In this article Burgos (2015) draws a distinction between mentalism and dualism, and criticizes radical behaviorism (RB) for its conflation of the two. He points out that a theory of behavior may be mentalistic in the sense that it employs mental terms, yet not dualistic in the sense that it does not postulate the existence of two separate substances—mind and matter. In other words, you can be a neural identity theorist (a kind of mentalist), believing that pain for instance is identical with the firing of a particular nerve in the brain, but not a dualist. He argues that radical behaviorists in their criticism of cognitive psychology conflate dualism and mentalism, and are thus logically incorrect. Burgos’s article is long and complex. Here I will focus only on two places in the article—at the beginning (pp. 2-3) where Burgos presents his understanding of radical behaviorism and identifies me as a radical behaviorist (or radical behaviorist sympathizer) on the basis of a quotation from Baum (2005), and at the end (pp. 30-32) where he (approvingly) cites my behavioral identity theory (Rachlin, 2014) as an exception to the general anti-mentalism of radical behavioristic theories.

But first let me briefly try to summarize my viewpoint on the mind, which I (but not Burgos) call “teleological behaviorism” (TB). TB is, as Burgos says, a behavioral identity theory. That is, it identifies the mind not with internal events at all but with overt patterns of behavior observable in principle by other people. Behavioral patterns are said by TB to be the causes of particular acts—but they are final causes, not efficient causes. TB says, for example, that the final cause of a pigeon’s keypeck is not the particular reinforcer that may be contiguous with the peck but the schedule of reinforcement—the abstract relationship, spread out over time, between pecking and reinforcement. Of course the peck has efficient as well as final causes; the efficient causes lie in the pigeon’s nervous system and muscles; they answer the question: How does the pigeon peck the key? Final causes lie in the contingencies (the schedule) spread out in time both before and after the peck; they answer the question: Why does the pigeon peck the key? I want to emphasize
that according to TB particular reinforcers are not causes of particular pecks; it is the temporally extended contingency between pecking and reinforcement (the schedule) that is the cause of particular pecks.\(^1\)

Q: Why are you hammering that nail? A: To attach this board to this beam. Q: Why are you attaching the board to the beam? A: I am building a ceiling. Q: Why are you building a ceiling? A: I am building a house, etc. Whereas a series of efficient causes comprises a chain, each effect following each cause like billiard balls, a series of final causes comprises a set of overlapping behavioral patterns, each effect fitting into each cause like a set of Russian dolls. According to TB, therefore, the mind (in the form of an abstract pattern of overt acts) may be the cause of a particular overt act. Patterns of overt acts such as wishes, hopes, intentions, perceptions, imaginations, etc. can thus cause particular acts. Let me illustrate this approach to the mind with two scenarios.

Q. What is the difference between two people (say John and Marcia), one of them (Marcia) stone deaf, both sitting stock still while a Mozart quartet is playing? A. John is hearing (i.e., perceiving) the music whereas Marcia is not hearing it. Q. What does it mean to hear? A. To discriminate by overt acts, over a period of time, between sounds and silence. That is, a non-zero correlation exists between John’s behavior and sounds (unsigned through other senses) whereas there is no correlation (a zero correlation) between Marcia’s behavior and such sounds. Their identical behavior during the Mozart quartet is merely one congruent point in two different correlations.

Two people (say Jack and Jill) in a room are asked to imagine a lion. Jack closes his eyes, puts his palm to his forehead and says, “I see it. It has a head and a mane and a tail. It’s walking back and forth,” etc. Jill runs screaming from the room. Q. Which is truly imagining a lion? A. Jill is truly imagining a lion because she is behaving in the absence of a particular state of affairs as she would in its presence (TB’s definition of imagination). By this definition Jack is imagining not a lion but a movie of a lion.

It is important to note that final causes are not necessarily any less scientific, less accurate, or even less precise than efficient causes. In physics, Maxwell’s equations (and all of field theory) are final causes. According to Max Planck, a founder of quantum theory: “The cause efficiens, which operates from the present into the future and makes future situations appear as determined by earlier ones, is

\(^1\) Another understanding of “final cause” (a narrow view) would say that an individual outcome may be the final cause of the individual response on which it is contingent. It may say, “Eating the food causes the peck.” TB, on the other hand, says, “The contingency between eating the food and pecking causes the peck.” I believe the latter (wider) view of “final cause” to be more useful in psychology than the former.
joined by the *cause finalis* for which, inversely, the future—namely a definite goal—serves as the premise from which there can be deduced the development of the processes which lead to this goal.” (Yourgrau & Mandelstam, 1968, p. 165). Final causes are also fundamental in thermodynamics and in economics. The discount functions (delay, probability, and social), prevalent in modern behavioral psychology and behavioral economics are also final causes—unless one (erroneously) reifies them as neural states inside the head, consulted by a homunculus when a decision needs to be made. Final causes are particularly suited to psychology (as Aristotle realized). Self-control and social cooperation may better be seen as conflicts between abstract behavioral patterns (healthy or moral patterns) and particular acts (impulsive or selfish acts) rather than as conflicts between inner forces such as “willpower” and outer temptations. TB and its implications for philosophy of mind as well as psychological research are the main topics of two books: Rachlin (1994, 2014).

Teleological behaviorism is an identity theory because it says that mental states are *identical* with certain overt behavioral patterns. These patterns are final causes of the particular acts that comprise them. TB is thus both mentalistic and monistic (there is only one psychological reality—behavior. Mind is a pattern of behavior not a separate substance). Given that final causes are essential to the relation between mental and non-mental behavior they are essential to TB. In the present article Burgos talks extensively about causes, understood as efficient causes, but does not mention final causes; this is a crucial lack. From the viewpoint of teleological behaviorism, ignoring final causes in discussing the mind, as Burgos does, is equivalent to ignoring efficient causes in discussing physics.

**Radical behaviorism (RB)**

Burgos quotes Baum (2005) on p. 3 of the present article as follows: “Rachlin…aligns himself with radical behaviorism on two grounds: antidualism and pragmatism…..” As indicated above, TB is indeed antidualistic; it is also pragmatic; that is, it is dependent on its actual and potential usefulness. I believe that the areas of usefulness of TB are in developing practical methods of self-control and social cooperation. [See Rachlin (2016) for an example of a self-control method based on TB.] If these are not developed, or if they fail, that will constitute evidence against TB. But a common antidualism and pragmatism does not imply that TB is a form of RB. TB differs from RB in two essential ways: First, according to TB, mental terms are essential to a scientific psychology. Mental states (abstract patterns of behavior) are no less real than particular acts, just as a melody is no less real than a musical note, or a Picasso painting is no less real than the daub of yellow paint in its upper-left corner. Thus TB is resolutely mentalistic and in that respect differs from RB, which is essentially anti-mentalistic. But Burgos is absolutely right in his main point—that the use of mental terms in psychology does not imply dualism.
A second way in which TB differs from RB is that for TB there are no inner (psychological) causes. It is not that the organism is in any way empty, but that the molecular substrate of behavior (its set of inner efficient causes) is held by TB to be the domain of neuroscience and not of psychology. Just as economics does not rely on atomic physics to solve its problems, so psychology should not rely on neuroscience, but should stand on its own as a separate discipline. When some aspect of voluntary behavior is unexplained by current observation, a psychologist should look for its explanation, not more deeply in the nervous system but more broadly in time—in the reinforcement history of the individual or, if still not found, in the evolutionary history of the species. This view was eloquently propounded by Skinner (1938) but unfortunately later modified in an effort to account for mental processes. For example, Skinner (1953, p. 273) described the act of mental arithmetic as a covert set of acts “...similar in form to the overt manipulation of pencil and paper.” The problem with that conception is that what one does with a pencil is to write numbers down and then read them. Skinner does not say how numbers are written down in the nervous system or in our muscles nor, more crucially, how they are read, and who reads them. As Aristotle pointed out, there are no sense organs in the brain, thus nothing there with which to read numbers—unless one assumes some sort of neural homunculus—and that, it should be obvious, leads to an infinite regression and eventually to a dualistic mentalism.

**Zombies**

Burgos (p. 9) presents and takes seriously (though ultimately rejects) an argument put forth by many modern philosophers of mind, for a kind of dualism (a version of Spinoza’s double aspect theory): Zombies

…are creatures physically exactly like us, down to the last particle. They thus have bodies and brains exactly like ours, anatomically and physiologically. They also behave exactly like we do, exhibiting pain and pleasure behavior, and reporting experiences of colors, shapes, smells, tastes, and everything we nonzombies report to experience. In short, zombies are physical twins of us nonzombies. Zombies differ only in lacking conscious experiences: They feel no pain, no pleasure, have no sensory or perceptual experiences, even if their brains and behaviors exhibit everything we non-zombies do when we experience all of this. If zombies are logically possible, the argument goes, conscious experience cannot be physical.

But, to a teleological behaviorist, zombies are not logically possible. To say that zombies behave in every way (from birth to death) like a normal person with a mind, including crying in agony when tortured, and yet that they have no more conscious experience than a toaster, is like saying A and not-A. If an organism behaves consistently like a person who can feel pain, she is, by definition, in pain when she so behaves. The position of these modern philosophers is not only logically false, but it is morally repugnant. How do I know that at this very
moment I am not the only non-zombie in the universe? How do I know that my wife is not a zombie? By definition, I don’t. Any person I meet or any group of people may just as well be zombies. This zombie argument (however unintentionally) can provide a rationale for extreme forms of racism, and a handy excuse for genocide.

Identity Theory

Let us define identity theory in general as the assertion that mental events in organisms are identical to a certain kind of physical event in or by the organism, to be specified by the particular identity theory, and let us consider some of them:

a. Atoms

According to Epicurus all physical and mental actions are identical to the movement of atoms. He “maintains that soul atoms are particularly fine and are distributed throughout the body…. The human mind is…that part of the soul that is located in our chest…. ” (Konstan, 2014). Note that the mind is located by Epicurus [as well as Aristotle and other Greek philosophers] in the chest. So it is not at all self-evident, through introspection, that the mind is in the brain or is the brain itself. This is an idea that we have been taught. It is possible to unlearn it.

b. Brain activity

Burgos (p. 12) presents examples from brain identity theory. Such a theory might say that “pain is C-fiber firing, visual consciousness is the functioning of the MT/V5 complex, and so on.” Brain identity theory is another one of those notions of modern philosophies of mind that is hard to take seriously. If pain were really identical to C-fiber firing then removing a set of C-fibers and stimulating them on a lab bench would cause them pain. But that is patently ridiculous.

Let us grant (contrary to fact) that C-fiber stimulation is both necessary and sufficient to cause pain. Now the person’s C-fibers are removed but their output is wirelessly connected to the same set of nerves as normally in situ. Now when the external C-fibers are stimulated (like pressing the buttons on a TV remote) the person writhes in horrible agony. Where is the pain? Is it in the person or in his C-fibers sitting on the table over there? The answer is obvious to me. A stubborn neural identity theorist may say that the pain itself is in the C-fibers but the person is feeling the pain. That’s like saying the pain is in the dagger and the stabbed person is just feeling the pain. What part of the C-fiber-less brain is now feeling the pain? Maybe the other nerves fed by the C-fibers. Let’s isolate those nerves along with the C-fibers, and then the next and the next group of nerves in the chain of stimulation, until we have the whole brain out on the table, still in wireless communication with the rest of the nervous system, and the person still writhing in agony. Where is the pain itself? Again the answer is obvious. Just as there is a difference between the engine of a car and its acceleration, there is a difference
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between the internal mechanism mediating pain and the pain itself. The former is
the province of neuroscience; the latter—the whole man’s overt behavior—is the
province of psychology—including sensation, perception, cognition, etc.

c. A pattern of brain activity

The firing of a nerve is already a complex pattern of physical activity, but
there are identity theorists who reject individual neural firings as too simple and
accept as mental events only abstract patterns of neural activity. This is the
follows: “…neural activity and conscious experience are different aspects or levels
of the same thing, in the same way that, say, the molecular structure of a piston and
the solidity of a piston are different aspects, or levels of description, of a piston.”
Burgos is correct that this view in itself (like other forms of identity theory
including behavioral identity theory) is mentalistic but not dualistic. In Rachlin
(2014, p. 175) I accused Searle of mentalism not because of his identity theory per
se but because like Descartes he locates the mind in the brain rather than in overt
behavior. As we have seen above, there is no a priori reason or why the mind
should be in any particular place within the body. My accusation was by
association: Descartes was indeed a dualist; by assuming that the mind must be in
the brain, Searle is more influenced by Descartes than he may realize; therefore
Searle is more dualistic than he may realize. This argument is fallacious, and
Burgos is correct to point it out. My only excuse is that Searle (1980, p. 454) also
said: “I cannot imagine anybody actually believing these [i.e., my own] views….what am I to make of it when Rachlin says ‘the pattern of behavior is the
mental state?’…I therefore conclude that Rachlin’s form of behaviorism is not
generally true.” Of course Searle’s reliance on his own imagination (or lack of it)
as evidence for what is and is not permissible in an identity theory doesn’t make
him a dualist either. But I think it does explain my less than temperate response.

d. Covert muscular movement.

The view that thinking is covert muscular movement can be traced to Watson.
It is the view of Radical Behaviorism. For some radical behaviorists, the whole 3-
part contingency (discriminative stimulus, response, and reinforcer) may occur
within the body in covert form. Pragmatically speaking this view (combined with
the rejection of introspection as a window into the mind) loses the two great
advantages of behaviorism—the observability of its subject matter and the contact
of its subject matter with the environment. The only “advantage” of the RB view
of the mind is that it preserves the contiguity of response and reinforcer. So if we
observe some instrumental response but do not observe its reinforcer we can
imagine an internal reinforcer or a self-reinforcer. To quote myself (Rachlin, 2014,
pp. 177-178):
If my wife asks me, “What did you think of those people we met for dinner last night?” and I say, “I think they were a pair of creeps,” I must [according to RB] actually be referring not to the people themselves, nor to their actual behavior, nor to my interaction with them, but to some sentences I was saying to myself or some image of them undetectable (to my wife) that I created in my muscles between her question and my answer….You can’t have it both ways. Covert movements cannot just “give rise” to consciousness; if they are to explain consciousness, they must be consciousness itself. And, if covert behavior is consciousness itself, consciousness cannot also be the perception of covert behavior. But let us suppose for a moment that consciousness is perception of internal speech by our proprioceptive nervous system. What exactly would that perception be? Is it identical to the entirely physical activity in our proprioceptive nerves? Or, do we need a still more covert activity (the perception of the perception) to explain the perception? And so, on until we get to the center of the brain, where the only remaining possibility is a non-physical soul, and we are back to Descartes’ model. Moreover, what a waste it seems for such an important functional property as consciousness to have evolved to rely on the relatively impoverished proprioceptive system when our exteroceptive system is so exquisitely accurate. It is our past behavior (our reinforcement history) that best predicts our future behavior. If, as I claim, the purpose of answering [my wife’s] question is to predict [my] overt behavior, the part of [my] behavior that will affect [her], why would [my] answer refer to [my] unreliable inner speech? There is no denying that we talk and picture things to ourselves. I believe that these covert acts, when they occur, are part of [a] mechanism by which our overt behavior is sometimes organized. But I do not believe that they can be usefully identified as thinking, perceiving, sensing, imagining, and so on. There is insufficient room between our central and peripheral nervous systems, on the one hand, and our overt behavior, on the other, for a massive covert behavioral system, a system that, if the covert-behavior view of consciousness is right, would have to be the referent for our entire mental vocabulary.

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Author note: Howard Rachlin is a Distinguished Professor Emeritus and Research Professor at Stony Brook University. Correspondence concerning this commentary should be addressed to Howard Rachlin, Psychology Department, Stony Brook University, Stony Brook, NY 11794-2500. E-mail: howard.rachlin@stonybrook.edu. Preparation of these comments was supported by Grant #1630036 from The National Science Foundation.