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Mind & Time: Interdisciplinary Division of Labor

1. Approaching Mind and Time

In answering the question of what it means to live the life of a person, one cannot help but to refer to the experience of the passage of time as well as to self-consciousness with its deep questions of existence, mortality, and the meaning of life. The experience of time is clearly at the very center of the workings of the mind. We experience the passing of time on very different levels, from brief moments to whole lives, to historical epochs that exceed the lifetime of any person. On closer examination, it appears more and more puzzling what actually connects these different moments and periods of time. The more so as humans have dramatically expanded the temporal horizons throughout the cultural history. The human time horizon leads not least to the problem of the place that human consciousness occupies in the fabric of the world in contrast to everything else that senses and experiences.

The widening of the temporal horizon is the result of technology, which includes above all language—the technique of expression—and formal techniques such as counting and calculation. In particular, drawing a line and its partitioning belongs to the primal scenes of technology. This simple technique of linearity has put us on a path to the modern scientific image of the world and to the measurement of time. The primal scene is the reconstructed process that stands at the beginning of that path that eventually leads to the modern scientific image of the world. Along this path, the expectation has been formed that insights into the fabric and workings of the universe can be gained from the mathematical measurement of space and time. Even today, this expectation has lost none of its relevance.

There are apparently two different ways to approach mind and time. We can either explicitly take the perspective of a person with her subjective point of view or an objective standpoint, which is formed, as it were, by a view from nowhere on the sequence of events.

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Perspective-independent descriptions register the succession of events without reference to the passage of time. The objective description of the centerless view lacks the experiential presence, which has such an overriding importance in conscious life. It therefore comes as no surprise that the terms »mind« and »time« have been associated with so-called hard problems again and again—this applies both in semantic and explanatory respects as well as in systematic respects.

When we deal with manifestations of the human mind, we soon stumble upon temporal aspects of perceiving, knowing, behaving, deciding, and acting. These mental acts stand in a peculiar connection with the course of events. Therefore, the question arises whether time is something that directly depends on these processes or whether it runs independently of them. This question has often been answered by saying that time is ultimately an illusion, or at best that it can be understood as a certain perspective on the course of events.[1] In any case, the modern philosophy of time takes its starting point from the thesis of the unreality of time as it has been developed, for instance by John Ellis McTaggart.

In the context of the development of his naturalistic system, Spinoza pointed out that time is not a determination of things, but only a way to think about them that enables us to explain duration.[2] The metaphor of the passing of time, which we so frequently encounter in everyday life, misleads us about a puzzling phenomenon, especially since there is no direct evidence for the experience of time as such. Rather, it seems that the subjective experience of time depends on the propositional content of the respective perceptions of the course of events. Temporal processes are accordingly inseparable from spatial processes.

Nevertheless, it would be hasty to regard time as not real or as a mere illusion. A person who expresses the words »here« and »now« or conceives them in the mind, makes her respective position in the world explicit and takes by this mental act a new attitude to her reality with new options for action. A person who masters the language of time is capable of perceiving and changing the course of events in a specific way. With persons, a perspective appears in the world, which joins the

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1 Cf. Rovelli 2018, 40: »The idea that a well-defined now exists throughout the universe is an illusion, an illegitimate extrapolation of our own experience.«

2 Cf. Spinoza 1972, 244: »Quare tempus non est affectio rerum, sed tantùm merus modus cogitandi […] durationi explicandae inserviens.«

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sequences of »before,« »simultaneous,« and »after,«—McTaggart's B-series—but consistently occupies a new present with a new past and future—McTaggart's A-series.[3] With the terms »here« and »now« a unique constellation manifests itself in the B-series with elements of the A-series.[4] This complicated relationship is likely to contribute significantly to the impression of the passage of time.

For us, the passage of time always points to the future, of which we have no knowledge, but about which we can make plausible conjectures. The plausibility of these conjectures depends to a not inconsiderable degree on the information we have about relevant events of the past and present. These events are determined by causal relations which follow the B-series. An event is never followed by its cause. Our understanding of time accompanies the direction of causality.[5] At least in this respect, time is not a mere illusion, but an expression of real processes.

2. What is Time?

The consciousness of the human life-form is characterized by its own way of dealing with temporal processes. It is often assumed that the analysis of the experience of time is the key to the understanding of human consciousness. But both fields of investigation are still dominated by profound controversies, and it looks as if the difficulties would be doubled if they were brought together.

Physicalism as well as most naturalistic approaches deny the possibility of speaking of a passing of time. The physicalist and naturalist positions are confronted with the phenomenological view, which understands the passage of time as the core of the experiential reality of persons. This opposition still characterizes current research. Yet, in recent debates, conceptions are emerging in which the physical

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[3] Cf. McTaggart 1927, 9–31.

[4] Cf. Prosser, 3: »There is […] an ever-changing succession of A-series, always consisting of the same series of physical events but with a different time being present on each series, and with other time's A-series positions differing accordingly.«

[5] Cf. Prosser 204: »Earlier events cause later ones, but not vice versa. […] A person's brain, at any given time, contains informational traces of the past (in memory), but not the future (the subject can, of course, have true beliefs about the future, but these are not the result of any causal influence by future events).«

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view and the phenomenological view no longer appear to be mutually exclusive.[6]

What we seem to know is that we can measure time with a variety of techniques. These techniques, however, say little about the experiential awareness of temporal consciousness as distinct from the experiences of other forms of life. Further, we presuppose that the consciousness of a person is for the most part transparent and self-referential. We can ask persons what they are thinking about or what their thoughts are at this specific moment. But we also imply that not every mental process is explicitly experienced. Not least, we are skeptical that we can measure consciousness as such.[7]

In the history of philosophy, there are early philosophical approaches to dealing with the difference between subjective and objective time. Aristotle and the Stoics bring time into a direct connection with movement and process. This is in contrast with the later view that time emerges from activities of consciousness. This position is associated with Descartes and sometimes with Augustine, but especially with Kant, Brentano, and Husserl. However, this constellation of theories is not as clear as is often suggested.[8] It is widely accepted that Husserl's phenomenological method marks an innovative turn for the 20th century in the philosophy of the time.[9]

3. The Semantic and Methodical Challenges

In methodological and semantic terms, it hardly escapes the attention that conceptions or ideas of time are referred to using metaphorical expressions, such as »time flows,« »time drags on,« or »time stands still.« These metaphorical expressions, as familiar as they may seem to us, are anything but harmless from a philosophical point of view, and it is of utmost necessity that they be subjected to semantic analysis.[10] Without conceptual analysis and linguistic control, metaphors generate inconsistent or contradictory ideas, especially when they are taken directly as representations of the way things are. Particularly, in the case of expressions like »mind« and »time« linguistic clarifica-

6 Cf. Chauvry 2023.
7 Cf. Herzog 2023, Beauducel 2023.
8 Cf. Horn 2023, 99–102.
9 Cf. Horn 2023, 96–99.
10 Cf. Bartmann 2023.

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tions and conceptual analysis are indispensable. Linguistic vagueness is impressively revealed by the supposedly simple question »When is now?«.[11] Not only is it impossible to answer it in a sufficiently discriminating way, but it confronts us directly with the fundamental problem of the pros and cons of discrete temporal units.[12]

Empirical studies indicate that the threshold for the distinction of temporal units is measurable. This does not mean that no mental activities take place beyond these boundaries.[13] We are dealing with different scientific resolutions of time relations. The sequences of objective or physical time run to a large extent below the threshold of subjective awareness.[14]

There is no consensus on the use of the concepts »mind« and »time«—neither interdisciplinary nor intradisciplinary. Contrary to what is widely implied, the absence of a consensus need not necessarily be understood as a semantic disaster. It is quite possible that it is a manifestation of an inevitable incoherence, which could result from the phenomenon as such or from limited epistemic access. Furthermore, in the case of the concepts »mind« and »time« there are established practices of language use, which also allow for methodical comparisons and identifications of relationships. In this way, no unified picture emerges, but at least a retraceable linguistic constellation of definitions, connections, discontinuities, and oppositions. In this situation, a method is appropriate that is oriented towards semantic diversity and division of labor—as is indicated for instance in Wittgenstein's reflections on language games and family resemblance.[15]

4. Interdisciplinary Diversity and Division of Labor

The different approaches to »mind« and »time« open a wide interdisciplinary field. In its everyday research, a single discipline does not aspire to cover a wide research field in its entirety—although some public statements seem to suggest otherwise. A single discipline does not have the instruments and methods needed for all aspects of the research area at its disposal. At any rate, the focus is usually on only

11 Cf. Gale 1964.
12 Cf. Herzog 2023, 56.
13 Cf. Herzog 2023, 58–62.
14 Cf. Herzog 2023.
15 Cf. Wittgenstein 1958. 5–13, 32, 33.

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one approach. No single discipline is able to encompass the entire scope and complexity of the field of investigation of »mind« and »time.«[16]

In the thematic connection of »mind« and »time,« we are dealing with a phenomenon which is in each case only accessible in certain aspects. This leads to the challenging interdisciplinary task of elaborating the corresponding relations and connections—such as between neuroscientific findings, psychometric approaches, and investigations in the disciplines of psychology, philosophy of science, epistemology, philosophy of language, and philosophy of mind. This constellation obstructs from the outset dualistic and eliminative positions that are still widespread in theories of mind and time. Interdisciplinary diversity and division of labor can only come about within a worldview that is, in the broadest sense, both naturalistic and open for revision.[17]

For example, in investigations of decision-making, results have been worked out in different scientific disciplines, such as philosophy, psychology, neuroscience and economics, which in turn are, or can be made, the subject of interdisciplinary research. In specific decisions, the respective attitude of a person, which she adopts towards immediate consequences or later consequences of her actions, is of critical importance.[18] This means that a person's subjective attitude is the origin of processes that can be identified, measured, and evaluated by various disciplines.

For all the mystery and indeterminacy that surrounds the expressions »mind« and »time,« they always refer to ways in which people deal with reasons and their temporal perspectives. This practice ultimately determines who we are and who we can be. These days, however, one wonders whether our use of reason, mind, and time is unique once and for all or whether biological, social, and technical processes can lead to radical changes.[19]

In personal and institutional decision-making, developments of Artificial Intelligence are becoming more and more important and obviously influence future manifestations of the human mind and knowledge.[20] Regardless of the expansion of technical automation, persons can deliberately change the course of events with their deci-

16 Cf. Beauducel 2023, 17–18.
17 Cf. Beauducel 2023, 19–21, Sturma 2023, 131–132.
18 Cf. Parfit 1984, ch. 8: Different Attitudes to Time, 149–186.
19 Cf. Heinrichs 2023, 53–54.
20 Ettinger, Ulrich, Keidel, Kristof & Murawski, Carsten 2023.

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sions. But they need to ask about impacts when technical systems, designed to execute processes previously initiated only by a person, change the course of events independently of human control. We must even consider the possibility that the proliferation of automated technical interventions will require us to expand the semantic field of the expressions »mind« and »knowledge.« The way we deal with time and especially with self-consciousness seems to stand in the way of such an expansion. The time has not yet come for us to accept full-heartedly systems of Artificial Intelligence as one of us[21]—as beings we can question about their conception of future and past.

The contributions in this volume explore in an interdisciplinary division of labor the semantic, systematic, and empirical constellations of mind and time by using their respective scientific methods. They dispense with grand theory and limit themselves to tracing those contours of mind and time accessible from their respective methods from which, under favorable circumstances, a larger picture emerges.

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[21] Cf. Heinrichs 2023.

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