Inserting the Presence of Mind into a Philosophy of Presence: A Response to Sheridan and Mantovani and Riva

Abstract

This article considers the following question: What is the best foundation for a theory of presence? After establishing criteria for a philosophy of presence, the article applies these criteria to a set of articles on the philosophy of presence by Sheridan (1999), Mantovani and Riva (1999), and others. Although we share common goals, it is suggested that these articles advance a philosophy of presence that may be ill suited to support theory and research on presence.

Several arguments are advanced to support this judgment. J. J. Gibson’s work may be misinterpreted to accommodate relativistic models of physical reality. By directly referencing Gibson’s writings, especially his concepts of ecological invariants, the article details how Gibson’s work could not be used to support cultural, relativistic, or “engineering” arguments about “different realities,” perceptual or otherwise, without significant modification of Gibson’s work and violation of his apparent intent.

Another source of problems for a philosophy of presence is traced. There appears to be a terminological and theoretical confusion about the difference between epistemology and ontology. This article proposes that ontological debates about divine presence represented by these authors may be inappropriate or sterile for three reasons: (1) although perceptual presence (that is, phenomenal states of distal attribution) and “divine presence” (that is, immanence of God) share the term presence, they are fundamentally different philosophical problems; (2) the concept of divine presence and Sheridan’s associated “estimation paradigm” is framed at such a level of generality to be incapable of supporting specific, actionable, and researchable theories about perceptual presence; and (3) any theory about “virtual reality,” a technology with a misleading oxymoronic term, provides no more ontological insight into reality than does theory and research on any other communication medium such as photography, film, or sound recording.

Finally, the article proposes a remedy. The philosophy of presence might be most fruitfully approached via the philosophy of mind. Specifically, it is suggested that presence opens the door to related problems in the science of human consciousness, notably the mind-body problem. The article also suggests that the problem of presence bridges the philosophy of mind and the philosophy of technology on the issue of mediated embodiment, that is, the fuzzy boundary between the body and technological extensions of the body.

I Introduction

What is the best foundation for a theory of presence? A key contributor to theories of presence, Sheridan appreciates that the question has implications for engineering and the science of virtual environments: “philosophical perspective affects what we do in our scientific and engineering pursuits and how we interpret and describe what we find” (Sheridan, 1999, p. 551). Mantovani and Riva (2001) echo this sentiment: “the ways in which the problem space is constructed exert a strong influence on the solutions that are possible” (Mantovani and Riva, 2001, p. 523).

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influence on the ways in which the problem is finally solved” (p. 537). Like Mantovani and Riva, we see presence as a bridge across disciplines, an intersection where we regularly find psychologists, engineers, designers, communication researchers, and philosophers. Like a solid bridge, a robust theory of presence is wisely built on a dependable foundation, fully grounded to a rocky river bank and not adrift in the unsteady currents of the river. Most would like a bridge that leads to somewhere we want to go, not a meandering span, half-suspended above the river, taking us to nowhere.

This article began as a blind review of the article by Mantovani and Riva (2001). Using the guidance of the philosophy of mind and technology and my practical orientation towards experimental research on presence, I briefly explore the foundation suggested by Sheridan (1999, p. 551), Mantovani & Riva (2001, p. 539), and others. Although I sympathize with their goals and deeply respect their work and contribution, I am concerned that Sheridan, Mantovani, and Riva locate the philosophy of presence within an inappropriate and sterile theoretical framework. This framework may miscast the fundamental nature of the problem of presence, inadvertently distort the theory of J. J. Gibson, and push the theory away from fundamental issues in human-computer interaction towards vague, underspecified, and unexaminable claims on the scope of the concept. Seeing obstacles in the paths that they suggest, I end by proposing a more promising path to a philosophical theory of presence, one that is anchored in the core philosophical problem of mind and technology.

2 On Rescuing Gibson from Cultural and Engineering Relativism

The work of the late perceptual psychologist, J. J. Gibson (1966, 1979) has become a ritualistic citation in virtual environment research. Many are eager to dress Gibson in their team shirt and declare him “one of ours.” Gibson may find himself conscripted onto teams with theoretical positions that might make him eager to squirm out of the team shirt that others have so quickly draped around his shoulders. Both Mantovani and Riva and Sheridan seem to claim that Gibson is “on their side.”

Sheridan builds on earlier work (Zahornik & Jenison, 1998) to offer a position he calls a “Heidegger-Gibson perspective.” According “to Heidegger and Gibson, perception and action have the same dimensions, with the perception vector incorporating action and the action vector incorporating perceptual constraints” (Sheridan, 1999, p. 552). Stated this way, Gibson might be comfortable. Sheridan seems to suggest that he shares this interpretation of the Heidegger-Gibson perspective, and proposes an “estimation paradigm” to concretize this philosophical perspective. It is in the estimation paradigm and, especially, Mantovani and Riva’s expansion of it, that Gibson might find the fit far too procrustean.

In the estimation paradigm that Sheridan proposes, we see two conflicting tendencies. Mantovani and Riva scrutinize the first tendency. On the one hand, Sheridan’s “estimation paradigm” involves a “‘Real’ reality (that) can never be known, . . . because of sensory and action constraints, only estimated.” Sheridan appears to equate this “real reality” with “divine presence,” and the concept is used, as we will see below, as a kind of totalizing concept for all being. According to this argument, nature is sometimes experienced as divine presence. This divine presence is fundamentally unknown and unknowable. We assume that Sheridan feels it is better approximated over time, although he makes no explicit historical realist argument.

Sheridan attempts to reconcile this more Cartesian view with what his view of the ecological Heideggerian-Gibson perspective. The reconciliation oscillates between a tendency to lapse back into a kind of skepticism that Descartes might find comfortable or towards an interpretation of Gibson that slides towards a kind of ontological relativism.

Mantovani and Riva note the Cartesian undertones evident in statements such as “a Gibsonian might claim that the flow field is not in the eye or in the head or in the environment, but in the interaction. I would claim that it is in the brain synapses, a refined model of what it is like to move through an environment of objects” (Sheridan, 1999, p. 557). Sheridan provides a materialist form of Descartes’ ego by replacing it with “brain
synapses.” But this kind of materialist, explanatory bridge was already present in Descartes, who speculated that the pineal gland was the gateway between mind and body. But, like Descartes, Sheridan’s neurological reference does not allow him to completely escape the charge that his estimation paradigm is very Cartesian. Reality, “out there” is unknowable. A thicket of sensors, effectors, and estimators may allow us to construct a skeptical, uncertain model of the world. A form of materialism reenters Sheridan’s model in a kind of implicit historical realism, where “estimation” is improved via sensors, effectors, and estimators over time.

Through Sheridan’s estimation paradigm, “what one converges (upon) is a sufficiently stable environment” (Sheridan, 1999, p. 557). But in this “sufficiently stable environment” we embrace not so much an objective world but “a rational discussion of God” in which the “real reality” is a best practical refinement of the virtual reality” (p. 556).

In this hybrid virtual-real reality, Sheridan takes what he sees as the “active” component of Gibson, “the primacy of action” to argue for a kind of constructed physical reality. While using a neo-Gibsonian argument for mutual determination between mind and environment, Sheridan inserts an engineering species of relativism. In Sheridan’s argument, there is no fixed model of physical reality, but only a relative set of possible models derived from initial conditions and “assumptions,” as in this passage:

Whether the perception is that of reality or as metaphor obviously depends on what model one starts with, what actions one takes as a result of what one observes (the control law), and what assumptions one makes regarding the sensory and action filters. What is virtual and what is real, what is subjective and what is objective, are a matter of one’s criterion for modeling and believing the model (Sheridan, 1999, p. 258).

Claims to a “real reality” are jettisoned for an engineered, relativistic ‘practical refinement of virtual reality.’

A statement regarding “estimation” of data flows from sensors and effectors that might be prudent in the context of a specific telepresence design or study becomes an argument for a kind of epistemological relativism when written large and inscribed as a philosophy of science. Sheridan begins his article being “troubled by a concern over the growth of alternative ontologies” that are at “odds with the conventional Cartesian perspectives that has formed the basis of science and engineering for so long” (Sheridan, 1999, p. 551). Sheridan’s solution is to blur the distinction and conclude that “essential differences between the ontological assertions of Descartes and those of Heidegger and Gibson appear exaggerated” (p. 558). But this is accomplished with a relativist argument that potentially undermines and defeats his initial motivation. Although this relativist argument is wrapped in engineering terms, it remains a species of relativism.

Mantovani and Riva also give their argument a relativistic cast while simultaneously embracing Gibson, albeit a culturally mediated version of Gibson. They concede to Sheridan that “the view that reality cannot be known is destructive of scientific work” (Mantovani & Riva, 2001). But, like Sheridan, they develop a relativistic argument for a philosophy of presence. Like Sheridan, it begins with an “interactionist” perspective that contains a neo-Gibsonian flavor: “The space in which reality and mind meet is not ‘outside’ nor ‘inside’ the head: it is a relational space, a place held in common by both environment and mind” (Mantovani & Riva, 2001, p. 538). This is a position they elaborated in an earlier paper.

This leads us to our first challenge to this approach to a philosophy of presence. A close and careful reading of Gibson makes it clear that Gibson would not be comfortable with the version of his work offered by Sheridan or the one advocated by Mantovani and Riva. Both expand Gibson’s view of the interaction of the human perceptual-motor system with the environment and use it as a springboard to suggest a relativistic view of human perception and, to a lesser degree, of the physical world. For Sheridan, this interaction provides a means to offer an estimation paradigm model aimed at probing various changing estimates of “divine presence.” In the Mantovani and Riva version of Sheridan’s model, a multitude of paths to reality emerge. Gibson’s ideas find
themselves embedded in a “bioculturally mediated” form of relativism in which “culture shapes individual minds and organizes their ways of knowing and acting in their social and physical environments.”

Both sets of authors attempt to create this more relativistic form of Gibson, but it is achieved only by ignoring a foundational concept at the core of Gibson’s epistemology: ecological invariants. The physically anchored invariants are the flip side of more psychologically oriented affordances. The two are linked.

Gibson is no relativist. In contrast to Sheridan, Gibson’s perceptual-motor system acts upon the world to extract invariant properties of the physical environment. For Gibson, these fundamental properties of the physical world are not “estimated” or “constructed” in any relativistic meaning of the term. In contrast to Mantovani’s and Riva’s biocultural mediation, Gibson sees the extraction of invariant properties as more primordial than the influence of culture, if not absolutely independent of culture. In fact, Gibson explicitly disparages theories of cultural relativism, and is suspicious of excessive claims in the name of cultural relativism, suggested in the closing pages of Mantovani and Riva’s argument with Sheridan. Consider this passage:

The useful senses have been contrasted in this book with what might be called the useless senses. The fact is that, although different men do not all use their senses in the same way, they can [his emphasis] all use their senses in the same way. The basis for agreement among men exists in available stimulus information. Men often disagree but they are fated to do so by their language or their culture. Disagreement is not caused by inherent differences in their basis for interpreting sensory experience . . . Let us acknowledge that people—other people, of course—often perceive the world like silly sheep. But it is wrong to make a philosophy of this rather snobbish observation. The orthodox theories of perception have encouraged this fallacy and one purpose of this book has been to undermine them. [Gibson, 1966, p. 321].

Gibson makes a number of relevant points in his passage. One is that the perceptual system’s detection of invariants, according to him, is universal because “the basis for agreement among men exists in available stimulus information.” Gibson’s universality comes from the detection of environmental invariants, a “resonance” that has emerged during the evolution between perceptual affordances and physically based invariant properties of the world. So this suggests he is a realist. Secondly, Gibson states that this sensory capacity precedes—and is more primordial than—culture and the influence of enculturation systems: “they are not fated to do so by their language or their culture.” Humans “can all use their senses in the same way.” Authentic and stable perception is recoverable in the face of cultural variation. Here he implicitly responds to arguments that language, a medium, shapes reality. For Gibson, language and, by extension, culture do not overturn fundamental perception of the physical world, although it may color the world by adding layers of meaning to perceptual objects. The discrimination of invariants is primary and retrievable, as in this point: “Discrimination has to precede association for language to be of any use. The ability to name and to predicate fixes the gains of perceiving but it does not explain perceiving. It fosters the education of attention to the facts of the world but cannot substitute for it” (Gibson, 1966, p. 321). Language can guide attention, but it cannot overturn perception.

For Gibson, the perceived world is stable and objective, even as the body uncovers invariants through interaction. The perceptual system has evolved over millennia with the environment to reliably detect and extract these properties for survival advantage. This notion is at the very core of Gibson’s concept of affordances. Affordances are properties that are stable, knowable, and useful in the world. The use of the affordances in the stable, accessible, and predictable world is what bestows evolutionary advantage to a species. Species have evolved over time to conform to and/or maximize the use of invariants in the world.

So, we must conclude that Gibson is no relativist. He is almost a “kick the rock” realist, but his position may be consistent with notions of structural coupling advanced by Materna (Materna, 2001; Winograd & Flores, 1987). If Gibson’s epistemology can best be described as a kind of interactive realism, his ontology appears to be a form of evolutionary materialism. It would
be hard to reconcile this view with Sheridan’s estimation paradigm or Mantovani’s and Riva’s biocultural relativism and see how their philosophical perspectives could be fairly labeled neo-Gibsonian.

3 Avoiding a Dead-End Path: Do We Want Ontology or an Epistemology of Presence?

Let me use a metaphor to illustrate what are second and third problems at the very heart of the debates between Sheridan and Mantovani and Riva. Three people are arguing as they stroll down a path full of twisted brushwood. Perhaps, they may not have traveled this path often. Somewhere, the wrong signs have been put up on the path. As the three walk in animated discussion, they may not notice that the path leads to a dark dead end, a place where little light will be shed on the topic of their discussion, an empirically based theory of presence.

The second issue I will raise concerns a deep misunderstanding about whether presence should be framed as an epistemological or ontological problem (that is, the signs on the path are wrong). The third problem builds on the argument in the second to show that the problem of “divine presence” as framed and debated by Sheridan and Mantovani and Riva is not about what is commonly known as presence, what I will call “perceptual presence” to distinguish it from Sheridan’s “divine presence,” (that is, the mislabeled sign leads to a dead end).

Sheridan’s title states, and Mantovani and Riva agree, that the article is about an “ontology of presence.” Sheridan is concerned with the possible proliferation of what he calls “different ontologies.” However, a reading of the article indicates that most of the article deals not that much with ontology, but with issues that might be better labeled as epistemology and the philosophy of science. If we examine the increasingly lengthy literature on presence (Barfield, Zeltzer, Sheridan, & Slater, 1995; Draper & Blair, 1996; Durlach & Slater, 2000; Ellis, 1996; Heeter, 1992; Held & Durlach, 1992; Lombard & Ditton, 1997; Loomis, 1992; Sheridan, 1992; Slater & Usoh, 1993; Slater, Steed, McCarthy, & Maringelli, 1998), it would be fair to state that the problem of presence is focused on the illusion of being here or there and less about being as such, that is, of the basic characteristics of all reality. To put it another way, the fundamental issue at the root of the problem of presence is the perception of reality, usually under the domain of epistemology, not reality itself, usually discussed under the banner of ontology.¹

So, for most of their papers Sheridan and Mantovani and Riva are really debating epistemology. They debate about Cartesian dualism and skepticism about the “reliability of knowledge of reality,” a classic reference in the history of epistemology. (See the section on the history of epistemology in Edwards (1967).) Also, their debates about the validity claims of the hard and soft sciences and about how the senses are “fooled” when experiencing presence are also classic epistemology. For example, consider both the discussions of Sheridan’s “estimation paradigm” and his discussion of the limits of human perception with a standard definition of epistemology: “the study of the origin, nature, and limits of human knowledge” (Kemerling, 2001), the “general reliability of claims to knowledge” (Edwards, 1967), or the “nature of knowledge and its justification; specifically, the study of (a) the defining features, (b) the substantive conditions, and (c) the limits of knowledge and justification” (Audi, 1995, p. 233).”

If the problem were just terminological confusion, we would easily ignore it. Although, if our reading of this is correct, this is no small error, as the signs on this path are wrong. It would be like writing a paper on chip design and calling it fluid mechanics. But there is more going on here than terminological confusion. We fear that this terminology reflects a deeper misunderstanding about how the problem of presence is to be framed.

¹ Ontology is a branch of metaphysics. Ontology does not typically focus on perception, but on the way things are in themselves. Consider standard definitions of ontology from the dictionaries of philosophy:

Branch of metaphysics concerned with identifying, in the most general terms, the kinds of things that actually exist. Thus, the “ontological commitments” of a philosophical position include both its explicit assertions and its implicit presuppositions about the existence of entities, substances, or beings of particular kinds.” (Kemerling, 2001, p. 551).
4 Is the Problem of “Divine Presence” Really Part of the Problem of “Perceptual Presence”?

This terminological problem leads us to the third fundamental problem with the debate between these authors. The concept of “divine presence” is not equivalent to, related to, or a subset of the concept of presence as used by most presence researchers, including the original formulation by Sheridan (Sheridan, 1992). There are really two concepts being discussed in the articles by Sheridan and Mantovani and Riva. Although they share the word presence, the ontological problem of what Sheridan calls “divine presence” is actually a very different problem from the more commonly understood problem that I will call “perceptual presence” (that is, telepresence).

By “divine presence,” we understand Sheridan to mean the experience of immanence of some divine presence in all environments. The problem at the core of divine presence is the way this divine entity is known by experience or belief, and what form it takes. If you were to conduct a literature review of the word presence, you would uncover numerous articles about a concept similar to Sheridan’s divine presence (for example, Brother Lawrence & Chadwick, 2000). These articles deal with the immanence of some divine intelligence in the world and human experience of this divine intelligence. (For a quick look at the many uses of presence in the metaphysical tradition, look up the term presence in this dictionary of esoteric philosophy, available at www.netnews.org/bkindex/c1045/1256.html.) Although the contemplation of the divine is legitimate on its own, it is a very different philosophical problem than that of feeling present in a remote space through a medium.

By “perceptual presence,” we mean the phenomenal state by which an individual feels located and active in an environment, and, especially in the case of telepresence, the class of experiences where the environment is mediated by a technology. The central problem as understood by most readers of this journal is the role of technological mediation in simulating the phenomenal experience of physical environments. These simulated environments may or may not have many of the perceptual properties of our interaction with unmediated physical environments. As I will elaborate below, the philosophical problem of perceptual presence is best situated in the philosophy of mind, or epistemology, dealing with states of how we know about the world and how we know something about the world to be true or valid.

A careful reading of Sheridan shows that the shift from a discussion of perceptual presence to a discussion of divine presence occurs abruptly in his article. (See p. 556.) There is little transition and bridging between the two concepts other than that they share the name presence. This transition is abrupt because Sheridan is actually talking about a totally different concept.


Now some readers might object that Sheridan’s concept of divine presence refers to our experience of “all of nature.” Surely, this must include the experience of a space through a medium. Stated this way, we would concede that a theory of “all of nature” includes a theory of telepresence. But is this meaningful? Does it really advance our understanding of perceptual presence?

This leads us to our fourth concern with the way that the concept of presence is used by Sheridan and Mantovani and Riva: the challenge on the grounds of theoretical specificity. Sheridan uses the concept of divine presence as a general totalizing entity, a kind of Cartesian unknowable “behind” all perception. To see the limitations in framing the use of divine presence as a framework for a theory of perceptual presence, let us replace the phrase divine presence with the word everything. God, as presented in these articles, is for all of reality—in a word, everything. Again, a careful reading of Sheridan’s “estimation paradigm” for a theoretical discussion of divine presence (everything), shows that there the idea is stated so broadly as to be summarizable by the following proposition: estimations of divine presence (everything) become more accurate over time as we interact with divine presence (everything) and develop and adjust our model of divine presence (every-
thing). Fundamentally, the theoretical framework as debated in Sheridan and Mantovani and Riva lacks specificity to support scientific theory. The engineering origins of Sheridan’s theory, the diagram, and the formulas give the argument the feeling of concreteness. But, on careful analysis, we find that this proposal cannot be implemented in any meaningful way, and would not shed light on the concept of “perceptual presence” if implementable. A theory of divine presence (perception of immanence in all matter) is underspecified and far too broad to provide much guidance for a scientific theory of presence. In essence, an unspecific theory of everything might also be a theory of nothing.

6 Searching for Fertile Ground: Presence as a Problem in the Philosophy of Mind

Where can the problem of presence find a philosophical harbor from which it can best set sail without getting immediately lost in a fog of ontological arguments or capsized by the fickle cross-currents of relativism? During the course of this article, I suggested some basic criteria to guide a philosophy of presence: the philosophy should stimulate and frame more-specific theories of presence; it should use and guide theory in more than one field; and it should enlighten our understanding of the vessel of presence (human consciousness), and yield insight into the connection of humans to technology, and even help guide design. But the ontological arguments discussed fail to meet these criteria. They do little to shed enough light on the philosophical problems posed by presence and virtual environments. They lack specificity to focus on the problem of presence per se. This approach does not speak specifically to the technologies that seek to increase presence, and it does not address the fundamental epistemological problems of perception and consciousness raised by the technologies of presence.

So where should we go? When we adopt a philosophical framework, we are presented with a set of puzzles that frame and delimit a problem area, and a set of emergent approaches to conceptually solving the puzzles. The most appropriate box of puzzles theoretically framing a possible solution can be found in the philosophy of mind (Lycan, 1995; Rosenthal, 1991). It is here that we can more solidly conceptualize a philosophy of presence. The philosophy of mind deals explicitly with issues of relevance to presence: sensation, perception, and the content of these sensations (Dreske, 1969; Hamlyn, 1990; Peacocke, 1983). Some of these problem areas overlap appropriately with fundamental issues raised by Sheridan regarding the philosophy of science, how we know, how we might gain certain knowledge, and how we construct systems of knowing, as well as how technologies and measurement systems structure knowing (Ihde, 1991).

7 A Philosophy of Presence May be Embedded in the Mind-Body Problem

We have suggested elsewhere that the problem of presence, especially perception mediated by technology, or more generally telepresence, is most fruitfully conceptualized as a subset of the mind-body problem (Biocca, 1997). Furthermore, conceptualizing presence in this way can allow us to use presence and the virtual environments that give rise to telepresence to explore the nature of consciousness (Biocca, 1996; Lauria, 1999).

At first reflection, it might not seem immediately clear how presence is directly tied to the link between the mind and the body, but the germ of this approach can be found in the very first discussions of presence in this journal. In an interesting but difficult article that may be more often cited than read, Loomis (1992) frames the problem of presence within the philosophical problem of “distal attribution.” In perceptual psychology, the problem of distal attribution deals with the following issues: why is the proximal sensation of light on the retina, for example, experienced not as a sensation on the retinal surface, on the surface of the body, but as an object in space? The experience is attributed to the distal stimulus of the object out there and not a proximal stimulus at the surface of the body, the retina.

Determining the location of “objects out there” during the distal attribution, simultaneously locates the body “here” surrounded by these objects. When a dis-
play technology creates the energy array that forms the proximal stimulus, the objects “out there” are virtual objects. But, just as in the perception of energy arrays originating from the physical environment, extracting the invariants creates a “viewpoint” of the body—but one that is situated inside the virtual scene. In Gibsonian terms, the optical flow provided cues as to the locus of the body, your bearing and direction, for example. As suggested by some presence researchers, the more attention the user allocates to processing the virtual objects, the more the locus of the active perceiving body is located “there” in the virtual space relative to the distal objects and less “here” in the locus of the less attended physical objects (for example, Draper, Kaber, & Usher, 1998; Kim & Biocca, 1997). The physical “here” is now shifted to “there,” for example, the viewpoint of the central locus of experience among the virtual objects.

The problem of distal attribution suggests why the philosophical problem of the body is key to understanding presence: the sense of “being here” or “being there” is in part a determination of the boundary of the body, the part that is me and that which is “not me,” out there. This boundary is inherently spatial: it locates the body in a specific space in the stream of stimuli. This stream of experience includes the experience of what is determined as “me” and what is determined as “not me.” When the user reaches out to touch an object in an immersive virtual environment, the computer graphic hand is not something “out there,” but is temporally accepted as part of “me” and within the boundary of the body. This suggests that understanding the boundary of the body, and the subset of distal attribution, is part of a philosophy and theory of presence (Biocca & Nowak, 2001).

In Gibsonian terms, this process of extracting our location in a changing sensory array locates our body in the environment. It enables our body motion and reaching, and is so automatic and of such evolutionary value that it cannot be easily “reprogrammed” by consciousness. If the evolutionary timescale were thought of as the progress of a single day, the arrival of powerful simulators of the energy array would be but a millisecond of time. In the 23 hours, 59 minutes, 59 seconds, and 999 milliseconds of evolution prior to the arrival of compelling simulators, it was valuable to conclude that the energy array was tied to an object that might have immediate bearing on your continued existence—be it food or foe. For Gibson, extraction of invariants was depicted as the organism’s attempt to “hunt for” structure. Consciousness attempts to override sensation and insist that the body is not “there,” but “here” in the room with the Gibsonian “energy array” machine. But the automatic processes of distal attribution insists that the body is “there” inside an array of objects, the invariants in the stimulus array. The body is at the center of this array of sensation ready for its movement and action—to turn, run, and act upon the sources of the stimulation, the objects around it. That oscillation and conflict between the physical “here” and the virtual “there” is why a theory of telepresence—and to a lesser degree, presence—is not at its heart about the mind in any environment, but about the mind interacting with a technologically mediated environment. It is inextricably tied to the philosophy of technology.

8 The Philosophy of Presence and the Philosophy of Technology

If presence is nonawareness of mediation, then, fundamentally, what is implied by technological mediation? Mediation refers to a process by which a technology alters and mediates how the senses and motor channels engage physical environments and virtual environments. Now consider the relation of the body to the technology, their connection and separation, and the moving boundary between body and machine (Sheehan & Sosna, 1991). This is where presence, the mind-body problem within the philosophy of mind, also becomes central to a philosophy of technology (Ilde, 1990, 1991, 1993; Mitcham, 1994). The body in question at the center of a telepresence experience is a mediated body. It is and has been for decades, and possibly for centuries, a cyber body, progressively embodied in technology (Biocca, 1997; Biocca & Nowak, 2001). Technology progressively mediates sensation and action. This is where Heidegger (Heidegger, 1962) appropri-
ately enters the philosophy of presence. Presence arises in part out of the phenomenon of “ready to hand,” Heidegger’s classic example of the human using a hammer then becomes a natural, imperceptible extension of the hand. The hammer becomes part of the body of the user; the boundary extends into the hammer. Like Merleau-Ponty’s (1962) famous example of the blind man, to what degree is perception of the body moved to the end of the cane and not stopped at the hand? The sensation is not of a piece of wood moving and pressing against the flesh of a moving hand. Rather, for the blind person, it is the cane tip running against the surface of the physical environment. As Ihde (1991) puts it, “In embodiment relations the technology—instrument—is taken into perceptual and bodily experience . . . . It is still referential but being ‘read through’” (p. 75). (See also the version of this argument in Winograd & Flores (1987).)

It is in this way that Gibson reenters this debate but now on different terrain, not the terrain of the philosophy of the mind but on the turf of a philosophy of technology. Gibson’s insights are indebted to technological mediation. The germ of Gibson’s theory was born embedded not in direct perception, but in mediated perception. It is a theory made possible by the mediated technology of film. It was Gibson who started studying the optical flow fields in film to understand what pilots experienced as they tried to land planes on the decks of ships. In all his works, Gibson always referred back to the perception of photographs and film, because these were the source of his insight: they made the optic array something that could be studied. Gibson sees media technologies as simply methods of storing and displaying the invariant properties of the physical world (Gibson, 1966). For Gibson, the energy arrays contained in photographs simply preserved the invariant properties of the physical world.

But in Gibson’s day, the boundary between the body and the world of film was still very intact. He could see the movement of progressive embodiment (Biocca, 1997) towards first-person immersion systems: “The striving for an approximation to immediate first-hand experience explain . . . . the efforts of the past century to overcome certain limitations of the framed picture . . . .

The parlor stereoscope . . . 3D movies” (Gibson, 1966, pp. 233–234). But consider the process of progressive embodiment, the connection of the body to the medium. What if the growth of input devices makes ambiguous the boundary of the body? In virtual environments, a computer graphic hand is accepted as one’s own. The stability of the environment captured by the concept of presence helps make this possible. But, with a Gibsonian ecological twist, Heidegger’s hammer is stretching and wrapping itself around the body. It is not just a tool; it is an environment connected to the body. It is here that the philosophy of mind-body and the philosophy of technology meet in the problem of presence: how does presence—and, by extension, consciousness—support this somewhat fluid boundary between the body and the extensions of the body? Is mediated presence testimony that the boundary itself is fluid and changing (Biocca & Nowak, 2001)?

9 Summary and Conclusion

A philosophy of presence should be judged by the fruits it bears: does it guide theories of the psychology of presence, guide insights into the design of technologies of presence, and enlighten and deepen empirical research studies? At the beginning of this article, I wrote that I shared Sheridan’s and Mantovani’s and Riva’s desire for a philosophical grounding for a theory of presence. It can be a means of connecting the work on virtual environments within the larger debates in cognitive science, the philosophy of mind, and a science of consciousness (Biocca, 1996). But I have also shared my concern that Sheridan’s framing of the problem is inappropriate, and that Mantovani’s and Riva’s continuation of the conversation within this frame moves a philosophy of presence further away from fertile ground for theories of presence.

This article has suggested that, in both the original Sheridan article and in the Mantovani and Riva piece, there may be a fundamental confusion both in terminology and in theory about the difference between epistemology and ontology. This, I suggested, is indicative of the failure to note the fundamental difference between
the philosophy of mind problem of “perceptual presence” and the very different ontological problem of “divine presence.” The article made the case that ontological debates about divine presence may be fundamentally flawed for three reasons:

- that, although “divine presence” (immanence of God) and perceptual presence (phenomenal states of distal attribution) share the term presence, they are fundamentally different philosophical problems;
- that the concept of divine presence is framed at such a level of generality to be incapable of supporting specific, actionable, and researchable theories about perceptual presence; and,
- that a technology with the oxymoronic term, virtual reality, provides no more ontological insight into reality than does research with any other communication medium such as photography, film, or sound recording.

Furthermore, I suggested that both sets of authors miscast J. J. Gibson’s theory to embed it into relativistic models of physical reality. By directly referencing Gibson’s writings, especially his concepts of perceptual invariants, this article demonstrated that Gibson’s work could not be used to support cultural or “engineering” relativistic arguments about “different realities,” perceptual or otherwise, without significant modification of Gibson’s work and violation of his apparent intent.

Finally, I proposed that the philosophy of presence might be most fruitfully approached via the philosophy of mind. The article suggested that presence is a sub-problem of the science of consciousness, specifically the mind-body problem. Virtual environment technologies potentially alter the interaction of the senses and/or motor systems with energy arrays that represent invariants of the environment such as objects, spaces, and other beings. It is part of the problem that we at the M.I.N.D. Lab call “embodied computing” (Embodied Computing, 2001). In a previous article in which I discussed the “cyborg’s dilemma” (Biocca, 1997), I proposed that the mind-body problem also becomes part of the philosophy of technology, specifically the ongoing study of the problem of technological embodiment (Biocca & Nowak, 2001).

Mantovani and Riva conclude their debate with Sheridan with a request that a bridge connect different communities of researchers embraced by the study on presence. I subscribe to this sentiment. That is why I am concerned about the philosophical grounding of a theory of presence. We agree that the goal is to create an interdisciplinary framework for research on presence. If it is to be fertile, the ground should support insightful, specific, and actionable theories that can cross disciplines and provide guidelines for the design of telepresence systems. Hopefully, we can anchor this bridge in rich, solid ground and avoid building on quicksand. It may turn out that the bridge to a theory of presence is close by. Presence might be found somewhere on the bridge between mind and body.

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