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Perspectives on time and the chronometric study  
of what happens in organizations

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***PERSPECTIVES ON TIME AND THE CHRONOMETRIC STUDY  
OF WHAT HAPPENS IN ORGANIZATIONS***

**(DON'T QUOTE WITHOUT PERMISSION)**

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***PERSPECTIVES ON TIME AND THE CHRONOMETRIC STUDY  
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An often made distinction in the study of time in organizations is that between objective, linear, homogeneous, linear, measurable, Newtonian time, also called *Chronos*, and subjective, non-linear, heterogeneous, experienced, event time, also designated as *Kairos*. These conceptions of time are associated with the positivistic and the interpretative approaches to organizational research. Are these conceptions of time incompatible? And are there two mutually exclusive ways of gaining scholarly knowledge about time in organizations? This paper proposes that the two notions of time can be meaningfully combined by accepting the possibility of mutual 'reflection', that is, the interpretation of measured time, and the measurement of interpreted time. By adding the postulate of 'recursivity', which entails reflection at successive (higher order) levels, a broad range of options for inquiry into the temporality of organizational phenomena unfolds, that allows for the use of chronometric as well as interpretative methods. It is noted that prevailing positivistic and interpretative approaches have both lead to a dramatic neglect of measured time in organizational research. Therefore, the remainder of this paper focuses on the chronometric study of organizations. It proposes a research agenda which covers temporal phenomena at multiple analytical levels, including those of the individual, the group and the organization as a whole. Since objective as well as subjective definitions of phenomena are considered, the scope of this chronometric approach and its descriptive and explanatory potential appear to be substantial.

## 1. Introduction

We are facing a paradox when it comes to the study of time in organizations. On the one hand, there have been many complaints about the lack of theoretical and empirical research on the temporal facets of organizations (e.g. George & Jones, 2000; Goodman, Lawrence, Ancona, & Tushman, 2001; Noss, 2002). On the other hand, the number of publications addressing the topic of time has grown dramatically. Yet, most of these publications have dealt with time in abstract terms and very few have engaged in the study of what happens in organizations in temporal terms. With every newly appearing publication we learn more about concepts, classification schemes and propositions, than about the results of studies that have actually studied time. As a result we suffer from a remarkable and embarrassing ignorance about the temporal aspects of organizational life (Roe, 2005a). It is tempting to generate explanations for this curious state of affairs and to prolong the intellectual debate about how time should be conceptualized, hoping that we will one day agree about how time should actually be studied. But I believe that it is about time to start doing what has been lacking thus far, that is, develop concepts and theories, and collect evidence about what *happens* (and has happened) in organizations. Helping to reach a point at which we as organizational researchers know what to do and how to do it, is the aim of the present paper.

I will first address some of the reasons why time-based research does not flourish. I will identify some obstacles and discuss ways in which they may be overcome. This includes a discussion of various conceptions of time in relation to human thought and action in the context of organizational life, and in the context of theory and research. It focuses on the distinction between experienced time and measured time and the approaches to scientific inquiry associated with them, and it claims that these concepts and approaches can be meaningfully combined. Next, I argue that more chronometric research should be done and I propose a conceptualization in terms of phenomena that facilitates the (re)formulation of genuinely temporal research questions. This merit of this approach is that it prevents that temporality is forgotten, and that it becomes salient at the expense of content. Subsequently, I will suggest a way to generate research questions and

a strategy to build evidence-based theories. And finally I will categorize organizational phenomena and discuss some issues that urgently deserve to be investigated from a temporal point of view. Some occasional references will point at specific methods and examples of how they can be used.

## **2. Overcoming obstacles in the study of time**

As Ancona et al (Ancona, Okhuysen, & Perlow, 2001) have pointed out, one can think of several reasons why there are so few temporal studies in organizational research. They mention researchers' opportunism, the existence of research conventions (such as running short-term experiments) and the fact that temporal research is difficult because of lack of guiding theory, methodologies, and practical experience among researchers in conjunction with the complexity of the phenomena to be studied. Other obstacles lie in our ways of thinking about time and about the phenomena that organizational research should study. I consider these conceptual obstacles to be more fundamental, since we will never be able to investigate time fruitfully unless we give it a proper place in our way of thinking. I see three main obstacles.

1. *First, the word time triggers different responses among researchers.* Not only is time a label for dozens of different phenomena and attributes, there are also diverging and competing views on what time "really is", about what is good and bad about these views, which approaches to time are legitimate and preferable when engaging in organizational research. In other words, there is a lack of consensus about how time in organizations can and should be studied, which hampers even rudimentary theory development.
2. *Secondly, among those who are interested in temporality there is a tendency to focus on time per se and hence to isolate it from events.* Such a tendency can perhaps be understood as a way to reverse the traditional practice of looking at phenomena without addressing time. But just like this very practice it separates time from content and thereby misses the opportunity to study the role of time in organizational phenomena.

3. *Thirdly, there is a tendency among researchers to conceptualize time in terms of (static) variables.* Events and processes are often conceived of in “variable” terms, which deprives them from their dynamic features. Again, this hampers the development of a truly temporal theory of what happens in organizations.

In will expand on these conceptual obstacles in the following sections and give some suggestions as to how they might be overcome.

### **2.1. Time: meanings, perspectives and approaches**

Behind the apparently simple word ‘time’ lies an immense domain of meanings. The vocabularies that people have developed to refer to time in connection with their daily and weekly activities and experiences, the phases of their life, etc., is enormously rich. There are hundreds of expressions containing the word ‘time’ that are used in everyday language (e.g. from time to time, for the time being, being on time, lacking time, have a hard time, time-pressure, time-table, time-lag, downtime, daytime, summertime, timer, timing, taking the time to ) and many more terms that refer to time indirectly (e.g. working hours, lunch break, rhythm, deadline, slowness, haste, endurance). In addition, there are numerous time-referenced terms in specific vocabularies, such as e.g. those of music and industrial production. Scientific disciplines ranging from biology, psychology and sociology, to law, linguistics, economics and philosophy have developed their own terminology to refer to the many forms and aspects of time. This diversity of meaning poses a formidable problem for those who want to study time - even in a limited domain such as that of organization studies - as the same term may carry a range of different meanings.

The differences do not only spring from *what* is designated (e.g. the duration of an event) but also *who* is referring to it (e.g. managers, schedulers, workers), in which *context* they so (e.g. negotiation, scheduling, production) and to what *purpose* (e.g. operations management, cost control, health promotion). In addition, they are affected by *cultural setting*. Thus, the fact that “times differ”, “all times are not the same”, or “all times are different” (Bluedorn, 2002, p. 3-6) has important implications for our efforts a temporalist approach to the study of organizations. Sooner or later we have to manage

this diversity and develop a common vocabulary that minimizes the risk of confusion and misunderstanding. But, more importantly and urgently, we have to reach an agreement about how to deal with the fundamentally different perspectives of time that underlie the different usage of time related language.

### *2.1.1. Perspectives on time*

A commonly made distinction regarding the *perspectives* on time is between objective, linear, homogeneous, linear, measurable, Newtonian time, also called *Chronos* and non-linear, heterogeneous, experienced, event time, also designated as *Kairos*. Linear time can be measured by using clocks and calendars, and can hence be called measured time. Event-time can be accessed only through experience, either direct or indirect by means of verbal descriptions and artifacts such as diaries and schedules. There is some disagreement among scholars about the way in which time should be conceived. Not only do they have different preferences, they also tend to consider their view as better and to promote its adoption by others (hence, the reference to ‘time hegemony’ in the work of Clark (see Clark & Maielli, 2006) and Bluedorn (2002; 2006). For instance, some authors have argued against linear clock time as the dominant conception of time (see Clark, 1985; Dubinskas, 1988; Whipp & Clark, 1986) and argued in favor of event time instead. Rehn (2002, p. 83) has pointed at the ideological nature of the controversy and has warned against a dogmatic turn in the study of time. I am inclined to agree with his point of view.

My preference is to make an effort to clarify what the dispute is about, and make a distinction between *who* is conceiving of time in either way and to *what purpose*. On the one hand, there are people in organizations whose behavior we intend to study, further referred to as ‘*organizational actors*’<sup>1</sup>, and on the other hand, there is us, *researchers* who want to investigate their behavior and develop theories about it. It seems that the distinction between time as measured and as experienced applies to both

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<sup>1</sup> Actors can be thought of as individuals but also as social entities such as dyads, triads, teams, larger groups (such as managers or production engineers) and even organizations. They are supposed to have the capacity to fulfill human-like functions such as sensing, perceiving, deciding, and (re)acting (cf. Hedaa & Törnroos, 2002).

categories, but in different ways. There is little doubt that organizational actors use both experienced time and measured time. They rely on their experiences as well as on clocks when making plans, taking decisions, performing roles and tasks. The way in which they perceive time and use clocks may be different, however, dependent on the events that are most meaningful for them<sup>2</sup>. Thus, it seems that Bluedorn is right in stating that the two views on time are compatible *in practice* and can be combined in any possible mixture<sup>3</sup>. Or, “eating lunch now describes the activity that occurs at a fungible time as well as an event defining it” (Bluedorn, 2002, p. 32)

The distinction between experienced time and measured time applies to researchers as well. Of course, researchers are also members of organizations and they conceive of time in the same way as others do. Thus, the time of academic researchers is as much defined by the structure of the academic year, the calendar of conferences, and the review cycle of academic journals, as the time of people in the clothing industry is defined by the seasons and the cycles of the economy (Clark & Maielli, 2006). But there is a difference, that becomes apparent as soon as we acknowledge that the researcher’s *role vis-à-vis* the organization as an object of study, differs from that of the other organizational members. The role of researcher brings along another experience of time, another way of timing, and the use of other conceptual and operational tools. Thus, as researchers we will not apply the time of the academic calendar or the daily schedule of lectures to the organizational processes we study, but we will still rely on our time related experiences while studying people in organizations. In some cases we will seek to make these experiences congruent with those of the actors through participatory observation , in other cases we may rely on what we observe during the study and subject it to ethnographic analysis (e.g. Perlow, Okhuysen, & Reppenning, 2002). Likewise, we will use the clock and the calendar as tools for measuring time, but now in a different manner, namely to define a time frame for the study, to set measurement points, to schedule data collection, and conduct measurements on a particular time scale (sometimes milliseconds, sometimes decades) (Zijlstra, Roe, Leonora, & Krediet, 1999), all in order to grasp what

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<sup>2</sup> This is nicely illustrated in a study by Bunzel about an Australian hotel, where departments “run on different clocks” (Bunzel, 2002, p. 176).

<sup>3</sup> Bluedorn speaks of fungible time (Newton’s absolute time with equivalent units) and epochal time (the time of successive events) as poles of a continuum.

is happening, but at the same time in ways *not* necessarily meaningful in our own daily life.

This is to say that the two perspectives of *Chronos* and *Kairos* define four approaches, and not two, to the study of time in organizations. Figure 1 depicts these four approaches.

		<b>Organizational actors</b>	
		experienced time	measured time
<b>Researchers</b>	experienced time		
	measured time		

*Figure 1: Perspectives of time in organizational actors and researchers*

The difference between the perspectives of the actors and the researchers, and the resulting four approaches may be illustrated by some examples. The first example concerns the experience of ‘present’ among organizational actors (e.g. Noss, 2002). Although people may differ in their ways of thinking of the present (e.g. include a certain degree of reproduction of the past and anticipation of the future) and this may have an impact on their actions, the present is of little significance from a researcher’s point of view. In terms of the researcher’s measured time the present is a constantly moving point on the time scale. The only issue of importance is the duration of the present as defined by the granularity of the time scale (e.g. milliseconds versus days). Another example is ‘rhythm’. As Bunzel (2002) has pointed out in a study of an Australian coastal hotel, rhythm as a “lived experienced” of the hotel’s employees is not the same as the objective rhythm recorded by the outside researcher. Inversely, the way in which a researcher describes the episodes of a decision process (experienced time) may have little to do with the way in which actors really experience time during the decision process (cf. Keenoy, Oswick, Anthony, Grant, & Mangham, 2002)

Let us now return to the question which view of time is better. This issue is hard to isolate from the antagonism between researchers who adopt a neo-positivist approach and search for theories based on facts, and those who prefer an interpretative approach that results in theories embodying shared meaning or “common sense”. Researchers in the first category prefer measured time as a basis for theory development and tend to be critical of the “discursive meandering” (Odihi & Knights, 2002, p. 62), the risk of overestimating one’s own experiences, and the tendency towards “linguistic immunization against counterfactual evidence” (my words) inherent in the interpretative approach. Researchers in the second category prefer experienced time and are critical about the study of “facts” in a world that they see as largely socially constructed. Some of them are rather outspoken in their criticism of measured time, which in their view “has been proven to be wrong” and which they consequently “reject” (e.g. Clark, 1985). Below, I will take a pragmatic realist position and argue that there is a merit in both approaches and that both can contribute to our understanding of time in organizations. I will also argue that they can be seen as a compatible.

But I will first take a closer look at the criticism and see how it should affect the way in which we conceive of time.

The main arguments against linear clock time<sup>4</sup> seem to be twofold (Bluedorn, 2002):

- 1) A theoretical argument borrowed from modern physics is that time does not flow evenly and is not the same throughout the universe. That is, according to Einstein’s relativity theory a moving clock moves slower than a stationary clock, the sequence of events is not the same for two observers who are in relative movement. Hence, the view of time as flowing at a constant speed should be considered as “false”.
- 2) An argument from the field of organization studies is that clock-based views of time among managers and engineers may lead to forms of organization that interfere with event-based views of time among other people in the organization and may produce

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<sup>4</sup> Strictly speaking clock time is circular: at the end of the 24 hours cycle the clock starts again at 0 hrs. It can only be seen as “linear” in the sense of flowing forward in combination with an eternal calendar, which turns it into clock and calendar time (Bluedorn, 2002). Yet, both the clock and the calendar have equal units.

adverse results for the organization as a whole or for workers. Hence, an exclusively clock-based view should be considered as “wrong”.

Referring to Figure 1, it appears that these two arguments pertain to different segments of the model. Obviously, the first argument *does not relate to the use* of measured time and, in practical terms, of clocks and calendars *by actors in organizations*. If this is the way actors in organizations think and act, so be it. If we assume that time is socially constructed (Clark, 1985; Whipp, 1987) the outcome of this process is to be accepted, irrespective of whether the social construction is defensible in front of a forum of scientific experts (De Groot, 1969). But what about the concept of measured time among organizational researchers? Here, the argument seems futile, if not irrelevant, since the constructs and assumptions of theoretical physics have as little to do with the behaviors of organizational actors as those of organizational theory with the physical particles and forces of the universe. There is no compelling reason why the definition and measurement of time by organizational scholars would have to change in response to the discoveries of Einstein’s relatively theory.

In reverse, the second argument does *not* relate to the researchers since - *as researchers* - they do not engage in creating organizational environments that could interfere with the event-based views of organizational members. However, it might be seen as relevant for those who do influence others, i.e. the managers and professionals who believe the organization should be structured according to linear time. If one accepts this argument, the question is what effects it should and could have. It is open to debate whether organizational theorists who “reject” the linear view of those whose behaviors they study should incite them to abandon their view - and it is questionable what the effect this would have. As I see it, organizational researchers should primarily inform their stakeholders - organizational actors in the first place - about what they find, including negative effects of imposing certain views of time while ignoring others. If research would consistently show other approaches to be better, they might - in addition - propose alternative management theories.

The second argument leads to an interesting issue, when put in a broader perspective. Just like managers are trying to impose their views of the best use of time

upon workers, these workers and their representatives seem to be exerting influences on managers to observe their views on time, in particular on the “best way” to combine work and private time<sup>5</sup>. At least in some parts of the western economies, the time of one-sided capitalist exploitation of the workforce may give way to a mutual dependency, resulting in some negotiated compromise. However this may be, it does not preclude the recognition of measured time as a way to think about time - and the clock and calendar as ways to measure it - among organizational researchers. To put it in terms of a logical syllogism, “if managerial time is (predominantly) clock time, not all clock time is necessarily managerial time”.

How well do measured time and experienced time *go together* in organizational research? Depending on the positions that researchers take with regard to philosophy of science there seem to be three options in how researchers answer this question. Those who endorse the view of (neo) positivism will opt for measured time and reject interpretivist approaches. Those who consider interpretivism as the right way to gain knowledge will opt for experienced time and reject measured time. And those who take the position that there are more than one ways to view the world can embrace both views of time. Some may argue that these two positions cannot be held simultaneously since they rest on different assumptions and hence are logically incompatible. This argument is hard to defend because it implies a narrow notion of truth in which only one set of assumptions is true and others are wrong.

Like in other sciences, one may very well accept that *multiple approaches* to knowledge can co-exist - a position known as ‘ironical’(Rorty, 1989). “An ironical thinker never takes her set of basic beliefs as eternally true, but is able to question them simultaneously and work with them.” (Rehn, 2002, p.85). My expectation is that time-based research will profit from such a pragmatic position which allows positivistic and interpretative approaches with their diverging conceptions of time *to inform and build on each other*. It is likely to bring us farther than condemnation of either position as being false or wrong.

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<sup>5</sup> It seems that nowadays, at least in sectors with a high degree of ICT, company time and private time are being renegotiated and greater flexibility is attained in the interest of both employers and employees. New arrangements, such as annualized working hours (Bell & Tuckman, 2002), can give employers more control over the availability of employees than before, while employees have greater control over the way in which private time and work time come together.

Although it is not essential for the way of working proposed below, I believe it is possible to conceive of time in a way that embraces the two opposing perspectives. The starting point for this integrated view is that the human experience of time follows *from life*, that is, our existence as a living being. Time comes to our awareness as an attribute of what we experience on the way from birth to death, modulated by the alternating seasons and the cycle of day and night. When formulated in abstract terms, time seems to flow - as Newton said- “in an orderly fashion” from the past to the future (Bluedorn, 2002, p. 5). But when we stay closer to the perceptual experience, it is our own movement – that is our action, growth, development – that flows. Like the passenger, who looks out of the train window and sees the landscape move rather than himself, we fail to perceive our own movement and project it on something out there, which we came to call time. Such a human-centered view which assigns primacy to the experience of time (cf. ‘experienced time’) and is compatible with the notion of time as socially constructed. Time in that sense, is not ontologically given but rather “invented” (Bluedorn, 2002, p. 28) with the aim to provide an external standard of reference that allows us to communicate about and compare our experiences with others.

The many clocks and calendars that mankind has produced throughout the history of civilizations can be seen as the products of social construction, but they are more than that. They are artifacts embodying varying notions of time. The creation of these artifacts, with their material existence in the physical world, marks the establishment of measured time as a notion distinct from and complementary to experienced time. Each and any of the clocks and calendars, whether sundial or railroad clock, Gregorian or Julian calendar, can be seen as producing a time scale with a particular metric that expresses the needs and views of a particular community of people. These time scales can metaphorically be seen as “currencies” with a local significance. If we do so, we can think of their interrelationships of in terms of a conversion table that can be read in any direction. Thus, any time scale can be seen as a standard of reference. At the same time, the clock and calendar time that is currently used throughout the world can be looked upon as a universal time *currency*<sup>6</sup>. Even though it originates from social construction and its

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<sup>6</sup> Although the scale at which this universal time is expressed is normally considered to be linear, which means having equal units, this assumption is by no means necessary. In the perspective taken here, the

measurements derive their meaning from social endorsement, the measurements on this common time scale can be considered as representing time in an objective sense. Thus, measured time, while objective, can be seen as having originated from experienced time, both rooting in the human awareness of life. It seems relevant to add, that the main function of measured time, derived from its objective character, lies in its capacity to coordinate human action and to adjust it to the cycles of nature. Whether we consider the global air transportation system, electrical power supply, the car factory or orchestra, everywhere clock and calendar time is the main tool for organizations to synchronize their operations.

### *2.1.2. Combining perspectives in temporal research*

If we accept that the two perspectives of time can be combined, the next question is how that should be done in the context of temporal research. In this section I will elaborate on this. *First*, we must recognize that our conceptual and methodological apparatus needs further development if we want to study organizational phenomena from two the dual time perspective of the researchers. As is indicated in the four cells of figure 1, there are four ways to study time in organizations. Thus, for studying the way in which organizational actors deal with clock time (i.e. measured time for them) from the perspective of measured time, we need other concepts and methods than for studying the event times (i.e. experienced time for them) from an experienced time perspective. Likewise, we need other concepts and methods to study event times from a measured time perspective and clock time from an experienced time perspective. Some examples: we may engage in participatory observation to study actors' event time or use a researcher's diary to study actors clock time; we may investigate actors' event time by analyzing their accounts of what happens (e.g. recorded by means of diaries) with measured time markers, and analyze their time budgets, schedules and plans in a similar

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linear scale could be transformed into any other type of scale (e.g. quadratic or logarithmic) without losing its function as a common standard of reference. The linearity of the scale seems to be just a matter of convenience.

way. As we have not been used to think in these terms, we need to expand our intellectual tool kit, in order to explore the four possibilities systematically than we have done before.

A *second* step forward can be made when we recognize that the output of research based on measured time can be an input for research based on experienced time, and vice versa. Facts about time, as recorded with clocks and calendars, such as for example the exchange of e-mails over a period of weeks, can be subjected to interpretative analysis and lead to written accounts of the interplay of various parties in and around the organization in terms of experienced (event) time. Inversely, interpretative accounts of what how the timing of change in strategy imposed by the more powerful actors in a firm has affected operations and organizational success. The analysis might focus on the times at which decisions were taken, the duration of processes such as resistance and adoption, the time lag between significant events, and so on. Using outputs of the one analysis as inputs to the other can be continued in a recursive manner. See Figure 2 for an illustration. Suppose that the e-mail exchange was analyzed in terms of various actors' event times, the results could subsequently be analyzed in terms of measured times, i.e. when events highlighted by the researcher did happen, in what sequence they took place etcetera. Likewise, the results of the chronometric analysis of written accounts of what has happened in the firm while adapting to the new strategy can subsequently be analyzed interpretatively, that is in terms of how the events times of key actors as expressed in their planning behavior has lead to events happening at certain moments. Of course, this example is contrived and rather abstract, but the logic of what I suggest is that studies from the two sides can be meaningfully combined and that there are various options for doing so.

An important implication of the scheme proposed here that the ideological divide between researchers who favor the positivist approach and the interpretivist approach can - in principle - be overcome by division of labor.<sup>7</sup> Those who take a pragmatist position and allow themselves to use both approaches either simultaneously (Bluedorn, 2002; Rorty, 1989) or in an alternating manner, can play an integrating role.

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<sup>7</sup> The approach proposed here can alleviate the conceptual inconvenience produced by the apparently inconsistent use of clock and calendar time in writings of interpretivist researchers, as it shows the legitimacy of a dual conceptualization of time.

	1st order	2nd order	3rd order
Events	M	ME	MEM
			MEE
		MM	MMM
			MME
	E	EE	EEM
			EEE
		EM	EMM
			EME

M= measured time, E= experienced time

*Figure 2: Combinations of measured and experienced time*

## 2.2. Other conceptual issues

Apart from the different ways of conceiving time in general there are other conceptual issues to address. They seem to originate from the abstraction process by which we separate time from the experience of life. While time is essentially an attribute of what happens, we often treat it as if it had an existence of its own.

As already noted, there exists a somewhat confusing linguistic practice of *speaking about time while referring to activities*. For instance, we speak of “taking the time to ...”, “spending time on ...” or “using time for .... ” in order to refer to activities

such as working, reading, eating, etc. We use the term 'time compression' to refer to the compression of activities in a certain time frame. Time management is not about managing time, but about managing activities *in* time. The term 'cyclical time' suggests that time is repeating itself, but it actually means that events or activities occur repeatedly. This way of speaking is not confined to everyday life but happens among researchers as well. It may lead to a figure-ground reversal that makes create concepts and build theories that concentrate on time but makes us forget about content. For instance, we may focus on 'polychronic time' while forgetting that refers to polychronic use of time, or carrying out actions simultaneously (Lee & Liebenau, 2002), or study the 'interpenetration of time' instead of the 'interpenetration of activities' (Bell & Tuckman, 2002), or 'intermittent real time' instead of intermittent activities. (Keenoy et al., 2002, p.188).

The historical roots of this tendency to substitute action by time are not entirely clear. In as far as organizations are concerned, it might be explained from an economic point of view. As Bell & Tuckman (2002, p. 118) describe, "... time has become a means of defining labor itself, in terms of 'man hours', rather than merely a means of structuring any given work activity (Adam, 1990)." Crucial here is the value that a time unit of work represents. A somewhat related explanation is in terms of managerial control. Once the worker has agreed to sell his labor the control is exercised in terms of hours spent. Time thought of as a commodity can obviously be used. Thus, time use becomes synonym to the display of certain activities while suppressing others). Wherever it comes from, there is a reason for concern since the focus on time may actually obscure our view of it.

This poses a specific risk when we aim at developing temporal organizational research. The risk is that research focuses on *concepts of time but loses sight of what happens*. Actually, this seems to be the trend, as the recent literature shows a much greater attention for explicitly time-related topics such as time perception, time-use, temporal focus, temporal depth, planning, entrainment, and rhythm, rather than for topics such as leadership, commitment, or strategic decision-making in which time is present but hidden. Such studies suffer from similar limitation as the timeless research from the past: they isolate content from time and thereby make the role of time *in* what happens

more difficult to understand. Even the notion ‘timescape’ (Adam, 1998), although useful of making us aware of the many appearances of time and their interrelationships, carries the risk of overemphasizing time. If a preponderance of future studies would adopt this explicit focus on time, it might do little to improve our temporal knowledge of organizations, and produce a body of ‘pseudo-knowledge’ (Roe, 2005a), complementary to that created by the timeless research from the past.

This problem of separating time and content stems from a flawed type of conceptualization, that is by no means limited to organizational or social research. It was also mentioned, and criticized, by Whitehead (1925) in the field of theoretical physics. Time is *in* the events, and should not be conceived as something having an independent existence (Bluedorn, 2002p. 31). One cannot meaningfully speak of events as distinct from time, or vice versa. I do not want to suggest that time-based research should totally abandon concepts that put time and temporality in the foreground. But, I agree with Mitchell and James (Mitchell & James, 2001) that the emphasis in future research ought to be on time as an intrinsic element of what happens.

Another, somewhat related problem is the risk of using concepts that obscure our view of time as an attribute of dynamic phenomena by *packaging it in quasi-stable attributes* or ‘variables’. For example, a popular notion in team research is entrainment (McGrath & Rotchford, 1983), which refers to the fact that activities become synchronized into a rhythmic pattern. However, entrainment is seen by some researchers as the presence of synchrony to a greater or lesser extent and not as a process of becoming more synchronized. Another example can be found in the study of punctuality, that is, the tendency of people to accord their behavior to agreed time-points (deadlines). While a number of studies have demonstrated cultural differences in how people behave vis-à-vis deadlines, researchers’ interest has drifted away from how they behave to punctuality as a trait that can be measured by means of some index (Levine, 1997) or personality scale (Richard & Slane, 1990). There are many more examples of temporal phenomena that are turned in to variables, that is, characteristics of social entities that are supposed to be present in a greater or lesser degree.: e.g. pace-of-life (Garhammer, 2002), flow (Mainemailis, 2001), temporal depth (Bluedorn, 2002), and pacing styles (Gevers, Claessens, Van Eerde, Rutte, & Roe, 2006). My suggestion would be to avoid using the

concept of variable as much as possible and to think in terms of what happens (Roe, 2005a). Below I propose to use the general notion of ‘phenomenon’ as a concept that helps to avoid losing sight of dynamics in research and theory building.

### **3. Why chronometric research?**

Temporal research on organizations can move forward in many directions. Researchers can follow the track of experienced time and focus on how managers think about time, how they structure their own and other people’s activities, and how people cope with the frictions of non-matching time demands (e.g. Ancona & Tushman in Ancona, Goodman, Lawrence, & Tushman, 2001; Odih & Knights, 2002; Sabelis, 2002, 2006), but they can also concentrate on what happens when, that is, on time lags and sequences (e.g. Mitchell & James, 2001). In terms of figure 2 they can emphasize experienced time, measured time, or particular combinations. Without implying that one way of doing research is inherently more valuable than the other, I feel that research of measured time needs special emphasis since, as we have seen (Roe, 2005a), its development has been minimal and is hampered by a lack of conceptual and methodological tools. For this reason, I will concentrate on research dealing with on measured time, or chronometric research, in the remainder of this paper.

In order to overcome the problem of losing sight of the dynamics of organizational life by either forgetting about time or about content, I propose to develop a general methodology for investigating time as an attribute of what happens in organizations based on an alternative conceptualization. My suggestion is to concentrate on phenomena rather than on variables. The word ‘phenomenon’ reflects that there is a way to observe or record what happens. A phenomenon is formally defined as *an event (or a series of events) taking place in a particular class of objects during a certain time interval*. A number of referents are needed to characterize a phenomenon, minimally those pertaining to who, what, and when. The *who* refers to the objects (or actors, e.g. individuals or teams), the *what* to content (e.g. making decisions, performing tasks) and the *when* to what we will designate as ‘temporal features’.

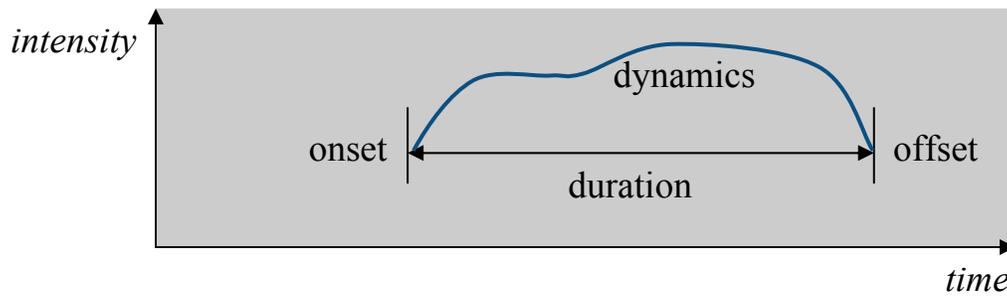


Figure 3: The temporal features of a phenomenon (Roe, 2005b)

The content of phenomena can best be described by means of *verbs*, as this ensures that the emphasis remains on “what happens”. For example, using the verbal form of leading or communicating conveys the meaning of a dynamic process that is lacking from the nouns leadership and communication. As is depicted in Figure 3 phenomena can be considered as temporally bounded and dynamic. Being temporally bounded means that that the phenomenon has a beginning and an end, whereas being dynamic implies a change of intensity of one or more attributes during the interval between these two points. The beginning of the interval is designated as the *onset* of the phenomenon, the end as its *offset*, whereas the interval between them is referred to as *duration*. The generic term *dynamics* is used to refer to the pattern of changing intensity, which may be characterized by one or more parameters<sup>8</sup>.

The notion of phenomenon as introduced here can be *generalized* in a number of ways. There can be one attribute, such as e.g. trust within a team, but also a set of covarying attributes, such as trust, relationship conflict and task conflict (Raes, Heijltjes, Glunk, & Roe, 2006). When phenomena manifest themselves repeatedly, or when they are interrupted by breaks (or other phenomena), they can be defined at multiple aggregation levels simultaneously. In this way, one can speak of performance at the level of a day, a week, a month, quarter, or a year, and so on. Moreover, phenomena can be defined to cover a single event or rather a sequence of events, such as occurring in decision making, team development or organizational change.

<sup>8</sup> The general definition of phenomena given here is based on measured time only. In line with the position chosen above, i.e. that one can alternatively opt for experienced time or combine measured and experienced time, an elaboration of the notion of phenomena in terms of experienced time is also conceivable.

Considering phenomena as bounded in time does not only imply that something is happening between the onset and the offset, but also means that this can be thought of as displaying a *life cycle*. More than anything else, the postulate that organizational phenomena are actually showing a life cycle challenges the assumption of continuity or persistence that runs through the theoretical thinking in terms of ‘variables’. This first of all applies to behavioral phenomena at the individual level, such as employee commitment or management style, which are normally thought of as quasi-stable traits. But it is also true for the shared mental models of team members and the power of managers and professionals in the organization, as well as to diversity, formalization, innovation of organizations. The very adoption of a conceptual format that forces us to question the assumption of continuity and to think about such as aspects as beginning, end, and changes in between, helps us to develop a more dynamic view of organizations than we have been able (and willing) to develop thus far. This is even true in cases where researchers attention seems already open to dynamic events such as organizational change or organizational learning, but where the research is still framed in terms of quasi-stable variables or stages.

Studying phenomena starts *with describing them and establishing the parameters* that define their start, duration, and development over time. Part of this is what Ancona, Okhuysen et al. (2001) have called ‘activity mapping’. This type of study can be done at several levels of temporal aggregation, which implies a larger time with lower resolution or a smaller time frame with higher resolution. But in addition to establishing main trends it also includes an analysis of different patterns within samples (e.g. different patterns among teams), as well as an analysis across different temporal aggregation levels (e.g. days, weeks, months etc.; Roe, 2005b). Its ultimate aim is to get a valid model of what happens over time.

Thinking in terms of phenomena is only a first step, however. Once we are ready to consider phenomena as building blocks from which dynamic theories can be developed, we can start conceptualizing the *relationships between two or more phenomena*. In Roe (2005b) I have presented a simple and schematic scheme for doing so, by interlinking the main temporal features of a pair of phenomena. Of course, this logic can be expanded to chains of phenomena that involve more than two phenomena. The scheme is depicted in

Figure 4. It hints at nine types of prototypical research questions involving just a pair of temporal features of just two phenomena, P and Q. P could be an antecedent phenomenon such as the emergence of task conflict in a team and Q a consequent phenomenon such as team performance.

		<b>Phenomenon P</b>		
		<i>Onset</i>	<i>Duration</i>	<i>Dynamics</i>
<b>Phenomenon Q</b>	<i>Onset</i>	1	4	7
	<i>Duration</i>	2	5	8
	<i>Dynamics</i>	3	6	9

Figure 4: Scheme for the temporal analysis of pairs of phenomena (Roe, 2005a)

This scheme can be used to generate a variety of *prototypical research questions* that can be systematically addressed in research studies. For instance, one may investigate which of the phenomena is preceding the other in terms of its onset, how big the time lag is, how upward and downward trends relate to each other. Several suggestions from the literature, e.g. by Goodman (see Ancona, Goodman et al., 2001, p.651) on time lags, and by Mitchell & James (2001) on time lags and duration, are covered by these research questions. Applying the nine options of the model to the many phenomena occurring in organizational life would lead to a very fragmented and bottom-up approach to research, and would give little view of the bigger questions that drive our discipline. It might take dozens of years to accumulate evidence on temporal relationships between the many phenomena that organizational researchers are interested in, before one would be able to answer key questions about what is behind long-term team effectiveness, which are impediments to successful organizational change, what causes managerial failure, how organizations really learn, and so on. From the point of view of research strategy, one would prefer to start from the theoretical models that have been driving us over the last decades and start to “temporalize” these. However, we cannot simply assume that this is a fruitful approach since much of our past theorizing and fact finding has been based on a neglect of time and some results may no longer be valid when time is incorporated in the

study. For instance, many cross-sectionally results may not hold when studied longitudinally. However, there are exceptional cases of truly temporal studies, such as research on entrainment , which has produced descriptions of how certain temporal phenomena can be each other's Zeitgebers (Ancona & Chong, 1996; Ballard, 2006; Bluedorn, 2002). Another example is group development, which has already been investigated extensively in the past (McGrath, Arrow, Gruenfeld, & Hollingshead, 1993; McGrath & Tschan, 2004).

If one accepts the position that theory-driven deductive research is most meaningful if there has been an opportunity for inductive theory-generating research in the first place (De Groot, 1969; Stadler, 2004), our future research strategy should also give *room for such inductive research*. Thus, there is a need to do what we have failed to do in the past, that is: to observe, record, interpret what happens, and to generate new conceptions and hypotheses. The results of this inductive approach may either convergence with those of deductive research that departs from current theory, but it may also supplement and substitute current insights<sup>9</sup>.

A chronometric approach to the study of organizations opens a still another way of gaining knowledge that is as yet rudimentary. Our conceptualization of phenomena does not only imply that their occurrence implies time, it also means that they can be seen as *located on a time axis*. Within the view of time that was presented earlier, i.e. clock-and-calendar time as rooting in social construction but defined by commonly accepted artifacts - the time axis represents measured time extended backward and forward into past and future<sup>10</sup>. Given such a time axis, marked with dates and hours according to present global standards (that is, with the acknowledgement of time zones), we may and raise questions regarding the generality of phenomena, or the generalizability of our theoretic knowledge about the phenomena. Such questions are important because organizational phenomena that we take for granted are very likely to be contingent upon societal conditions that were typical for a particular phase in history, or be linked to a unique sequence of such conditions, that is, path-dependent.

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<sup>9</sup> The editorial policies of the major academic journals pose a serious obstacle to the approach proposed here. In order to stimulate temporal research these policies may have to be changed (Goodman et al., 2001).

<sup>10</sup> The nature of the time axis is the subject of debate in theoretical physics. Before it has been argued that this debate is not of immediate relevance in organizational research.

In summary, the introduction of the notion of phenomenon may be helpful in developing a more dynamic view of what happens in organizations in three respects. It brings a proper degree sensitivity to time in what happens, avoiding both neglect of and fixation on time. Second, it helps to develop a differentiated view of temporal relationships that leaves no room for simple notions of simultaneity, sequence or causality. Third, it helps to perceive issues in a long-term and historical time perspective and to avoid thinking of generalizability as a default. Elsewhere I have outlined a research strategy based on these three points and shown how it might be implemented given the research methodology and analytical tools that are currently available to us (Roe, 2005b). Temporal research is difficult to conduct and certainly laborious, but the greatest obstacle is certainly in our mind.

#### **4. Organizational phenomena**

A full-fledged application of the foregoing to organizational phenomena is beyond the reach of this paper. However, it will be instructive to look at some examples and to highlight some issues connected with a chronometric research approach. Given the broad scope of organizational research there is a wide array of phenomena that lend themselves for temporal study. I propose a classification scheme based on three distinctions. The *first* distinction is between phenomena that are “objective”, in the sense that they do not directly depend on actors’ awareness and phenomena that are “subjective”, in the sense that they are defined by or otherwise originate from what actors think. Although organizational researchers often think of organizations as socially constructed entities and believe that what happens in organizations is socially constructed as well, we should not forget that organizations have a physical existence next to its “ideal” or “imaginary” one. Airlines do move people through the air, construction companies do create buildings, military organizations do kill. While the acts of the people involved in organizations may be thought of as being subjective in their origin, they are carried out through the muscular apparatus of the body, they normally involve the use of a variety of tools, and they do result in a concerted transformation of the physical environment. In other words, there is an objective side to the life of organizations and people. And its dynamics as well as its

interaction with subjective phenomena should be a topic for organizational research. Examples of objective phenomena are: composition, structure, practices, performance; examples of subjective phenomena are justice, conflict and time perspective. The *second* distinction is between phenomena in which actors explicitly deal with time, called time-oriented, and phenomena in which time does not stand out but is simply implied. Examples are: organizational learning, time-management and time-perspective. The *third* distinction is between phenomena at multiple levels: organization, department / team, individual.

Figure 5 visualizes the classification scheme and gives a few examples for each of its cells. It should be noted that the phenomena are referred to in the “traditional way”, i.e. in terms of nouns. As a first step to temporal analysis these nouns would have to be replaced by verbs. For example, innovation by innovating, creativity by creation, trust by trusting, leadership by leading, and turnover by leaving. Next, we would have to think about the life time of each phenomenon, that is ask ourselves questions about its emergence and disappearance, as well as the shape of its development over time. Thinking about the examples will make us aware that there is as yet little we can bring to bear about their dynamic life. There is little we know about when these phenomena start, how long they take to develop, and so on - even in cases where time is salient, such as in entrainment, shared temporal models and planning. In order to move forward, it would be good if the descriptions of time-based phenomena that were given in the literature, often in rather general and impressionistic terms, would be rephrased in more specific terms that would allow some degree of empirical testing. An example would be Bunzel’s study of rhythmicity in organizations (Bunzel, 2002).

Considering the risk of putting too much focus on time that was discussed above, it would seem particularly important to devote a great deal of attention to those organizational phenomena that are not explicitly time-related but that nonetheless, by definition, imply time (cf. Mitchell & James, 2001). There are many cases of such phenomena that at first sight seem to “resist” such a temporal reframing, but which can yet be laid down in temporal terms<sup>11</sup>.

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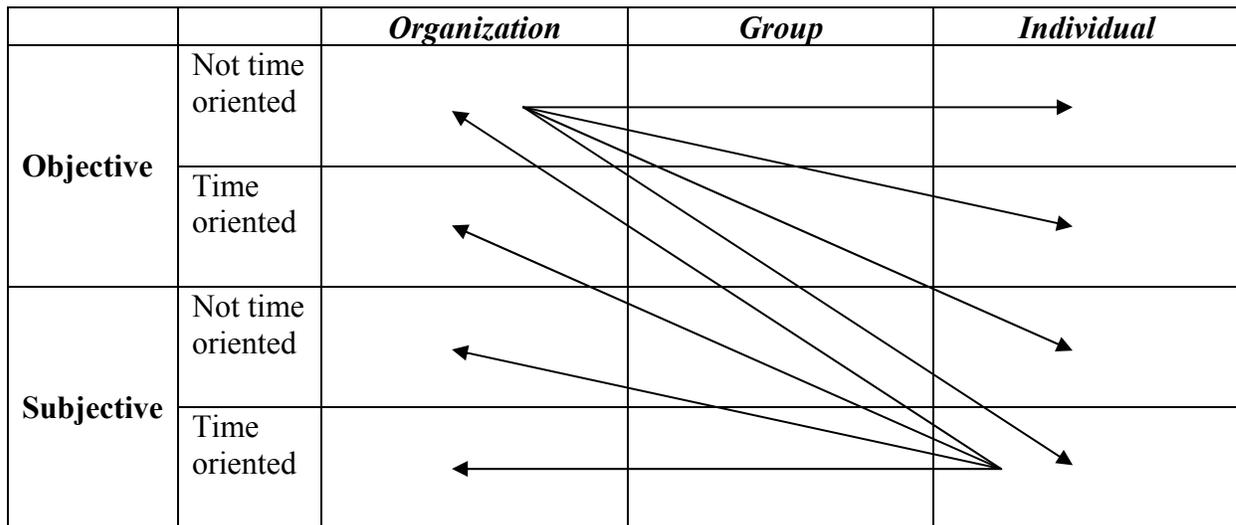
<sup>11</sup> It is important to recognize that the resistance is in our own mind, and we have to break strong, unconscious habits in order to overcome it.

		<i>Organization</i>	<i>Group</i>	<i>Individual</i>
<b>Objective</b>	Not time oriented	Structure Power Innovation Outsourcing Organizational routines Performance	Team composition Diversity Creativity Collaboration Cohesion Performance	Leadership style Autonomy Responsibility Competence Stress Performance
	Time oriented	Organizational change Organizational growth Organizational learning Planning, scheduling Time regime Rhythm	Group development Planning behavior Timing of actions Rhythm	Career planning Pre-/absenteeism Turnover Tenure Time management
<b>Subjective</b>	Not time oriented	Organizational climate Management style Communication Decision making Ethical behavior Fairness	Group norms Shared cognition Task conflict Relationship conflict Trust Cohesion	Commitment Motivation Psychological contract Situational awareness Satisfaction Fatigue
	Time oriented	Mono/Polychronicity Temporal norms Punctuality Timing Entrainment Organizational rhythm	Mono/Polychronicity Temporal mental models Timing Entrainment Rhythm	Mono/Polychronicity Time urgency Time perspective Time focus Pacing style Flow Haste, Slowness Time compression

*Figure 5: Exemplary Topics of Chronometric Study at a Single Level*

Describing the temporal dynamics of separate phenomena such as mentioned above is not the ultimate aim of organizational studies. The interest of this field is primarily in the interplay of actors and interactions between organizations, groups and individual members. If we move the focus of our attention to the relationships between phenomena, several intriguing issues arise. *First* of all, there are many questions to be answered about the relationships between two (or more) phenomena lying at the same level (organization group, individual). For example, the exercise of power and organizational climate, team collaboration and shared mental models, time management and performance. How are the relationships between the onset of P and the onset of Q,

the onset of P and the duration of Q, the growth of P and the growth of Q etc.? (cf. Figure 2). It no longer suffices to postulate a positive or negative link (correlation) between P and Q, but we are facing questions about delay, persistence, stability, and changes. Links that are absent in the beginning may become positive or negative later on. For instance, if we assume that the development of organizational rhythms produces social integration, that is, “help(s) in creating and sustaining a sense of community” (Bunzel, 2002, p. 177) we might want to find out to whether this effect happens immediately and how fast.



*Figure 6: Exemplary Topics of Chronometric Study across Levels*

*Secondly*, as is suggested by the arrows in Figure 6, other types of questions are emerging when links between phenomena at different levels are concerned. For instance, as organizational scientists we easily assume causal links between events at the organizational level and what happens in teams and among individual employees. Likewise, we assume that individuals - especially those at the “higher echelons” - are exerting influences on the organization. But once we start asking ourselves what exactly happens at the various levels (e.g. how managers think of time, how managers in the top team interact, how organizations change) and how these links should be modeled (e.g. which temporal facets of manager’s cognitive development or which facets of the top team’s interaction relate to which temporal features of the organizational change process), it becomes clear that there is much we actually don’t know. There has been

considerable concern among researchers over the effects of fast communication and information processing technology on experiences such as ‘time compression’ among managers (e.g. Odih & Knights, 2002; Purser, 2002; Sabelis, 2002) but evidence on its occurrence and effects is still limited, and further research is needed. Some more general topics emerging from this way of looking at phenomena are the way in which conceptualizations of time by managers and other actors influence the change of temporal regimes, and temporal socialization (how organizations make individuals and groups adopt and internalize the ideas and norms about time).

*Thirdly*, there are several other links, either at the same level or across levels that call for researchers’ attention, especially those between “dissimilar” phenomena. For instance, how do time-related phenomena relate to non time-related phenomena? And how do subjective phenomena relate to objective ones, and vice versa? It is certainly possible that deadlines, resulting from subjective decisions become objective Zeitgebers for others. What happens within teams seems relatively easy to describe, but once we start wondering about “what happens when” and “how and when” one process impacts upon the other the picture becomes much less transparent. It is not at all clear where the team members’ mental models come from, how and when they become shared, how they affect what team members really do and when, and so on.

Subjective and objective, time-oriented and non time oriented phenomena seem to be involved in a *complex interplay that spans several levels*. A good example is provided by the orchestra, where the subjective ideas of the conductor and members are input to and at the same time output of an interaction that - through a process of continued practicing and learning - leads to a high degree of entrainment. The entrainment of the activities of the musicians becomes an objective phenomenon at the level of the organization as a whole. It even extends onto the audience that (apart from occasional coughing) reduces its activity to the minimum in synchrony with the orchestra’s performance. This example allows us to recognize the complexity of these interactions between the objective and the subjective and the shift between timescapes in successive stages of production. Thus, the composer may take a week to create the score for a small music piece (from subjective to objective), the musician may need 3 weeks of rehearsal

to master the piece (from objective to subjective, and from subjective to objective) and the actual performance (idem) may take a 5 minutes<sup>12</sup>.

The issue of *generalizability of organizational phenomena over time* has not much of an issue in organizational research, thus far. Publications in the domain of organizational theory have been strong in historical awareness and have emphasized contextual factors and path-dependency. But much empirical research has been characterized by a relative neglect of long term trends. Research on the temporal facets and interrelations of phenomena will create a greater awareness of how variables and patterns that were naively taken as inherently stable may actually change over time. Bibliographic research offers the possibility to begin investigating long term stability and change. By charting how the interest in certain topics has evolved over time, we may get a rough idea about when certain phenomena became salient and faded away. In order to assess the validity of certain models over a longer time span, one might resort to meta-analysis methods (e.g. Schulze, 2004). But these should be adapted as to reveal the trends and changing variances. Being based on essentially timeless research data such research efforts would, however, be of limited use. Insights in how organizational phenomena and their relationships change over time would require real temporal research studies in the first place.

## **5. Conclusion**

We can conclude that the road to temporal research is not an easy one. Although many authors in organizational field nowadays endorse the call for “more time” in theory and methods, it should be clear that the implications of this view are by no means simple. Focusing on a few time-related phenomena, such as entrainment or temporal depth, or replacing cross-sectional research designs by longitudinal ones, will not be sufficient. We do need to become sensitive to time and discover its many facets in the first place, as Sabelis (2006) has pointed out, but in order to get involved in observing and analyzing

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<sup>12</sup> These estimates are based on George Benjamin’s ‘miniatures for violin’, interview the composer in Amsterdam on May 18, 2006.

time we need to change our very way of thinking and our practices of conducting research. Whatever efforts are made to understand time from the perspective of actors, we shall not forget to measure time.

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