All the World's a Stage: A Person-centered View of Science

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Abstract

In this paper, an alternative, more person-centered view of the nature of science is presented. In the paper, I argue against the currently prevalent scientific outlook which maintains, among other things, that (a) the real world is just the totality of physical states of affairs; (b) it is logically (categorically) independent of us and our human distinctions; and (c) we are essentially spectators whose job it is to understand it. In the paper, several arguments and a final reminder are advanced against this view of science, culminating in a positive view wherein science emerges as a far more person-centered venture and the real world itself emerges as essentially the world of persons and their behavior.

Keywords: science, physicalism, philosophy of science, science of psychology

> "…the real world is essentially the world of people and their behavior. All the world's a stage and the non-person portions of it are props which are called for by the drama."
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> --P.G. Ossorio, 1998, p. 76.

Some 14 billion or so years ago, a familiar story goes, there was a "big bang." An unimaginably hot, dense and energetic singularity exploded, expanded outward, and became the universe. In time, matter clustered into many billions of

galaxies, each with many billions of suns, and many of these in turn with their own planetary systems. In one otherwise ordinary galaxy, one ordinary sun formed and on one of its planets, the one we now call "earth," conditions came about in time such that life forms emerged. Over the course of some 3.7 billion years (Ricardo & Szostak, 2009), these life forms evolved and exhibited ever increasing complexity, until in the extremely recent cosmological past an especially complex organism emerged, homo sapiens. This organism, then, is a very recent, accidentally evolved one that has existed for one microsecond of cosmic time on one ordinary planet in the vastness of the cosmos.

Without in any way questioning the factual matters in the preceding paragraph, they seem to have lent themselves historically to what on the present view is a certain unfortunate line of thinking. First of all, center stage in this story is the physical universe and its evolution both on the broadest possible scale and more locally. This evolution began with a singularity that contained all of the material constituents then and now present in the universe--everything from quarks to biological organisms to galaxies and beyond. Thus, it has seemed natural to equate the real world with the world of matter--with the *physical world*--and to conclude that the scientific understanding of everything must ultimately lie in the understanding of material reality (Churchland & Churchland, 1994; Smart, 1978; Stoljar, 2009). Any claim to the contrary, i.e., any claim having to do with alleged non-material realities, must conjure up the likes of such scientifically suspect entities as souls, spirits, or ghosts.

The second element in this line of thinking is that, in the history of the cosmos, human beings have a very secondary and derivative status. We are, after all, but one among billions of biological organisms, evolved accidentally via the random vagaries of genetic mutation, and extremely recent in origin. In the end, on all of these counts, we human beings are often seen to be rather cosmologically insignificant (Gould, 1992).

Third and finally, the place that is assigned to scientists in this view is that essentially of *spectators of inexorable physical processes* that are not of our making, that preceded our appearance on the scene, and that will doubtless continue when we are gone. This notion is nicely captured in the following quote from the noted physicist Richard Feynman who, despite his awareness of certain quantum level observer effects, nonetheless asserted the following broad picture:

> "We can imagine that this complicated array of moving things which constitutes 'the world' is something like a great chess game being played by the gods, and we are observers of the game. We do not know what the rules of the game are; all we are allowed to do is to watch the playing. Of course, if we watch long enough, we may eventually catch on to a few of the rules…" (1966, p. 24).

The purpose of this paper is to present an alternative view of science. It is a view in which persons play a far more central role, one quite different than that of insignificant spectators of inexorable physical processes that have nothing to do with us, and one in which the very concept of the "real world" assumes a rather different form than Feynman's "complicated array of moving things." The position advanced here was developed employing ideas and conceptual resources from the discipline of Descriptive Psychology (Ossorio, 1981, 1990, 1998, 2006; Putman, 2013; Roberts, 2010).

Science as an Account of How Things Are *For Us*

Lee Smolin, a highly respected and influential theoretical physicist, has written:

> "Physicists have traditionally expected that science should give an account of reality as it would be in our absence. Physics should be more than a set of formulas that predict what we will observe in an experiment; it should give a picture of what reality is. We are accidental descendants of an ancient primate, who appeared very recently in the history of the world. It cannot be that reality depends on our existence...Philosophers call this view realism. It can be summarized by saying that the real world out there... must exist independently of us. It follows that the terms by which science describes reality cannot involve in any essential way what we choose to measure or not measure" (2006, pp. 6-7).

The traditional views of a prominent physicist notwithstanding, Kant (1781/1996) pointed out long ago that we have no access to what he termed "noumenal" reality. That is, we have no access to reality conceived as how things are independent of us, our perceptions, and our conceptual distinctions. There is clearly *nothing to be said* about such a world (Grier, 2009). Were one to say to Dr. Smolin, "Tell us about this 'real world as it would be in our absence' and that 'in no way involves what we choose to measure or not measure'," there is nothing he could say. Scientific accounts, necessarily couched in our concepts and based on our (aided or unaided) observations, must therefore of necessity always be *our* accounts--accounts of what *we* make of things--as well as accounts of how things are *for us*.

What is this "Real World" Anyway?"

We say that science is concerned with describing and explaining how things are and have been in "the real world." But just what is this real world? What do we mean when we talk about "the real world?"

The formulation that will be argued here is the following: *The real world is the state of affairs that includes all other states of affairs* (Ossorio, 2006). Alternatively phrased, it is the set that contains everything that is the case--the set that contains

every object, process, event, and state of affairs that is real, factual, actual, or existent, as opposed to false, fictional, imaginary, nonexistent, or illusory. This formulation, though not identical in how it will be cashed out, has commonalities with Wittgenstein's famous assertion that "The world is everything that is the case. The world divides into facts, not things" (1922, #1.0, 1.1).

What justifies such a formulation of this concept? And why, especially, should it be preferred to the widely advanced, and arguably most favored, physicalist contention that the real world just is the totality of all *physical* objects, processes, events, and states of affairs (Churchland & Churchland, 1994; Smart, 1978; Stoljar, 2009). On this physicalist view, any claim that there are non-physical realities--that the physical does not exhaust the real--can only be considered metaphysical and scientific nonsense since it would seem to conjure up the likes of such scientifically suspect entities as souls, spirits, and ghosts.

To say that something is "physical," however, is to make a certain kind of claim. I am free to *say* anything. I can say, for example, that "the second amendment to the Constitution is located at latitude X and longitude Y," or that "the square root of minus one has a mass of one gram." But clearly, I would be talking nonsense in either case. Concepts have assertability conditions (Kripke, 1982). If I say, "X is a triangle," then, if pressed, it is incumbent upon me to show that X meets the conceptual criteria for "triangle"; i.e., that it is a two dimensional, enclosed geometric figure with three straight sides. Correspondingly, to say that something is "physical" is to say that it has certain characteristics or properties such as, depending on the particular something, mass, spatial extension, location, energy, charge, wave characteristics, and so forth.

With respect to many objects, processes, events, and states of affairs that we collectively take to be real and act upon, however, it makes no sense to predicate any such properties of them. It is nonsensical, and a category error (Ryle, 1949, Thomasson, 2010), to say of these things, for example, that they can be found at some location, that they weigh so many grams, that they have a certain electrical charge, or that they are accelerating at a rate of such and such. If we wish to confine the category (or set) of the real to the physical, it would follow that all of the items in the following list would have to be declared unreal--as fictitious or imaginary or illusory or somehow not the case--since physical predicates cannot be applied to any of them without incurring nonsense and category error:

Thoughts (e.g., that I must get to the airport by noon, or that my dinner guests prefer red wine)
Beliefs (e.g., that Shakespeare wrote Hamlet, or that God exists)
Laws (e.g., those contained in the U.S. Constitution)
Rules (e.g., of chess, baseball, or parliamentary procedure)
Ideas (e.g., of matter-energy equivalence, relativity, heritability, or indeterminacy)
Human relationships (e.g., of *mistrust* between Arabs and

Israelis; of *rivalry* between the two chess grandmasters)
Human disciplines (e.g., mathematics, history, biology, and law)
Language (e.g., words and grammar)
Human agreements (e.g., contracts, vows, and promises)
Mathematical realities (e.g., numbers, logarithms, and calculus).

Unless we wish to declare every state of affairs of which physical properties cannot be sensibly predicated unreal or nonexistent, and perhaps to render the logically entailed claim that they therefore could not have had any influence on events in the real world such as wars, nuclear holocausts and Supreme Court decisions, we cannot confine our concept of the real world to physical realities only. All of the above are clearly realities whose actualization and utilization (a) involve embodied human beings, and (b) depend, on any given occasion, on relevant physical states of affairs obtaining. An embodied person (so far as we know) is required to think about how best to get to a destination, interpret a law, or employ the calculus to solve a problem. But can it sensibly be said, for example, that the calculus *qua calculus--qua mathematical system*--designates a reality of which physical attributes can be sensibly predicated? Or, lacking such attributes, must we conclude that "there is no such thing as the calculus" or that the calculus seems "ghostly" in nature?

There are other reasons to question the claim that physicalism is true, and a large literature exists regarding this issue (see Stoljar, 2009, for an excellent summary). I shall present only two further arguments, and very briefly. First, at the present historical juncture, the physicalist claim represents a massive I.O.U.--a massive promise to deliver in the future--and not cash on the barrelhead. For example, consider the joke: "What did the Zen novice say to the hot dog vendor?" Answer: "Make me one with everything." At present (and perhaps in principle and thus for perpetuity [see Bergner, 2004]), there is no conceivable reduction or explanation of this joke in biological terms. That is, there is no alternative description or explanation in terms, for example, of synaptic events in a listener, for phenomena such as the listener "getting" the joke or finding it "funny." There remains by virtually universal consensus an uncrossed "explanatory gap" (Levine, 1983) between the physical and the mental states of affairs here, and thus no strong, evidentially based reason to conclude that physicalism is true.

Second, as many have noted, human mental phenomena (consciousness, thoughts, beliefs, etc.), aside from the fact that physical properties cannot be sensibly predicated of them, have certain distinctive properties unlike any physical phenomenon (McGinn, 2004). These include *intentionality* (they are always *about* something), *subjectivity or qualia* (there is something that it is like, something experiential, about the having of them), and *transparency* (the haver of them cannot be wrong, for example, in knowing that he or she is experiencing pain or thinking about the Eiffel tower). Since such phenomena, as Descartes famously argued, exist indubitably, they further call into question any claim that the physical exhausts the real.

If the concept of the real is to comprehend *all* real states of affairs, then, it would seem best characterized simply as the state of affairs that includes or encompasses all other states of affairs--as the set that includes all other sets, or the world that includes all other worlds. (I am assuming here that certain other historical claims, such as that the real world is all number, all water, or all spirit, need not be entertained here.) One upshot of this formulation of the real world is that it designates a world that *contains, at least as a subset, the human world*, the world of persons and their behavior: their sub-worlds (of science, law, music, baseball, etc.), their institutions (family, church, judicial system, etc.), inventions (the calculus, the computer, etc.), their ideas (of gravity, natural selection, etc.), their languages (English, Spanish), and their social practices/forms of behavior (dancing, writing programs, doing sums, etc.). That alone being the case, we are far more than spectators. We are *creators of and participants in countless aspects of the real world*, many of these the subject historically of very significant scientific attention.

The Real World as the Human Behavioral World

Above, one of the paraphrases of the real world as the state of affairs that includes all other states of affairs was that it was "the world that includes all other worlds." It is the world that includes the sub-worlds of law, history, mathematics, music, and all the myriad other worlds evolved by human beings. Is there any logical candidate for the designation, "the world that includes all other worlds." I will argue here, consistent with the position of Ossorio (1998, 2006), that such a world would be *the human behavioral world--the world of persons and their behavior* (see also Putman. 2013; Roberts, 2010).

It is easily observed that many objects, processes, events, and states of affairs in the real world are what they are *entirely* by virtue of the place we have given them in our human behavioral practices and ways of life. Objects such as dollar bills and chess pawns, events such as getting a "thumbs up" signal or a traffic light turning green, processes such as singing a requiem mass or dribbling a basketball, and states of affairs such as an experimental finding having $p. < .05$ or any word in a language having the meanings that it does--*all of these are what they are by virtue of the places we have created for and given to them in human behavioral practices*. Thus, for an enormous array of real world phenomena--essentially those portions of the real world we might call the "humanly created world" ("the days and works of man") with its cultures, institutions, social practices, inventions, artistic works, intellectual creations, and more--things are what they are in this world by virtue of their place in human behavioral practices. A chess piece is a chess piece, a dollar is a dollar, a signal is a signal, a word is a word, not by virtue of its physical characteristics, but by virtue of its place in human behavioral practices.

An Objection.

Perhaps we can all agree that elements of the real world such as chess pawns and dollar bills and the words of a language are what they are by virtue of their place in human behavioral practices. However, it may be objected, what about objects such

as atoms and genes, processes such as the genetic transmission of characteristics and volcanic eruptions, events such as the big bang and solar eclipses, and states of affairs such as the earth revolving around the sun and humans having evolved from infrahuman species. All of these and more, it would seem, just are what they are quite independently of us. Atoms, for example, were here before we were and will survive our likely passing. We may have discovered them, but they are elements of the real world that in no way depend on us. We did not and do not create them and we do not dictate either their structure or the manner of their functioning.

In considering this objection, let us focus on this iconic object that is the atom, and let it stand proxy in our argument for all the elements of the natural world. Like "pawn" and "queen of spades," "atom" is a concept that certain people, playing certain "games" such as chemistry and atomic physics, act upon. And, certainly, these people neither created atoms nor determined their inner workings. What they did do, however, was *to make atoms what they are.* What does this mean?

Increasingly, since early in the 19th century, we have seen fit to give atoms a prominent place in certain kinds of accounts of the real world (Pullman, 1998). Why atoms? We have cared about atoms, and have given them a central place in our real world ontologies, because it was found that, *in certain human behavioral practices, there were enormous payoffs for doing so*. There was a point--indeed there were and are many vital points--to drawing this particular distinction in the real world and acting on it. Employing it, we were able to systematize the elements in the periodic table, explain the properties of these different elements and their compounds, explore its applications to energy production, and much more, all of which jobs we had not accomplished by thinking in terms of other (real or hypothetical) objects (processes, etc.) such as the molecule, the alchemical philosopher's stone, or the classical Greek elements air, earth, fire, and water (Pullman, 1998). Thus, "atom" became a central element in our ontology of what there is in the real world.

In the future, it may turn out that there will come a time when there is a far lesser point, or perhaps even no point, in discriminating and acting on the concept of "atom." It is not of course that atoms as we conceive them will cease to exist. Rather, some physics of the future may find a better way to talk (e.g., in terms of now hypothetical "superstrings"), which may do all the descriptive and explanatory work now done by "atom," and more. In this scenario, we may demote, or even abandon, the concept of atom in our bookkeeping systems of the real world. Like Newtonian mechanics, in which we once had such vast confidence as the ultimate truth about the workings of the physical universe, it will have been superceded by a new and more advantageous way of talking. In such a scenario, historians of science may one day say, "Oh yes, that was once a very useful level at which to break down the constituents of matter, and it had its day; but now we have better ways to talk about matter and, aside from histories of science, we rarely include atoms in our scientific treatises."

So, we do not create atoms ex nihilo and we do not dictate their structures or functioning. However, like certain cinematic and political figures, we "made it a star." We gave it a central place in the scheme of things, which place, unlike other candidates for the job, it was extraordinarily well suited to fill by virtue of its properties. We made atoms what they are in this sense; i.e., *by assigning them a status*--by giving them a *place*--in certain human practices, and did so because *there were and are enormous advantages to doing so.* And, if past is prologue, we may one day, as we often do with those politicians, demote it from its star status in favor of something that conveys greater advantage in our human projects. (Compare: I notice a rock in my garden. I might assign it no status in the real world beyond "the little stone by the mulberry bush." Alternatively, I might pick it up, wash it off, assign it the status of "my favorite paperweight," find that it is admirably suited to fill that role in the world, and decide to retain it unless and until I find a better paper weight. The rock never leaps out, never comes forward and demands that I give it any status at all. If it is ever to be more than "just a rock in my garden," it is up to me or some other person to give it that status.)

In the end, we did not create this subset of realities we call "the natural world," and we do not dictate its structure or its functioning. However, in filling in the contents of the real world, this state of affairs that includes all other states of affairs, we make things what they are on the basis of their value in our human projects--on the basis of whether they forward our understanding, enable us to do things better, or enable us to do things that we couldn't do before. We give them a status for better or for worse. If discriminating and thinking in terms of Xs buys us something, we assign Xs an important status in our real world ontologies. If it does not, we do not. If X continues to have behavioral value while Y does not, a certain "survival of the fittest", of the most "adaptive", prevails.

An Ex Post Facto World

In the scientific realm, some advances, such as technological ones, change the contents of the real world in important ways. The radio, the airplane, the computer, the internet all become new elements in the ever expanding real world. However, other advances, such as those involving the discoveries of evolution, atoms, relativity, bacteria, and indeterminacy at the quantum level, cause us not only to expand our construction of the real world, but to *reconstruct how the real world has been all along*. In other words, they cause us to reconstruct the real world *ex post facto* (Ossorio, 1981, 2006; Roberts, 2010). With these discoveries, not only are there now in our ontologies such objects as atoms and such processes as natural selection (etc.), but it becomes the case, once we have accepted them, that the real world has suddenly become, ex post facto, one that has been this way all along. Further, we realize that with scientific advances our current real world, like that of those confidently settled Newtonians of a previous era, will almost certainly itself be replaced by some future ex post facto world.

With this in mind, consider the following thought experiment (from Ossorio,

2006). Suppose we are standing watching a game of chess. I pick up one of the pieces, a carved piece of onyx, and say to you, "If you encountered this object three thousand years ago, before the invention of chess, would it have been a pawn?" You reply, "Of course not. Nothing could have been a pawn until such time as the game of chess was created." I inquire further: "Could it have been a piece of onyx before such time as an at least rudimentary precursor of mineralogy began, and onyx was distinguished from other rocks?" You reply, "Well, it would have been something, but I guess at that point it could not have been a piece of onyx, since 'onyx' was not a category in anybody's ontology." I say, "I agree, and there is an interesting difference between the two cases. In the case of 'pawn,' nothing *could ever* have been a pawn before there was chess. In the case of onyx, once we had created a human practice of distinguishing one kind of rock from another, and distinguished onyx from other rocks, at that point *it became true, ex post facto,* that onyx had existed for eons.

Over time, we humans create new "games," new human practices. And it is only when we have created these behavioral practices that places within them such as "pawn," "home run," "dollar," "b flat," and "impressionism" come to be categories of reality. But the same is true, though less obviously, of "onyx," bacterium," "genetic transmission," "electromagnetic field," and "atom." Before we invented the relevant behavioral practices, there was something. But it was only once we had created our practices and given different objects (processes, etc.) places within them did it *become* the case that (a) these somethings appeared in our ontologies at all, and (b) ex post facto, they had always or long since been elements in the real world.

The critical upshot of this point is to recognize that the real world, the state of affairs that includes all other states of affairs, is a *humanly constructed world*. It is we who created these behavioral practices, decided that certain phenomena deserved place of pride within them and that others did not, tried out various candidates (e.g., the ether and the atom) for places in our ontologies, and constructed ex post facto accounts of how the real world has been all along (which accounts may or may not survive the test of time). Finally, this world is humanly constructed, not in some idealistic Berkeleyan sense, but in the sense that this world--the one you see when you look around you, the one that includes, not only human creations (languages, currencies, poems, chess games, etc.), but also elements of the natural world (atoms, trees, planets, genes, evolutionary processes, etc.)--is one that we construct via our creation of human behavioral practices. The epistemology, if this may clarify the matter, is realist and not idealist. Now that we have distinguished a certain X and agreed to call it "cow," there is indeed a cow over there in the meadow.

"You Can't Construct Just Any Old World"

Lest I seem here to be advocating a postmodernist position wherein "There is no truth, only a plethora of interpretations...There is no objective reality, only a plurality of perspectives" (Flew & Priest, 2002, p. 323), it must be noted that *there are limitations on our world constructions*. I might, for example, believe and claim that "I can fly unaided," or "glass is an excellent conductor of electricity," or "this

rock can be used as a calculator." However, I will prove unable to act on these claims successfully. I cannot fly unaided, get an electrical current to flow through glass, or perform arithmetic operations on a rock. Thus, in the words of Ossorio, "you can't construct just any old world and get away with it" (1998, p. 73). While the real world is open to numerous apt or correct descriptions, and while there is no uniquely correct description of any of its elements, *there are incorrect descriptions*. The real world possesses a certain recalcitrance in the face of some of our descriptions of it; there are r*eality constraints*. These are brought home to us when we find ourselves, in science and in everyday life, unable to act successfully on these descriptions.

Significance a Product of Human Appraisal

This final point may be considered, not an argument, but simply a reminder. In the scientific outlook characterized at the outset, it was stated that, due to their accidental evolution and extremely recent arrival on the cosmic scene, people are unimportant and insignificant in the grand scheme of things. They are merely, as quoted previously, "accidental descendants of an ancient primate, who appeared very recently in the history of the world" (Smolin, 2006, pp. 6-7). From a person-centered perspective, however, it may be noted that, without persons, there are quite literally and obviously *no such things as importance or significance*. Both are inescapably the product of human appraisal. Nothing is important to planets and suns and atoms and dark energy. Without us (and other persons who may exist in the universe), it's a cosmos devoid of *any* importance or significance whatsoever. We are, by virtue of our higher level consciousness, the sole locus of meaning and significance in the universe. We are, paraphrasing Heidegger (1967), the only being who is there for being.

Conclusion: On Being "Center Stage"

On the present, more person-centered scientific view, then, the human behavioral world is fundamental. On this view, the currently prevalent view that "the real world is just the totality of physical states of affairs; it is independent of us and our human distinctions; and we persons are mere spectators whose job it is to understand it," encounters serious difficulties. First, the real world contains countless elements (human behavioral practices, languages, mathematical systems, currencies etc.) of extreme interest to science that are clearly the creation of persons, that include many nonphysical aspects, and in which the place humanly assigned to elements (e.g., "it's a means of exchange," a "conveyor of meaning from one person to another," etc.) is fundamental to what that something is. Second, where the realities of the natural world are concerned, it comes back to what persons, playing important "games" such as chemistry and biology and cosmology, and having the aims and concerns that go with those games, have found a point to discriminating and acting upon--always inescapably in human terms. Third, the goal that science must comprehend "the real world as it is without us" (Smolin, 2006) leaves us with absolutely nothing to say. It is a placeholder concept whose content cannot be filled

in--a hopeless candidate for what we mean by the real world. As soon as Newton or Darwin or Einstein fill in some content of the real world, as soon as they utter a single proposition about how the world is and works, they have left forever such a Kantian noumenal world.

In this more person-centered conception of science, if we may be permitted a borrowed dramaturgical metaphor, "all the world's a stage," and we persons are the dramatis personae. We are center stage. We are Hamlet and Lear and Juliet, and all the rest our props and stories. Science is one human activity. Its theories, while extremely important to many of us, are but one of many human stories, and are important because we persons have given them importance, something we did not always do. They are conceived by human minds, based on human perceptions, and articulated in humanly constructed languages and theoretical frameworks. In the end, these theories are successful when we find that there is a point to talking the way that the theory does--when it provides distinctions and ideas we can act upon successfully, and thus forwards our projects. On the person-centered view, the science of psychology assumes a certain unique potential importance: as the study of persons and their behavior (which necessarily involves their "props and stories"), it encompasses all else. As Santayana once observed, "Human life is a peculiar reality in that every other reality, effective or presumptive, must in one way or another find a place within it (quoted in Ossorio, 2006, p. 7)."

Author Notes

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References

Bergner, R. (2004). Is it all really biological? *Journal of Theoretical and Philosophical Psychology, 24,* 30-49.

Churchland, P. M., & Churchland, P.S. (1994). Intertheoretic reduction: A neuroscientist's field guide. In R. Warner & T. Szubka (Eds.), *The mind-body problem*. Oxford: Blackwell.

Feynman, R. (1996). *Six easy pieces: Essentials of physics explained by its most brilliant teacher*. New York: Basic Books.

Flew, A., & Priest, S. (2002). *A dictionary of philosophy*. London: Pan Macmillan.

Gould, S. J. (1992). Uniformity and catastrophe. In S. J. Gould (Ed.), *Ever since Darwin* (pp. 147-170). New York: Norton.

Heidegger, M. (1967). *Being and time.* (trans. J. Macquarry & E. Robison). Oxford, UK: Blackwell.

Kripke, S. (1982). *Wittgenstein on rules and private language*. Cambridge, MA: Harvard University Press.

Levine, J. (1983). Materialism and qualia: The explanatory gap. *Pacific Philosophical Quarterly, 64*; 354-361.

McGinn, C. (2004) *Consciousness and its objects.* Oxford, UK: Oxford University Press.

Ossorio, P. G. (1981). *Ex post facto: The source of intractable origin problems and their resolution* (LRI Report No. 28a). Boulder, CO: Linguistic Research Institute.

Ossorio, P. G. (1990). *The human condition: Some formal aspects*. LRI Report No. 47a. Boulder, CO: Linguistic Research Institute.

Ossorio, P. G. (1998). *Place. The collected works of Peter G. Ossorio, Vol. III*. Ann Arbor, MI. Descriptive Psychology Press.

Ossorio, P.G. (2006). *The behavior of persons: The collected works of Peter G. Ossorio, Vol. V*. Ann Arbor: MI: Descriptive Psychology Press.

Pullman, B. (1998). *The atom in the history of human thought.* New York: Oxford University Press.

Putman, A. (2013). At a glance and out of nowhere. In R. Bergner, K. Davis, F. Lubuguin & W. Schwartz (Eds.), *Advances in Descriptive Psychology* (Vol. 10, pp. 19-36). Ann Arbor, MI: Descriptive Psychology Press.

Ricardo, A., & Szostak, J. (2009). The origin of life on earth: Fresh clues hint at how the first living organism arose from inanimate matter. *Scientific American, 247*, URL =<http://www.scientificamerican.com/article.cfm?id=origin-of-life-on-earth>

Roberts, M. (2010). An indeterminate and expansive world. In K. Davis, F. Lubuguin, & W. Schwartz, (Eds.), *Advances in Descriptive Psychology* (Vol 9, pp. 231-256). Ann Arbor, MI: Descriptive Psychology Press.

Ryle, G. (1949). *The concept of mind.* Chicago: University of Chicago Press.

Smart, J. J. C. (1978). The content of physicalism. *Philosophical Quarterly, 28,*239-241.

Stoljar, D. (2009). Physicalism. In E. Zalta (ed.), *The Stanford Encyclopedia of Philosophy.* URL =<http://plato.stanford.edu/entries/physicalism/>.

Thomasson, A. (2010). Categories. In E. Zalta (ed.), *The Stanford Encyclopedia of Philosophy.* URL = <http://plato.stanford.edu/archives/fall2010/entries/categories/>.

Wittgenstein, L. (1922). *Tractatus Logico-Philosophicus.* (trans. C.K. Ogden & F.P. Ramsey). London: Routledge.