

# 20th Century Variants of Dual-Aspect Thinking

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## Abstract

In the philosophy of mind and in psychology as well as cognitive science, the program of naturalizing the mind is conventionally understood as the attempt to reduce whatever appears mental to physical explanations. In recent decades this has become a central motif in cognitive neuroscience and consciousness studies, where it features as the reduction of conscious states to brain behavior. On the long run, the resulting physicalism can be viewed as a counter-position against both idealist positions and Cartesian dualism.

But is physicalism the only alternative? At least since Spinoza, there is a tradition of dual-aspect thinking in which both the physical and the mental are construed as aspects of an underlying reality, which is itself neutral with respect to the mind-matter distinction. I will present and compare some selected variants of dual-aspect thinking in the 20th century, such as Bertrand Russell's neutral monism, the holistic dual-aspect monism of Wolfgang Pauli and Carl Gustav Jung, David Bohm's implicate order, and naturalistic dualism according to David Chalmers. They can all be viewed as versions of a naturalism that aims at a concept of nature beyond the duality of the mental and the physical.

## 1. Kinds of Naturalism

The basic idea connected with the term naturalism is that “reality is exhausted by nature, containing nothing “supernatural”, and that the scientific method should be used to investigate all areas of reality, including the “human spirit”, – so Papineau (2007) in his entry in the Stanford Encyclopedia of Philosophy. It is evident that this characterization is not particularly informative, as he himself admits, if not only for its lacking precision than also because it just offsets the explanatory load from the notion of “nature” to the notion of “reality” and leaves open how the latter should be understood.

Papineau's entry focuses on an understanding of nature whose development began in the early 20th century and, eventually, led to the almost

hegemonial pretense of what is today called physicalism. In a nutshell, physicalism pretends that nature is, ultimately, what physics is all about. Today, naturalism appears essentially construed as physicalism, and naturalizing the mind (the “human spirit”) means to explain mental states and their behavior by brain states and their behavior. Most contemporary neuroscientists adhere, knowingly or not, to this philosophical program. But the notion of naturalism is neither historically nor systematically restricted to physicalism, as discussed in detail by Hampe (2014).

There is a variety of different versions of this kind of physicalism (eliminative, epiphenomenal, reductive, non-reductive, etc.) which I cannot discuss in detail here, see again Papineau (2007) for a very brief overview. One crucial assumption in all of them is the “causal closure (or completeness) of the physical”, meaning that every event in nature that has a cause has a physical cause. This assumption is widely held without discomfort, though a number of authors have recently expressed concerns about its unquestioned validity (Lowe 2000, Montero 2003, Bishop and Atmanspacher 2011).

But many of the great hopes and promises that the enunciators of the so-called “decade of the brain” (1990–1999) generated are still unfulfilled today. There is no doubt that brain research yielded important insights, yet an understanding of the fundamental problem of the relationship between our mental lives and what our brains do surely has remained an open problem. The naive idea of one-to-one neural correlates of conscious states has proven pure fantasy (cf. Anderson 2010), and other physicalist oriented ideas replacing it may turn out difficult to realize as well.

At present we can see that the lack of success of physicalist approaches toward one of the deepest questions in the history of humankind, the nature of mind-matter correlations, entails the search for alternative approaches. There is a touch of irony in the fact that a most prominent one among those alternatives is grounded in another, long neglected kind of naturalism which differs substantially from physicalism. It has received increasing attention under the notion of “dual-aspect thinking”.

The historical protagonist of dual-aspect thinking in philosophy is Spinoza, whose framework of thinking constitutes the mental and the material as “modes” under which humans can apprehend two “attributes” of thought and extension of an infinite substance. This substance, in a pantheist reading of Spinoza, is God and equivalently nature – or, in Latin: *deus sive natura*.<sup>1</sup> Since this psychophysically neutral substance is infinite, it has infinitely many attributes, but only two of them are apperceptible by humans. In this sense, Spinoza’s philosophical system belongs to the variety of dual-aspect monisms.

As one can guess from the terms Spinoza used for the attributes of

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<sup>1</sup>See the replies to my commentators below for more details on this issue.

thought and extension, his thinking was a reaction to Descartes' interactive dualism. While this dualism clearly violated the assumption of the causal closure of the physical insofar as the mental is capable of acting upon the physical, causal closure in Spinoza is violated in a subtler way. Since the modes, which do not interact directly, derive from the one substance, this substance may inject effects, intrusions as it were, into the modes so that they cannot be causally closed in principle.

Spinoza was well received by the German idealists (Hegel: "philosophy is Spinozist or it's no philosophy at all"), and a number of other important figures in the history of philosophy, such as Schopenhauer, Avenarius, James, Whitehead, Russell remind us of Spinoza's dual-aspect thinking. Its more recent renaissance in philosophy is exemplified by Deleuze, Sayre, Nagel, Chalmers, Rosenberg, Strawson, Seager, Brüntrup, and many others. The rather influential accounts of Russell and Chalmers will be described in more detail in Secs. 2 and 5.

Philosophically interested physicists with a dual-aspect account are Mach, Pauli, Bohm and, more recently, Polkinghorne, Lockwood, d'Espagnat, Primas, and Haken. Of particular interest is the appearance of dual-aspect thinking in psychology. Pertinent names are Jung (together with Pauli), and currently Velmans, Damasio, Solms, Panksepp, Hobson, Friston, and the much discussed approach by Tononi. In Secs. 3 and 4 below I will address the versions of Pauli and Jung and of Bohm.

## 2. Russell's Neutral Monism

Bertrand Russell (1872–1970) was a British philosopher, logician, aristocrat, peace activist, atheist, and journalist who lived most of his life in his home country Wales, where he was born and died. With respect to philosophy, he is generally recognized as one of the main founders of modern analytic philosophy. With respect to the mind-matter problem, he sympathized with (in the 1910s) and later defended (from the 1920s to the late 1940s) the position of neutral monism. Most of the text quotes in the following are from his *Analysis of Mind* in 1921, although his later *Analysis of Matter* of 1927 also contains in-depth discussions of neutral monism (cf. Alter and Nagasawa 2012). A recommendable review of neutral monism is found in Stubenberg (2010).

Russell picked up essential ideas for his neutral monism mainly from the dual-aspect frameworks of thinking of Mach and James, but he is likely its most widely known advocate – so widely that the notion of Russelian monism was coined, and its current proponents are also called neo-Russellians. In *The Analysis of Mind*, one of his works on the topic, Russell (1921, pp. 3f) begins with a brief sketch of the situation between physics and psychology of his time:



Figure 1: Bertrand Russell (1872–1970) at the foundation of a tribunal examining US interventions in Vietnam in 1966. Later Russell tribunals were concerned with military juntas in Latin America (1970s) and, more recently, the Israel–Palestine conflict (after 2009).

On the one hand, many psychologists, originally those of the behaviorist school, tend to adopt what is essentially a materialist position as a matter of method if not of metaphysics. They make psychology increasingly dependent on physiology and external observation, and tend to think of matter as something much more solid and indubitable than mind. Meanwhile the physicists, especially Einstein and other exponents of the theory of relativity, have been making matter less and less material. ... Whoever reads, for example, Professor Eddington's *Space, Time, and Gravitation*, will see that an old-fashioned materialism can receive no support from modern physics.

Note that this quote refers to the development of general relativity in the physics of the 1910s. As we will see in Sec. 3, the rise of quantum theory after the mid 1920s contains material which makes Russell's thesis even more compelling. Anyway, with this prelude, he settles his standpoint about the mind-matter issue in the following words (Russell 1921, pp. 4f):

The view that seems to me to reconcile the materialistic tendency of psychology with the anti-materialistic tendency of physics is the view of William James and the American New Realists, according to which the "stuff" of the world is neither mental nor material, but a "neutral stuff", out of which both are constructed. ... The stuff of which our experience is composed is, in my belief, neither mind nor matter, but something more primitive than either. Both mind and matter seem to be composite, and the stuff of which

they are compounded lies in a sense between the two, in a sense above them both, like a common ancestor.

A cartoon-like schematic representation of this scheme can be seen in Figure 2. It shows the two aspects of the mental and the material above the horizontal line, and the psychophysically neutral domain below it. (I will use the same scheme for all other dual-aspect frameworks discussed in this paper to facilitate their comparability.)

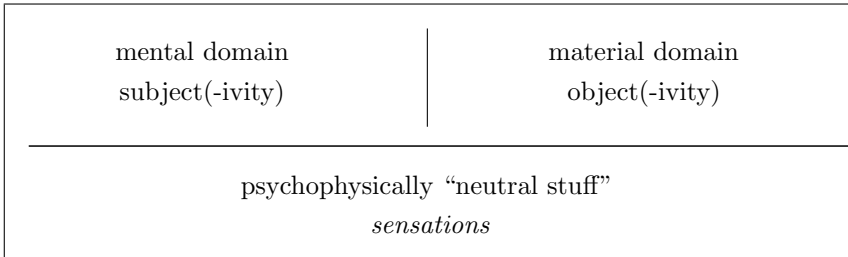


Figure 2: Dual aspects in Russell’s neutral monism, often addressed as the distinction of subject and object. As Mach did previously, Russell referred to the psychophysically “neutral stuff” in terms of *sensations*.

As a notable distinction from other kinds of dual-aspect thinking, Russell (along with James) conceives of the psychophysically “neutral stuff” as consisting of elements whose composition gives rise to mental or physical appearances (Russell 1921, p. 11):

James’s view is that the raw material out of which the world is built up is not of two sorts, one matter and the other mind, but that it is arranged in different patterns by its inter-relations, and that some arrangements may be called mental, while others may be called physical.

This conception is in line with Russell’s logical atomism (and, needless to say, with the physical atomist doctrine of the time as well). For him, a philosophical system is composed of individual atomistic elements, and it is a logical consequence that the manifold of different phenomena then follows from the manifold of different possible combinations.

However, Russell is not as clear as desirable about the precise logical status of the neutral stuff. Sometimes he refers to “neither matter nor mind”, sometimes he says the stuff “belongs equally to mind and matter”, yet another phrase he uses is “intersection of mind and matter”. Strictly speaking, these three characterizations describe three different scenarios: “neither-nor” is the negation of the logical disjunction (also called the

logical NOR, or the joint denial), “both-and” and “intersection” point at the logical conjunction (also called the logical AND). We will later see that these different versions play an important role in comparison to other dual-aspect variants.

Another important point is Russell’s insistence that the “neutral stuff” can be apprehended, namely by sensations. Again referring to the paper in which James (1904) introduced the concept of “pure experience” as the neutral stuff that is apprehensible, Russell (1921, p. 12) writes:

My own belief ... is that James is right in rejecting consciousness as an entity, and that the American realists are partly right, though not wholly, in considering that both mind and matter are composed of a neutral-stuff which, in isolation is neither mental nor material. I should admit this view as regards sensations: what is heard or seen belongs equally to psychology and to physics.

As the term sensation suggests mental rather than psychophysically neutral activity it is somewhat infelicitously chosen. As a consequence, both Russell’s sensation (Mach used the same term) and James’s pure experience have led to considerable confusion about their actual systematic status.

In his work in general, and in particular in his work about neutral monism, Russell was largely abstinent about the notion of causation. He argued correctly that causation requires temporal direction, and since the fundamental laws of physics are time-reversal symmetric, causal relations cannot be part of a fundamental physical description of the world. As a consequence (Russell 1913),

the law of causality, I believe, like much that passes muster among philosophers, is a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm.

In this context, he shared the Humean position that cause-and-effect relations are always matters of interpreting observed correlations. All contemporary empirical science ascribes causal dependencies to correlations only on the basis of established theoretical models with broken time-reversal symmetry. As we will see in Sec. 3, an alternative to interpreting correlations by causation is an interpretation in terms of meaning (Atmanspacher 2014a) – a speculative move that is entirely outside any current scientific thinking though.

In his earlier work, Russell referred to meaning basically as a reference relation between “subjective states” and their “objective” referents. This is very much in the spirit of Brentano’s concept of intentionality (Russell 1921, p. 7ff), as usually construed by a two-place reference relation between a mental phenomenon and its content. But now, Russell strives for overcoming the duality of subject and object, and dissolves it by the psychophysically neutral “acts of sensation”.



Figure 3: Artistic depiction of the “Pauli-Jung dialog” (acrylic on canvas, 150 x 100 cm) by Jürgen Jaumann in 1995. The painting is part of the author’s collection.

### 3. Dual-Aspect Monism à la Pauli and Jung

The ideas that Wolfgang Pauli (1900–1958) developed together with Carl Gustav Jung (1875–1961) have the special flavor that they arose from a 3-decades long interaction between two scientific giants at different sides of the Cartesian divide. The physicist Pauli was one of the architects of the early quantum theory, and the psychiatrist Jung played a key role in the foundation of depth psychology.

They spent most of their lives in the Zurich area, where they discussed and outlined their version of dual-aspect monism essentially in the late 1940s and early 1950s. Much background material can be found in their correspondence edited by Meier (1992). In-depth discussions of their interaction with respect to the topic of this section are found in Atmanspacher and Primas (2006, 2009) and Atmanspacher and Fuchs (2014).

Pauli’s and Jung’s common interest was anchored in their search for a worldview better adapted to the extended body of scientific knowledge than what philosophers had offered so far. Their joint target was the “psychophysical problem”. How is the interface between the mental and the physical to be understood, on which idea of reality can it be grounded, how can psychophysical correlations be explained, and what is their epistemological status?

The special format of dual-aspect monism à la Pauli and Jung derives from Pauli’s familiarity with basic principles of quantum physics, which he used to design structural analogies for the psychophysical problem. For instance, the idea of *complementary* descriptions in physics led him

to suggest that mind and matter may stand in a complementary relation (Pauli 1952a, p. 164, translated by HA):

The general problem of the relation between psyche and physis, between inside and outside, can hardly be regarded as solved by the term “psychophysical parallelism” advanced in the last century. Yet, perhaps, modern science has brought us closer to a more satisfying conception of this relationship, as it has established the notion of *complementarity* within physics. It would be most satisfactory if physis and psyche could be conceived as complementary aspects of the same reality.

Complementarity in this sense is not just a colloquial way to superficially dissolve conflict, but has a strict meaning. Two or more descriptions of a phenomenon are complementary if they mutually exclude one another and yet are together necessary to describe the phenomenon exhaustively. This can be formalized in terms of non-commutative algebras of observables or, more generally, non-Boolean lattices of propositions.

At least as important as complementarity, however, Pauli regarded the analogy from *quantum holism*, or quantum nonlocality, which matched perfectly with Jung’s conception of a basic reality that does not consist of parts but is one unfragmented whole – the *unus mundus*. Starting from this holistic, psychophysically neutral reality, aspects such as the mental and the material are generated by *decomposition* of the whole. This is a decisive difference from neutral monism à la Russell, where the aspects are created by composing psychophysically neutral elements. While *composition* entails that the mental and the material are reducible to these elements, the decompositional approach renders reduction to the whole impossible. The fact that a primordial whole cannot be derived from its parts raises the bar for an intuitively accessible reconstruction of the psychophysically neutral domain in Pauli and Jung’s scheme.

The broken holism leading to mental and material aspects produces mind-matter correlations for free – they emerge as a consequence of an *epistemic split of an underlying ontic holism*, producing mental and material aspects. This split represents one among many possible distinctions which depend on further contexts (cf. Spinoza’s infinitely many attributes of which thought and extension are just two). It resembles a kind of symmetry breakdown, another analogy from quantum physics. Some general remarks on the status of structural analogies in model building, in particular for consciousness studies, have been discussed by Prentner (2014).

In our reconstruction of the Pauli-Jung scheme from their correspondence and some scattered publications on the topic, we found that it implies two basically different types of *psychophysical correlations*. They imply interesting conceptual conjectures and empirical predictions some of which have been implemented in innovative research projects with first concrete results.



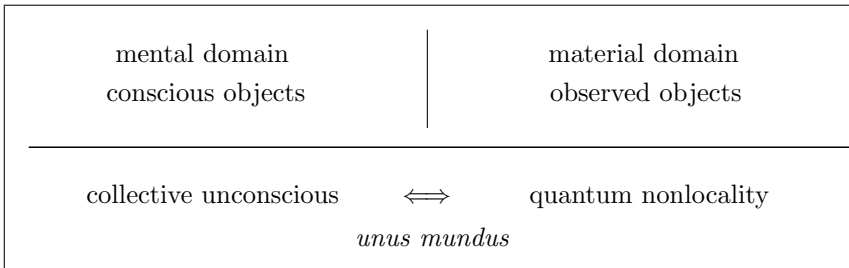


Figure 4: In dual-aspect monism according to Pauli and Jung, the mental and the material are manifestations of an underlying, psychophysically neutral, holistic reality, called *unus mundus*, whose symmetry must be broken to yield dual, complementary aspects. From the mental, the neutral reality is approached via Jung’s collective unconscious, from the material, it is approached via quantum nonlocality.

The two types of mind-matter correlations are indicated in a letter from Pauli to Jung which itself is lost, but fortunately we know large parts of it through their extensive quotation in the appendix to Jung’s essay *On the Nature of the Psyche* (Jung 1969, par. 439, footnote 130):

On the one hand, the unconscious can only be made accessible in an indirect way by its (ordering) influence on conscious contents, on the other hand every “observation of the unconscious”, i.e. every attempt to make unconscious contents conscious, has a prima facie uncontrollable reaction back onto these unconscious contents themselves (as is well known, this precludes that the unconscious can be “exhaustively” brought to consciousness). The physicist will, per analogy, conclude that precisely this uncontrollable backlash of the observing subject onto the unconscious limits the objective character of its reality and, at the same time, provides it with some subjectivity.

The final part of this quote connects well with Russell’s statement about physics and psychology. But from a systematic point of view, its first part is more significant. Both “ordering influence” and “reaction back” together constitute a bidirectional interchange between the psychophysically neutral domain and its two aspects. While the “ordering influence” is a structural feature leading to persistent mind-matter correlations (such as so-called neural correlates of mental states), the “reaction back” is induced by all kinds of contexts, and the resulting correlations are unstable and evasive. The systematic analysis of these types of correlations yields a compact and transparent classification of so-called exceptional experiences (e.g., coincidence phenomena, dissociation phenomena) which significantly improves our understanding of several classes of

extraordinary mental states. Since this is not the place for more details, interested readers should consult a recent paper by Atmanspacher and Fach (2013), as well as commentaries and replies to it.

The concept of synchronicity (Jung 1952) finds a natural place in the category of coincidence phenomena within this classification. Crucial criteria for synchronicities between mental and material events are (i) their connection by a common meaning and (ii) the absence of a direct causal interaction. With respect to (i), Pauli (1952b, translated by HA) gave a succinct characterization which clearly alludes to the induced type of mind-matter correlations mentioned above:

synchronistic phenomena ... elude being captured in natural “laws” since they are not reproducible, i.e., unique, and are blurred by the statistics of large numbers. By contrast, “acausalities” in physics are precisely described by statistical laws (of large numbers). Wanted: a type of natural laws consisting of a “correction of chance fluctuations by meaningful or purposeful coincidences of non-causally connected events”.

With respect to (ii), Jung (1969) illustrated how he concretely conceived the induction of synchronistic events indirectly via unconscious activity:

When an unconscious content trespasses into consciousness, its synchronistic manifestation ceases and, conversely, synchronistic phenomena can be elicited by putting a subject into an unconscious state (trance). The same relation of complementarity can be observed in those frequent medical cases in which particular clinical symptoms disappear when their corresponding unconscious contents become conscious. We also know that a number of psychosomatic phenomena, otherwise outside the control of volition, can be induced by hypnosis, i.e. by an attenuation of consciousness.

Figure 4 suggests a sharp boundary between the mental and physical aspects on the one hand and their underlying domain on the other. This is a cartoon picture – as it is for the other approaches discussed here as well. It should be refined by a whole spectrum of boundaries (difficult to sketch pictorially), each one indicating the transition to a more comprehensive level of wholeness until (ultimately) the distinction-free *unus mundus* is approached. A viable idea in this regard is a picture with increasing degrees of generality: the *unus mundus* at bottom, the mental and physical on top, and intermediate levels in between would make more sense. This twist is additionally interesting because it also relativizes Jung’s (overly) strict Kantian stance that the ordering factors (archetypes in Jung’s terminology) in the collective unconscious *per se* are strictly inaccessible epistemically, and thus empirically.

This extension of the Pauli-Jung scheme (which they did not indicate themselves) resonates with a concept originally proposed by Quine

(1969), developed by Putnam (1987) and later worked out in detail by Atmanspacher and Kronz (1999): ontological relativity or, in another parlance, relative onticity. The key motif behind this notion is to allow ontological significance for any level, from elementary particles to ice-cubes, bricks, and tables – and all the same for elements of the mental. Ordering factors which may be regarded as ontic relative to the perspective of the mind-matter distinction, can be seen epistemic relative to the *unus mundus*.

Additional recent work trying to develop Pauli's and Jung's speculations and conjectures is found in Primas (2009) who discusses the mental and material in terms of complementary notions of mental and material time. This approach is formulated in a largely formal manner, based on algebraic structures similar to those used in quantum theory, and it is not easily digestible for the non-mathematical reader. Again, the key idea here is to exploit structural analogies with quantum physics.

Bernard d'Espagnat is another important figure in the recent renaissance of dual-aspect monism. He uses the notion of "the Real" – an independent primordial reality that is neither mental nor material. As in the proposal by Jung and Pauli, this reality is "veiled" (d'Espagnat 1999, 2006) insofar as it is in principle inaccessible to direct empirical experience.

#### 4. Bohm's Implicate Order

There is yet another well-known physicist whose ideas about mind and matter are not too different from the Pauli-Jung scheme: David Bohm (1917–1992). Born and educated in the US, Bohm was prosecuted in the McCarthy era and emigrated, first to Brazil, then to Israel, and finally to the UK. From 1961 to his retirement he was professor for theoretical physics at Birkbeck College, University of London.

Apart from his attempts to formulate hidden variables for quantum theory, Bohm also proposed a dual-aspect approach to mind and matter whose early precursors date back to the same time when Pauli and Jung developed their approach – in the late 1940s and early 1950s. A detailed historical account of this early work is found in Pylkkänen (2014). More mature versions are based on his ideas about explicate and implicate orders in *Wholeness and the Implicate Order* (Bohm 1980).

While the notion of an explicate order characterizes an empirically and, thus, epistemically accessible reality, the notion of an implicate order refers to an ontic realm. (Occasionally, Bohm (1980, e.g. p. 199) also notes that implicate orders can sometimes be "directly perceived" or "sensed immediately".) The mind-matter distinction is part of an explicate order, which is based on a psychophysically neutral implicate order without that distinction (Bohm 1990, p. 273):



Figure 5: David Bohm (1917–1992) at the symposium “Art Meets Science and Spirituality in a Changing Economy: From Fragmentation to Wholeness” at Amsterdam in 1990. Photograph taken at a round table with Stanislav Menshikov, Robert Rauschenberg, David Bohm and the Dalai Lama.

The whole universe is in some way enfolded in everything and each thing is enfolded in the whole. From this it follows that in some way, and to some degree, everything enfolds or implicates everything, but in such a manner that under typical conditions of ordinary experience there is a great deal of *relative* independence of things. The basic proposal is then that the enfoldment relationship is not merely passive or superficial. Rather, it is active and essential to what each thing is.

Because the implicate order is not static but basically dynamic in nature, in a constant process of change and development, I called its most general form the *holomovement*. All things found in the unfolded, explicate order emerge from the holomovement in which they are enfolded as potentialities, and ultimately they fall back into it.

The general implicate process of ordering is common both in mind and matter. This means that ultimately mind and matter are at least closely analogous, and not nearly so different as they appear on superficial examination.

On Bohm’s account, mental and physical states emerge by explication, or unfolding, from an ultimately undivided and psychophysically neutral implicate, enfolded order. This order is called *holomovement* because it is not static but rather dynamic, just as in Whitehead’s process philosophy. This means that Bohm’s aspect monism is not only holistic as in the Pauli-Jung scheme, it is also fundamentally based on process rather than

substance. This is much less pronounced in Pauli’s and Jung’s views, where structural and dynamical features (e.g., of archetypes) appear to be regarded as equally important.

Bohm avoids concerns about a sharp boundary between below and above the horizontal line in Fig. 6 by assuming many subtle levels of implicate orders whose distinction-free limit would correspond to the *unus mundus*. His picture also contains the idea that implication and explication are relative notions: each level of implicate order is the explication of a more subtle implicate order, and each level of explicate order is the implication of a less subtle explicate order. In this sense, Bohm’s thinking is close to the concept of an ontological relativity as mentioned in Sec. 3 (cf. Pylkkänen 2007), although he (Bohm 1980, pp. 165ff) also has even more radical ideas about this.

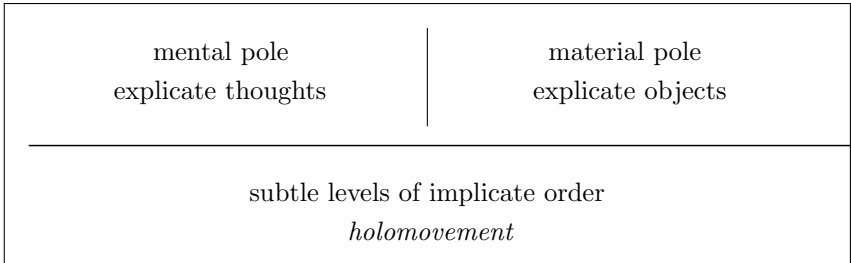


Figure 6: In Bohm’s aspect monism the mental and the material are unfolded explications of an enfolded, implicate order with many subtle levels. These levels are increasingly holistic, and they are not static but dynamic, hence Bohm coined the term *holomovement* to characterize them.

This move allows him to hold a subtle intermediate position between Russell and Pauli-Jung as far as experiential access to the psychophysically neutral is concerned. If a particular level of implicate order is not (yet) explicated, it is experientially inaccessible. But every level of implicate order *can in principle be* explicated, and if this happens, it becomes accessible. Along these lines, Bohm proposed novel forms of dialog facilitating insight into deeper implicate, holistic levels of nature (see Bohm and Peat 1987).

Psychophysical connections are governed by something Bohm calls *active information* – not syntactic information but literally meaning to bring something implicate into explicate form, both mentally and materially (Bohm 1990, p. 282):

There is a kind of active information that is simultaneously physical and mental in nature. Active information can thus serve as a kind

of link or “bridge” between these two sides of reality as a whole. These two sides are inseparable, in the sense that information contained in thought, which we feel to be on the “mental” side, is at the same time a related neurophysiological, chemical, and physical activity (which is clearly what is meant by the “material” side of this thought).

By “bringing the implicate into form”, Bohm’s active information can be seen very much in accordance with the archetypal ordering principles in the Pauli-Jung scheme. The bidirectional relationship between the psychophysically neutral and its aspects, expressed in Pauli’s quote of 1954, is mimicked in the mutual process of unfolding the implicate and enfolding the explicate. And correlations between the mental and material arise as a consequence of the fact that they are both projections of the same implicate order.

Dual-aspect thinking invites the option to be interpreted in the spirit of panpsychism, the doctrine that mind is a fundamental feature of the world which exists throughout the universe (Seager and Allen-Hermanson 2010, Skrbina 2009). However, neither Russell nor Pauli or Jung make concrete reference to panpsychism – but Bohm (1990, p. 283f) clearly does:

A rudimentary mind-like quality is present even at the level of particle physics, and as we go to subtler levels, this mind-like quality becomes stronger and more developed. Each kind and level of mind may have a relative autonomy and stability. One may then describe the essential mode of relationship of all these as *participation*, recalling that this word has two basic meanings, to *partake of* and to *take part in*.

Regarding a panpsychist interpretation, there may be a nuanced distinction between atomistic neutral monism and holistic dual-aspect monism. While the psychophysically neutral itself is neither mental nor material on the accounts of Pauli-Jung and Bohm, panpsychism can only refer to the level of aspects. For Russell’s monism, where the elements of the “neutral stuff” are sometimes characterized as both mental and material (cf. Sec. 2), panpsychism would be an option even at the elementary level, not only in the aspects.

After Bohm’s death in 1992, Basil Hiley has further developed Bohm’s proposal using the formal apparatus of representations (in the mathematical sense) of algebraic structures. While these structures would stand for the implicate order, their representation would be equivalent to explicate orders. Specifying the general idea laid out by Bohm and Hiley (1993) in their joint book *The Undivided Universe* (note that “undivided” is not the same as “indivisible”!), Hiley works with a pre-space (and pre-time) algebra and attempts to reproduce basic principles of the known physics by representations of this algebra (Hiley 2001, de Gosson and Hiley 2013).

Concerning mind-matter relations, the idea would be that other representations of the algebra, yet to be found, are relevant for mental processes. Since both representations derive from the same algebraic structure, they are supposed to exhibit relationships that may be at the basis of the psychophysical correlations that are the core of the mind-body problem. Paavo Pylkkänen, a Finnish philosopher, has related Bohm and Hiley’s work to modern approaches in the philosophy of science and the philosophy of mind (Pylkkänen 2007).

## 5. Naturalistic Dualism According to Chalmers

In Chapter 8 of his book *The Conscious Mind*, entitled “Consciousness and Information: Some Speculation”, David Chalmers (1996) outlines a proposal of a theoretical basis, or a template of it, for how to explain consciousness and its relation to the physical world. As the originator of the notion of the “hard problem of consciousness”, Chalmers (1995) became known as an outspoken critic of approaches that try to reduce phenomenal experience to brain behavior all-too-quickly.

A key ingredient in Chalmers’ proposal is the concept of syntactic information à la Shannon – he does explicitly disregard semantics or pragmatics, at least to begin with. The neutral stuff in his proposal consists of



Figure 7: Two aspects of David Chalmers, born at Sydney in 1966. In 2000 (left) he was at the University of Arizona at Tucson where he co-organized the biennial conferences “Toward a Science of Consciousness” that have been of major influence for the emerging field of consciousness studies. 2004 he returned to his home country at Australian National University Canberra. 2013 (right) he was elected a member of the American Academy of Arts and Sciences, and in 2014 he accepted a full-time professorship at New York University.

information states (bits) that are neutral with respect to a mind-matter split. They can be represented in so-called information spaces and manifest themselves phenomenally and physically simultaneously (Chalmers 1996, pp. 284/286):

Whenever we find an information space realized phenomenally, we find the same information space realized physically. And when an experience realizes an information state, the same information state is realized in the experience's physical substrate. ...

Principles concerning the double realization of information could be fleshed out into a system of basic laws connecting the physical and phenomenal domains.

Needless to say, these basic laws are yet to be discovered – perhaps the Weber-Fechner law of psychophysics may be regarded as a historical precursor. The classification of mind-matter correlations in Sec. 3 may be of some general relevance in this direction. Truly psychophysical phenomena in this spirit are neither physical nor psychological, and they are subject to psychophysical laws, neither to physical laws nor to psychological laws (Atmanspacher 2014b).

But let us return to a more detailed characterization of the abstract information spaces. They are assumed to be endowed with combinatorial structure and relational structure in the following way (Chalmers 1996, p. 279):

An information space will have two sorts of structure: each complex state might have an internal structure, and each element in this state will belong to a subspace with a topological difference structure of its own. We might call the first of these the *combinatorial* structure of the space, and the second of these the *relational* structure of the subspaces. Much of the time, each subspace will have the same relational structure, so we can just speak of the relational structure of the space itself. The *overall* structure of the space is given by these combinatorial and relational structures together.

In other words, the relational structure exhibits the differences that are needed to define the choices leading to informational units. For binary choices, this unit is simply a “binary digit”, a bit. Sequences of binary (or higher-order) choices are symbol sequences of bits (or high-order informational units). The simplest information state is thus one bit based on a binary choice (or a qubit, respectively, if quantum information is considered). Obviously, the complexity of information states increases with the length of the symbol sequence (combinatorial structure) and the number of choices per symbol (relational structure).



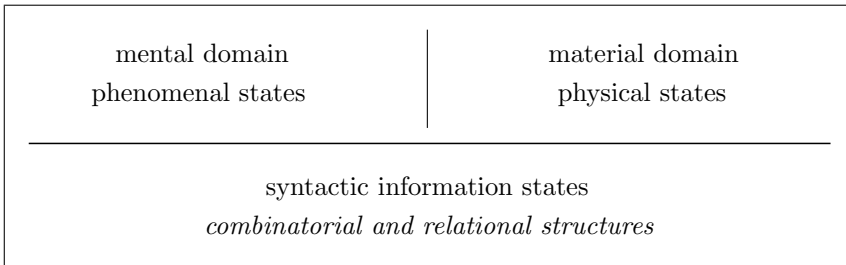


Figure 8: Naturalistic dualism according to Chalmers posits that the “hard problem of consciousness” can be addressed by psychophysically neutral states characterized by syntactic information. These states are represented in abstract information spaces and are endowed with combinatorial and relational structure. At the level of the mental and the material they are realized in terms of phenomenal and physical states.

Starting around 2000, Tononi and collaborators (see, e.g., Tononi and Balduzzi 2008) have developed and refined a theory of integrated information that can be seen as a concrete implementation of many features of Chalmers’ proposal. Tononi’s theoretical framework assigns different levels of phenomenal experience to a system, depending on the measure of integrated information characterizing that system. And Balduzzi and Tononi (2009) even proposed a way to construct structures in so-called qualia spaces which represent qualia by their shape.

Because phenomenal and physical realizations of information states always go hand in hand, panpsychism is straightforwardly entailed by naturalistic dualism. The integrated information approach predicts that simple and purely reactive systems like photodiodes or thermostats have non-vanishing – though not terribly interesting – phenomenal consciousness. In recent work, it was shown that very complex networks, simulated as feed-forward systems, can perform a high degree of functionality and yet have zero (“zombie”) consciousness. This and many other interesting results of Tononi’s work were recently published by Oizumi *et al.* (2014).

Naturalistic dualism shares with neutral monism that the mental and the material, here the phenomenal and the physical, are reducible to the psychophysically neutral, here the information states. Their realization depends on the way they are composed – but also, importantly, on the difference between their external and intrinsic features. So the overall picture that naturalistic dualism presents is of the atomistic, not of the holistic variety.

At the end of the chapter, Chalmers (1996, p. 305) discusses the metaphysical dimension of his proposal:

The ontology that this leads us to might truly be called a double-aspect ontology. Physics requires information states but cares only about their relations, not their intrinsic nature; phenomenology requires information states but cares only about the intrinsic nature. This view postulates a single basic set of information states unifying the two. We might say that internal aspects of these states are phenomenal, and the external aspects are physical. Or as a slogan: Experience is information from the inside, physics is information from the outside.

The different ways of realizing information states are here connected to their external relations (physics) and to their intrinsic nature (phenomenology). The external relations needed for physical states are intimately linked to the notion of (efficient) causation: physical states are realizations of information states “according to their effects along a causal pathway” (p. 281).

Phenomenal states are not based on such pathways from causes to effects. They are realizations of the intrinsic structure of information states, not of external relations. Since physical states are solely based on external relations, the properties of the physical world that we usually conceive of as intrinsic (spin, mass, charge, etc.) may thus actually be “projections” grounded in intrinsic *phenomenal* properties. This hypothesis “again requires a variety of ‘outrageous’ panpsychism” (p. 305), but its conceptual elegance is hard to deny indeed.

As Chalmers points out, his proposal matches exactly the ontology of property dualism, based on an ontically conceived notion of information. The purported observer-independent *ontic* status of information is at variance with the standard understanding of information as knowledge relative to observers, hence *epistemic*. However, as we will see in the next quote below, the fundamental information spaces of Chalmers’ approach are based on “primitive” differences. These differences are assumed to be primordially given as space partitions, so they need no observers.

There is some tradition of corresponding ideas in modern physics as well – starting with Zuse in the 1960s and later employed by Fredkin, Kantor, or Wolfram in terms of classical information theory. Finkelstein and von Weizsäcker, also in the 1960s, pioneered the digital universe picture based on quantum information long before Lloyd, Brukner, Zeilinger and others refined this framework of thinking. Its arguably most popular expression is Wheeler’s (1990) illustrative phrase “it from bit”.

While all this work has been restricted mainly to physics (von Weizsäcker’s “ur-alternatives” being an exception, cf. Böhme 2011), Chalmers’ approach is clearly more ambitious: It is designed as a basis for both the physical and the phenomenal. His view offers (p. 303)

a picture of the world as a world of *pure* information. To each fundamental feature of the world there corresponds an information

space, and wherever physics takes those features to be instantiated, an information state from the relevant space is instantiated. As long as these information states have the right relations among them, then everything will be as it needs to be. On this picture of the world, there is nothing more to say. Information is all there is. This is how I understand the “it from bit” conception of the world. It is a strangely beautiful conception: a picture of the world as pure informational flux, without any further substance to it. ... The world is simply a world of primitive differences, and of causal and dynamic relations among those differences. On this view, to try to say anything further about the world is a mistake.

## 6. Discussion

After the annotated presentation of selected variants of 20th century dual-aspect thinking in historical sequence, they are now to be compared, in a systematic fashion, with respect to their commonalities and disparities. For the hasty reader, this comparison is summarized in a synoptic overview in Figure 9.

The one feature that all four variants discussed have in common is that they regard the mental and the physical as two aspects of one underlying reality that itself is neutral with respect to the mind-matter split. This is the key point of dual-aspect approaches. They combine an (epistemic) dualism with an (ontic) monism and, in this way, suggest an alternative to the conventional physicalist program of naturalizing the mind. In fact,

|                    | Russell                | Pauli-Jung              | Bohm                          | Chalmers              |
|--------------------|------------------------|-------------------------|-------------------------------|-----------------------|
| notation           | neutral monism         | dual-aspect monism      | aspect monism                 | naturalistic dualism  |
| neutral domain     | sensations (percepts)  | archetypes, unus mundus | implicate order, holomovement | syntactic information |
| empirically        | accessible             | inaccessible            | cond. accessible              | accessible            |
| mereology          | composition            | decomposition           | decomposition                 | composition           |
| interlevel         | reductive              | holistic                | holistic                      | reductive             |
| implicit meaning   | —                      | symbolic content        | active information            | —                     |
| explicit meaning   | objective reference    | synchronistic events    | correlations between aspects  | phenomenal experience |
| related approaches | Mach, James, Avenarius | d’Espagnat, Primas      | Hiley, Pylykkänen             | Rosenberg, Tononi     |

Figure 9: Synoptic summary of key features of the four selected variants of dual-aspect thinking discussed in this paper.

dual-aspect approaches consider both mind and matter to be naturalized by their underlying reality.

The most momentous distinctive features between the variants considered has to do with the way in which the underlying, psychophysically neutral reality is conceived. Russell refers to sensations, Chalmers to syntactic information, Pauli-Jung to archetypal ordering factors, Bohm to holomovement and implicate order. While Russell and Chalmers both allude to concepts with a pronounced “epistemic flavor”, Pauli-Jung and Bohm refer to less intuitive metaphysical ideas.

Consistent with their epistemic leanings concerning the neutral domain, Russell and Chalmers posit that it can be epistemically accessed, i.e. experienced or apprehended. This is different for Pauli-Jung, where the neutral domain remains strictly inaccessible for direct apprehension. On Bohm’s account, the overall idea is that there are levels of implicate orders which may become accessible under the condition that they can be explicated (for details see Sec. 4). Bohm’s way to relax epistemic inaccessibility can be mapped to Quine’s (1969) idea of ontological relativity and its later refinements.

Russell’s and Chalmers’ neutral domain is conceived atomistically. For Russell there are neutral elements whose composition decides whether the compound state appears mental or material. Chalmers specifies these states as information states whose external relations give rise to physical states and whose intrinsic nature gives rise to phenomenal features.

Both Pauli-Jung and Bohm turn the compositional move upside down. Their neutral domain is explicitly holistic, and the mental and material aspects emerge due to decomposition. This idea resonates with a basic philosophical insight of quantum theory – that systems are undivided wholes without parts to begin with. In principle there are (infinitely) many ways to generate parts by particular operations under particular contexts. Among the accounts presented here, the Pauli-Jung conjecture is the only one that addresses the (collective) unconscious and conceives of it in a similarly holistic way.

The decompositional approach yields mind-matter correlations for free – correlations emerge whenever the holistic symmetry of a system is broken. For some remarks about how this can be formally addressed in the Pauli-Jung scheme see Atmanspacher (2014c). Moreover, mental and material aspects are not reducible to the neutral domain – it is not possible to uniquely reduce parts to wholes when there are (infinitely) many ways to decompose wholes into parts. In virtue of these two features I think that holistic dual-aspect accounts show an obvious conceptual advantage over their atomistic competitors.

In order to explain mind-matter correlations, Chalmers introduces external and intrinsic features of the neutral information states that are assumed to be correlated by default. Since external and intrinsic features

manifest themselves in physical and phenomenal states, these inherit the default correlations. Thinking the aspects as compositions rather than decompositions provides the option to reduce mental and material aspects to the neutral elements out of which they are composed.

Panpsychism can be related to all four approaches considered. If the neutral domain is conceived holistically, it is neither mental nor material, and panpsychism refers to the simultaneous appearance of both the mental and the material aspects. If the neutral domain is conceived atomistically, it is possible to regard it as both mental and material (as Russell occasionally does), so that panpsychism may even refer to the neutral domain itself. The so-called “combination problem” for panpsychism (Seager 2010), i.e. how experiences of fundamental physical entities combine to yield experiences of higher-level physical entities, does not contaminate decompositional approaches.

In both holistic versions of dual-aspect thinking, the notion of meaning plays a significant role, and it does so in two respects. First, the experience of meaning is constitutive for synchronistic correlations between mental and material events in the sense of Jung. On Bohm’s account, experienced meaning is due to correlations between mental and material states, which arise as a result of unfolded active information. Both ways to conceive meaning are based on the idea of an explicit two-place relation.

Second, there is also an implicit, not yet explicated sense of meaning. In Bohm’s approach this implicit meaning is addressed by the notion of active information, which Bohm emphatically distinguishes from syntactic information. In the Pauli-Jung scheme it is enfolded in the symbolic content of (unconscious) archetypal ordering factors, and it unfolds when the respective archetype gets “constellated”, i.e. activated, in a particular situation. As a consequence, the meaning experienced in a synchronistic event is not merely “subjectively” ascribed – the range of possibly experienced meanings is also “objectively” prescribed by the archetype.

In Russell’s and Chalmers’ frameworks of thinking, meaning does not feature prominently, and certainly not in the implicit sense. Russell mentions Brentano’s concept of intentionality as a relation between a mental state (a thought) and what its content refers to (an object). In a sense, the intentional content of a mental state expresses its “meaning”. But, as we have seen, Russell proposed to override the duality of a mental state and its physical referent and introduces the term “sensation” for exactly this purpose.

For the hard problem of consciousness according to Chalmers it is not the intentional content but the phenomenal experience of a mental state that matters crucially. The issue is what it is like to be in that state (and how this relates to brain activity). Along this line, an *experience* of meaning over and above meaning as intentional content should be a phenomenal experience just as that of pain, sound, dizziness or whatever

else. Since his dual-aspect account is mainly concerned with syntactic information states, his sophisticated work on semantics is not discussed here (see, e.g., Chalmers 2006).

How far away are we from concrete or even practical applications of dual-aspect thinking? Among the four approaches presented, those of Pauli-Jung and of Chalmers did already initiate considerable empirical and applied research. A number of first results and insights from the Pauli-Jung lineage, mainly in psychology and psychiatry, have been included in a collection of essays edited by Atmanspacher and Fuchs (2014). And key ideas of Chalmers's approach have been utilized and developed in Tononi's integrated information theory, with many recent results reported by Oizumi *et al.* (2014).

The central challenge of dual-aspect thinking remains the problem of how consciousness, mind and phenomenal experience are related to the brain and the physical world in general. Mind-matter correlations are at the heart of this problem – the way in which panpsychism works out for inanimate systems, exceptional experiences apparently linking the mental and the physical, or the relation between physical time and mental time are only few examples.

No philosophical position in the mind-matter debate comes free of charge. The most costly issue in dual-aspect thinking is arguably the unclarified, some might say obscure, nature of the psychophysically neutral domain underlying the mental and the material aspect. Since current science is almost exclusively concerned with explorations of the two aspects, progress in understanding the neutral domain can be expected primarily through conceptual speculations and conjectures. At first glance they may seem as outrageous as their creators need to be courageous.

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## Commentaries to Atmanspacher

### *Commentary by Michael Silberstein*

Atmanspacher, like Seager, takes panpsychism very seriously as a contender. For example, while Atmanspacher does not talk at length about what he calls “holistic dual-aspect monism” (which he opposes to “atomistic panpsychism”), it seems to be largely equivalent to what Seager and others mean by non-compositional panpsychism. Both Seager and Atmanspacher seem to think that non-compositional panpsychism or holistic panpsychism solves the combination problem. One of my goals in my main paper was to argue that neutral monism, panpsychism and dual-aspect theories, as traditionally conceived, are not just different, not just mutually exclusive, but one of them is better all the way around: neutral monism. I argued that neutral monism is the most explanatory position, most parsimonious, most in keeping with naturalism, most unifying, etc.

Let me be clear that I am not questioning Atmanspacher’s interpretation of the specific thinkers he focuses on. To be sure, these accounts of mind have historically and conceptually fuzzy boundaries. Nor do I doubt his openness to neutral monism as such. The only reason I am pursuing my taxonomic differences with Atmanspacher is that I want him and others to appreciate that neutral monism as I have defined it – fairly I think – is the view that most transcends the metaphysical assumptions that lead to the mind/body problem in the first place. My worry is that this cannot be fully appreciated if the essential differences are not first emphasized, before we go trying to create hybrids or synthesize these views. So this brings me to my only significant difference with Atmanspacher, how best to taxonomize panpsychism, neutral monism and dual-aspect theories, and the evaluation of their relative strengths.

Let me focus on the taxonomic differences first. Atmanspacher suggests that neutral monism and panpsychism belong in the category of dual-aspect thinking (my italics):

*I will present and compare some selected variants of dual-aspect thinking in the 20th century, such as Bertrand Russell’s neutral monism, the holistic dual-aspect monism of Wolfgang Pauli and Carl Gustav Jung, David Bohm’s implicate order, and naturalistic dualism according to David Chalmers. They can all be viewed as versions of a naturalism that aims at a concept of nature beyond the duality of the mental and the physical.*

And even more explicitly here (again my italics):

*The one feature that all four variants discussed have in common is that they regard the mental and the physical as two aspects of*

*one underlying reality that itself is neutral with respect to the mind-matter split.* This is the key point of dual-aspect approaches. They combine an (epistemic) dualism with an (ontic) monism and, in this way, suggest an alternative to the conventional physicalist program of naturalizing the mind. In fact, dual-aspect approaches consider both mind and matter to be naturalized by their underlying reality.

Atmanspacher says, “dual-aspect thinking invites the option to be interpreted in the spirit of panpsychism, the doctrine that mind is a fundamental feature of the world which exists throughout the universe”. Here Atmanspacher makes clear that he does not think of panpsychism and dual-aspect theories as necessarily mutually exclusive. In what follows Atmanspacher also suggest that panpsychism and neutral monism are not mutually exclusive (my italics):

Regarding a panpsychist interpretation, there may be a nuanced distinction between *atomistic neutral monism* and *holistic dual-aspect monism*. While the psychophysically neutral itself is neither mental nor material on the accounts of Pauli-Jung and Bohm, panpsychism can only refer to the level of aspects. For Russell’s monism, where the elements of the “neutral stuff” are sometimes characterized as both mental and material (cf. Sec. 2), panpsychism would be an option even at the elementary level, not only in the aspects.

*Panpsychism can be related to all four approaches considered. If the neutral domain is conceived holistically, it is neither mental nor material, and panpsychism refers to the simultaneous appearance of both the mental and the material aspects. If the neutral domain is conceived atomistically, it is possible to regard it as both mental and material (as Russell occasionally does), so that panpsychism may even refer to the neutral domain itself.*

Again, focusing on the taxonomic differences for the moment, unlike neutral monism and dual-aspect theories, panpsychism as traditionally conceived has no neutral base, i.e., physical particulars such as particles possess qualia. Note that merely moving to non-compositional panpsychism does not give it a neutral base. Only neutral monism and dual-aspect theories have a neutral base, but in the case of the latter, mind and matter are essentially distinct and irreducible to that neutral base.

Neutral monism rejects the very duality between mind and matter, whereas both panpsychism and dual-aspect theories affirm that essential duality. Therefore, it is not obvious at the end of the day that panpsychism and dual-aspect theories really are, as Atmanspacher says, “epistemic dualism combined with ontic monism”. The dualism in these views looks pretty ontic and neither panpsychism nor dual-aspect theories seem necessarily monistic at all. For these reasons panpsychism, dual-aspect theories and neutral monism are, as traditionally defined, distinct views.

Showing that these views are distinct allowed me then in my main paper to demonstrate that both panpsychism and dual-aspect theories have various problems that neutral monism does not have. I will not reiterate all those problems now, but for example, compositional panpsychism as traditionally conceived is just dualism writ small, connecting qualia or little-minds to particles rather than neurons or larger regions of the brain. This tiny-dualism leads in turn to various combination problems. True, one can mitigate these problems by moving to non-compositional panpsychism, but in so doing the very compositional logic that drives panpsychism is thrown out the window. If reality is not made of fundamental parts with primitive thisness and intrinsic properties such as qualia, then panpsychism is a *non sequitur*.

If one is willing to reject this compositional picture of reality as contextual emergence does, then there is no reason to seek out fundamental units of mind (whether they be correlated with individual particles or entangled quantum states) and somehow “cohere” them into an individual human mind. I am trying to get Atmanspacher to acknowledge that contextual emergence is already a thoroughgoing rejection of the kind of atomistic thinking that breeds panpsychism to begin with. Dual-aspect theories are certainly better off than panpsychism, but they are still stuck with essentially different mental and physical properties that are not reducible to one another, and yet somehow need to be correlated with one another.

Most importantly of all, I want Atmanspacher and others to see that the promise of neutral monism characterized as a form of contextual emergence is to pull the mind/body problem out by the root, along with all the odious assumptions that generated it. Given neutral monism as a form of contextual emergence, the mind/body problem is simply and thoroughly deflated. Neither panpsychism nor dual-aspect theories, as traditionally conceived, hold out that promise. I understand that Atmanspacher himself and the thinkers he canvasses are open to embracing neutral monism.

***Commentary by William Seager:  
A New Way to Understand the Mind-Matter Relation?***

Atmanspacher’s wide ranging survey of modern and current dual-aspect approaches to the mind-body problem (and to the metaphysics of nature more generally) casts considerable light and is especially useful for bringing together the views of thinkers who are seldom compared or contrasted with one another. I am in broad agreement with his philosophical taxonomy, but I have one grumpy complaint to make and then want to discuss a more substantive albeit rather open-ended issue.

Near the beginning of Atmanspacher’s paper he makes an intriguing but to me rather obscure and *prima facie* implausible claim about

Spinoza and the so-called “causal closure of the physical” (the principle that every physical event has an entirely sufficient purely physical cause). Atmanspacher writes:

... causal closure in Spinoza is violated in a subtler way [as compared to Cartesian dualism]. Since the modes, which do not interact directly, derive from the one substance, this substance may inject effects, intrusions as it were, into the modes so that they cannot be causally closed in principle.

Causal closure of the physical would be, in Spinoza’s terminology, causal closure over the attribute of extension. By and large, the modes of extension are material bodies (leaving aside the infinite modes, which are generally taken to be the laws of nature). How could the realm of extension fail to be causally closed?

One way is the Cartesian postulate that mind and matter are in genuine causal interaction with one another and represent entirely distinct substances. In Spinozistic terms, this would have to be cross-attribute causation and would thus illicitly violate the independence of the attributes. Spinoza holds that “each attribute of a substance must be conceived through itself” (Spinoza 1677/1985, Part I, Prop. 10). Since Spinoza also holds as an axiom that to know an effect is to know its cause (Spinoza 1677/1985, Part 1, Axiom 4), it is impossible for one attribute to be causally involved with another (else one could conceive of one attribute through the conception of another’s causal powers). For Spinoza the system of modes of each attribute form a closed causal system, but one that is isomorphic to the similarly isolated causal system of each of the other attributes. Spinoza (1677/1985, Part 2, Prop. 7, scholium) illustrates this in a famous passage:

... a circle existing in nature and the idea of the existing circle, which is also in God, are one and the same thing ... therefore, whether we conceive nature under the attribute of Extension, or under the attribute of Thought ... we shall find one and the same order, or one and the same connection of causes ...

This disjunction of ways of conceiving nature is exclusive, since the attributes are what “the intellect perceives of a substance, as *constituting* its essence” (Spinoza 1677/1985, Part 1, Definition 4; my italics). For Descartes, this exclusivity led to the conclusion that what Spinoza calls distinct attributes are distinct substances. Against Descartes, Spinoza rightly points out that nothing prevents a substance from having more than one attribute (Descartes actually had to admit this, but took it that each substance had a defining “principle attribute”).

Spinoza then attempts to prove that there is but one substance that possesses all possible (conceivable) attributes. Nor is it clear how substance could generate anything like what Atmanspacher calls “intrusions

... into the modes". The modes are the expression of the attribute (and hence ultimately the substance) to which they belong, be it extension, thought or any of the infinitely many other unknown and unknowable attributes hidden from the human mind. The independence of the attributes, again, guarantees that there could be no such intrusions.

This is of some importance if only to prevent premature foreclosure of the range of positions possible within a dual-aspect approach. The significance of Spinoza's position is that it can *both* (1) endorse the causal closure of the physical, which many take to be a regulative principle of and perhaps even entailed by the structure of our most fundamental physical theories, *and* (2) deny that mentality must be in some way reducible to the physical.

Though perhaps not often noted, the same advantage can be found in neutral monism. From an admittedly somewhat strained Spinozistic perspective, the neutral monists can be regarded as denying what is sometimes called attribute parity: the view that all the attributes are equally fundamental. The neutral monists by contrast hold a view that is akin to selecting one attribute – in this case the “neutral” – as truly fundamental, and relative to which all the other attributes are derivative.

Alternatively, the neutral could be likened to Spinoza's substance, with the attributes then compared to the derivative mind and matter, although this is not a particularly apt analogy since the neutral monists find the neutral “in” both mind and matter, in unchanged form, differing only in the structure of relations under which they are “organized”. In Spinozistic terms this seems to be another violation of attribute independence.

As Atmanspacher points out, Russell is probably the most famous proponent of neutral monism, even though he came late to the party after initially being strongly opposed to the view. But neutral monism has a natural affinity for one of Russell's core principles, that “whenever possible, logical constructions are to be substituted for inferred entities”. This was perhaps first articulated in Russell (1914), but the sentiment is frequently expressed in his writings.

What is surely curious here is: How can we construct anything from the neutral, unless we have access to it? And how can we have access to it unless we apprehend it as falling under and within our conceptual scheme? It would take considerable defending, but I believe that the force of these questions is what leads neutral monists to choose mentalistic terms to label the neutral. As Atmanspacher notes, the use of the frankly mentalistic terms “pure experience” (James), “sensation” (Mach and Russell) and “sense data” or “sensibilia” (Russell) has led to confusion. However, it is worth noting that they had other terms as well such as “elements” (Mach) and “events” or “momentary particulars” (Russell).

In my opinion, the solution to this puzzle of accessibility is to take the neutral as what is *present* to consciousness, which is indeed always

categorized or conceptualized in experience but which can be recategorized if necessary in the face of new and recalcitrant further experience (as for example one can imagine how one might come to recognize that one was suffering from hallucinations or when a dreamer regains lucidity within a dream and recognizes it as such). Such recategorization allows us to develop the notion of the neutral: what is present to the mind is not necessarily, in itself, either mental or physical. James (1912/2003, p. 7) tells us that

... experience is a member of diverse processes that can be followed away from it along entirely different lines. The one self-identical thing has so many relations to the rest of experience that you can take it in disparate systems of association, and treat it as belonging with opposite contexts. In one of these contexts it is your “field of consciousness”; in another it is “the room in which you sit” ...

And Russell (1913/1984, p. 15, as quoted in Tully 1999, p. 211) echoes:

the whole duality of mind and matter ... is a mistake; there is only one kind of *stuff* out of which the world is made, and this stuff is called mental in one arrangement, physical in the other.

If we try to look at neutral monism this way, we can see how it is perhaps more closely connected to the holistic dual-aspect views of Pauli and Jung, and Bohm, Hiley and Pyllkänen than would seem initially likely.

The reason for that, which Atmanspacher emphasizes, is the remarkable fact that quantum theory provides a striking living analogy for a kind of holism in which systems possess many aspects without those aspects constituting the system and in which, in a certain sense, which aspect is presented depends on the context of observation. Perhaps it is more than an analogy but at the very least it gives us a solid and specific model.

Holism can be roughly defined in terms of the order of ontological priority. We are all very used to a kind of weak reductionist viewpoint in which the property of the whole is a function of the properties of the parts (and their arrangement, or relational structure<sup>2</sup>). It is probably fair to say that it is hard not to see this viewpoint as being just obviously correct. We have built our artifactual world according to the dictates of this kind of reductionism. The computer, carefully devised physically out of literally billions of microscopic and macroscopic parts and logically out of myriads of relational structures of elementary instructions, stands as the apotheosis of this viewpoint. It is indeed pretty obvious that things, including human beings, are made of parts and it certainly seems to the

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<sup>2</sup>This relational structure does not have to abide by locality or be limited to “mechanical” influences so this kind of weak reductionism is not equivalent to part-whole reductionism, although it is compatible with it and inspired by it.

case that the overall features of familiar things are determined by the relations and interactions of their parts. More grandly, there are respectable thinkers who liken nature to cellular automata, another perfect exemplar of the “parts have priority” viewpoint (see, e.g., the remarkable paper by ’t Hooft (2014), but also the entire digital physics movement).

But philosophically speaking, the idea that the parts have ontological priority is not an analytic truth (for a nice presentation of philosophical holism see Schaffer 2010). Quantum theory suggests a picture in which the whole takes ontological priority and the “parts” are derivative. The whole has priority in the very robust sense that there does not exist a unique breakdown of a quantum system (as specified by the wave function) into components. On the other hand, the experimenter is free to, as it were, generate such components by performing an appropriate measurement. Orthodox quantum theory furthermore denies that prior to such measurement the components were already present in some definite form within the whole. Much if not all of the oddity and paradoxical nature of quantum mechanics results from these facts.

Although stimulating and highly suggestive, the quantum model may not smoothly fit onto a holistic dual-aspect outlook in all respects. If we regard complementary observables as the “aspects” we find that each precludes the other rather than being co-accessible or even, as suggested by classical neutral monism, identically present in experience. There is no isomorphism between the aspects; each embodies distinct information. There is something akin to inter-attribute causation or at least influence. If we measure momentum, we irrevocably alter information about position.

Such considerations suggest that quantum physics may not *directly* inform our metaphysics. The difficulty can be illustrated via Atmanspacher’s discussion of the Pauli-Jung conception of the mind-body problem. To take one explicit example, Pauli wrote both that “a mirror-image principle is a natural way to give an illustrative representation of the psychophysical relationship” (Pauli and Jung 2001, p. 159) and that “it would be most satisfactory if physis and psyche could be conceived as complementary aspects of the same reality” (Pauli (1952/1994)). As noted, complementary observables cannot be in a mirror-image relation, since in that case complete knowledge of one would, in principle, yield complete knowledge of the other. And yet, a dual-aspect approach to the mindbody problem quite naturally suggests the kind of isomorphism between them as was envisaged by Spinoza.

Here, to use Pauli’s phrase, we need a “a new idea of reality” (from a 1948 letter from Pauli to Markus Fierz, as quoted in Atmanspacher and Primas 2006, p. 16). Quantum theory stands as a kind of metaphorical beacon on the road towards this new idea, but it may not itself embody that “new idea”.



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### ***Commentary by Steven Horst: Dual Aspects and Neutral Monism: Some Cognitivist Concerns***

Atmanspacher provides an illuminating discussion of several types of dual-aspect neutral monist theories. Some of these were previously unfamiliar to me, and so I think my best way of engaging his paper is to do so critically, from a cognitivist perspective.

#### *Intuitive Development*

Human understanding of the world involves the application of concepts and the formation of judgments. Some concepts divide the world into classes of things, and others pick out ways those things can be. Judgments involve commitments to things being some *particular way*, expressed in terms of concepts. The number of basic judgment types is small; but even an intellectually unremarkable human adult has a large repertoire of concepts, a repertoire that is dramatically increased through specialized learning and is in principle open-ended.

Concepts and judgments may not be *all* that is needed for understanding – I, for example, think the semantics of concepts are largely derivative

from mental models – but to think concrete thoughts at all, we have to apply concepts. But if we have many concepts, they are not simply a motley laundry list. More specific concepts, for example, can be grouped under more generic concepts, and philosophers and lexicographers have produced various taxonomies and thesauri that attempt to capture a pattern of organization, perhaps even a canonical pattern. There is a natural question about whether there are unique and canonical highest-level divisions – e.g., mental and physical – before we reach the purely categorical level of such bland generalities as “object”, “property”, and “relation”, or whether there is an irreducible hodgepodge of overlapping ways of classifying things.

### *Naive Realism*

In ordinary thinking, we take the ways we conceptualize things to be ways things really are, or at least can be. There is no distinction made between concepts on the one hand and kinds and properties on the other, though of course even the most naive of us is aware that we may be mistaken in any particular application of a concept to a given individual or state of affairs. The first step out of naiveté comes with the realization that some concepts do not capture real features of the world, or at least that some (like Locke’s “secondary qualities”) are not features that are truly “in the object”, but are artifacts of our responses. The job of understanding the world then becomes one of obtaining and using concepts that adequately reflect the real mind-independent properties objects (supposedly) have in their own right, and making correct judgments about the world using those concepts.

From this realist standpoint, the taxonomic project is not merely, or even primarily, one of finding order in our *concepts* viewed as psychological entities, but finding the most basic kinds of things (substances), properties, relations, processes, and events in the world. It is within this project that we must locate claims that there is one type of substance (bodies, or perhaps minds) or two types (minds and bodies) or perhaps some larger number. There can be promiscuously pluralist realisms (Aristotle, Dupré), but most realist philosophical metaphysics is fundamentalist, seeking to identify some kinds and properties as those on which all others depend.

### *Kantian Idealism and Other Cognitivism*s

Cognitivist philosophies, the most familiar of which is Kantian idealism, take an opposite approach. The phenomenal world is regarded as *real*, but is made up of objects as interpreted through the mind’s own faculties. The outer limits of how we can conceive of things are determined by constraints of our cognitive architecture, though within this there is room for a great and perhaps indefinite variety of “empirical concepts” whose aptness is to be judged by their empirical robustness in ongoing experience.

For Kant, the Categories, Forms of Sensibility, and the different posits required by theoretical, practical and teleological reasoning play a predominant role in determining the highest-level divisions of the ontology of the phenomenal world, and transcendental analysis reveals the basic types of operations of the mind. My Cognitive Pluralism allows for experience and conceptual innovation to play a much larger role, suggests that there may be less overarching order to the various model-based ways we possess of understanding phenomena, and predicts that some of them will prove to be abidingly inconsistent with one another, even if they are each individually apt.

On such a view, the notion of “objects as they are in themselves” turns out to be curiously empty. On Kant’s view, the “negative” conception of the noumena is obtained by starting with a phenomenal object and abstracting away from all of the conceptual and sensual content. One cannot give any kind of concrete characterization of noumena, because to do so, one needs to apply concepts and form judgments, and once one does that, one is no longer treating them as noumena but as phenomena. If “natures” need to be things that can in principle be described with concepts, noumena *qua* noumena can have no natures.

#### *Multiple Aspects and Neutral Monism*

Multiple-aspect theories begin with the recognition that one and the same thing can be felicitously characterized in more than one way.<sup>3</sup> In itself, this does not amount to a philosophical theory; it is more like a common-sense observation that things have many good descriptions, that problems can be thought about from many angles, etc.

It begins to become a philosophical theory once we suppose that not just every difference in conceptual framing makes for a distinct aspect: that our most general ways of thinking of things, if they are sufficiently comprehensive and sufficiently orthogonal to one another, are the real candidates for aspecthood. Where it truly gains the status of philosophical theory is in how it elaborates its differences from other philosophical theories. Unlike fundamentalist realism, it holds that two aspects can apply to the same things without either aspect being derivative from the other, but being, as it were, coeval. Unlike cognitivism, it holds the aspects to be features of the world itself and not merely different basic ways of interpreting the world.

The best-known dual-aspect view, Spinoza’s, has additional characteristics which, I take it, a dual-aspect view *need not* have: (1) each Spinozistic Attribute is comprehensive, in the sense that everything has a

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<sup>3</sup>One usually hears them called “*dual-aspect*” theories, but I see no reason to limit the number of aspects to two, and indeed Spinoza claimed that the number of Attributes is in fact infinite, with only our powers of grasping them limited to so small an integer value.

characterization under each Attribute (though not, of course, in the sense that any one Attribute includes all of the good characterizations), and (2) each Attribute provides us in principle with a deductive system from which we could infer all of the facts about the world (under that aspect) *a priori*. Some contemporary dual-aspect views embrace the first claim, but I know of none that advocate the second.

Atmanspacher's characterization of neutral monism adds something to all this: the supposition that, underneath the aspect dualism, there is an ontically monistic "neutral domain", in the form of a common ground which we can understand through multiple aspects. This strikes me as something absent from Spinoza (except perhaps in the independence of his notions of Substance and Mode from that of Attribute), and I think Atmanspacher may agree, as Spinoza's view is not represented in the schematic diagrams that depict various forms of neutral monism or in the chart that compares them.

There are things here that a cognitivist can like. For example, Atmanspacher characterizes the "key point" as the combination of "an (epistemic) dualism with an (ontic) monism". At least the "epistemic" side of this seems grist for the cognitivist's mill. Again, I do not see it as central to the neutral monist view that the number of aspects be exactly *two*; and so long as it is larger than one, a Cognitive Pluralist like myself can endorse the conclusion that none need take pride of place over the others, as the fundamentalist realist monist would have it.

What is a potential sticking point, however, is the "(ontic) monism". The questions here involve just what one is committed to in calling it "ontic", and what (if anything) can be said about its ontic nature. From a cognitivist standpoint, the worry is this: insofar as it can be accurately described at all (leaving aside metaphorical gestures in its direction), we end up treating it, in Kant's terminology, as *phenomenon*. If the language in which we describe the "neutral" level is distinct from that of our aspect-languages, what we then would seem to have is an additional aspect. And if that is the case, and it is still treated as more fundamental than the others, a fundamentalist realistic monism has snuck in through the back door.

Among the theories Atmanspacher describes, Chalmers' informational approach seems most clearly to invite this interpretation.<sup>4</sup> Perhaps this is supposed to be avoided by making the properties of the neutral substrate purely formal. But I am not sure that it *is* purely formal. On the one hand, at least *reference* seems to be in the picture, as we can refer to "information states". On the other hand, a description of a system of relata characterized only by a set of relational properties would seem to

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<sup>4</sup>Although Chalmers' notion of "information" strikes me as importantly different from the notion I am more familiar with from Shannon and coding theory, and so I am not fully confident of my reading of his view.

have at least a limited amount of *sense*: the senses of the relational terms. What must be avoided, of course, is having the key notions of the aspect-languages in the description of the neutral system. But this does not prevent the latter from amounting to an additional aspect, but merely a *different* one.

Alternatively, the talk of a neutral base might simply be a way of expressing our intuitions that our ways of thinking about things through concepts are beholden a transcendent referent, which can never be captured fully in our concepts, and certainly not concepts confined to a single aspect. But this in itself is not a metaphysical theory, and it is not clear that it should be turned into one. And, perhaps more directly, it is not clear that the I-know-not-what that we posit in regarding an object or phenomenon as transcendent should be regarded *monistically*. Indeed, it seems odd to speak of counting at all except when things are interpreted under concepts. At best, saying the ontic base is “monistic” seems intelligible only in the negative sense of saying that it is not carved up into separate partitions by the aspects, but is “the common reality” understood through both aspects.

Now there is another option which I think might merit the name “monism” in a stronger sense. Mystic practitioners report a mode of experience which is non-discursive, non-conceptual, and in which the world is not experienced as divided into objects. Certain strands of Platonism/Neoplatonism and some Buddhist lineages (and, as I learned from Silberstein’s article, Advaita Vedānta ) have held that this mode of experience presents reality more directly, and as an undivided unity. In the Neoplatonist tradition, this mode of experience is called *noesis*, the name given to the highest form of cognition in Plato’s divided line.

I think Jung may have endorsed a view of this type, and it seems more compatible with Atmanspacher’s “decompositional” than “compositional” forms of neutral monism. Of course, one question we might then pose is whether such a form of “access” is itself “epistemic”. Plato contrasts *noesis* with both *episteme* and *dianoia*, but perhaps this simply reflects Plato’s own theoretical use of the term *episteme* and has no bearing on whether it is “epistemic” in the sense that aspects are said to be “epistemic”.

## Replies by Atmanspacher

Let me begin with my sincere thanks to the authors of the three commentaries, which reflect some of the lively discussions at the symposium from which this issue of the journal emerged. More specifically, I am grateful for the opportunity to expand somewhat more on a number of points about which my target paper was not elaborate enough. Since the commentaries contain sufficiently distinct material (though there are also common points of concern), I think it is in the service of clarity to respond to them individually.

### *Reply to Silberstein's Comments*

Since Silberstein emphasizes the taxonomic issues in his comments, let me briefly begin with a few words about where the origins of my hesitations and predilections lie. I hesitate to subscribe to the notion of neutral monism because of two reasons. The first is that the historical sources favoring neutral monism mostly use mentalistic notions for the neutral domain, such as experience (James) or sensation (Mach, Russell), and this has arguably entailed a considerable amount of confusion about the status of the "neutral".

The second reason is that these same sources describe their views, as far as I know, predominantly in terms of a compositional picture: constellations of neutral elements may lead to mental or physical aspects depending on their actual arrangements. The presented versions of dual-aspect monism, by contrast, are decompositional. Silberstein obviously favors this move himself – at least at the end of his main paper, where he suggests "pure being" or "pure presence" as possible notions to address the ultimately neutral as thoroughly holistic.

He states his reluctance toward dual-aspect terminology by saying that the "dualism in these views looks pretty ontic". This may be correct in certain examples, but it is clearly not the case for the proposals by Bohm and Pauli/Jung that I presented. They both emphasize a neutral domain from which the mental and the physical "emerge" as aspects – in ways which need to be clarified, of course. I cannot see anything about the aspects in those proposals that might make them suspicious of being interpreted as ontic. (I'll say a bit more about this below, in fact I think the story is a bit more complex.)

In my view, panpsychism does not play a leading role in this discussion. Yet, I did not want to exclude it from the comparative part of my article, because it can be embedded differently in the different approaches presented. Of course, panpsychism is also an interpretive option for ontological dualism – which I am certainly not arguing for.

Now I want to come to an issue that may be more interesting than terminology. In Silberstein's comments, and even more so in his main paper, he alludes to the concept of contextual emergence as an *ontological* relation. The way in which Bishop and myself introduced contextual emergence was different though. In the title of the first paper introducing it ten years ago we referred deliberately and explicitly to the "description of properties", not to properties "out there" in nature.

This was a matter of both carefulness and cautiousness. All our arguments against strong reduction and in favor of contextual emergence were couched in theoretical terms tailored for the examples described. And the guiding principles for applying contextual emergence in situations with less well developed theoretical frameworks also use clearly descriptive terms. So we left issues of ontology aside to begin with.

But it is a natural question to ask whether and how this restricted epistemological framework can be related to ontology. And if the ambition in dual-aspect monism (or neutral monism) is to express a relation between an ontic neutral domain and its epistemic aspects, we need to have an idea about the relation between them. Is there a way to connect ontic and epistemic elements in a way that is general enough to be useful in this respect?

A philosophical proposal that shows a possible direction to go has been suggested by Quine (1969) with his *ontological relativity*. The key idea is to reject a fundamental ontology from which everything can be derived and permit ontological status for all systems in nature. Not only are elementary particles ontic, but everything else can be considered ontic as well, up to bricks, tables and icecubes (a triad put up by Putnam (1987) in his work on *internal realism*, a variant of Quine's proposal).

Neither Quine nor Putnam told us how to apply this to concrete scientific scenarios. Some time ago, we tried to outline possibilities which might serve this purpose (Atmanspacher and Kronz 1999, Atmanspacher and Primas 2003).<sup>5</sup> We sketched a way in which ontic and epistemic states of systems can be formally related to one another such that we can legitimately talk about ontic states (of nature) and epistemic states (of our knowledge about nature) at each domain (level).

Taking this picture seriously means that the epistemic aspects in dual-aspect monism can be assigned ontic relevance as well, namely relative to higher-level epistemic states. Relative to the ontically conceived neutral base they are to be regarded epistemic. As a consequence, there is the option for both the mental and the physical to be interpreted ontically. But this is in no way like brute ontological dualism – the picture now

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<sup>5</sup>Another, related proposal along different lines was suggested by Elena Castellani under the name *ontological democracy*. See her lecture at the Seven Pines Symposium XVI on "Analogy and Duality in Physics" in May 2012, accessible at <http://pitp.physics.ubc.ca/conf/7pines2012/talks/Castellani.pdf>.

is much subtler. Subtleties of this kind, I think, must be carefully considered if Silberstein wants to use contextual emergence in an ontological framework of thinking that is consistent with its (weaker) epistemological underpinnings.

### *Reply to Seager's Comments*

The causal closure of the physical is a principle that has almost reached the status of an ultimate truth in analytical philosophy of mind. Seager's "grumpy" comment on my "obscure" note that "causal closure in Spinoza is violated" is therefore well motivated. But I think the status of the causal closure of the physical is not as solid as it may appear from (much of) the literature. Its discussion also gives me an excellent opportunity to spell out some corresponding features of dual-aspect monism which I didn't address in my main paper.

First of all, "causal closure" is usually understood as *completeness* with respect to *efficient causes*: Every physical effect has a physical efficient cause. The causal closure principle features with particular significance in the discussion of mental causation, where it ultimately prohibits mental efficient causes to affect physical events. In Spinoza's terms, the modes of the attribute of extension cannot be influenced by the modes of the attribute of thought.

Now, Spinoza's and other kinds of dual-aspect thinking include a monistically conceived substance in addition to the attributes: "God" for Spinoza, or the more profane "neutral" in other versions. Seager wants me to clarify how this substance could "inject effects, intrusions as it were, into the modes" if the modes are expressions of the attributes which in turn are attributes of the substance.

I can see that Seager's concern is plausible within a certain reading of Spinoza as a *pantheist*, equating God with nature. If this equation comes out even, it seems absurd to think of anything like causes and effects between God and nature. However, there is a long tradition of interpreting Spinoza as a *panentheist*, where God is immanent in nature but not identical with it: God is infinite and nature is finite, and the finite things can only have God as their cause (Lloyd 1996, p. 40).

But does "cause" here mean efficient cause? Hardly, I think, and this is why my obscure remark needs clarification indeed. What kind of "effect" the neutral domain in dual-aspect thinking might "inject" into its aspects may become clearer in the following quote from a letter of Pauli to Fierz in 1948 (von Meyenn 1993, p. 496, my italics):<sup>6</sup>

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<sup>6</sup>In this letter Pauli discusses the concept of archetypes which Jung previously had defined as inner images of the psyche. Pauli argues correctly that this would be inappropriate within a dual-aspect framework of thinking.



The *ordering* and *regulating* factors must be placed beyond the distinction of “physical” and “psychic” – as Plato’s “ideas” share the notion of a concept and of a force of nature (they *create* actions out of themselves). I am very much in favor of referring to the “*ordering*” and “*regulating*” factors in terms of “archetypes”; but then it would be inadmissible to define them as contents of the psyche. The mentioned inner images (“dominant features of the collective unconscious” after Jung) are rather psychic *manifestations* of the archetypes which, however, would also have to *put forth, create, condition* anything lawlike in the behavior of the corporeal world.

The “ordering and regulating factors” in this quote ought to be conceived much more like formal causes rather than efficient causes. They are projections from the neutral into the mental and the physical, and generate manifestations of the neutral domain which itself, according to the Pauli-Jung picture, remains inaccessible.<sup>7</sup> In this sense, both the mental and the physical are “causally open” – not for mutual interaction, but with respect to structural ordering factors residing in the *tertium quid* of dual-aspect monism. For more discussion see Atmanspacher (2012).

Conceiving the psychophysically neutral domain holistically rather than atomistically reflects the spirit of a corresponding move in quantum theory, which started out as an attempt to finalize the atomistic worldview of the 19th century and turned it into a fundamentally holistic one. This elucidates why the protagonists of holistic dual-aspect thinking have their roots in quantum physics. However, I agree completely with Seager that “quantum physics may not *directly* inform our metaphysics” of the mind-matter problem, and I also agree with his arguments for this statement.

For instance, I think it is deceptive and will not be viable to look for a *direct* influence of consciousness on physical matter via the not-yet-fully-understood measurement process in quantum physics. My corresponding critique of the proposals of eminent scientists in the lineage of von Neumann, London and Bauer, Wigner and Stapp can be found in Atmanspacher (2011). My ideas are pretty much different, so what Seager indicates at the end of his reply to my comments is *definitely not* pointing my way. Here are two key points of what I try to promote:

(1) A holistic conception of dual-aspect monism *implies* correlations between the mental and the physical as a direct consequence of the broken symmetry of the holistic neutral domain. No other approach to the “hard problem of consciousness” has such a natural explanation of mind-matter correlations. And the notes that Pauli and Jung left in their correspondence even give us thrilling hints for how these correlations can be systematically addressed (see Atmanspacher and Fach 2013).

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<sup>7</sup>This is an important and problematic issue which both Seager and Horst raise. I will address it in my reply to Horst.

(2) If epistemic quantum features emerge from the holistically neutral domain on the physical side, then we should *expect* analogous epistemic quantum features on the mental side as well. This is not to say that quantum physics might explain psychology – what it means is that basic formal principles such as non-commuting operations, which are central in quantum physics, should also play a role in the mental domain. This conjecture has already led to cutting-edge research in decision theory, perception, and other areas of cognitive science (see Wang *et al.* 2013 for an introduction).

The price to be paid for these (and hopefully more) bonus points is to buy into a neutral domain about which we (today) know next to nothing – a “new kind of reality”, as Pauli speculated, neither physical nor mental nor a simplistic combination of the two. And this brings me to a grave issue raised by Horst.

### ***Reply to Horst’s Comments***

Horst’s concern, which I think is very much to the point, is about the status of what I called “ontic monism”. He gives three options of how to understand this notion:

- (A) The “onticity” in ontic monism is actually part of an epistemology, insofar as it is subject to a theoretical description. I agree that Chalmers’ information based approach has much of this flavor, and I have elsewhere criticized it precisely because of this friction.
- (B) The “onticity” of the neutral base refers to a transcendent referent, which can never be fully captured in theoretical terms. But then it is unclear why this neutral base reality should qualify as “monistic” – it is just “not carved up into separate partitions by its aspects”.<sup>8</sup>
- (C) The “onticity” of the neutral refers, in Horst’s words, to “a mode of experience which is non-discursive, non-conceptual, and in which the world is not experienced as divided into objects”. In this version “experience” is involved as a clearly epistemic (though non-conceptual) issue, and this casts doubt on the notion of the “ontic”.

For me, (C) is the most promising move, but this needs to be explained. The key point is that the overall cartoon picture shown in Figures 2, 4, 6, and 8 (which serves the purpose of illustrating the core idea) is in need of refinement.

In fact, the boundary between the mental and physical aspects on the one hand and their underlying domain on the other is by far not as sharp

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<sup>8</sup>The simplest kind of partition is a bipartition, the decision of a binary alternative, leading to a dual-aspect view. However, in principle multiple aspects are possible, as Horst alludes to in a footnote. Let me add that the partitions should also satisfy certain stability criteria in order to be useful. We don’t know how such a criterion looks like for the mind-matter distinction, but it seems to be fairly robust!

as those illustrations suggests. One should conceive of a whole spectrum of boundaries, each one indicating the transition to a more comprehensive level of wholeness until (ultimately) a totally distinction-free domain is approached *in the limit*. A viable idea within the Pauli-Jung conjecture, for instance, might be archetypal levels with increasing degrees of generality: the undivided world at bottom, the mental and physical on top, and intermediate levels in between.

This entails that a tight distinction of fundamentally ontic and derived epistemic domains is too simplistic. In my commentary to Horst's main paper I made an attempt to relate his "cognitive pluralism" to an "ontological pluralism" through a concept that we introduced as "relative onticity" (Atmanspacher and Kronz 1999), but perhaps I failed to get this across clearly enough. Using the terminology of Pauli and Jung, an archetype which may be regarded as ontic relative to the perspective of the mind-matter distinction, can be seen epistemic relative to undivided wholeness.

Such a refined picture also relativizes Pauli's and Jung's overly stern Kantian stance that archetypes *per se*, as formal ordering factors in the "collective unconscious", are strictly inaccessible epistemically. This would be close to option (B) and entail that any experiential apprehension whatsoever is impossible. If, however, archetypes are understood as *epistemic or ontic relative to* other archetypal levels, this opens up a way to epistemic access.

Modern philosophy of mind speaks of a mode of experience, originally introduced by Evans in 1982 (cf. Bermúdez and Cahen 2011), which is highly relevant in this context: the experience of *non-conceptual content*. Horst explicitly uses this term in his option (C), and I think the two of us may have a thrilling point of convergence here (which challenges another Kantian doctrine: that "thoughts without contents are empty, intuitions without concepts are blind"). Let me finish my reply with some details about this.

Briefly speaking, mental states with non-conceptual content are states to which no *propositional attitude* can be ascribed. There are several ways to characterize such states. One framework in this regard (often applied in ecological psychology) has been proposed by Feil and Atmanspacher (2010) based on formal tools of the theory of complex dynamical systems. It can be used for standard representational accounts in the philosophy of mind, but at the same time offers the potential to proceed beyond such accounts.

This framework is called a state-space approach: mental states are represented as subspaces of a space spanned by the properties that are associated with the states. Typically one needs *stable states* (attractors) in order to represent concepts in the sense of propositional attitudes. By contrast, *marginally stable or unstable states* (without or outside attrac-

tors) do not represent concepts. Nevertheless, they can be experienced – or so one might claim.

Feil and Atmanspacher (2010) distinguished basically two types of mental states with non-conceptual content: (i) states in the absence of representations (no stable attractors) of any kind, referred to as *pre-categorical*, and (ii) states in the presence of fully established representations (stable attractors) none of which is actualized by the state, referred to as *a-categorical*. Many mystical, aesthetic, existentialist and other numinous experiences (see, e.g. the introduction to the anthology edited by Gunther (2003)) belong to this second type.

I agree with Horst that Jung must have been sympathetic to such “noetic” experiences. And relativizing the ontic-epistemic divide should allow us to explore their metaphysical status systematically.

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