

Author's Response

Informing Metaphysical Choices with Epistemic Considerations

Bernardo Kastrup

> Upshot • It is admittedly difficult, if at all possible, to establish a direct, positive logical bridge from epistemic considerations to ontological conclusions. Yet, epistemic considerations can and should inform metaphysical choices, for all we ultimately have for making these choices is our knowledge. More accurately, all we finally have is the mind – sole given of existence – upon which our knowledge resides and within which our metaphysical choices are made.

« 1 » A general line of criticism in the open commentaries is the idea that one cannot positively derive a metaphysical conclusion (e.g., idealism) purely from epistemic considerations of the kind discussed in my target article. **Robert Prentner** indicates this in §4 of his commentary, whereas **Itay Shani** is even more specific when he remarks that epistemic asymmetry “does little to show that the *metaphysical* dichotomy between mind and matter is unsound” (§7). While I concur with the remark, this is an attack on a straw man, for the target article does not seek to point out internal metaphysical inconsistencies in any given ontology. As explicitly highlighted in my §40, it is not even intended as a direct metaphysical argument – contrary to what **Chris Fields** and **Sebastian Kietzl**, in §1 of their respective commentaries, suggest. As such, the claim that my attempt has been that of “deriving metaphysical idealism from epistemological idealism” (**Shani** §12) is not accurate. My metaphysical argument for idealism was made elsewhere (Kastrup 2018).

« 2 » So, let me be clear: what the target article attempts is to highlight that different ontologies inherently carry *different epistemic costs*, i.e., degrees of epistemic confidence, even if these ontologies are internally consistent. And whereas this is admittedly not a metaphysical argument, it undoubtedly has great relevance in informing one's choice of metaphysics, since all that is avail-

able for making this choice is one's knowledge. The degree to which one's knowledge is reliable should be a factor – perhaps even a *defining* factor – in the choice.

Physically objective matter can only be accessed conceptually

« 3 » **Shani's** objections are particularly specific. In §4 of his commentary he writes:

“Kastrup's entire argument is founded upon the assertion that matter is an abstraction of mind. [...] [But] while the *concept* of matter is contingent upon the constructive activities of mind, in no way does this prove that the *denotation* of the concept – namely, matter itself, should it exist – is thereby contingent upon such acts.”

I entirely agree with this and nothing in the target article contradicts it, at least deliberately. However, the intended point, which **Shani** misses, is this: unlike mind, our *sole* access to matter operates *through the concept* of matter, for perceptions are themselves mental. Therefore, insofar as we can directly know, the existence of matter is limited to the existence of the mere *concept* of matter. And since this concept – as **Shani** acknowledges – is itself just as mental as perceptions, the existence of the non-mental substrate it denotes is doubtful.

« 4 » The relevance of **Shani's** argument here is contingent upon the existence of matter itself (after all, if matter itself does not exist, its alleged mind-independence is immaterial), but the very thrust of the target article is precisely to question the appropriateness of our confidence in this existence, in the first place.

« 5 » **Shani** continues: “It seems a logical fallacy to conclude that matter itself is mind-dependent simply because such is the predicament of the concept of matter” (§4). This conclusion would indeed be a glaring logical fallacy. However, the target article never advances it. The article is explicit in stating that matter, as a concept, denotes a mind-independent ontological class (e.g., §3). Whenever the article asserts that matter is an “abstraction of mind” (§§34, 41), what is meant by the word “matter” in the respective context is the *concept* of matter. This should be clear throughout the article, as, e.g., in §6 (“physically objective matter is not empirically observable, but a concep-

tual explanatory device,” emphasis added). In §41 the word “matter” is even defined as an “explanatory model,” i.e., a conceptual construct. The target article's very point is to show that, given certain epistemic considerations, one must be skeptical that there is *anything more* to matter than the mere concept alone. In other words, what is meant is that, *insofar as it can be directly known, matter is no more than a concept and, as such, an abstraction of mind*.

« 6 » **Shani** argues that dichotomous pairs may be simply opposite polarities of a spectrum of gradations (§8) and thus not necessarily jointly exhaustive, as assumed in the target article. This is largely a matter of word usage. The target article clearly and explicitly defines “dichotomy” in a sense appropriate for its argument (§§1 and 30), for mind and matter today are not seen as opposite polarities of a continuous spectrum, but as mutually exclusive and jointly exhaustive ontological classes. Contemporary culture largely acknowledges that aspects of nature may be either mental or material, but not that there are aspects of nature somewhere in between mentality and materiality (see §§1f). Even when mental and material properties are assumed to always occur together or to fundamentally correspond to one another in some sense (as, e.g., in most formulations of panpsychism), the respective properties are still seen as mutually exclusive and jointly exhaustive. In other words, even under panpsychism, each individual property of nature is either mental or material, not something in between. The definition used in the article is thus appropriate.

« 7 » More substantively, it is crucial to notice that, unlike what **Shani** suggests in §9 of his commentary, the target article *never* argues that there is a dichotomy – in the sense discussed above – between idealism and mainstream physicalism. The article argues against a dichotomy solely between *mind and matter*, which in turn becomes the basis for the later claim that idealism and mainstream physicalism are not *mirror images* of each other.

« 8 » Unlike the above, the point made in §11 of **Shani's** commentary, although directed at a single claim in the target article and benign as far as its overall argument is concerned, is one I unreservedly agree with. It appropriately limits the scope of validity of

my claim – namely, the claim that “steps of explanatory abstraction can only be justified if the relevant empirical observations cannot be explained *without* them” (§20) – to cases wherein the manner in which a theory derives the familiar world around us does not become disproportionately convoluted.

« 9 » **Fields** points out that the target article does not rigorously define what is meant by “matter,” in the scientific sense (§2). If this is so, it is because I assumed that, by referring to mainstream physicalism, the appropriate definitions would be implicitly inherited. What matters is that, under physicalism, the ontological primitive(s) is(are) always “physically objective,” which the target article does explicitly define as something “outside and independent of mind” (§6). The more popular physicalist formulations take the fundamental subatomic particles in the Standard Model for primitives. Others take the quantum field, the hyperdimensional “branes” of M-theory, etc. The argument in the target article is agnostic as to which particular primitive is applicable, so long as it is an entity *outside and independent of mind*. Therefore, to simplify and focus the discussion on the relevant points, the target article simply uses the colloquial word “matter,” whatever its meaning may be within one’s preferred formulation of physicalism.

Is spacetime itself fundamentally experiential?

« 10 » **Fields**’s discussion in §§6 to 9 is interesting and appropriate, as it touches on a critical issue: by speaking of experiences as “excitations of mind,” the target article presupposes a spacetime framework insofar as one visualizes excitation as *vibration*. Since vibration is movement in space and time, this seems to distinguish spacetime from experience, for experience now needs to unfold *within* preexisting spacetime.

« 11 » Yet, I acknowledge what I believe to be **Fields**’s point: insofar as we can directly know them, both space and time are but qualities of experience. What we call “past” is an experiential quality characteristic of memory and “future” an experiential quality characteristic of imagined possibilities or expectations. Space, in turn, is the experiential quality of a certain relationship between perceived objects.

« 12 » The problem is that even an ontological idealist is *linguistically* forced to presuppose a spacetime scaffolding – at least metaphorically – when they open their proverbial mouths, for space and time are built into the fabric of language (nouns denote things that exist in space, verbs actions that unfold in time, etc.). This is a concession to the limitations of language, not necessarily a metaphysical concession. When the idealist says that experiences are *like* vibrations of consciousness, they do not necessarily concede primacy to spacetime over experience, but may mean simply that the spacetime-bound notion of vibration *corresponds* – in some admittedly metaphorical, illustrative, but nonetheless accurate sense – to an ineffable ontological fact.

There is no excuse for conceptual ambiguity in analytic philosophy

« 13 » **Kietzl**’s commentary centers on my critique of ontic pancomputationalism, which is illustrative of, but not central to, my argument. **Kietzl** claims that the ground of my critique is that I do “not agree with the concept of ‘information’ employed by pancomputationalists” (§2). This is not accurate: my point is that pancomputationalists do not even have an *unambiguous* definition of information for me to either agree or disagree with.

« 14 » **Kietzl** argues that, even with inherent ambiguity, a concept can still be useful: “it seems dubious to say that we must be able to clearly define what a concept means for it to be meaningful” (§3). Whereas I acknowledge that conceptual vagueness may not be so problematic in certain areas of human intellectual activity – say, art criticism, poetry or clinical psychology – when it comes to analytic philosophy, particularly ontology, it ought to be considered fatal. A concept meant to denote an ontological class must unambiguously specify and delineate this ontological class; otherwise one literally does not know what one is talking about. To talk of pure information as the ground of existence without unambiguously specifying what one means – and does *not* mean – by “information” strikes me as hand waving at best.

« 15 » **Kietzl** points out that the meanings we attribute to certain concepts change radically over time. He asks: “Why should ‘information’ be immune to this possibil-

ity of changing its meaning? And does this make this concept ultimately meaningless?” (§3). So long as, *at each point in time*, one has clarity about what one means by the concept, the answer is no. But my critique of ontic pancomputationalism is not that the definition of “information” changes over time, but that it has not been unambiguous *at any point* up until now. This does make ontic pancomputationalism literally meaningless, at least until its supporters finally define “information” unambiguously.

« 16 » §4 of **Kietzl**’s commentary is a *non sequitur*. I concur that *ideal* conceptual definitions are impractical and that a concept is already ontologically useful if it is defined “well enough” (wherein “well enough” means that “the relevant peer group accepts the definition as sufficiently exact”). But “information” is *not* defined “well enough” in this sense; that is, the peer group of analytic philosophers dealing with metaphysics and, more particularly, ontology, does not accept the definition as sufficiently exact (even if ontic pancomputationalists somehow do!). To then suggest that *all other* concepts used today by this peer group are as ambiguous as “information” in ontic pancomputationalism is simply unsound.

« 17 » In §§5f of his commentary, **Kietzl** makes much of my passing assertion that Claude Shannon’s definition of information is “intuitive.” But he misses the point, which is that Shannon’s definition, unlike the morass of ontic pancomputationalism, is *clear and unambiguous*; so much so that we can precisely *quantify* information – as defined – through mathematics and design our entire modern communication networks based on the definition and respective quantification procedures. **Kietzl**’s criticism of my “insisting on a common-sense status quo expressed by the majority” is a straw man. I insisted on no such a thing.

« 18 » In §6 of his commentary, **Kietzl** says that “the mind/matter dichotomy [Kas-trup] is concerned with is not a distinction that plays a role in laypeople’s lives.” I find this a surprising view, for clearly the dichotomy *does* play an obviously significant role in most people’s lives: it is the abstracting away of matter from mind that underlies, for instance, death anxiety, dualist religions, arguably consumerism, etc. See, e.g., He-flick et al. (2015).

Philosophical hypotheses are not scientific hypotheses

« 19 » Finally, the discussion in §9 to 14 of **Kletzl**'s commentary is rather confused. Specifically, **Kletzl** tries to apply criteria for the assessment of *scientific* hypotheses to what is in fact a *metaphysical* hypothesis (namely, the existence of physically objective matter). A scientific hypothesis always entails, or at least implies, a predictive model of nature's *behavior*, which can then be either verified or falsified by *observation* of such behavior. A metaphysical hypothesis, on the other hand, consists of a particular *interpretation* of scientific models – and therefore, indirectly, of nature's behavior – based on, or leading to, a certain inference about what nature essentially *is* (as opposed to how it *behaves*).

« 20 » There are admittedly grey areas between these two types of hypotheses: I have claimed, for instance, that idealism is more consistent with both physical¹ and neuroscientific (Kastrup 2017e) observations than mainstream physicalism. Nonetheless, a metaphysical hypothesis should be assessed not only in terms of its consistency with science – all serious metaphysical hypotheses are mostly consistent with science, anyway, even though they contradict one another – but also in terms of parsimony, internal logical consistency and epistemic cost (the latter being the subject of the target article). Unlike what **Kletzl** suggests, such a metaphysical assessment never leads to a definitive binary answer – otherwise all key metaphysical problems would already have been solved – but to an educated *judgment call*.

« 21 » For instance, I cannot definitely falsify the metaphysical hypothesis that the Flying Spaghetti Monster determines the outcome of all probabilistic quantum events from a higher dimension; but I *can* make the judgment call that such a hypothesis is overly unparsimonious and epistemically unreliable. Informed by epistemic cost considerations, I can make an analogous call regarding the metaphysical hypothesis of mat-

ter outside and independent of mind. Unlike what **Kletzl** suggests in §11 of his commentary, making these or other metaphysical assessments requires no “demon scenario.” It is simply a matter of reason.

« 22 » Given all this, **Kletzl**'s conclusion that “the assumption that ‘there is physically objective matter outside and independent of my mind’ is not a hypothesis but the fundament on which most of our hypotheses gain their meaning” (§14) is arbitrary and begs the question by assuming the very point in contention.

« 23 » On a related note, **Prentner** argues that the metaphysical hypothesis behind mainstream physicalism – namely, that matter exists outside and independently of mind – has served useful purposes in the scientific development of our civilization. I have acknowledged this in an earlier work:

“Physicalism has served important practical purposes over the past couple of centuries. It has provided scientists and engineers with an effective—if simplistic and ultimately wrong—picture of the world, conducive to the development of technology. By thinking of objects and natural phenomena as having standalone reality independent of their own minds, practitioners could achieve the degree of detachment and objectivity necessary for describing the world without bias. The predictive models of nature's behavior that resulted from this effort now lie at the foundation of our technological civilization.” (Kastrup 2017c: 8)

« 24 » Yet, mainstream physicalism also creates “wild goose chases,” such as the search for the biological basis of consciousness, which was selected by *Science* magazine, in its 125th anniversary edition, as the second most important unanswered question in science today. In my view, mainstream physicalism has outlived its usefulness as a paradigm and, today, it is a net liability to the progress of human thought.

Mind, or phenomenal consciousness, is existence's sole given

« 25 » **Fields** questions whether the notion of phenomenal consciousness, or the “substrate or ground of experience,” is not itself an abstraction – just as much as the concept of matter is – given that all we actually know directly are qualia (§5f). The question presupposes an ontological distinc-

tion between qualia – i.e., the qualities of raw experience – and phenomenal consciousness to begin with. Yet, the attempt in the target article has been precisely to avoid this distinction: it defines “mind” as “phenomenal consciousness” (§9) and qualia or experiences as “excitations of mind” (§10). There is thus no ontological distinction between mind and qualia, for the same reason that there is no ontological distinction between a dance and the dancer, ripples and water. A dance is simply the dancer in motion; ripples are just water in motion. Similarly, qualia are just mind “in motion.” In the absence of an ontological distinction, if qualia are a given and not an abstraction – as **Fields** acknowledges – then mind, phenomenal consciousness, the substrate or ground of experience is also a given and not an abstraction. This is not a linguistic sleight of hand, but precisely a careful attempt to avoid linguistic artifacts.

« 26 » Therefore, the comparison **Fields** attempts in §10 of his commentary is not applicable: whereas the “ground of experience” is a given, the ground of information – insofar as it is assumed *not* to be the same as the ground of experience – is *not* a given. This is precisely what allows ontic pancomputationalists to *reject* the ground of information and look upon *information itself* as the ontic foundation of reality. The target article characterizes this position as absurd because – amongst other reasons – ontic pancomputationalists offer no unambiguous definition of information. While **Fields** disagrees with this characterization – in §12 of his commentary he claims that it “is clearly question-begging, as any proponent of ontic information would claim that information is a ‘natural entity’” – he offers no definition of information either. So, my point stands: What sense is there in attributing all ontological value to an undefined – or, at best, loosely and ambiguously defined – entity?

« 27 » **Konrad Werner** raises a point analogous to **Fields**'s: that mind – just as physically objective matter – may also be no more than an abstract conceptual entity. Unlike **Fields**, however, **Werner** justifies his point not by distinguishing mind from qualia, but by implicitly using the word “mind” in a way subtly different from what is meant in the target article (§9). It is this subtle linguistic sleight of hand – unintentional, as I am convinced it was – that I shall elaborate upon.

1 | See my “Should quantum anomalies make us rethink reality? Inexplicable lab results may be telling us we're on the cusp of a new scientific paradigm,” Scientific American Blog Network, 19 April 2018, at <https://blogs.scientificamerican.com/observations/should-quantum-anomalies-make-us-rethink-reality>

«28» Werner initially interprets my point as intended:

“In my reading, Kastrup’s critique of the *mind/matter* dichotomy takes a foundationalist route of some sort by stipulating that our reference to *mind* is direct, i.e., not mediated by abstractions and theoretical fictions.” (§3)

My usage definition of the word “mind” in §9 of the target article makes this clear.

«29» But he then proceeds to subtly mean something else by the word in subsequent paragraphs. He talks of “mind” and “matter” as belonging to a connected “semantic web,” their meanings being relative, determined by the mutual semantic relationships in the web (§5). This is only tenable if he is talking about the *conceptual constellation* that can be associated with the word “mind.” After all, as a flexible word, “mind” can indeed be part of a semantic web. But what is specifically denoted in §9 of the target article can be *directly referenced* and, as such, is not relative to the relationships in a semantic web.

«30» Where do semantic webs themselves exist, if not in mind? Werner says “speaking of mind is also a *choice*” (§3). Where is this choice made, if not in mind? Underlying the *concept* “mind” there necessarily is *mind itself*; that within which, and out of which, all conceptualizations are made. Underlying philosophical discourse there necessarily is the mind that hosts the discourse. This should be so self-evident as to obviate the need to say it, but we are now so “lost in a forest of intellectually appealing but ultimately arbitrary conceptualizations” (§29 of the target article) that I do need to say it. As such, if anything, Werner’s commentary illustrates the very situation the target article expresses anxiety about, thereby highlighting the article’s relevance.

«31» This point is so important I want to belabor it before closing this response. I harbor no illusions about my ability to use concepts clearly and rigorously: it may be – and at least occasionally it surely is – flawed. Perhaps the target article falls short in this regard. But shortcomings aside, all *this* – the target article, the open commentaries, this response, philosophy in general, discourse in general, *life in general* – must be, insofar as it exists, grounded in an *existent*. And the only

existent we know directly, independently of theoretical abstractions, is what we call “mind.” I could even *define* “mind” in this manner, without doing injustice to the colloquial meaning of the word: mind – including its “contents” or “excitations” – is all you and I *knew* when we were infants, prior to the shifting phantasmagoria of theory that came thereafter.

«32» If “mind” is an inappropriate word to denote this irrefutable, given existent, then we can try others (“consciousness”? “psyche”?). But whatever the choice, nothing would change about the existent; it would remain what it is, irrespective of our tortuous conceptualizations and abstract contortions. Without this existent, there would be *nothing* to talk about.

«33» At the foundation of all semantic webs, all post-modern relativism and deconstructionism, is the Mind that abstracts “mind” into a relative, debatable concept. *That* Mind is what I mean by “mind” in the target article. Denying that that Mind is a given is, in the words of Galen Strawson, “the silliest claim ever made.”²

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Combined References

Ajdukiewicz K. (1934b) Sprache und Sinn.

Erkenntnis 4: 100–138. English translation: Language and meaning. In: Ajdukiewicz K. (1978) The scientific world-perspective and other essays: 1931–1963. Reidel, Dordrecht: 35–66.

Ajdukiewicz K (1934a) Das Weltbild und die Begriffsapparatur. Erkenntnis 4: 259–287. English translation: The world-picture and the conceptual apparatus. In: Ajdukiewicz K. (1978) The scientific world-perspective and other essays: 1931–1963. Reidel, Dordrecht: 67–89.

Allman M. J., Teki S., Griffiths T. D. & Meck W. H. (2014) Properties of the internal clock: First- and second-order principles of subjec-

tive time. Annual Review of Psychology 65: 743–771.

Atmanspacher H. (2014) 20th century variants of dual-aspect thinking. Mind and Matter 12(2): 245–288.

Audi R. (2003) Epistemology: A contemporary introduction to the theory of knowledge. Routledge, New York.

Catani D. (2013) Evil: A history in modern French literature and thought. Bloomsbury, London.

Chalmers D. J. (1995) Facing up to the problem of consciousness. Journal of Consciousness Studies 2(3): 200–219.

Chalmers D. J. (1996) The conscious mind: In search of a fundamental theory. Oxford University Press, Oxford.

Chalmers D. J. (2003) Consciousness and its place in nature. In: Stich S. P. & Warfield T. A. (eds.) Blackwell guide to the philosophy of mind. Blackwell, Malden: 102–142.

Chalmers D. J. (2018) Idealism and the mind-body problem. In: Seager W. (ed.) The Routledge handbook of panpsychism. Routledge, London. In press. ► <http://cepa.info/4580>

Daston L. & Galison P. (2007) Objectivity. Zone Books, New York.

Dietrich E. (2015) Excellent beauty: The naturalness of religion and the unnaturalness of the world. Columbia University Press, New York.

Dietrich E. & Fields C. (2015) Science generates limit paradoxes. Axiomathes 25(4): 409–432.

Ewing A. C. (1934) Idealism: A Critical Survey. Methuen, London.

Fields C., Hoffman D. D., Prakash C. & Prentner R. (2017) Eigenforms, interfaces and holographic encoding: Toward an evolutionary account of objects and spacetime. Constructivist Foundations 12(3): 265–291. ► <http://constructivist.info/12/3/265>

Fields C., Hoffman D. D., Prakash C. & Singh M. (2018) Conscious agent networks: Formal analysis and application to cognition. Cognitive Systems Research 47: 186–213.

Floridi L. (2008) Trends in the philosophy of information. In: Adriaans P. & Benthem J. van (eds.) Handbook of the philosophy of science. Volume 8: Philosophy of information. Elsevier, Amsterdam: 113–131.

Fraassen B. C. van (1980) The scientific image. Oxford University Press, Oxford.

Fraassen B. C. van (1990) Laws and symmetry. Oxford University Press, Oxford.

Franklin S. P. (1997) Artificial minds. The MIT Press, Cambridge.

2 | “The consciousness deniers,” The New York Review of Books at <http://www.nybooks.com/daily/2018/03/13/the-consciousness-deniers>

- Fredkin E. (2003) An introduction to digital philosophy. *International Journal of Theoretical Physics* 42: 189–247.
- Glaserfeld E. von (1984) An introduction to radical constructivism. In: Watzlawick P. (ed.) *The invented reality*. W. W. Norton, New York: 17–40. ► <http://cepa.info/1279>
- Godfrey-Smith P. (2014) *Philosophy of biology*. Princeton University Press, Princeton.
- Greene B. (2003) *The elegant universe: Superstrings, hidden dimensions, and the quest for the ultimate theory*. W. W. Norton, New York.
- Griffin J. D. & Fletcher P. C. (2017) Predictive processing, source monitoring, and psychosis. *Annual Review of Clinical Psychology* 13: 265–298.
- Guyer P. & Horstmann R. P. (2018) Idealism. In: Zalta E. N. (ed.) *Stanford encyclopedia of philosophy*. Summer 2018 Edition.
- Heflick N. A., Goldenberg J. L., Hart J. & Kamp S. M. (2015) Death awareness and body–self dualism. *European Journal of Social Psychology* 45: 267–275.
- Hoffman D. D. (2008) Conscious realism and the mind-body problem. *Mind and Matter* 6(1): 87–121.
- Husserl E. (1970) *The crisis of European sciences and transcendental phenomenology: An introduction to phenomenological philosophy*. Northwestern University Press, Evanston. German original published in 1936.
- Kastrup B. (2017a) An ontological solution to the mind-body problem. *Philosophies* 2: 10.
- Kastrup B. (2017b) Making sense of the mental universe. *Philosophy and Cosmology* 19: 33–49. ► <http://cepa.info/4636>
- Kastrup B. (2017c) Not its own meaning: A hermeneutic of the world. *Humanities* 6(3): 55.
- Kastrup B. (2017d) On the plausibility of idealism: Refuting criticisms. *Disputatio* 9(44): 13–34. ► <http://cepa.info/4635>
- Kastrup B. (2017e) Self-transcendence correlates with brain function impairment. *Journal of Cognition and Neuroethics* 4(3): 33–42.
- Kastrup B. (2018) The universe in consciousness. *Journal of Consciousness Studies* 25(5–6): 125–155.
- Koch C. (2004) *The quest for consciousness: A neurobiological approach*. Roberts & Company Publishers, Englewood.
- Koch C. (2012) *Consciousness: Confessions of a romantic reductionist*. MIT Press, Cambridge MA.
- Landauer R. (1999) Information is a physical entity. *Physica A* 263(1–4): 63–67.
- Levine J. (1983) Materialism and qualia: The explanatory gap. *Pacific Philosophical Quarterly* 64: 354–361. ► <http://cepa.info/4061>
- Merleau-Ponty M. (1964) *The primacy of perception*. Northwestern University Press, Evanston.
- Moore G. E. (1903) The refutation of idealism. *Mind* 12: 433–453.
- Nagasawa Y. & Wager K. (2016) Panpsychism and priority cosmopsychism. In: Brüntrup G. & Jaskolla L. (eds.) *Panpsychism*. Oxford University Press, Oxford: 113–129.
- Nagel T. (1974) What is it like to be a bat? *The Philosophical Review* 83(4): 435–450. ► <http://cepa.info/2399>
- Noë A. (2009) *Out of our heads: Why you are not your brain, and other lessons from the biology of consciousness*. Hill and Wang, New York.
- Okasha S. (2002) *Philosophy of science: A very short introduction*. Oxford University Press, Oxford.
- Partington C. F. (ed.) (1837) *The British cyclopædia of natural history: A scientific classification of animals, plants, and minerals. With a popular view of their habits, economy, and structure. Volume 3*. W. S. Orr & Co., London.
- Pelczar M. (2015) *Sensorama: A phenomenalist analysis of spacetime and its contents*. Oxford University Press, Oxford.
- Perzanowski J. (1990) Ontologies and ontologies. In: Zarnecka-Biały E. (ed.) *Logic counts*. Kluwer, Dordrecht: 23–42.
- Picard F. (2013) State of belief, subjective certainty and bliss as a product of cortical dysfunction. *Cortex* 49(9): 2494–2500.
- Piccinini G. (2015) Computation in physical systems. In: Zalta E. N. (ed.) *The Stanford encyclopedia of philosophy*, Summer 2015 edition.
- Poincaré H. (1958) *The value of science*. Dover Publications, New York.
- Prentner R. (2018) Process metaphysics of consciousness. *Open Philosophy* 1(1): 3–13.
- Priest G. (1994) The structure of the paradoxes of self-reference. *Mind* 103(409): 25–34.
- Rochat P. (2012) Primordial sense of embodied self-unity. In: Slaughter V. & Brownell C. A. (eds.) *Early development of body representations*. Cambridge University Press, Cambridge: 3–18.
- Rosenberg G. (2004) *A place for consciousness*. Oxford University Press, New York.
- Russell B. (1974) *The problems of philosophy*. Oxford University Press, Oxford. Originally published in 1912.
- Ryle G. (2009) *The concept of mind*. Routledge, London. Originally published in 1949.
- Schooler J. W. (2002) re-representing consciousness: Dissociations between experience and meta-consciousness. *Trends in Cognitive Sciences* 6(8): 339–344.
- Shani I. (2015) Cosmopsychism: A holistic approach to the metaphysics of experience. *Philosophical Papers* 44(3): 389–437.
- Shannon C. E. (1948) A mathematical theory of communication. *Bell System Technical Journal* 27: 379–423 & 623–656.
- Smolin L. (2007) *The trouble with physics: The rise of string theory, the fall of a science, and what comes next*. Mariner Books, New York.
- Stoljar D. (2016) Physicalism. In: Zalta E. N. (ed.) *The Stanford encyclopedia of philosophy*, Spring 2016 edition.
- Strawson G. (2006) *Consciousness and its place in nature*. Imprint Academic, Exeter.
- Tarnas R. (2010) *The passion of the western mind*. Pimlico, London.
- Tegmark M. (2014) *Our mathematical universe: My quest for the ultimate nature of reality*. Vintage Books, New York.
- Varela F. J., Thompson E. & Rosch E. (1993) *The embodied mind: Cognitive science and human experience*. MIT Press, Cambridge MA.
- Waismann F. (1945) Verifiability. *Proceedings of the Aristotelian Society, Supplementary Volume XIX*: 119–150.
- Walls L. D. (2003) *Emerson's life in science: The culture of truth*. Cornell University Press, Ithaca.
- Webster R. (1995) *Why Freud was wrong: Sin, science, and psychoanalysis*. Basic Books, New York.
- Wheeler J. A. (1983) Law without law. In: Wheeler J. A. & Zurek W. H. (eds.) *Quantum theory and measurement*. Princeton University Press, Princeton NJ: 182–213.
- Whitehead A. N. (1947) *Essays in science and philosophy*. Philosophical Library, New York.
- Whitehead A. N. (1978) *Process and reality*. Corrected edition, edited by David Ray Griffin and Donald W. Sherburne. Free Press, New York.
- Yetter-Chappell H. (2018) Idealism without God. In: Goldschmidt T. & Pearce K. (eds.) *Idealism: New essays in metaphysics*. Oxford University Press, Oxford. In press.