

What Kind of Being Is Mental Presence? Toward a Novel Analysis of the Hard Problem of Consciousness

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Abstract

Mental presence is how phenomenal consciousness exists. The very existence of consciousness is what gives rise to the so-called “hard problem of consciousness”. In contrast to problems concerning the contents of conscious phenomena, the problem of their very existence has so far escaped detailed analysis. This paper ventures a new attempt, making use of the distinction between mental presence and the temporal present. Even though mental presence is tied to the temporal present regarding location in and travel through time, it is shown that the distinction can be drawn both intra- and inter-subjectively. The temporal present can be discerned by its autonomous movement and its inter-subjective significance. By virtue of the inter-subjective synchronization of the temporal present, presence as such is not purely subjective. Mental presence might have a root in the capability of performing inter-subjective synchronization.

The paper speculates that quantum measurement may be of particular interest in this respect. Quantum measurement is not restricted to the laboratory, but it is a ubiquitous process of constituting facts. It waits to be related to the coming forth of the actual state in which reality presents itself to experience. Could it be that living organisms, in the course of evolution, have learned to make use of this universal process of actualization for elaborating actuality into mental presence? The arguments put forward touch upon the discussion about a time observable and its role for the evolution of conscious minds.

1. Introduction

Consciousness is not a state of a population of nerve cells. Presence is needed to make consciousness supervene on the physical brain. Phenomena such as sense qualities, feelings, moods, volitions, longings, lust and pain, in short qualia, do not come forth but in the mode of presence. Qualia must not be confused with patterns of electromagnetic activity in

the neural machinery that are supposed to be, in one way or another, functionally related to the contents surfacing in the conscious mind. Qualia do not belong to the domain of the *physically* real. Presence is a mode of existence on its own, clearly differing from the universal, objective, observer-independent, either-or mode of existence of physical realism. Presence is not either-or, but a matter of degree. It peaks in a “here and now”, fades out towards a horizon, and varies in intensity. Small wonder, hence, that presence has so far been without prospects of scientific recognition. Not even traditional metaphysical ontology took it seriously.

The conscious mind exists in the mode of mental presence exclusively. Without understanding how presence is engendered we will never understand how those conscious activities that we are acquainted with as the conscious mind emanate from the material brain. So far, however, it is unclear where to start. In contrast to the contents coming to mind, the mode of its existence does not point to a physical correlate. Nor is it an easy exercise to describe what presence means. Presence seems to be such a primitive, basic notion that it escapes being translated into terms that allow a definition susceptible to further analysis. The only philosophical tradition that has developed what we, in the West, would call an ontology of presence is the Eastern philosophy of Being.¹

Eastern philosophy of Being starts (as does Kant’s epistemology for instance) from noting that the way reality is given to experience is appearance. No perception, no imagination, no theory whatsoever is not mediated by appearances. The philosophers in the East were not so much preoccupied as their Western colleagues, however, with the question of how knowledge about objective reality can be extracted from appearances. They rather asked what kind of final certitude appearances as such can grant. Appearances cannot be trusted regarding the entities that appear. The only thing one can be sure of is the presence of the appearance as such. Eastern philosophy of Being, accordingly, restricts Being to appearances and presence. Although appearances are elusive regarding their contents, they cannot be sensibly doubted regarding their very presence. The question thus becoming unavoidable is: What is presence?

Presence, as a mode of existence, cannot be grasped as such, without referring to what exists in this mode. From the presence of appearances, however, it is hard to learn more about presence than the characteristics already mentioned: Appearances exist in a way that is related to a “here and now” or a point of view, in a perspective circumscribed by a horizon and allowing for varying intensities of *being there*. From contemplating appearances, no answer is to be expected of how to understand presence as such. In order to understand at all, one has to turn to the center, to

¹The literature is abundant and still growing; compare the classic introduction by Longchenpa (2000).

the “here and now”, the point of view. This center cannot be accessed from outside, however, but only from within. But even from within, by way of reflection, nothing seems to be accessible than appearances. Every mirroring, self-monitoring, self-reconstruction or whatever kind of self-referential intentionality has to do with appearances.

The only way of approaching presence as such must account for the fact that the presence being accessed from within is the presence that is *aware*. Awareness, to be sure, is involved already in the presence of appearances, be it in perception, reflection or whatever kind of taking notice. A particularity of awareness is that it is never related exclusively to that which appears, but always to the very coming forth of the appearance as well. There is no awareness without the background awareness of how it feels to be aware, i.e. to be an experiencing subject.

There is no awareness, to put it differently, without the – at least implicit – sense of its being one’s own awareness. Every appearance an awareness is aware of implies this sense of ownership. This implicit sense of ownership is constitutive of whatever experience. It is constitutive of the very subjectivity of awareness: It is what ties awareness to the perspective of the first person.²

Eastern philosophy of Being approaches the question of what presence is as such by asking whether this implicit self-awareness is aware of something over and above appearances. For answering this question an attitude radically different from cognitive reflection has to be adopted. Awareness is challenged to overcome its seemingly unavoidable attitude of being directed to some object that this way is made to appear. This attitude can be overcome by the difficult exercise of subverting or undercutting the habit of being intentional.

The seemingly paradoxical task of undercutting one’s own intentionality is realized in states of meditation where awareness comes to itself as merely existing. In becoming aware of its existence as such, awareness is aware of what presence is as such. In this sense, the awareness of coming to itself is ineffable, it corresponds to an “acategorical state”, which does not actualize concrete mental categories and does not represent intentional content (Atmanspacher and Fach 2005, Feil and Atmanspacher 2010). Even though it does not include intentional content as a characterizing property of conscious states, the concept of acategoriality elucidates the crucial significance of such an awareness.

One Western philosopher echoing Eastern philosophy of Being most capably is Martin Heidegger. The distinction between the things and events presenting themselves and presence as such is drawn in what he

²The sense of ownership is, accordingly, what is re-established when consciousness recovers from a phase of being unconscious. Recovering from the unconscious means that consciousness “comes into its own”, i.e. regains its – at least implicit – self-awareness.

calls the ontological difference between Being and Entities, “*Sein und Seiendem*” (Heidegger 1927). Being (with capital B) is the “*Anwesenheit des Anwesenden*”, the presence of the present, to translate it imperfectly but sensibly. Entities are whatever things and events that are discernible. Being is presence performing itself. The mode of existence characteristic of an entity such as the conscious mind is “*Dasein*”.

“*Dasein*” literally translates as “being there”. When related to the mode the conscious mind exists in, “to be there” assumes a double meaning. It can mean to exist as a living organism (the brain), and it can mean to be present in the sense of mental presence. It is this double meaning of “being there” that is characteristic of the existence of the conscious mind. The organism is an entity, but mental presence is not an entity, but a performance of being there. “Being there” covers this intrinsic difference. According to Heidegger, “being there” is that one entity (*Seiendes*) that is aware of and cares of its Being (*Sein*). Being, thus understood, means presence, as distinct from the things and events presented. The conscious mind is that one distinguished entity that itself performs the ontological differentiation of Being and Entities.

Heidegger’s analysis of “being there” anticipated what is at issue in the “hard problem of consciousness” (Chalmers 1995). It is the question of the ontological difference between the mode in which the physical brain exists and the mode in which the conscious mind exists. The mode in which the conscious mind exists is mental presence. So far, this mode of existence has resisted further analysis. Remarkably, however, it can be doubted whether mental presence is identical with presence as such. The hard problem might be susceptible to further analysis if it were possible to draw a distinction within mental presence itself. Could it be possible to decompose the hard problem into the problem of presence and the problem of awareness?

There is no hope to define awareness by way of rational analysis.³ And it is not just awareness that escapes being captured by words. Presence, too, resists an analytic definition that really hits its meaning. Nevertheless, decomposing complex problems into simpler ones is an option that sometimes makes even the hardest problems easier.

How to decompose the hard problem into that of awareness and that of presence? One way suggesting itself is to ask whether mental presence can be distinguished from other kinds of presence. Even though Heidegger

³We are well familiar with awareness; there is no way, however, to grasp it directly by verbal communication. Awareness concerns the coming to mind of something, the mind’s active passing presence over to that by which it is affected passively. But how helpless are words vis-à-vis the elementary act of entering a mind’s world, the very origin of Being! How can we proceed from acquaintance to understanding without description? All descriptive accounts offered so far do no more than trivialize or even miss the key point.

does not consider this question in detail, he gives an indication. The book where he develops the existential analysis of “being there” is entitled “Being and Time”. Presence is inherently temporal. It is not only a mode of existence for itself, but also a mode of existence that implies a kind of change for itself. Presence is inseparably tied to temporal change.

Temporal change means that world states having been future become present to vanish into the past (Franck 2003). In temporal change nothing changes except the intensity with which world states are present. A state approaching the “now” grows in presence, the intensity of its presence peaks when it comes abreast of the “now”, the intensity declines as soon as it recedes from the “now”. This is what happens when time goes by.

Temporal change, accordingly, has to be sharply distinguished from real change. Real change means that world states differing in time (date) also differ in structure or function. Real change is what traditional kinematics and dynamics are about. Temporal change concerns only the position that the temporal present occupies in time.

On closer inspection, however, it appears premature to simply identify mental presence with the temporal present. Mental presence, by virtue of its being aware, is tied to the perspective of the first person. Mental presence, accordingly, is to be rated subjective, brought forth by an individual subject. The temporal present, in contrast, has inter-subjective meaning. People agree on living in one and the same “now”. They even agree on the particular world state happening to surface in the “now”.

If it were true that we collectively march in unison through time, the temporal present cannot be exclusively individual. If *nowness* were to depend on individual minds, this should result in a multitude of individually differing “nows”. There should be as many “nows” as there are individuals, each traveling through time independently, with the pace set by the biological clock of the individual organism. As we know, biological clocks deviate inter-individually to a remarkable degree. They are not suited to synchronize the society of subjects with respect to time.

The individual mind is distinct from other minds, thus prevented from immediately contacting and inspecting other mental presences. There is no other way, thus, to establish synchrony between individual instances of mental presence than by involving real change. In order to establish synchrony via real change, however, mental presence would have to exercise efficacious downward causation. The passage of time would have to be synchronized intersubjectively by a kind of social convention. But even though we have to use tensed grammar in language in order to communicate, it would be sheer nonsense to contend that the passage of time is a social construction (Franck 2005). The only way to account for the inter-subjectivity and synchrony of temporal change lies in postulating an extra-individual way of synchronization based in physical reality.

The inter-subjective temporal present has to be distinguished from

mental presence. The extra-individual temporal present cannot be said to be aware. As a consequence, we find ourselves driven to hypothesize that there are forms – maybe proto-forms – of presence that are not entirely subjective. In order to decompose the hard problem we should look for something like an interface that connects temporal change and real change.

2. Presence and Nonlocality in Time

The paradigm of a process where real change and temporal change are seamlessly united is perception. It is only through its coupling with temporal change that real change becomes perceivable at all. Without temporal change supervening, the states appearing sequentially to experience must be supposed to be given “blockwise”.

In experience, however, the states making appearance do not appear just sequentially. It is always only a single state of the world that presents itself, but we do not see snapshots appearing one after the other. We rather perceive the differences between sequential states as movements. This means that real change and temporal change are not connected simply by overlay. In the block of states, movements cannot be attributed to single states, but only to pluralities thereof. It is always only a package of states that makes up the trajectory we perceive as movement.

In perception, no multitude of states presents itself. It is always only a single state of the world that appears at a time. Instead of being presented as a series of snapshots, i.e. a section out of a block of states, we have an immediate perception of movement. The sequence of states in the block is fused into one single impression of an object as a whole moving in time. This means that the presence conferred by the “now” to the states presenting themselves cannot be instantaneous, point-like.

This means that the “now” has to span an interval of a certain length within which parts cannot be distinguished as earlier or later. Put differently, the “now” has to be of a certain duration, which nevertheless always restricts appearance to only one single state. This is what William James (1890) expressed as a “specious present”, an eigentime called “durée” by Henry Bergson (1889). “Durée” characterizes a nonlocality in time, an interval of non-vanishing extension when measured from outside, but allowing no distinction of earlier and later parts from within.

This nonlocality has been well-known in psychology (Pöppel 1997) and in psychophysics (Atmanspacher and Filk 2003, Franck and Atmanspacher 2009). It surely is a phenomenon of presence. It may be questioned, however, whether it leaves real change totally unaffected. Time is the dimension of both temporal change and real change. In order to account for real change, time can be defined operationally by a parameter t measured

by clocks. This definition, however, is too poor for allowing nonlocalities in time to come forth.⁴

Proposing the possibility of an interface that mediates temporal change and real change, we are speculating far ahead of the main burden of the argument. Thinking of such an interface makes sense only if temporal change can be distinguished from the changing subjective impression of being in a particular state. Before going further into the question of what follows from the inter-subjectivity of the “now”, we should first ask whether the distinction between mental presence and the temporal present makes sense from within mental presence, i.e. in the perspective of the first person.

3. Ways of Introspectively Separating Mental Presence from the Temporal Present

From within mental presence, there are intensities, but not qualities of presence discernible. Presence, as a mode of existence, knows of no different kinds. Things change, however, when change comes into play. From experience we know that there are distinctively varying ways in which the intensity of presence can change. There are basically three such kinds to be discerned.

(1) We feel capable of actively changing the intensity with which phenomena are present by controlling the focus of attention: *focal change*. Attention is the capability of mental presence to act voluntarily by way of concentrating itself and thus passing presence selectively to an object or scene singled out. By focusing attention, phenomena having been resting in the background can be made to appear in the foreground, by controlling attention we constantly change back and forth between foreground and background. The difference between background and foreground is itself a difference in the intensity of presence. If not made to stay, by voluntarily concentrated effort directed to the phenomenon summoned to the foreground, the focus tends to roam freely, thus changing the presence of phenomena according to whim and mood.

(2) Phenomena, however, do not change according to will and whim alone. They also change in a way totally withdrawn from control. There is an autonomous ground change that we learn to distinguish from focal change early in our conscious life: *temporal change*. As focal change, temporal change changes the intensity of presence. However, temporal change differs from focal change regarding our feeling of agency involved. Focal change is voluntary, temporal change is involuntary. It is our feeling of

⁴Temporal nonlocality is essential for a proper account of complex systems in physical reality; for an introduction see Antoniou and Christidis (2010). See Sec. 5 for more discussion.

being in control of the focus of our attention by which we distinguish focal change from temporal change. By distinguishing these kinds of changing intensity of presence we learn what temporal change means. Distinguishing focal change from temporal change, we distinguish a change of presence involving awareness from a change of presence independent of awareness. Focal change inseparably unites the changing intensity of presence with self-aware action.

(3) In addition to focal change and temporal change there is a kind of semi-autonomous change of presence intensity. The intensity of mental presence itself fluctuates in the daily cycle of waking, getting tired and sleeping. This fluctuation, though highly autonomous, is not as completely withdrawn from control as is the process of temporal change. The intensity of mental presence is susceptible to influences by the activity of the organism, by the environment, or simply by drugs. The fluctuating intensity of mental presence provides clear evidence that mental presence and the temporal present can be separated. In the daily cycle of waking and sleeping there are phases when mental presence no longer manifests itself. In dreamless sleep, mental presence has gone since awareness has lost its self-awareness. But even in phases of coma the “now” persists.

When awareness is recovered, i.e. comes back to its own, it notes that time has been going on. The “now” uninterruptedly traveled on. In order to travel it had to persist, to exist independently of mental presence. Even if this persistence were not due to the “now” as such but due to the fact that there are other beings in the state of mental presence around, there should be an actuality overarching the individual instances of mental presence. Why are we all traveling in one and the same “now”?

4. The Exorcism of Nowness from Reality

In the perspective of the first person, it makes sense not only to distinguish the temporal present from mental presence abstractly, it even contradicts experience to treat them as one and the same. What does this mean, however, in the perspective of the third person? Does presence survive the separation from awareness? At first glance this seems to be the case. The temporal present is the kind of presence we share inter-subjectively. Awareness resists being shared this way, it inescapably is tied to the perspective of the first person. Inter-subjectivity need not contradict, however, what physics understands of objectivity. It need not contradict firmly established physical theories. The assumption of an objective “now” challenges, however, one of the best established theories in physics: relativity theory.

Relativity theory excludes an objective “now”. With the absoluteness of the finite speed of light, simultaneity becomes relative to the reference

frame of observers. As a consequence, the “now” is relative to the observer frame, too. If only the present state of the world would be “real”, reality as such would become observer-dependent (Gödel 1949). In order to keep reality objective, the “now” has to be denied its objectivity. Einstein (1919, p. 149) writes:

The four-dimensional continuum is now no longer resolvable objectively into sections, all of which contain simultaneous events; “now” loses for the spatially extended world its objective meaning.

In relativistic spacetime, the world states we experience successively are given “blockwise”. The entire collection of states, successive for us, is arranged as if located in another dimension of space. There is no difference between these states as to their mode of existence. In spacetime, the world states differing in date co-exist side by side. The state incidentally being present this moment is neither more nor less real than any other state of the universe.

Since such a relativistic block universe is deterministic, the experience we have of time is nothing more than the ever changing subjective impression of being in a particular state. Real change and temporal change are “orthogonal”. The objectivity of the “now” dissolves into thin air. There is no way of testing whether the “nows” of our fellow humans are indeed synchronized with the present we are experiencing ourselves in. It is equally possible that we are communicating with others who, in their own awareness, are in states far ahead of or far behind the present we find ourselves in. In a deterministic world, nothing changes in temporal change except the subjective impression of being in a particular state. From outside there is no way of discriminating a state that is past, present or future in the view from within. Under the sway of relativity theory, it thus could happen that “the general view ... of scientifically minded philosophers concerning the temporal passage is that it is a subjective illusion” (McCall 1994, p. 26).

This “general view” amounts to contending that the temporal present is in fact indistinguishable from mental presence. If temporal change is a purely subjective phenomenon it is hopeless to find a connection between a definitely subjective and a more objective variant of presence. This claim, however, is bold. It implies that it is subjectivity alone that makes time go by. The passage of time is one of the most basic facts of life. If it is an illusion, it is an illusion we all share. No one has so far managed to escape from it. The experience that time goes by has been holding sway over mankind without any one exception ever reported.

If this experience is of purely subjective origin, subjectivity has to be acknowledged a superior power. Compared with the elementary experience of temporal actuality, the laws governing physical reality are mild. In contrast to the coercion exerted on us by the laws of nature, the coercion

exerted by the passage of time has been unmitigated by the progress of knowledge and technology. Whatever it may be that makes time go by, its passage is plainly overwhelming for beings who are aware and care of their being.

There are certainties of experience that are immune to theoretical scepticism. Even Einstein seems to have shared this intuition, as he was seriously concerned with the problem of *nowness*. Rudolf Carnap (1963, p. 37) reports a discussion with Einstein about the peculiarity of the “now” within the scientific world view shortly before Einstein’s death:

Einstein said that the problem of the Now worried him seriously. He explained that the experience of the Now means something special for man, something essentially different from the past and future, but that this important difference does not and cannot occur within physics. That this experience cannot be grasped by science seemed to him a matter of painful but inevitable resignation.

5. Relief from Complex Systems Theory

Einstein’s feeling of painful resignation was closer to the truth than the nonchalance with which adherents of the “tenseless theory of time” dismiss the experience we have of time as a mere illusion.⁵ Einstein’s conclusion becomes inevitable as soon as the definition of time as a mere parameter for time evolution is accepted. This parameter is represented by the homogeneous continuum of real numbers. There is nothing like a mode of existence, no disruptive factor such as indeterminism to be accounted for. There is no way of – and no reason for – distinguishing past, present, and future, and no preference regarding temporal direction. Parameter time t is the quantity measured by clocks. The tenseless theory of time results from implications of this operational definition.

It is risky, however, to draw conclusions about matters of fact from mere definitions. Clock time, no doubt, is an extremely useful tool in physics. However, it was criticized by some outstanding philosophers, such as Bergson, Husserl, Heidegger, for being overly abstract and not subtle enough. Not long ago, in the late 1970s, homogeneous clock time t became challenged from within physics as well when Ilya Prigogine and collaborators, referring explicitly to Bergson, introduced an alternative conception of time necessary to account for complex systems (Prigogine 1997).⁶ In contrast to the traditional notion of parameter time, complex systems are characterized by irreversibility, unpredictability, and innovation. The concept of time developed for dealing with such complications is the time operator T (cf. Antoniou and Misra 1992).

⁵For an exposition and discussion of this theory see Oaklander (1994).

⁶For a recent account see Antoniou and Christides (2010).

Cutting short the discussion of this paradigm change to its immediate relevance regarding the inter-subjective significance of the “now”, let us be clear that it entails, basically, a break with determinism. Complexity, as conceived by complex systems theory, is a function of chance. Irreversibility, unpredictability and innovation follow if chance is granted a role to play in the real world. With indeterminism, the problem returns of how the “now” is synchronized inter-subjectively. We are back to the hypothesis that there must be an extra-individual way of synchronization. There must be, to put it differently, something like an interface that connects the tensed domain with the domain of physical parameter time.

6. Proto-Forms of Presence in the Physical Domain?

Looking for possibilities to account for the synchronization of the experience we individually have of time, the notion of *entanglement* has been suggested to play a role.⁷ The correlations that entangled states exhibit prevent these states from being localized – an insight that Einstein disbelievingly referred to as “spooky action at a distance”.

Measurement, in the context of quantum theory, means that nonlocal correlations are suppressed to the effect that local facts emerge. Remarkably, this suppression is not an instantaneous “collapse of the state vector” but a transition from entangled states to disjoint states that itself takes time. From within the *event* of the transition, it makes no sense to distinguish temporal parts that are earlier or later since there are still no facts to be ordered sequentially. Measured externally, however, the event covers an interval that can be subdivided.

These temporal properties of the measuring event closely resemble those of the temporal present. As we have seen, the temporal present cannot be assumed to be point-like. The present that covers an interval raises the problem of parts that are earlier and later. When looked at from within, the “specious present” appears as an eigentime that resists being subdivided into parts. Measured from outside, the present covers a time interval that can be subdivided into subintervals. Could this conformity with the measurement event be more than just by chance?

The time characterizing the transition from propensity to fact is different from the parameter time used to order facts. In the formulation of the measurement problem by Lockhart and Misra (1986), an internal time of the event stretching over a finite interval Δt , when measured externally, is characterized by a time operator (time observable) T . Substituting a parameter for an operator means to substitute a number for an action.

⁷See Primas (2003, 2009) for more detailed elaborations of “time entanglement” in the context of mind-matter relations. For a psychological example of temporal nonlocality in bistable perception see Atmanspacher and Filk (2012).

The action of the operator T involves a *nonlocality in time* that is indeed strongly reminiscent of the extended present. The operator T “operationalizes (externally) the size of the time interval over which temporal nonlocality persists (internally).”⁸

Introducing a time operator for measurement must not be confused with involving an observer who is mentally present. On the contrary, connecting the time operator with the extended present amounts to explicitly distinguishing the temporal present from mental presence. It means, to be specific, that two basically *different aspects of time* are distinguished. One of them parametrizes time by the temporal succession of sequential facts that have been constituted by measurements. The other is more fundamental as it refers to the emergence of novel facts in an extended present.

Measurement, understood quantum theoretically, is not restricted to the laboratory (Percival 2000). It is a ubiquitous process, happening wherever and whenever new facts are constituted. Novel facts, however, cannot emerge but in the “now”. – But what about measurements in the block universe? There are, of course, countless processes contained in the block supposed to be measurements. Yet, these procedures are not addressed in terms of processes quantum theory conceives as measurements, where one of the states having co-existed in superposition becomes selected and actualized. Superposition is the mode in which quantum theory allows pluralities of potential states of a system to co-exist.

The selection of a state to be actualized introduces randomness into quantum measurement. In the block universe, there is no place for randomness. The block exists as such, encompassing the totality of states at any time. The measurement processes contained in the block are idealized registration events as in classical physics. In the block universe there are no superposition states and there is no “now”. It is only the “now” where randomness can happen. Are measurements synchronized in the same way in which individual “nows” are synchronized?

Einstein denied the reality of nonlocal correlations. He never accepted the view of a totally entangled quantum whole out of which distinct objects are constituted by a kind of random selection. Einstein refused to grant randomness a constitutive role for nature, suspecting that a theory that allows randomness to be effective must be incomplete. Maybe this suspicion prevented him from assuming a more productive attitude towards the “now” than painful resignation.

Both the time observable and the randomness involved in quantum

⁸This citation is from unpublished notes on Lockhart’s and Misra’s paper by Harald Atmanspacher and Albrecht Müller. These notes highlight the different aspects of time, whereas the paper itself deals with them in a rather passing remark on pp. 73f. Though unpublished, I cite these notes for reasons of acknowledgment, because it was through them that the significance of Lockhart’s and Misra’s work became clear to me.

measurement are indications of a close relationship between nowness and the generation of new facts. The process suppressing, or minimizing, nonlocal correlations to the effect that facts emerge resembles the process of ongoing actualization, experienced by us as temporal change, too closely for being left out of consideration when we look for an interface that synchronizes nowness inter-subjectively. We are led to conjecture that it is not just by chance that the objects rendered by measurement surface in the “now”. We hypothesize, rather, that the “now” itself is the collective effect of measurements going on at a time.

This conjecture, of course, is highly tentative. It is far from clear how the actualization of states, understood quantum theoretically, relates to their actualization in terms of becoming temporally present. We are far from understanding, moreover, the dynamics of the process we experience as the passage of time.

What grows in the time that it takes to perform a measurement is the degree of disjointness of the states turning into facts. This gradual growth of disjointness is fundamentally different from the change that the sequential order of established facts expresses. The gradual growth of disjointness is much more of the kind traditionally called temporal becoming. Temporal becoming means the growth of the presence of a state that is approaching the “now”.

In case there are forms – or proto-forms – of presence below the level of mental presence, temporal becoming would not be restricted to conscious experience. Rather, the emergence of facts, as attributed to the process of measurement, would be a proto-form of temporal becoming. When trying to account for this proto-form we should be prepared to face difficulties. It is therefore no bad news to learn that the measurement process, as a process, has so far resisted satisfying description as well (Atmanspacher 1997, p. 341):

But the measurement *process* itself, in its dynamical, not only in its structural and logical features, is not yet finally understood. Up to now we do not have a formally rigorous, logically consistent, and intuitively satisfying description of what is “really” going on in a system when a measurement takes place, i.e. when a local concept of reality replaces a holistic concept of reality since local objects are constituted.

7. Stream of Consciousness and Flow of Time

Our hypothesis is that the time observable, related to the temporal nonlocality involved in the emergence of novel facts, is what remains of presence when mental presence has gone. Each moment, novel facts emerge everywhere. Each moment, the present moment is supplanted

by a successive moment so that the duration it takes to perform a measurement fuses with its neighbors into an enduring “now” that moves in relation to the order of facts established by the ongoing process of measurement. The innovation rate, or production rate of new information, characterizes the pace at which time passes.

What grows in the time that it takes to perform the measurement is, to repeat it, the degree of disjointness of states turning into facts. The “now” thus conceived is at the edge of the growing universe.⁹ In our view this is relevant for the origin of both the flow of time and the stream of consciousness. The question of how consciousness may have evolved from dead matter turns into the question of how focal change may have emancipated from temporal change. From the point of view within a “here and now”, it is focal change that severs the stream of consciousness from the flow of time.

From within mental presence, focal change is distinguished from temporal change by the feeling of being in control of the intensity with which phenomena are present. This feeling of agency is proprioception of one’s effort plus the effect intended. Paying attention means to control, to a noticeable extent, the ongoing process of presentification. In order to feel oneself being in control of one’s attention, aspects of the “stream of consciousness” must be correlated with the effort one exercises. Since the reshuffling of presence qua temporal change is autonomous, controlling the focus means to intervene into the ongoing process of presentification.

In a neuroscience committed to the paradigms of classical physics, such intervention has no place. In this context, the impression of being free to intervene seems to be an illusion. However, gathering information from experimentation presupposes that the experimenter is free to ask questions that nature is supposed to answer. The experimenter must be free, that is, to manipulate initial conditions in a way that is not predetermined by the theory under test (Primas 2009). It is only the asking of questions (and the choice of initial conditions) – not nature’s response – where we propose that experimenters need to be free. Choosing initial conditions makes no sense if it does not connect to a feeling of agency.

Exploring the possibility of accounting for this moment of choice within quantum theory, Stapp (2005) asks the question of how agency might be connected to measurement. He recurs to an effect first described by Misra and Sudarshan (1977), the quantum Zeno effect, according to which a rapid enough succession of measurements can have the effect of “freezing” a state of the system even if it is unstable. By increasing the rate of measurements intentionally, Stapp sees a possibility of intervening into the flow of phenomena manifesting themselves. In particular, he sees the possibility for increasing the rate of measurements initiated when the

⁹For the concept of a growing universe see McCall (1994) and Prigogine (2003).

answer obtained motivates the continuation of monitoring events (Stapp 2005, p. 51):

If a “Yes” response occurs and includes a positive evaluative element that instigates a quick re-posing of the query then the quantum Zeno effect can convert this positive evaluation into positive action. Such a use by nature of the quantum Zeno effect would promote the survival of any species that can exploit it. Thus the physical efficacy of conscious effort entailed by this quantum model would provide a naturalistic explanation of how and why our brains developed in a way that can exploit the quantum Zeno effect.

The quantum Zeno effect, if it can be induced in an efficacious way, might amount to an intervention into the autonomous flow of phenomena. The initiative would be not on the level of facts, but on the level of measurement processes. It would only be the asking of – not the responding to – questions that is influenced by the effort. Nevertheless, the effort would result in a remarkable effect. By speeding up the succession of measurements, the considered state could be temporarily “frozen”. This would be enough for intervening into the process of presentification.

Stapp conjectures that intentionally inducing the quantum Zeno effect may be sufficient for triggering templates of mental action that eventually will have effects on the level of facts. Indeed, it is only by virtue of such effects that the quantum Zeno effect could have been efficacious for natural selection. Irrespective of the question what freedom of choice means in the last analysis, the quantum Zeno effect presents an option for understanding where the intuitively compelling impression of being in control of one’s attention stems from.

Conclusion

In a novel attempt toward an analysis of the hard problem of consciousness, the problem of awareness has been distinguished from the problem of presence. Taken in isolation, presence shows internal structure. Exploring the kind of being which mental presence is, we propose that the corresponding mode of consciousness intersects, but is not identical, with that of the temporal present. Consciousness does not exist outside the “now”, it is tied to its position and forced to travel with it. Embedded into the “now”, mental presence shares the roots that the temporal present has in objective reality.

This offers the opportunity of invoking quantum indeterminism. Mental presence, as we know it from our own – human – experience can be distinguished from the temporal present dynamically. For instance we can distinguish focal change from temporal change. The distinctive feature is the feeling of voluntarily controlling focal change, whereas temporal

change is beyond our control. Focal change is the voluntary redistribution of presence, temporal change is involuntary. A conceivable way of translating quantum indeterminism into volition lies in the utilization of the quantum Zeno effect. As far as this volition goes, mental presence is a genuinely subjective mode of existence.

As a sub-problem of the hard problem of consciousness, the question of what presence means as a mode of existence only begins to be studied. In contrast to the problem of awareness it looks susceptible to further analysis. It connects to a particular interpretation of quantum measurement and to the discussion of a theory of tensed time. It seems that we are starting to learn where to look instead of staring at an indissoluble block universe.

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