the evolution of sub-genres of the PowerPoint presentation genre can bring light into variations of deparadoxification and the possible creation of hybrid solutions that combine both communication modes: a consistent storyline, on the one hand, and the explication of decision contingency, on the other hand.

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