

Which Ontology for Naturalists?

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According to classical naturalism, folk psychology (our system of mental explanations) is compatible with scientific explanations of human behaviour. There are *proper physical correlates* for mental phenomena. Contemporary naturalistic approaches do not share this compatibilistic view. According to them, folk psychological explanations are incompatible with scientific explanations because they cannot be separated from specific ontological commitments which comprise, among other things, endurers. In the article I present the following thesis: Most contemporary *naturalists* are committed to the view that there are *no proper physical correlates* for mental phenomena because they allow only events and processes as physical correlates and not endurers or continuants. I argue against the naturalistic assumption that the commitment to event ontology follows from the assumption that reality can be explained in scientific terms. For this purpose I will concentrate on the naturalistic explanation of the phenomenon of the human self.

1. FROM COMPATIBILISM TO INCOMPATIBILISM

According to the classical naturalistic theory of reductionism there is no contradiction between our everyday folk psychological assumptions and scientific explanations. In this view, the explanatory success of our common sense or folk psychological assumptions is based upon an isomorphic structure of mental and physical events (Lewis 1966): We are justified to explain our actions by assuming mental causes like wants and beliefs because these mental causes correspond to neural patterns which are the physical causes of our actions. According to Goldman, Lewis, Fodor, and many others, there is no contradiction between folk psychological and neurobiological explanations of human behaviour. Cognitive science is not here to correct and revise our common sense

assumptions but to clarify the “characteristic manner in which wants and beliefs cause acts”:

[...] neurophysiological information can help explain how it is that wants and beliefs cause action. (Goldmann 1970, 166-168)

This positive attitude towards our basic folk psychological assumptions is compatible with the naturalistic commitment that the only form of reality which exists is physical in nature. The theory behind this compatibilist view is the model of theory reduction. It is maintained that the folk psychological system of our mental concepts can be reduced upon the system of our best scientific theories. For classical naturalism scientific descriptions were much more adequate and closer to reality than mental descriptions. But that did not exclude the belief that also the mental concepts had a *fundamentum in re* because in the end they referred to the same (physical) reality as physical descriptions did. In this view mental states had a ‘proper physical correlate’. ‘*Proper physical correlate*’ is defined here as a *physical entity whose causal role corresponds to the causal role of the mental entity*.

The assumption of proper physical correlates of mental phenomena is not shared any more by most contemporary naturalists.¹ There are several reasons for this change of attitude within naturalism towards mental phenomena and folk psychology. Classical naturalism was focused on mental phenomena which had an event-like and relational character—mental events like wants, intentions, desires, pains etc. It seemed to be easy to find corresponding correlates on the physical level upon which these phenomena could be reduced. However, a closer analysis of mental phenomena revealed the difficulties of the reductionist enterprise of classical naturalism: It turned out that these event-like mental phenomena had a qualitative aspect which could not be grasped in the reduction. This

¹ The list of naturalists who deny the existence of proper physical correlates comprise philosophers and cognitive scientists like Dennett, Flanagan, Metzinger, Roth, Crick & Koch, Paul and Patricia Churchland, Stich, Wegner and many others. There are some exceptions, e. g. Kim and Beckermann; these naturalists can be regarded as the last representatives of classical naturalism.

difficulty leads David Chalmers to his well-known distinction between hard and easy problems of consciousness (Chalmers 1995).

The main problem was, though, that the descriptions of mental phenomena cannot be separated from a whole set of descriptions which together form the conceptual system of folk psychology (and folk ontology). “Folk psychology” is defined according to a mainstream position in the theory of mind-debate as

a conceptual framework ... used by ordinary people to understand, explain and predict their own and other people’s behaviour and mental states. (Von Eckardt 1994, 300)

Not only belong the above mentioned mental concepts like belief, desire etc. to the conceptual system of folk psychology but also a whole range of other concepts which are implicitly presupposed in folk psychological (mental) explanations: freedom of will, agent causation, the existence of persons etc.

The decisive point is that there are also specific ontological commitments which are connected with the conceptual system of folk psychology. One of the most important ontological commitments of folk psychology is the assumption of the existence of enduring subjects which are the bearers of intentional states. Propositional attitudes presuppose acting and thinking subjects which remain the same during time. Endurers are presupposed in nearly all commonsense explanations. Paul Churchland emphasizes that our common-sense framework for empirical reality contains a subframework comprehending the notion of a person (Churchland 1979, 89). We presuppose that the things to which we attribute mental states are persons which remain the same during their mental activity. Diachronic personal identity makes it possible that we can ascribe mental states also during these periods in which the subject does not have occurrent mental activity. Intentions, beliefs, and wants do not exist only as mental events or occurrences—“I now want to go skiing”, “I am now aware of my belief that there is snow in the mountains”—but also in the dispositional form of so called ‘standing’ wants, desires or intentions: “Since a few weeks I have the intention to go skiing as soon as there will be enough snow”, “Since my 10th birthday I have the desire to obtain the pilot’s licence.” These mental states exist even when they are

not present in an episodic form, even when we are not actually aware of them. Mental dispositions cannot be reduced upon underlying physical events or facts² and we ascribe dispositions to objects, not to properties or events. Obviously dispositions need for their existence a bearer, which is definitively not event-like, but a continuant or a substance.³ Without enduring subjects the attribution of long-term mental dispositions would not make sense. Enduring subjects are also presupposed in our ascriptions of mental causation: An agent subject can be the intentional cause of her acts only if she remains the same at least until the intended action has come to its conclusion.

It is clear that in the everyday language of folk psychology we do not use technical terms like ‘endurers’, ‘continuants’ or ‘substances’ in order to express our intuition that we remain the same during time. When we justify our common sense belief that—despite all our physical and psychical changes—we are now the same persons as we were ten years ago, we use concepts like ‘I’ or ‘self’: “Yes, I looked totally different ten years from now, but it’s still me, my self remained unchanged.”

For most contemporary naturalists in the world of physical events there can be no *proper physical correlate* for the folk psychological assumptions of a self. The concepts of ‘self’ cannot be reduced upon something physical as it was attempted in the case of mental events by physicalists in the ‘good old times’ of classical reductionism. Contemporary naturalists assume that there is a physical correlate for the self in a similar way as there is one for illusions or false beliefs: Something must be going on in a person’s brain when she is convinced that she is Napoleon when in fact she is not; in this sense, the belief “I am Napoleon” has a physical correlate. But there is no *proper physical correlate* for this illusion—there is no state of affairs in the physical world which corresponds to the propositional content of the belief that she is Napoleon. A similar opinion is shared by naturalists when it comes to folk psychological assumptions like self and personal identity: There is nothing in the physical world which corresponds in the proper sense to that what we have in mind when we refer to our selves. For

² For the problems concerning the reduction of dispositions see Mumford 1998.

³ According to Jansen 2007, 168, disposition ascriptions to individual substances are more basic in metaphysical, logical and epistemological respect.

Metzinger, e.g., the self is the product of the self-misunderstanding of a system which self-represents itself (Metzinger 1993, 157), for Dennett the self is an explanatory fiction (Dennett 1991, ch. 13).

It is obvious that this new naturalistic approach has negative consequences for the relationship between science and folk psychology. Due to the ontological commitments of folk psychology it is not possible to reduce smoothly our everyday assumptions upon physical descriptions. The entire folk psychological system and its ontology are incompatible with scientific knowledge. Eliminative materialists deduce from that the necessity to eliminate the folk psychological framework in favour of a more sophisticated neurobiological one:

Eliminative materialism is the thesis that our common-sense conception of psychological phenomena constitutes a radically false theory, a theory so fundamentally defective that both the principles and the ontology of that theory will eventually be displaced, rather than smoothly reduced, by completed neuroscience. (Churchland 1990, 206)

Eliminative materialism is an extreme position and therefore not widely accepted among naturalists. Even if folk psychology is based upon wrong propositions, most naturalists would admit that our folk psychological system is very useful in everyday life. For this reason, they stress the evolutionary advantage of such false assumptions concerning the self and diachronic personal identity. They tend to explain the self or related folk psychological assumptions as some sort of useful fictions (Dennett 1991, Flanagan 1992, Metzinger 1993, Roth 2003). According to these authors it is only our ability to self-represent ourselves that can be proved scientifically. This ability, however, does not presuppose a robust notion of the self. It is sufficient to talk about a biological system controlling and representing itself. According to this position the ‘proper self’ is nothing else than a fiction created by a self-representing organism. Physical (and thus scientifically observable) correlates of self-representation are neuronal activities taking place in the brain of the self-representing biological system (Dennett 1991, 187).

This naturalization of our assumption of diachronic identity expressed by concepts like ‘self’ or ‘I’ is officially justified through scientific evidence: The thesis that the self is an illusion or fiction is deduced, e.g. by

Dennett, from the fact that the physical correlates of the psychological self consist in parallel distributed neural processes in a highly plastic brain. For Dennett it is the specific complexity and plasticity of the human brain which makes it possible that the folk psychological self can detach itself completely from the biological organism. Cases of DID (Dissociative Identity Disorder) seem to confirm the idea of a fictional self. According to Dennett's interpretation it is sometimes rather disadvantageous for a cognitive system to attribute all experiences to one self alone. For the 'psychological survival' of some human beings the production of other selves might provide an advantage. The ontological status of these additional selves is the same as the one of the 'original self'—it is real as a fiction which is used by the system for specific tasks of self-representation.

In a similar vein as Dennett the prominent German neurobiologist Gerhard Roth argues. Roth considers the self as an illusion. Similar to Dennett, Roth refers to decentralized working processes of the human brain in order to support his illusion-thesis of the human self (Roth 2003, 394f.). In the brain there is nothing which corresponds—as a proper neural correlate—to the unity and centeredness of the psychological self as it is experienced in everyday life. For Dennett and Roth the assumption of personal identity (a robust concept of the self) has to be rejected because it leads to dualism which is not reconcilable with a scientific outlook of the world (Dennett 1991, 423). For Dennett there are only two possibilities to deal with the phenomenon of the human self: Either someone becomes a dualist and interprets the self as the manifestation of a spiritual, non-physical reality or someone is willing to pay the price for a less obscure and more scientific view of the matter and unmask the self as fiction. Only if someone is willing to accept the self as a fiction of self-representing biological systems then the non-scientific assumption of a soul or "soul-pearls" (as Dennett puts it) becomes superfluous (Dennett 1991, 423).

2. ARGUMENTS AGAINST INCOMPATIBILISM

In their search for neural correlates of mental phenomena naturalists refer mainly to physical entities which can be subsumed under the ontological categories of events and processes: Dennett, e.g., refers to parallel

distributed processes in the brain (Dennett 1991, 187); Wolf Singer identifies “dynamically associated, synchronized cell assemblies” with the neural mechanism responsible for our impression of a unified conscious experience (Singer 2000, 134); for Edelman and Tononi “rapid re-entrant interactions among distributed neural populations” are the neural correlates for the unity of conscious experience (Edelman & Tononi 2000, 141); according to Flohr consciousness and self-consciousness are based upon neural processes, which are “mediated by the cortical NMDA synapse” (Flohr 2000, 255). Among those events and processes quoted above there are no proper physical correlates for our everyday assumptions concerning personal identity. Events, processes or physical states seem to be no good candidates for being proper physical correlates of assumptions which are connected with personal identity. We can ask, therefore, whether the situation changes if we take enduring entities as proper physical correlates for these mental phenomena.

A short analysis of contemporary naturalistic literature in philosophy of mind creates the impression that enduring entities are excluded a priori from the list of possible neural correlates of mental phenomena. It is the question, though, whether the denial of enduring entities as proper physical correlates of mental phenomena is essentially connected with a scientific account of human cognition or whether it is the consequence of a biased selection of physical correlates for mental phenomena.

In the search for proper physical correlates of mental phenomena we can distinguish entities which are *ontologically admitted* by a scientific theory T and entities, to whose existence the proponents of T are *ontologically committed*. The class of *ontologically admitted* entities include all entities which can be described in terms of T. Should it turn out that supposedly real entities are neither describable nor accountable in the framework of T, they must be regarded as unreal. In this sense, scientific theories admit or exclude specific entities. The class C_1 of entities which are *ontologically admitted* by a scientific theory T is not coextensive with the class C_2 of entities to whose existence the proponents of T are *ontologically committed*. By accepting T, I commit myself to the existence of determinate entities. Ontological commitments include only those entities whose existence is presupposed by T. An ontological commitment means that T is true only iff an entity x exists. The class C_1 of entities

which are admitted as legitimate objects of T is larger than the class C_2 of objects which falls under the category of ontological commitments of T (C_2 being a subclass of C_1).

We can classify the entities which are presupposed or admitted in scientific theories in the ontological categories of events, processes,⁴ states, properties and that of enduring entities (like objects and things). In this case we get the following picture: There might exist a set of scientific theories which are *committed* only to the existence of events, states and processes: For quantum-theory, e.g., an ontological system consisting of events, processes, properties and states might be an adequate ontological framework. That does not mean, however, that the ontological *constraints* of quantum-theory imply that only events, properties, states and processes are admitted as legitimate objects of a scientific description. There exists also an adequate quantum mechanical description of enduring objects.

As a matter of fact most naturalists in the field of cognitive science and philosophy of mind do not refer to quantum mechanics but to neurobiology and related disciplines when it comes to the analysis of physical correlates of mental phenomena. Quantum mechanics is among the favourite scientific theories for dualists when it comes to defend the possibility of the mental interacting with the physical (Eccles 1994 and Hameroff 1994). They refer in their theories about the interaction of mental and physical phenomena to the 'non-deterministic' level of sub-atomic entities which is described by quantum mechanics. However, for these dualists there are, strictly speaking, no physical *correlata* for mental phenomena on the subatomic level but only physical *relata* with which the mental entities interact. The mental entities themselves do not have a physical correlate at all because they belong to a non-physical reality. Quantum physics is, though, not the kind of science which naturalists have in mind when they argue in favour of the naturalization of common sense phenomena like mental states, selves, and other folk psychological assumptions.

What are the ontological commitments of the scientific framework of neurobiology in which naturalists look for the physical correlates of mental phenomena? Unlike (perhaps) quantum-physics, neurobiology is not committed only to events, states, properties and processes. When we

⁴ For the distinction between events and processes see Steward 1997, 75ff.

classify the entities presupposed in neuroscientific theories according to the ontological categories mentioned above we find among them events, states, properties, and processes—like reactions to certain stimuli, brain states, and synchronized neural activities—but also enduring objects—like neurons and brain regions. As we have seen above, the class C_2 of entities which belongs to the ontological commitments of a theory T is a subclass of the class C_1 of the entities which are admitted by T as legitimate objects of scientific description. Therefore, when endurers belong to the subclass C_2 of a neurobiological theory T' , it is trivially true that there are no ontological constraints connected with T' which exclude endurers from being also members of C_1 —legitimate objects of scientific description for T' .

We can conclude that in the field of neurobiology and cognitive sciences there are no pressing grounds for a naturalist to consider only events and processes as physical correlates of mental phenomena. The ontological commitments of neurobiological theories comprise members of all ontological categories—events, processes, states, and enduring objects; and it is clear that there is no ontological constraint which would exclude enduring objects as legitimate objects of a neurobiological description. Why, then, are naturalists like Dennett et al. not willing to accept endurers as proper correlates of mental phenomena like the human self? One possible reason for this refusal might be that enduring neurobiological entities like neurons, brain regions are not good candidates for being proper correlates of the self because this would amount to assume a kind of *homunculus*. In this case, the proper correlate of the self would be some kind of “pontifical neuron” which controls all our brain activities (Dennett 1991, 413). As a matter of fact, the homunculus-view is presented by Dennett as the only candidate for a proper physical correlate of the human self. From the scientific implausibility of the homunculus-view he deduces that there is no proper physical correlate of the human self.

This conclusion, though, is premature. The class of enduring entities which are candidates for proper physical correlates of the self does not comprise only body parts like neurons or brain regions, but also functions. According to Barry Smith, functions fall under the ontological category of enduring entities: The function of our heart, for example, “begins to exist with the beginning to exist of your heart, and continues to exist, self-

identically, until (roughly) your heart ceases.” (Smith 2004) In his formal ontology Smith follows Aristotle, who subsumes organisational principles under the category of substance (*ousia/forma substantialis*). Therefore, we have to extend our search for proper physical correlates of the self to the class of bodily functions.

It is clear that no single organic function can fulfil the requirements needed by a proper correlate of the human self. There is, however, a functional principle of the human organism, which can even be found in Dennett’s naturalistic conception of consciousness and the self. In his *Consciousness Explained* Dennett assumes a “biological self” (Dennett 1991, 414). The biological self is given to all organisms that are able to distinguish (implicitly) between themselves and their environment (a capacity which Dennett ascribes also to protozoa). For Dennett, the biological self is “wired” in the biological structure of organisms (Dennett 1991, 427). The decisive point is that Dennett would hardly admit that the proper correlate for the conscious self of adult human beings is the biological self. He stresses the dichotomy between the biological and the conceptual self. Whilst the biological self is the organisational principle of a living being, the psychological self of adult human beings is only a conceptual construct. Contrary to other organisms the limits of a human self are not defined through the biological structure of the human organism. In contrast to the biological self the psychological self is not bound to its body, rather it has a life of its own. Under normal circumstances the slogan ‘one self per body’ is correct but in contrast to the biological self a clear correlation between psychological self and body is not possible. There are, however, scientific data which can be interpreted differently from Dennett’s view:

(1) Dennett’s proposal to consider the biological and the psychological self as inhomogeneous does not seem to be backed up by results from developmental psychology. George Butterworth explored extensively the origins of self-perception in infancy. In agreement with Dennett, Butterworth shows that a biological self (understood as an implicit knowledge about the limits and functions of one’s own body) can already be noticed in an unborn fetus. Butterworth emphasizes, however, that there are no reasons to distinguish sharply between the biological self as basis of all proprioceptive activities and goal oriented behaviour on the one hand

and higher forms of self-conception on the other hand. These different kinds of a self are not incompatible with each other. Rather higher forms of self-conception presuppose the more basic ones. He talks of a continuum beginning with primitive ways of bodily self-perception and terminating with a mature concept of an autobiographical self in adult human beings:

The point is that movement synergies reveal properties of the material self as an organized totality; species typical developmental processes will determine the extent to which such aspects of the categorical self become elaborated within higher order cognitive processes. (Butterworth 1992, 108)

According to this view the biological self is nothing else but an early form or the biological grounding of the psychological self.

(2) Further evidence, which obviously contradicts the incompatibilist view of most contemporary naturalists, can be found in the work of the neurobiologist Antonio R. Damasio. Damasio's findings can be used as an argument against the thesis of Dennett, Flohr, Singer et al. that physical correlates of higher forms of (self-)consciousness are to be found exclusively in the cerebral cortex. He shows that (self-)consciousness essentially depends on structures which belong to older phylogenetic areas of the brain which are closely interconnected with biological functions. Damage of parts of the diencephalon, the brainstem, or the upper part of the *formatio reticularis* leads to various forms of loss of consciousness. These structures are responsible for the regulation of basic living functions of the organism—the so-called *inner milieu*. The dividing line between the parts of the *formatio reticularis* whose damage leads to a change or loss of consciousness and those parts whose damage does not entail such consequences is quite clear (Damasio 1999, 236ff.). From the fact that these brain areas are essentially involved in control and representation of bodily processes, Damasio draws the conclusion that there is a direct connection between subjective experience, neuronal representation and the control of bodily processes. According to him, core-consciousness is immediately connected with permanent representations of fundamental organic functions. It is the so-called “proto-self” that makes this constant representation possible. Since these basic regulatory mechanisms are relatively stable, they provide an optimal foundation for referring to an identical subject, as it is presupposed in self-consciousness. A central

condition for the development of human subjectivity and self-consciousness is thus the representation of a dynamic equilibrium (homeostasis) of the various organic states through the proto-self. Self-consciousness arises, if an object, the organism, and the relation among the two are represented. The neurobiological basis of this proto-self is the representation of the causal relation between (interior and exterior) objects and the organism (emotions).

Damasio explicitly turns against a relativization of the self in terms of a mere fiction. His understanding of the self is not so much the consequence of a different understanding of mental phenomena. Rather Damasio (and Butterworth in his research) interpret bodily phenomena—as correlates of mental phenomena—in a different way from Dennett's, Roth's, Singer's and Flohr's account. The reality underlying the self is not limited to specific cortical processes. This does not mean that brain processes or events do not play a decisive role in the constitution of consciousness. They are crucial for the representation and cognitive processing of those fundamental bodily functions which keep an organism alive. The organizational and functional structure of the human organism and its multilevel mapping in the brain, though, are fundamental for the formation of a self (Damasio 1999, 144). Even if we change permanently throughout life, the structure and functional principle of our organism remain largely unchanged. Bodily processes are grounded in a unifying principle, which persists soundly from the beginning to the end of our life. Self-representation generates the impression of identity and unchangeability of a stable self because this invariant organizational principle of our organism is constantly represented as well (Damasio 1999, 141). This organizational principle is no fiction but a reality of our organism that controls fundamental bodily functions. According to Damasio, without this principle neither consciousness nor self-consciousness could arise because there would be nothing that maps what remains essentially the same throughout time.

Moment by moment, the brain has available a dynamic representation of an entity with a limited range of possible states—the body. (Damasio 1999, 142)

Thus, there would be no basis on which our capacity to refer to ourselves could be grounded. This organizational principle that represents the constitution plan for our bodily structure is on a fundamental level the proper physical correlate of what we call personal identity. By pointing at functions and conservational processes in an organism which remain largely the same throughout a life span, the physical-bodily realm does not appear completely incommensurable with those mental phenomena which are not perceivable as events. Enduring entities like bodily systems, basic organic functions and organizational structures of the entire organism seem to be better candidates for proper physical correlates of mental phenomena as they are brain events or distributed neural processes.

3. CONCLUSION

In the understanding of many contemporary naturalists physical phenomena are conceived as being fundamentally different from mental phenomena: While we talk about processes and events in regard of the body (brain), people refer to identity, self and subjectivity in the mental realm. A disembodied conception of the mind stands vis-à-vis a pure event- and process-like conception of the body. At this point the reason for the naturalistic account of the self as a mere fiction becomes obvious. It consists in an event- and process-like conception of the body which leads to a dichotomy between mind and body. Some mental events, such as emotions, upshots of thoughts etc., may be reducible to physical events; but there are a whole set of mental phenomena that cannot be reconstructed as physical events, like subjectivity, mental dispositions or our notion of an "I". Once the route of distinguishing between bodily and mental phenomena, as sketched above, is taken, it is hard not to arrive at a result like Dennett's laid down alternatives.

Dennett's line of argument is a paradigm example of how the naturalistic preference for a restricted ontology in which there are only events, processes, states, and properties, but no enduring entities, shapes the relationship between the scientific approach to cognition and our folk psychological assumptions on personal identity and other mental phenomena. It can be shown that the naturalistic view of the self as an explanatory fiction is grounded in the inability to reconcile our folk

psychological intuition of personal identity with an event-ontological understanding of the human body.

The work of Damasio and other experts in the field of cognitive science indicates, however, that the physical correlates of states of consciousness are not assumed to be single neuronal events or complex neuronal activity patterns. Increasingly scientists become aware of the relevance of basic functional principles of the living organism and their multilevel neurobiological mappings for the generation of consciousness (see for instance De Preester et al. 2005).

In the ongoing discussions of cognitive science more and more complex organic unities and their interconnected functions, which can be subsumed under the ontological category of endurers, serve as proper correlates of states of consciousness. This implies that the correlated mental phenomena do not appear to be as strange and different as they are when physical correlates of the mental were sought exclusively in processes or events in specific regions of the human brain. Fundamental bodily functions together with their multilevel mapping in the human brain are good candidates for being proper correlates of mental phenomena like self-consciousness, subjectivity and our intuition of personal identity: Bodily functions remain the same even when they are not actualized. They are dispositional in character and thus, not adequately understandable within a framework of mere event-ontology. A comprehensive understanding of the totality of scientific data requires a richer ontology which comprises not only states, processes and events but also enduring continuants (substances). If everything is like a process or event, we have not only an inadequate understanding of our common sense intuitions, but we are also not able to understand the whole range of scientific data in a comprehensive way. An adequate understanding of the structure of the human body, the human mind and its working together needs both—continuants and events.

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