

# AN EVENT-EPIISODE APPROACH FOR STUDYING WORK PRACTICES IN IT-RELATED ORGANIZATIONAL CHANGE

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## Abstract

Practice oriented theories, such as actor network theory, structuration theory, the mangle of practice, and practice theory are all potentially very powerful in depicting how processes of IT-related organizational change unfolds over time. However, these theories are often complex and operate on a high level of abstraction, which makes demands on the methodological approach in order to attain transparency and cogency.

Over the years, combinations of the strategies of temporal bracketing and visual mapping have been utilized in several empirical studies to structure and analyze the process in which IT-related work practices change over time. Thus, this approach has showed some potential to remedy some of the problems, which may arise when using practice-oriented theories.

The purpose of this paper is to contribute to the understanding of process-based analysis of work practices and how the combined temporal bracketing/visual mapping strategy can be applied in empirical studies. In this paper, a recent approach called the event-episode approach is discussed and analyzed in the light of previous studies applying similar approaches. From the discussion, four key questions are identified, which seem to be important to take into account when applying the approach. These key questions relate to the relationship between the events and the process as a whole, the relationship between the observed phenomena and the theoretically informed events, the character of critical events, and the analysis of events within episodes.

*Keywords: event-episode approach, process research, temporal bracketing, visual mapping*

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# 1 Introduction

Several ideas have recently been applied to the information systems (IS) field in order to “take seriously the recursive intertwining of humans and technology in practice”, as Orlikowski (Orlikowski 2007:1437) put it. Many of those ideas originate from sociology and science and technology studies, such as structuration theory (Giddens 1984), actor-network theory (Callon 1986 ; Latour 1987 ; Law 1987), the mangle of practice (Pickering 1995), and practice theory (Schatzki, Knorr-Cetina et al. 2001). Recently, a number of ideas have also begun to develop within the IS field itself, with a more practical focus (c.f. Alter 2002 ; Goldkuhl 2005).

These theories all take into account the interaction between humans and technology in practice, although from somewhat different perspectives. Moreover, they are all in line with the longstanding processual tradition in organization theory of how change unfolds over time (c.f. Weick 1969/1979 ; Pettigrew 1990 ; Van de Ven and Poole 1995 ; Langley 1999 ; Tsoukas and Chia 2002 ; Van de Ven and Poole 2005). Thus, they have been judged as appropriate for the study of IT-related organizational change from a practice point of view (Orlikowski 2007 ; Orlikowski and Scott 2008).

The use of these theories has showed promising results, but there is also an inherent challenge when it comes to the application in empirical research. Several authors have argued that the complexity and the high level of abstraction make it difficult to apply theories such as structuration theory and actor-network theory (c.f. Pozzebon and Pinsonneault 2005 ; Cho, Mathiassen et al. 2008).

Moreover, Langley (1999) highlights three particular challenges related to the analysis of process data: they often involve multiple levels and units of analysis with ambiguous boundaries, their temporal embeddedness often varies in terms of precision, and they are eclectic. Pettigrew (1990) also points to the risk for “death by data asphyxiation” if the researcher does not manage to simplify the complexities of the real world. Consequently, the researcher faces the challenge to organize and present the fuzzy process data in a way that is transparent and demonstrates coherence.

Several strategies and techniques have been crafted as a remedy when organizing and analyzing process data. Langley (1999), for example, suggested a range of different strategies such as narrative, quantification, alternate templates, grounded theory, visual mapping, temporal bracketing, and synthetic strategy. In practice, many strategies are often combined and developed in order to fulfill a particular purpose. One such combined approach, sometimes referred to as “the encounter-episode approach”, builds on temporal bracketing and visual mapping and has been used in a number of studies on IT-related organizational change (c.f. Barley 1986 ; Newman and Robey 1992 ; Cho, Mathiassen et al. 2008 ; Newman and Zhao 2008).

However, there is, to my knowledge only little widespread understanding of the approach itself, and in each study, the authors have developed the approach in their own way to suit the research question at hand. The purpose of this paper is twofold. Firstly, the aim is to contribute to the general understanding of the combined temporal bracketing/visual mapping approach by discussing and analyzing a number of studies applying this approach. And secondly, to derive a number of key questions from this analysis, that might help a researcher employing a process-based inquiry of work practices to reflect on his or her own application of the combined strategy.

In the next section, I will outline a particular version of the temporal bracketing/visual mapping strategy, which I call *the event-episode approach*. This approach will be discussed in the light of previous studies, which adopted the overall approach, and a number of key questions will be formulated. In the last section, the potential benefits of employing these key questions will be considered.

## 2 The event-episode approach

### 2.1 A brief introduction

Over the years, several adoptions of the combined temporal bracketing/visual mapping strategy have been made in the study of IT-related organizational change. The approach has been used primarily to compare the activity at different points of the process as a whole, and to explain how and why certain consequences arose. For example, Barley (1986) studied the introduction of CT-scanners in two American hospitals. In another early paper, Newman and Robey (1992) investigated how the relationship between users and system analysts changed over time in the development of system. More recently, Newman and Zhao (2008) examined the implementation of ERP-systems in two Chinese enterprises on two different levels: the project level and the work level. In another study, Cho et al (2008) explored the contextual dynamics arising during the implementation of health information systems.

The purpose of the *temporal bracketing strategy* is to divide the stream of events in a longer process into a sequence of shorter periods or episodes<sup>1</sup> (Langley 1999). Episodes are not “phases” which follow in a sequential order driven by a program or code (c.f. Van de Ven and Poole 1995), but rather blocks of activity representing a certain continuity within each period, interrupted by certain discontinuities in the beginning and at the end of each period (Newman and Robey 1992). These episodes then constitute comparable units of analysis for process theorizing (Langley 1999). In many empirical studies, the temporal bracketing strategy is accompanied with a *visual mapping strategy* as a means to allow an overview of the process as a whole and its major elements in a condensed way (Miles and Huberman 1994 ; Langley 1999).

The combined approach gives a researcher who is working with processual analysis an opportunity to create comparable units of analysis, and to visualize core elements, which connect the course of events to an underlying theoretical or empirical framework. In this way, it forms a starting point for the following analysis. The use of the event-episode approach does not produce theory in itself, but can be seen as an intermediate step in process theorizing. Thus, the approach may be a way to transform a shapeless mass of process data into a series of discrete but connected blocks, as Langley (1999) puts it.

However, in the process of simplifying complex events, many nuances of the rich process data will get lost. This paper suggests a number of key questions aimed at helping researchers make this process more transparent and coherent. In the next section, a recent application of the combined approach will be outlined. Along with this account, a number of challenges experienced by the author of this paper will be highlighted and discussed in the light of similar approaches presented in the papers mentioned above.

### 2.2 Illustration of the event-episode approach

#### 2.2.1 A short background to the case study

The recent application, outlined below, is taken from an in-depth longitudinal case study (Lychnell 2010) which investigates how IT-related organizational change was shaped in the interplay between development and use at a small travel agency will. The purpose of the case study was to contribute to the understanding of how IT-related organizational change comes about in interplay between development and use. The study was carried out from an overarching development perspective, however criticizing the simplified “rational” view and recognizing the sociomaterial, emergent, and unpredictable character of IT-related organizational change (Orlikowski 1996 ; Orlikowski and Scott 2008).

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<sup>1</sup> In the following, I will use the concept of episode, inspired by Newman and Robey (1992).

Process data concerning five change efforts unfolding over a period of two years at a small travel agency was gathered. Different data collection methods such as interventions, interviews, observations, and archival documents were used. Each change effort was then written as a narrative describing how the actions of the actors advanced the “plot” forward in each case (Pentland 1999 ; Czarniawska 2007).

The narratives were then interpreted using the mangle of practice as a theoretical lens in order to produce a theoretically informed narrative (c.f. Pettigrew 1990). In order to make sense of the course of events and to be able to compare blocks of events, the encounter-episode approach of Newman and Robey (1992) was used and further developed, as described in the following sections. However, before accounting for the study, a discussion about the notion of event as the smallest unit of analysis in the present approach will be needed.

### 2.2.2 The notion of event and a discussion about time in event-based studies

Several authors have suggested the event as a unit of analysis in process-based studies (Abbott 1992 ; Newman and Robey 1992 ; Van de Ven and Poole 1995 ; Newman and Zhao 2008). Processes always involve various events and events exist only in and through processes (Rescher 1996:38). However, a process cannot be observed in itself. What we can do is to observe phenomena that occur at different points in time (Lundeberg 2011). But to analyze these phenomena, we need to interpret them as events that make sense from a theoretical perspective (Van de Ven and Poole 1990 ; Van de Ven and Poole 1995 ; Langley 1999). Thus, a difference between *observed phenomena* and *theoretically informed events* is recognized. Figure 1 illustrates a hypothetical process consisting of a number of different events.

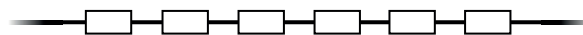


Figure 1 A process involves various events.

In the case study at hand, the observed phenomena were first derived from the case documentation and sorted in chronological order within each narrative and then given a theoretically informed interpretation to be considered as events. However, before discussing the theoretical interpretation and the role of theory, I would like to elaborate briefly upon another challenge. Langley points out (1999), that events can be identified on many different levels of abstraction and collected from different time frames.

In the current study, the events that advanced the change efforts had different durations. Thus, events may come in different guises. In the case study, the observed phenomena used to constitute events were very different in character. For example, one observed phenomenon was a one-hour meeting between the CEO and the supplier in which a new agreement with the consultant was reached. Another one was the substitution of an information system that took several days. Yet another was the emergent change in work practices that become noticeable only after a couple of months.

All these observations contributed to make sense of the narrative, and they advanced the plot forward in the light of the study’s overarching development perspective. From this perspective, the events made sense in explaining the processes in which IT-related organizational change was shaped over time. An important consequence is that the timeline becomes event-based, rather than chronologically ordered (c.f. Gersick 1994 ; Van de Ven and Poole 2005).

For a researcher who follows the processes, it becomes important to identify events that contribute to advancing the plot without resorting to predefined conceptions of an event, but also to be explicit about how the framing of events contributes to advancing the plot. To be clear about the *overarching perspective* from which the study is made, and to demonstrate how events make sense in light that perspective helps the reader to appreciate a study. Thus, one key question is about explicating *the*

*relationship between the events and the process as a whole* (c.f. the fundamental principle of the hermeneutic circle (Klein and Myers 1999)).

### 2.2.3 Theoretical interpretation and the gross list of events

In order to go from observed phenomena to theoretically informed events, different *theoretical frameworks* have been used in the five studies mentioned above. For example, Barley (1986) built on Giddens' structuration theory while Cho et al. (2008) use Latour's and colleagues actor-network theory as the foundation. Newman and Robey (1992) rely on empirical conceptions of the user-analyst relationship and Newman and Zhao (2008) build on Leavitt's sociotechnical theory. The choice of theory is related to the research question pursued in each study. In the case study at hand, the theoretical interpretation was made using Pickering's *The mangle of practice* (Pickering 1995 ; Pickering 2000), a decision based on Pickering's taking both human and material agency into account, as well as displaying a logic which very much resembled the trial-and-error nature of the change initiatives carried out in the travel agency (c.f. Jones 1998 ; Chae and Poole 2005 ; Jones and Rose 2005).

By building on Pickering's (1995) concepts of accommodation and resistance<sup>2</sup>, a theoretical framework was developed in order to identify the basic events in the narratives. A gross list was made, containing 47 events unfolding over time. The list was elaborated and refined in relation to the research question at hand.

The elaboration constituted an adaption of the mangle of practice to the field of IT-related organizational change in general, and to the present study in particular. For example, in line with previous studies on IT-related organizational change (Orlikowski 1996), a difference between planned and emergent accommodations was made alongside the notion of condition development in order to account for different modes of change (c.f. Argyris and Schön 1974 ; Watzlawick, Weakland et al. 1974 ; Bateson 1979). In this way, the study's theoretical framework was developed and operationalized.

Moreover, a distinction was made between accommodations made in development practices and accommodations made in use practices to illuminate the interplay between development and use. In a similar way, Newman and Zhao (2008) differentiated between project level processes and work level processes in their study of the implementation of ERP-systems in two Chinese enterprises. Thus, a vertical dimension was added to the horizontal and event-based timeline, demonstrating the unfolding of events. Table 1 shows an example of a list consisting of observed phenomena on the one hand, and theoretically interpreted events on the other.

*Table 1 A list of events and their theoretical interpretation derived from the theoretical framework*

<b>Observed phenomena</b>	<b>Events</b>		
	<i>Type of accommodation</i>	<i>Type of practices</i>	<i>Theoretical reference</i>
A meeting between the CEO and the supplier in which a new agreement with the consultant was reached	Planned accommodation of conditions for development	Development	(Bateson 1979 ; Pickering 1995)
The substitution of an information system	Planned accommodation	Development	(Pickering 1995 ; Orlikowski 1996)
Emergent change in work practices	Emergent accommodation	Use	(Pickering 1995 ; Orlikowski 1996)

<sup>2</sup> Pickering is using the concept of resistance to denote a block on the road towards some goal, and not in the traditional sense of resistance towards change (c.f. Kotter and Schlesinger 1979).

However, theoretical interpretation is not a question of just template matching between empirical data and theoretical labels. Decisions will not only have to be made about what theory (or theories) which suits a particular research question, but also to be sensitive to the match between the observed phenomena and the emerging theoretical interpretation when the theoretical concepts are applied. If these concepts do not match the unfolding chain of events, there may several alternatives to accommodate this incoherence. First, the incoherence may be resolved by returning to the data and either to collect more data or try new ways of making sense of the course of events. Another option is to challenge the theoretical interpretation made earlier. However, the incoherence may also be an opportunity to suggest additions to the theoretical framework used in the study (c.f. for example Quine's holism (1951/1964)). In the case study at hand, the author of this paper realized that not only would resistance in relation to some intention affect the course of events, but so would events supporting intentions. This addition was based on empirical evidence, but confirmation was also found in Pickering's (1984/1999) earlier writings. Thus, another key question regards *the relationship between the observed phenomena and the theoretically informed events*.

## 2.2.4 Episodes and critical events

As has been pointed out earlier, the stream of events is divided into comparable units or episodes, in which the activity is rather stable. But in the beginning and end of these episodes, critical events challenge the path forward. In the present study, occurrences of resistance or support (as indicated above) were used as critical events. They challenged the way forward and from a real-time perspective the direction in which the course of events would continue was not apparent. For example, in one of the analyzed change efforts in the case study, an occurrence of resistance was identified when the integration between two different information systems broke down after a stable episode in which development work was carried out as planned. The critical event challenged the intended path and the route forward was not clear. At that moment, no one imagined that several iterations of episodes and critical events would have to take place before the integration was completed four months later. This way, it was possible to identify eighteen episodes separated by critical events in the five change efforts studied. Figure 2 shows how critical events (circles) interrupt the stream of events (squares) and how this division makes up an episode.

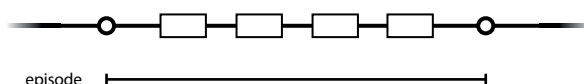


Figure 2 Critical events interspersing the course of events and form episodes

In the case study at hand, the critical event was constituted by a theoretical construct (i.e. resistance or support). Moreover, the episodes were comprised of one or more theoretically grounded events (i.e. accommodations of different kinds). This was not the case in all of the previous studies. Barley (1986) used significant exogenous events or shifts in organizational strategy, judged by the participants themselves to identify the starting points of different phases in which he could observe how the institutional context of the departments affected the pattern of action in the two radiology departments studied. Newman and Robey (1992) used the empirical concept of encounters<sup>3</sup> between system analysts and users as a critical event. In an encounter, the character of the relationship between the analyst and the users was most likely to be altered, and thus provided an opportunity for change. In the episodes, the relationship was supposed to remain stable. Both these studies used empirical constructs as critical events, however Barley based his analysis on the interpretation of the users.

<sup>3</sup> Therefore, the approach has sometimes been called the encounter-episode approach (c.f. Cho, Mathiassen et al. 2008). I have, however, chosen the more generic term event-episode approach, that also reflect both the smallest unit of analysis (the event) and the main unit of analysis (the episode).

Moreover, in the study by Cho et al (2008:620), the authors are drawing on ANT to identify events that caused controversy and disrupted the temporary order in the actor-networks, which resulted in episodes with extensive translations to achieve new stability. Building on Leavitt's (Leavitt 1965) theory of sociotechnical change, Newman and Zhao (2008) identified gaps between the theoretical elements (structure, task, technology, and people) as playing a similar role as critical events as they challenged the path forward.

From the discussion above, yet another question is related to *the character of critical events*: what kinds of criteria are used to identify the critical events and who identifies them. While Barley, and Newman and Robey rely on empirical concepts for the identification of critical events, Cho et al, Newman and Zhao, and Lychnell build on concepts pertaining to a chosen theoretical framework. Of these studies, only Barley relied on critical events perceived as such by the participants in the study.

In the sections above, I have outlined the core elements of the event-episode approach: the event, the critical event, and the episodes. I have also discussed the event-based timeline and the role of theory. In the next section, I will demonstrate how these core elements were visualized in the case study at hand, and discuss similarities and differences with other approaches presented in the previously discussed papers.

### 2.2.5 Visualization

By using visual displays it is possible to represent large quantities of information in a condensed way, thus gaining the advantage of getting an overview of the process studied and to identify patterns within and between episodes. Figure 3 below shows a visual display from one of the change efforts studied in the case study at hand. In the passage below, eight events were coded according to the theoretical framework described above. The following gives a brief account of the narrative, the theoretical interpretation, and the codes used to link the text to the visual display.

The course of events starts when the CEO recognizes that the way the travel agency worked with customer communication was not in line with his intention<sup>4</sup>: the cost for producing printed newsletters was too high and the frequency was too low. In the analysis, this was interpreted as an occurrence of resistance in relation to his intention ( $R_{i1}$ )<sup>5</sup> and formed the first event (#1). This was a critical event that challenged the path forward and thus marked the beginning of the first episode (A1).

The interplay turned into development practices (D) and the travel agency decided to establish a relationship with a new supplier who offered a new tool for writing and distributing electronic newsletters. The new relationship, including the tool, would make it possible to develop new work practices at the travel agency in order to fulfill the intention. The second event in the change effort (#2) was coded as a planned accommodation of the conditions for development (PAC).

When the forms for collaboration had been established, the new information system was implemented and the booking procedure was changed in order to register all customer data, necessary for marketing purposes, as a natural part of the daily work practices of the sales representatives. The third event (#3) was coded as a planned accommodation in development (PAD). Then the users started to adopt the new procedures, and the course of events turned into use practice (U). The fourth event (#4) was coded as a planned accommodation in use (PAU). Thus, it is distinguished between the event of changing the espoused booking procedure, and the event in which the actual bookings practices change.

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<sup>4</sup> The concept of intention is used here in an ordinary sense inspired by Pickering (1995). Coming from the field of science and technology studies, he uses the concept in an ordinary sense referring to the plans or goals that scientists put forward and then try to achieve in their research projects.

<sup>5</sup> See Figure 3 below for an explanation of the codes used.

In use, no resistance toward the original intention to lower the costs and to communicate with the customers more frequently occurred, but after a while the booking routine become troublesome since it demanded a lot of extra work. This event was coded as resistance in relation to a second, alternative intention: a previously espoused intention of having an effective booking routine ( $R_{12}$ ) (#5). The critical event challenged the path forward towards the original intention and a new episode began (A2).

After this critical event, the course of event did not go into development, as one might have anticipated. Instead, the interplay between development and use came to a standstill because the managers did not know how to solve the problem. As time went on, the users stopped prioritizing the registration of customer data and the procedures were gradually accommodated in use. This event was coded as an emergent accommodation in use practice (EAU) (#6).

When the necessary data registration stopped, the road towards the initial goal of increasing customer communication was blocked, and the seventh event (#7) was coded as resistance in relation to the original intention ( $R_{11}$ ). Again the path forward was challenged and the third episode could begin (A3).

Due to the limits of the available resources, the managers chose to let go the intention of collecting all data of all customers, and decided that it was sufficient to collect only some data about the customer who booked a particular package. This event was coded as an emergent accommodation of the original intention ( $EAI_{11}$ ) (#8). In this way resistance was dissolved, the interplay between development and use ceased, and the course of events came to be stabilized temporarily. The remaining four change efforts was coded and analyzed in the same manner and mapped into visual displays.

D	Development	PAC	Planned Accomodation of the Conditions for development
U	Use	PAD	Planned Accomodation in Development
$R_{11}$	Resistance relative to the original intention	PAU	Planned Accomodation in Use
$R_{12}$	Resistance relative to an alternative intention	EAU	Emergent Accomodation in Use
		$EAI_{11}$	Emergent Accomodation of the original intention

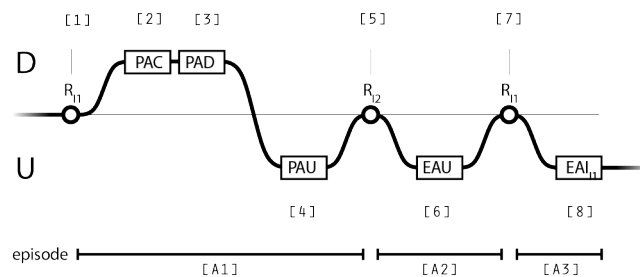


Figure 3. Events and episodes in change effort A.

The visual display above demonstrates how the course of events follows the interplay between development practices and use practices. Critical events of resistance intersperse the episodes by challenging the path forward. In the episodes, the course of events proceeds in a relatively stable manner carried forward by different kinds of accommodations. The display provides an overview of the change effort and how it is coded in order to make comparisons between different possible episodes. In the next section, the analysis of the episodes in the present study will be described.

## 2.2.6 Analysis of the episodes

The next step in the case study at hand was to compare the eighteen identified episodes for similarities and differences. An analysis was made based on what types of accommodations occurred within the episodes (that is between the critical events) and in what order these accommodations followed. Figure 4 shows the four different patterns (type 0 to type III) that were identified among the 18 episodes.



These patterns were grounded on an empirical level (the observed phenomena) and a theoretical level (the theoretically informed events), as well as “processually” (the narrative structure). In this way, four general change processes were identified as advancing the course of events: improvisation (type I), planned development (type II), condition development (type III), and finally, adjustments of the intention (type 0)<sup>6</sup>.

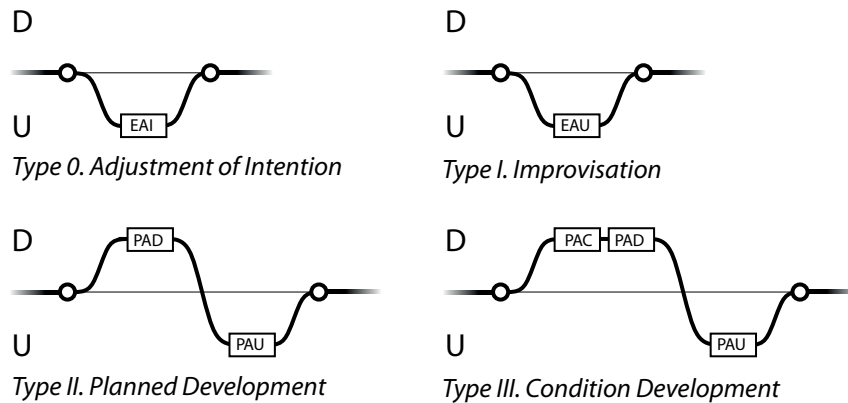


Figure 4 Generic event chain of Type III

The analysis of episodes in the previous studies has been carried out in different ways. In his classical use of the temporal bracketing strategy, Barley (1986) coded the events within the episodes in order to measure how the degree of centralization and decentralization changed over time in the two studied hospitals. Newman and Robey (1992), in their seminal process analysis, attributed four different empirical labels – joint system development, analyst-led development, user-led development, and equivocation – to describe how the relationship between analysts and users changed over time in the studied episodes. Cho et al (2008) did not focus their analysis on episode patterns, but rather on the dynamics created by the critical events separating the episodes. Newman and Zhao (2008) also did not focus on patterns within or between episodes, but on explaining how different encounters moved the process forward, and how this process explained the outcome of the projects studied.

Hence, while Lychnell uses the event as the smallest unit of analysis, Newman and Robey use the episode. The choice of unit of analysis seems to be crucial, and may also explain the two different conceptions used: Newman’s and Robey’s encounter-episode approach focus on the episodes interspersed by encounters, while Lychnell’s event-episode approach focus on each event and how they build up episodes of different characteristics together. The last key question identified is thus about if *analysis of events within episodes* are carried out and, if so, on what grounds this analysis is made.

### 3 Discussion

In the previous section, I have accounted for the use of an event-episode approach in a longitudinal process-oriented case study on IT-related organizational change. First, I discussed the notion of event and its relation to time, and then how empirically observed phenomena were interpreted theoretically into events. Then I discussed the concept of critical events that divided the stream of events into

<sup>6</sup> This generic chain of events did not move the process forward in the same way, but rather made the interplay between development and use cease, and was therefore named type 0. The other numbers were related to the order of change, going from the operational level (1), to the meta-level (2), and the meta-meta-level (3) (Argyris and Schön 1974 ; Watzlawick, Weakland et al. 1974 ; Bateson 1979).

consecutive episodes, consisting of one or more events. These episodes formed comparable units of analysis. I then demonstrated how the event-episode approach was visualized using process graphs in which the elements of the theoretical framework were incorporated. Finally, I discussed the analysis of patterns across episodes, which were demonstrated by a comparison between the sequences of events in the different episodes. Meanwhile, comparisons between similar approaches in the IS field were made, and a number of key questions were highlighted. In the following sections, I will summarize these key questions and discuss the implications for theory and (research) practice.

The first key question relates to *the relationship between the events and the process as a whole*. The event-episode approach suggested in this paper takes Rescher's (1996) notion of event as starting point, that is, a process consist of events, and events exist only in and through processes. Therefore, the investigated change efforts (seen as overarching processes) were first coded in terms of events, of which some were coded as critical events based on the theoretical interpretation made by the author of this paper. This is in line with Barleys (1986) approach, in which instances of routine decision making were coded. However, the approach differs from the other studies accounted for in this paper. First, Newman and Robey (1992), Newman and Zhao (2008), and Cho et al (Cho, Mathiassen et al. 2008) only identify critical events and do not build up the episodes from "other" events, but consider the episode a "black box" to be analyzed. This relates to another key question, namely the *analysis of events within episodes*. Pattern matching of the episodes were made, both in the present case study and in Barley's study. In the paper of Cho et al, the contextual dynamics within the episodes were analyzed. And in Newman's and Robey's and Newman's and Zhao's papers, analysis concerned the sequence of episodes connecting the antecedent conditions with the final consequences. This was also made in Lychnell's study, which investigated how different change processes contributed to the final consequence, and Barley's study showed how the technology could cause different changes in organizational form in different social settings. The latter two cases also demonstrated how the events in each episode contributed to form the change as a whole.

This leads to the next key question, which relates to *the relationship between the observed phenomena and the theoretically informed events*. The studies mentioned in this paper show that many different theories may be used in combination with the event episode approach, such as structuration theory (Giddens 1984), actor network theory (Callon 1986 ; Latour 1987 ; Law 1987), and the concept of the mangle of practice (Pickering 1995 ; Pickering 2008). However, two points should be made regarding the supposed deductive character of the particular approach proposed in this paper. First, from my point of view, inductive and deductive approaches are ideal types, since data are theory laden (Newton-Smith 1981/2005) and the hypothesis has an inductive basis (Lee 1991). The study at hand was rather abductive, since codes were not applied to empirical data, but the empirical data also informed the codes and thus a contribution to theory was made in that the mangle of practice was adapted to IT-related organizational change. Second, as far as I can see, there is nothing in the approach per se that excludes a more inductive approach. The character of the events constituting the episodes could be derived empirically through, for instance, the use of a grounded theory-inspired approach (Glaser and Strauss 1968 ; Corbin and Strauss 1990) or, rather, a multi-grounded theory approach (Goldkuhl and Cronholm 2003 ; Lind and Goldkuhl 2005).

The fourth key question relates to *the character of critical events*. In the studies of Barley (Barley 1986), the critical events were selected based on the perceptions of the participants, and not the researchers in contrast to the other studies mentioned. Moreover, in tow of the studies, the critical event was based on empirical matters, and in three studies they were based on theoretical concepts. In Barley's study it consisted of significant exogenous events or shifts in organizational strategy and in Newman's and Robey's (1992) study the critical events were identified based on encounters between analyst and users. However, in Newman's and Zhao's (2008) study, the critical event was based on events causing gaps in the relationships between structure, people, technology and task and their effects on IS implementation. In Cho et al (Cho, Mathiassen et al. 2008), critical events were identified as events causing controversy and disruption in the temporary order in the actor network. And finally, in the case study at hand (Lychnell 2010), critical events were identified as events in

which resistance (or support) in relation to some intention occurred. Thus, it seems possible to use both theoretical and empirical concepts for identification of critical events, as well as basing them on both judgments of the researcher and of the participants. However, it should be mentioned that such decisions have an impact on the character of the study. For example, when critical events are interpreted by the participants, the interpretative character increases (Isabella 1990).

To summarize, in this paper, an event-episode approach has been proposed as a means to increase the transparency and cogency in process-based studies, and in this way help researchers overcome some challenges with the potentially powerful practice oriented theories. The approach builds on two of the strategies for organizing and analyzing process data suggested by Langley (1999), i.e. a combination of temporal bracketing and visual mapping. Several similar approaches have been employed in the field of IT-related organizational change, however each approach has been adapted to the research question pursued and the particular circumstances of the study. This is also the case in the approach suggested in this paper. However, based on lessons learned and in comparison with four other approaches, four key questions (summarized in Table 2) have been formulated in this paper. These key questions may assist researchers making some of the critical decisions needed for applying the combined temporal bracketing/visual mapping approach whether the particular approach suggested in this paper is used or, which is more likely, when finding one's own best practice.

<b>Study</b>	<b>The relationship between the events and the process as a whole</b>	<b>Analysis of events within episodes</b>	<b>The relationship between the observed phenomena and the theoretically informed events</b>	<b>The character of critical events</b>
Barley (1986)	Processes consist of events	Interactions between radiologist and technicians	Structuration theory (Giddens 1984)	Empirical: significant exogenous events or shifts in organizational strategy, judged by the participants themselves
Newman and Robey (1992)	Processes consist of episodes and critical events	“Black box”	Punctuated Equilibrium Theory (Gersick 1991)	Empirical: encounters between analyst and users, judged by the researcher
Cho et al (2008)	Processes consist of episodes and critical events	“Black box”	Actor-network theory (Callon 1986 ; Latour 1987 ; Law 1987)	Theoretical: events causing controversy and disruption in the temporary order in the actor network, judged by the researcher
Newman and Zhao (2008)	Processes consist of episodes and critical events	“Black box”	Socio-technical theory (Leavitt 1965)	Theoretical: events causing gaps in the relationships between structure, people, technology and task and their effects on IS implementation, judged by the researcher
Lychnell (2010)	Processes consist of events	Different kinds of accommodations in development and use	The mangle of practice (Pickering 1995 ; Pickering 2008)	Resistance (or support) in relation to some intention

*Table 2 Four key questions related to the event-episode approach, as identified in the five studies*

## References

- Abbott, A. (1992). "From causes to events: notes on narrative positivism." *Sociological Methods & Research* 20(4): 428-455.
- Alter, S. (2002). "The work system method for understanding information systems and information systems research." *Communications of the AIS* 9: 90-104.
- Argyris, C. and D. A. Schön (1974). *Theory in practice: increasing professional effectiveness*. San Francisco, CA, Jossey-Bass, Inc., Publishers.
- Barley, S. R. (1986). "Technology as an occasion for structuring: evidence from observations of CT scanners and the social order of radiology departments." *Administrative Science Quarterly* 31(1): 78-108.
- Bateson, G. (1979). *Mind and nature: a necessary unity*. London, Wildwood.
- Callon, M. (1986). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. *Power, action and belief: a new sociology of knowledge?* J. Law. London, Routledge & Kegan Paul: 196-233.
- Chae, B. and M. S. Poole (2005). "The surface of emergence in systems development: agency, institutions, and large-scale information systems." *European Journal of Information Systems* 14(1): 19-36.
- Cho, S., L. Mathiassen, et al. (2008). "Contextual dynamics during health information systems implementation: an event-based actor-network approach." *European Journal of Information Systems* 17(6): 614-630.
- Corbin, A. and J. Strauss (1990). *Basics of Qualitative Research*. Newbury Park, Ca, SAGE Publications.
- Czarniawska, B. (2007). *Narratives in social science research*. Thousand Oaks, CA, Sage Publications.
- Gersick, C. J. G. (1991). "Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm." *Academy of Management Review* 16(1): 10-36.
- Gersick, C. J. G. (1994). "Pacing strategic change: the case of a new venture." *The Academy of Management Journal* 37(1): 9-45.
- Giddens, A. (1984). *The constitution of society: outline of the theory of structuration*. Cambridge, Polity Press.
- Glaser, B. and A. Strauss (1968). *The discovery of grounded theory. Strategies of qualitative research*. London, Wiedenfeld and Nicholson.
- Goldkuhl, G. (2005). Workpractice theory – what it is and why we need it. *Proceedings of the 3rd Intl Conf on Action in Language, Organisations and Information Systems (ALOIS)*. Limerick, Ireland.
- Goldkuhl, G. and S. Cronholm (2003). "Multi-grounded theory - adding theoretical grounding to grounded theory." *Proceedings of the 2nd European Conference on Research Methods in Business and Management (ECRM)*.
- Isabella, L. A. (1990). "Evolving Interpretations as a Change Unfolds: How Managers Construe Key Organizational Events." *The Academy of Management Journal* 33(1): 7-41.
- Jones, M. (1998). Information systems and the double mangle: steering a course between the Scylla of embedded structure and the Charybdis of strong symmetry. *Information systems: current issues and*

- future challenges: Proceedings of the IFIP WG8.2 and 8.6 Joint Working Conference*. T. J. Larsen, L. Levine and J. I. DeGross. Laxenburg, Austria, IFIP Press: 287-302.
- Jones, M. and J. Rose (2005). "The double dance of agency: a socio-theoretic account of how machines and humans interact." *Systems, Signs & Actions* 1(1): 19-37.
- Klein, H. K. and M. D. Myers (1999). "A set of principles for conducting and evaluating interpretive field studies in information systems." *MIS Quarterly, Special Issue on Intensive Research* 23(1): 67-93.
- Kotter, J. P. and L. A. Schlesinger (1979). "Choosing strategies for change." *Harvard Business Review* 57(2): 106.
- Langley, A. (1999). "Strategies for theorizing from process data." *Academy of Management Review* 24(4): 691-710.
- Latour, B. (1987). *Science in action*. Milton Keynes, Open University Press.
- Law, J. (1987). Technology and heterogeneous engineering: the case of portuguese expansion. *The social construction of technological systems: new directions in the sociology and history of technology*. W. E. Bijker, T. P. Hughes and T. J. Pinch. Cambridge, Ma, MIT press: 111-134.
- Leavitt, H. J. (1965). Applied organizational change in industry: structural, technological, and humanistic approach. *Handbook of organizations*. J. G. March. Chicago, Rand McNally: 1144-1170.
- Lee, A. S. (1991). "Integrating Positivist and Interpretative Approaches to Organizational Research." *Organization Science* 2(4): 342-365.
- Lind, M. and G. Goldkuhl (2005). The Evolution of a Business Process Theory - the Case of a Multi-Grounded Theory. *Procedures of the Qualitative Research in IT & IT in Qualitative Research (QualIT 2005)*. Griffith University, Australia.
- Lundeberg, M. (2011). *Improving Business Performance. A first introduction*. Stockholm, SSE Institute for Research.
- Lychnell, L.-O. (2010). IT-relaterad verksamhetsförändring. Processer som formar växelspelet mellan utveckling och användning. [IT-related organizational change. Processes shaping the interplay between development and use.]. *Department of Information Management*. Stockholm, The Economic Research Institute at Stockholm School of Economics (EFI)
- Miles, M. B. and A. M. Huberman (1994). *Qualitative data analysis*. Thousand Oaks, Ca, Sage Publications.
- Newman, M. and D. Robey (1992). "A social process model of user-analyst relationships." *MIS Quarterly* 16(2): 249-266.
- Newman, M. and Y. Zhao (2008). "The process of enterprise resource planning implementation and business process re-engineering: tales from two Chinese small and medium-sized enterprises." *Information Systems Journal* 18: 405-426.
- Newton-Smith, W. H. (1981/2005). *The Rationality of Science*. New York, Routledge.
- Orlikowski, W. J. (1996). "Improvising organizational transformation over time: a situated change perspective." *Information Systems Research* 7(1): 63-92.
- Orlikowski, W. J. (2007). "Sociomaterial practices: exploring technology at work." 28(9): 1435-1448.
- Orlikowski, W. J. and S. V. Scott (2008). "Sociomateriality: challenging the separation of technology, work and organization." *The Academy of Management Annals* 2: 433 – 474.
- Pentland, B. T. (1999). "Building process theory with narrative: from description to explanation." *Academy of Management Review* 24(4): 711-724.

- Pettigrew, A. M. (1990). "Longitudinal Field Research on Change: Theory and Practice." *Organization Science* 1(3): 267-292.
- Pickering, A. (1984/1999). *Constructing quarks: a sociological history of particle physics*. Chicago, University of Chicago Press.
- Pickering, A. (1995). *The mangle of practice: time, agency, and science*. Chicago, University of Chicago Press.
- Pickering, A. (2000). "The objects of sociology: a response to Breslau's 'Sociology after humanism'." *Sociological Theory* 18(2): 308-316.
- Pickering, A. (2008). New ontologies. *The mangle in practice: science, society, and becoming*. A. Pickering and K. Guzik. Durham, NC, Duke University Press: 1-14.
- Pozzebon, M. and A. Pinsonneault (2005). "Challenges in conducting empirical work using structuration theory: learning from IT research." *Organization Studies* 26(9): 1353.
- Quine, W. V. O. (1951/1964). Två av empirismens dogmer. *Filosofin genom tiderna. 1900-talet*. K. Marc-Wogau. Stockholm, Bonniers: 279-300.
- Rescher, N. (1996). *Process metaphysics: an introduction to process philosophy*. Homewood, IL, Irwin.
- Schatzki, T. R., K. Knorr-Cetina, et al. (2001). *The practice turn in contemporary theory*. London, Routledge.
- Tsoukas, H. and R. Chia (2002). "On organizational becoming: rethinking organizational change." *Organization Science* 13(5): 567-582.
- Van de Ven, A. H. and M. S. Poole (1990). "Methods for studying innovation development in the Minnesota Innovation Research Program." *Organization Science* 1(3): 313-335.
- Van de Ven, A. H. and M. S. Poole (1995). "Explaining development and change in organizations." *Academy of Management Review* 20(3): 510-540.
- Van de Ven, A. H. and M. S. Poole (2005). "Alternative approaches for studying organizational change." *Organization Studies* 26(9): 1377-1404.
- Watzlawick, P., J. H. Weakland, et al. (1974). *Change: principles of problem formation and problem resolution*. New York, Norton.
- Weick, K. E. (1969/1979). *The social psychology of organizing*, Addison-Wesley Publishing Company.