

# *The Extended Mind and Religious Thought*

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## PERSONS AND THE EXTENDED-MIND THESIS

by Lynne Rudder Baker

*Abstract.* The extended-mind thesis (EM) is the claim that mentality need not be situated just in the brain, or even within the boundaries of the skin. Some versions take "extended selves" to be relatively transitory couplings of biological organisms and external resources. First, I show how EM can be seen as an extension of traditional views of mind. Then, after voicing a couple of qualms about EM, I reject EM in favor of a more modest hypothesis that recognizes enduring subjects of experience and agents with integrated bodies. Nonetheless, my modest hypothesis allows subpersonal states to have nonbiological parts that play essential roles in cognitive processing. I present empirical warrant for this modest hypothesis and show how it leaves room for science and religion to coexist.

*Keywords:* bionic; constitution view; EM; enduring persons; evolution; extended minds; externalism; intentional agents; neural prostheses; parts; personal; quasi-naturalism; religion; science; subjects of experience; subpersonal; vehicle

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Cognitive scientists have become increasingly enamored of the idea of extended minds. The extended-mind thesis (EM) is the claim that mentality need not be situated just in the brain or even within the boundaries of the skin. EM is the modal claim that it is possible that the mind is not bound by skull or skin. EM is quite radical: A mind is a collection of processes

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that easily extends to tools, programs, other minds, and language. Cognitive states may have all sorts of components—neural, bodily, environmental. The heart of the extended-mind thesis is that we biological creatures can “couple” with nonbiological entities or features of our environment and thereby expand the entities that we are. Some versions do away with enduring agents altogether; “extended selves” (Clark and Chalmers 1998, 18) are relatively transitory couplings of biological organisms and external resources. There is a huge and complex literature on the idea of an extended mind, both pro and con.<sup>1</sup> I focus here on some of Andy Clark’s work, especially the article he wrote with David Chalmers in 1998, “The Extended Mind.”

Here is my plan for the article. First, I show how EM can be seen as an extension of traditional views of mind. Then, after voicing a few qualms about EM, I reject it in favor of a more modest hypothesis that recognizes enduring subjects of experience and agents with integrated bodies. Nonetheless, my modest hypothesis allows subpersonal states to have nonbiological parts that play essential roles in cognitive processing. I present empirical warrant for this hypothesis and show how it leaves room for science and religion to coexist.

#### FROM TRADITIONAL VIEWS TO THE EXTENDED MIND

One way to understand EM is to start with a traditional picture of mental states and then see how EM revises it. Here is one traditional picture: Many mental states have content—states of desire are satisfied or not, intentions are fulfilled or not, beliefs are true or false. Typically, contents are given by the *that*-clauses that follow psychological and linguistic verbs such as *thinks*, *believes*, *desires*, *intends*, *says*. Thoughts and other contentful states are said to have two kinds of properties: properties determined by the content and properties of the vehicles that carry content. (The distinction brings to mind Descartes’ distinction between representative, or objective, reality and formal reality.)

What makes a thought the very thought that it is is its content. That is, states that have content are individuated by their contents. The thought that snow is white differs from the thought that grass is green in virtue of the difference between snow’s being white and grass’s being green. The contents of thoughts (and other mental states)—that snow is white or that grass is green—are carried by vehicles, traditionally thought of as neural states. Neural states are internal states, “in the head.” Call this view *vehicle-internalism*.

Even if, as traditionally supposed, vehicles are internal to the thinker, the contents of thoughts may be determined by phenomena outside the thinker (or so many think). The view that the contents of our thoughts—and, hence, the identity of which thoughts we can have—are determined

by features of the environment is called *content-externalism*.<sup>2</sup> To take a well-worn example, Pam, who lives on Earth where there is H<sub>2</sub>O (water), may have the thought that water is wet. Now suppose that there is another world in which there is an abundant liquid that looks like water but is not water because it has a different chemical composition. Suppose also that people in that waterless world drink, brush their teeth with, and swim in the water look-alike. The inhabitants speak a language similar to English, but when they utter what sounds like “water” in English, they are not speaking of water but of the other stuff, the water look-alike. In that world, where there is no water (no H<sub>2</sub>O), a molecular duplicate of Pam—call her Cam—could not have the thought that water is wet. The duplicate’s thought can be reported in English as the thought that *twater* (the stuff in the other world) is wet, but it cannot be reported as the thought that *water* is wet. Cam’s thoughts that correspond to Pam’s water-thoughts are *twater*-thoughts. Cam cannot have any water-thoughts. Because Pam and Cam are molecular duplicates, their brain states are of identical types. But if content-externalism is true, their thoughts are not of identical types.<sup>3</sup>

Although content-externalism is not altogether uncontroversial, it is well-entrenched enough to say that a version of the traditional view combines vehicle-internalism and content-externalism.<sup>4</sup> We may see EM as an extension of the externalism of contents to an externalism of vehicles.<sup>5</sup> With the combination of vehicle-internalism and content-externalism in the background, EM treats vehicles in a way analogous to the way that the (externalist) traditional view treats content. EM is a kind of extreme externalism in that not only the determinants of content but also the vehicles may be located outside the organism. Clark, an early proponent of EM, characterizes EM as “the view that the material vehicles of cognition can be spread out across brain, body and certain aspects of the physical environment itself” (2005, 1). EM in effect extends content-externalism to vehicle-externalism (Hurley 1998). Until recently, vehicles were thought to be only brain states (vehicle-internalism). According to vehicle-externalism, however, not only is the content determinable by features of the environment, but the vehicle also may be spread out into the environment. Vehicle-externalism supposes that cognitive processes may have vehicles that include aspects of the environment.

For example, beliefs are normally embedded in memory, but they need not be. Consider Otto, who is impaired in such a way that he cannot form new memories. He writes down what he wants to remember in a notebook that he always carries. Suppose that Otto is on Fifth Avenue in New York City and is looking for the Museum of Modern Art (MoMA). He knows that he cannot simply search his memory for the location of MoMA, so he automatically reaches for his trusty notebook and looks up the address: 53rd Street. The information in the notebook—just like the information stored in brain-based memory—“is reliably there when needed, available

to consciousness and available to guide action, in just the way that we expect a belief to be” (Clark and Chalmers 1998, 13). Viewed from the lens of EM, the skin is seen as an artificial boundary.

In one of the most important early articles on EM, Clark and Chalmers state that “when it comes to belief, there is nothing sacred about skull and skin. What makes some information count as a belief is the role it plays, and there is no reason why the relevant role can be played only from inside the body.” For some of Otto’s mental states—his extended beliefs—Otto and his notebook are coupled; they form a cognitive system, all components of which are causally active.<sup>6</sup> The “relevant parts of the world are *in the loop*, not dangling at the other end of a long causal chain” (Clark and Chalmers 1998, 9). Hence, extended cognition is sometimes called “active externalism” (p. 8).

As Clark puts it later, “taken as a single, integrated system, Otto-and-the-notebook exhibit enough of the central features and dynamics of a normal agent having (amongst others) the dispositional belief that MOMA is on 53rd Street to warrant treating him as such.” He asks rhetorically, “If an inner mechanism with this functionality [passive aspects of memory] would intuitively count as cognitive, then (skin-based prejudices aside) why not an external one?” (Clark 2005, 7) The point of EM is that neither the organic brain nor the skin sets a boundary on the vehicles of cognition. Features of the environment may or may not be components of the vehicle.

In general, tools extend cognition. A tool, “even when temporarily in use, is rapidly assimilated into the brain’s body maps and is treated (temporarily) just like a somewhat less sensitive part of the body.” For example, the receptive visual field of a macaque using a rake for as little as thirty seconds becomes elongated as if the rake were part of the arm (Clark 2005, 8). Use of a tool, even temporarily, changes neural maps. Neural plasticity “makes it possible for new equipment to be factored deep into both our cognitive and physical problem-solving routines” (p. 9). So, we become physical and cognitive hybrids—part biological and part artifactual.

Not only is there physically extended cognition, there is socially extended cognition as well. As many have observed, their spouses are their external memory devices. My husband serves as part of a vehicle for many of my memories. For such memories (as well as in other ways), a proponent of EM may say that my husband and I are coupled. Coupling between agents is effected by language, among other things.<sup>7</sup> Language “is not a mirror of our inner states but a complement to them. It serves as a tool whose role is to extend cognition in ways that on-board devices cannot” (Clark and Chalmers 1998, 18).

Clark emphasizes that hybridization (Otto-and-his-notebook) is quite normal. We routinely use “transparent technologies” such as pencils for calculating sums. We are just shifting combinations of biological and non-biological elements.

## A STEP TOO FAR

A precursor to EM was encapsulated in the slogan “embodied and embedded.” Many of our mental states—all of the interesting ones—are made possible by our being embodied as we are and embedded in the environments that we are. Some of our mental states, such as memory of how to ride a bicycle, may be constituted by states of our bodies beyond the brain. And the electrical stimulation provided by cochlear implants is clearly part of the cognitive process of hearing among certain persons who are deaf.

So far, so good. But some proponents of EM take another step: The extended mind seems to imply an extended self. In that case, one’s boundaries may fall outside one’s skin. “Otto *himself* is best regarded as an extended system, a coupling of biological organism and external resources. To consistently resist this conclusion, we would have to shrink the self into a mere bundle of occurrent states, severely threatening its deep psychological continuity. Far better to take the broader view, and see agents themselves as spread into the world” (Clark and Chalmers 1998, 18).

I think that Clark and Chalmers here set out a false dichotomy. We can reject both options—to “shrink the self” and to see ourselves “as spread into the world.” We can think of ourselves as subjects of experience and as agents without supposing that there is any mysterious inner entity, the “self.” As Susan Hurley wisely put it, “It is a mistake to think that the processes in brains that make subjecthood and agenthood possible relocate subjecthood and agenthood internally. These processes make it possible for us familiar persons to be selves, embedded in the world, here where we seem to be. They don’t replace us with other, hidden selves” (Hurley 1998, 36). (So, I try to avoid the term *self* altogether.) However, we are not stretched out across the environment, either.

As a traditional externalist, I do take the social, linguistic, and physical environments to play essential roles in determining what we are able to think and do. I do not believe that that role spreads us cognizing agents “into the world.” We are still agents and subjects of experience, not mere systems or components of systems. Cognitive processing does loop out into the world, but processing does not stand on its own. It requires an entity that is doing the processing. Processing does not perceive or act on the world; we do. Brains do the processing that enables us to perceive and act on the world, but the entities who act on the world are not brains—they are agents.

If I am correct, we are enduring persons—agents and reflective subjects of experience. In the remainder of this essay I explain my view of persons and the extent to which it can accommodate a small (but empirically warranted) step in the direction of EM.

## TWO QUALMS

Although many philosophers and cognitive scientists have responded to Clark, especially to his 2003 book *Natural-Born Cyborgs* (see Mithen 2004 and criticisms in Adams and Aizawa 2008), I want to raise two qualms of my own. Both concern the nature of human persons. I have argued for my views elsewhere (Baker 2007a), so I only mention my qualms and do not argue for them here.

First, I can agree that there is a cognitive system that has as parts Otto and his notebook; but Otto does not expand to become an extended entity that includes his notebook. Otto the human being does not dissolve or disappear into a cognitive system. Elsewhere I have argued that the only coherent way we can understand ourselves is as entities with first-person perspectives (Baker 2000; 2007a). On my view, Otto is a concrete particular, and there is no concrete particular denoted by "Otto and his notebook." A cognitive system is not a concrete particular. Even if one supposes that Otto is a part of a cognitive system that has a nonbiological part (his notebook), Otto himself does not become an extended being (Otto-cum-notebook). A person who is part of a cognitive system does not expand to include the other parts of the system; nor does the system take ontological precedence over Otto the human being. Similarly, when several people are brainstorming they may compose a cognitive system, but there is no reason to reify the system as if it were an individual in the same sense that the participants are individual persons. The system Otto-cum-notebook, like the brainstorming group Tom, Dick, and Harry, does not take ontological precedence over the persons who are parts of it. Otherwise, persons as we know them would disappear.

As I understand Daniel Dennett, persons do disappear. Ontologically speaking, there is tool use, but no tool user; thinking, but no thinker; acting, but no agent; experiencing, but no subject of experience. There are just temporary couplings of various components of various processes.<sup>8</sup> Persons disappear into temporary hybrids. They become scattered objects, different hybrids at different times. It is unclear what holds persons together over time. Perhaps person  $x$  considered at time  $t$  = person  $y$  considered at time  $t'$  if and only if there is a human body that is part of person  $x$  at  $t$  and is also part of person  $y$  at  $t'$ ? Clark expresses agreement with Dennett's view regarding selves (Clark 2005, 10). Because I have written on Dennett and extensively on persons,<sup>9</sup> I'll simply say that for me an antirealist view of persons is a nonstarter. There is no tool use without a tool user.

My second qualm concerns the distinction between personal and sub-personal levels, a distinction that I take to be ontological (Baker 2007a, chap. 11). (Clark mentions the importance of the distinction several times, but I suspect that he takes the levels to be levels of description. See Clark

2005, 1 n. 1.) It seems to me that in EM the distinction between personal and subpersonal levels, whether descriptive or ontological, becomes blurred, especially when we consider tools. Clark suggests that a gardener-together-with-his-spade is an extended agent (Clark 2005, 8). Here the tool (the spade) is on the personal level—it is something that the agent, the whole person, manipulates. But Clark also says that a neural implant extends cognition, and, I infer, is likewise a tool (Clark and Chalmers 1998, 10). A neural implant clearly is a subpersonal device. Tools seem to be ubiquitous, crossing over between personal and subpersonal levels.

Keeping personal and subpersonal levels distinct is important to me because I do not believe that there are extended agents or extended persons. However, I shall propose a modest hypothesis that recognizes us as enduring persons whose subpersonal states may have nonbiological parts that play essential roles in cognitive processing.

Because *cognitive process* and *cognition* sometimes are used equivocally for phenomena at both personal and subpersonal levels, let me try to avoid confusion by stipulating how I use terms. I use *mental state* and *mental process* to refer to person-level states and processes that are constituted by subpersonal states and processes, and I use *cognitive state* and *cognitive process* to refer to subpersonal states and processes. On my modest hypothesis, subpersonal states and processes may have bionic components. Because I take minds to be at the personal level, constituted by brains or by brains-with-bionic-parts (or someday, perhaps, wholly by bionic mechanisms), and my modest proposal pertains only to subpersonal states and processes, it would be more accurate to call the proposal a modest version of extended cognition.

#### A MODEST PROPOSAL

I share two beliefs with proponents of EM: Persons are not essentially biological, and there are no immaterial minds. I disagree with proponents of EM about the existence of extended persons. On my view, there are no extended persons, persons who extend beyond their bodies.<sup>10</sup> However, there are enduring persons—subjects of experience, agents, who can think reflectively of themselves throughout much of their existence. (They have robust first-person perspectives.) So, I take issue with Clark when he says that “(what we ordinarily think of as) the self [I’d say ‘person’] is a hastily cobbled together coalition of biological and non-biological elements, whose membership shifts and alters over time and between contexts” (2004, 177).

Although I believe that there will be increasing integration of parts of human organisms and machines, I do not believe that such couplings will threaten to replace enduring persons such as ourselves with fluctuating systems. The reason that I think that persons (or “selves”) do not fluctuate with various couplings is that the integration of parts of human organisms

and machines takes place at subpersonal levels. At subpersonal levels, mechanisms and functions are explained in computational or neurophysiological or physical terms. At the personal level, we are focusing on intentional agents and “what they perceive and intend, what they believe and desire, and [we are] try[ing] to make sense of them as acting for reasons, though of course allowing for irrationality and mistakes” (Hurley 1998, 2–3).

The personal and subpersonal levels are distinct: A state is at the personal level if the person can come to acknowledge the state as her own. An unconscious desire that a person can bring to consciousness as her own (perhaps after therapy or reflection) is at the personal level. There are no doubt neural mechanisms, discovered by experimentation, that underlie the desire; but the desire is still at the personal level, and the neural mechanisms are at a subpersonal level.<sup>11</sup> Any state (for example, digesting food, or even having a stomach) that does not presuppose consciousness is at a subpersonal level.

The sum of all Otto’s organic parts constitutes his body.<sup>12</sup> Otto’s body constitutes Otto. Neither the sum of Otto and his notebook nor the sum of Otto’s body and his notebook constitutes anything at all. The only cognizer here is Otto. Nevertheless, there is a sense in which a person may have extended cognition—that is, cognition that has bionic components. In that case, the person would have mental states constituted by (subpersonal) vehicles that have nonbiological parts. What seems to me significant about EM is that it provides a way to understand cognitive processes (that constitute a person’s mental life) in a way that does not depend altogether on biology. That bionic components (cochlear implants, for example) may seamlessly interact with organic components is an empirical fact. So, auditory cognitive processing of someone with a cochlear implant is partly nonbiological.

My proposal has two clauses.

1. The (subpersonal) vehicles of a person’s (person-level) mental states are causally integrated with the person’s other subpersonal parts.
2. Some people have mental states and processes that have (subpersonal) vehicles with nonbiological parts.

The first clause is the “modest” part, and the second takes a step toward extended cognition.

It is noteworthy that my proposal is not science fiction. The cochlear implant that restores hearing and speech understanding to persons who have been profoundly deaf, from birth or later, has received regulatory approval and is now in use (G. Clark 2007, 78). Because of the plasticity of the brain, babies born deaf may learn to speak and hear almost normally if the device is implanted early enough, as early as six months of age. Following the success of cochlear implants, scientists working with engineers now



aim at “making machines and technology behave like living systems with particular reference to the sense organs and nervous systems,” according to Graeme Clark, inventor of the cochlear implant. With the advent of nanotechnology and with the increasing understanding of the plasticity of the brain, Clark continues, a new field of “Medical Bionics” offers hope

of producing a bionic ear that gives high fidelity sound, bionic nerve and spinal cord repair for paraplegia and quadriplegia, a bionic eye for blindness, bionic epilepsy control, bionic delivery of drugs for the treatment of cancer and Parkinson’s disease, bionic stents for coronary and other arterial disease, a bionic bladder neck for the control of incontinence, bionic tissue repair, bionic muscles, and implantable bionic sensors. (G. Clark 2007, 78)

Another example of ongoing research is on brain-machine interfaces. Neuroscientist John Donoghue has developed a computer chip to implant in brains of persons who are unable to move their limbs. A “neuromotor prosthesis” takes signals from brains and decodes them and connects them to a device like a computer or a robot or even to that person’s own muscles. “We’re effectively rewiring the nervous system—not biologically but with real wires,” says Donoghue (Sender 2004).

With these advances underway, it is not too much of a stretch to suppose that someday scientists will be able to replace whatever neural structure that is taken to be the vehicle of mental state *X* with a functionally equivalent silicon part. Andy Clark points out that this has been done with an artificial neuron in a Californian spiny lobster; the artificial neuron functioned successfully in a group of fourteen natural neurons (Clark 2005, 4). Empirically speaking, the boundary between human organisms and machines is getting fainter.

On my view, enduring persons may be subjects of mental processes constituted by extended cognitive processes (subpersonal processes that have bionic components). Proponents of EM have mostly been concerned with cognitive science, not with metaphysics. My concern is with metaphysics, and I want to show that my own metaphysical view can accommodate my modest proposal of extended cognition without threatening to eliminate the person, the subject of experience.

#### THE CONSTITUTION VIEW OF PERSONS

On the Constitution View, persons are material beings, wholly constituted by bodies—typically human organisms—but not identical to the bodies that constitute them. The relation between a person and the organism whose brain makes possible the person’s thoughts is constitution, not identity. Given that the person and organism take up exactly the same space, how can they be not identical? Well, the person and organism differ in persistence conditions. The person endures as long as she has a first-person perspective; the organism endures as long as it maintains certain biological

functions. The person's persistence conditions are first-personal, and the organism's are third-personal. Hence, it is possible for one to exist without the other. The person is not essentially biological, but the organism is.

I am constituted by my body; the body that I currently have is an organism. But with enough prosthetic devices (artificial heart, cochlear implants, bionic replacements of neural structures), I may come to be constituted by a body that is not so clearly an organism. I am essentially embodied, but I do not essentially have the body that I currently have. Some philosophers think that there is something amiss, even nonsensical, about talk of someone's body (Olson 2007; van Inwagen 1980). But here is a formula that gives conditions for being someone's body: "Necessarily,  $x$  is  $y$ 's body at  $t$  if and only if  $y$  is a person and  $x$  constitutes  $y$  at  $t$ ." This formula allows that a person may have different bodies at different times and that a person's body may be partly bionic and partly organic.

Constitution is ubiquitous. Genes are constituted by sums of DNA molecules; fireplaces are constituted by sums of bricks; credit cards are constituted by pieces of plastic. When a thing or property of one primary kind is in certain circumstances, a distinct thing or property comes into existence or is exemplified. When a fetal human organism develops to the point where it can support a rudimentary first-person perspective, a new entity—a person—comes into existence<sup>13</sup> (Baker 2007a). The organism, who has a first-person perspective contingently, then constitutes the person, who has a first-person perspective essentially.<sup>14</sup> Constitution, unlike identity, is a temporal and contingent relation.

One may wonder what motivates a distinction between persons and human organisms at all. Why take the relation between persons and bodies to be constitution rather than identity? There are two reasons. First, the Constitution View preserves the unity of the animal kingdom while recognizing the ontological uniqueness of persons. (Only persons can intentionally change the course of natural selection.<sup>15</sup>) Second, a person may be constituted by different bodies at different times. A person who begins existence with an organic body may end up with an inorganic body after enough artificial organs and prostheses.

One may further wonder: Even if the distinction between persons and bodies is well motivated, is there any naturalistic way to understand how persons could have come to be nonidentical with human organisms? I think that the answer is yes. An evolutionary just-so story shows one way that persons could have evolved from human organisms.

Suppose that eons ago there evolved a species of hominids whose mentality was determined by their brains in interaction with their environments. They were social beings who had (perhaps) routinized social interactions of grooming, feeding the young, and so on. The range of their cognitive states was limited to those concerning their local present environments and survival and reproduction. At some later time—perhaps about

30,000 to 60,000 years ago, at the time of rapid cultural development during the Upper Paleolithic revolution (Mithen 2004, 164)—beings of this species experienced a “cognitive inflation,” similar to the expansion of the physical universe after the Big Bang. Cognitive inflation was a period of remarkable cognitive innovation. At the end of this period, beings of this species had acquired spoken and written language, art, and government. Their lives and thoughts were products not just of biology but also of learning, culture, and technology. We are their descendants.

There is only speculation about when cognitive inflation began. It probably did not start with the development of spoken language about 500,000 years ago with the development of vocal cords (Mithen 2004, 165). Although spoken language allowed sharing of acquired knowledge and coordination, it did not make the radical transformations required for modern life. However, the development of written language, about 5,000 years ago, is too late. Steven Mithen speculates that what started the cognitive snowball rolling was the emergence of art, about 100,000 years ago. Cave wall drawings are evidence of practices of inscribing persisting marks on the environment. This is a sign of cognition-enhancing technology that, when coupled with the later invention of written language, blurred the boundaries between the material (art) and the informational (language). These cognitive innovations were a powerful driver of extended cognition.

With my own philosophical preoccupations, here is what I take from this just-so story. No matter how the period of cognitive inflation got started, at the beginning were human organisms (members of the genus *Homo*) but no human persons (entities with reflective first-person perspectives). By the end there were human persons, constituted by human organisms. That there is no precise moment when human persons came into existence is no surprise; every process in nature is gradual.<sup>16</sup> When human organisms developed first-person perspectives, along with grammatically complex first-person sentences,<sup>17</sup> entities of a new kind—persons—came into being. My speculation is that grammatically complex first-person language and human persons came into existence together, both in the course of cognitive inflation of human organisms. With the development of language came an explosion of the kinds of thoughts that could be entertained: modal thoughts about necessity and possibility, normative thoughts about what makes a good person, counterfactual thoughts about what might have been, abstract thoughts about numbers and properties, and first-person thoughts about oneself and one’s desires, intentions, and beliefs. The development of the complex linguistic first person and the first-person perspective also made possible law-governed societies, institutions of all sorts, the sciences, and advanced technology.

From an evolutionary point of view, our minds evolved to guide behavior. With the advent of persons—beings with first-person perspectives and first-person language—there was an explosion of kinds of behavior that

are possible. Language is an amazing enhancement of cognitive powers.<sup>18</sup> Our minds are now linguistic minds. Language is a tool of cognition, not just an expression in natural language of preexisting thoughts that are encoded in some innate language, like “Mentalese.” Many if not most of our everyday thoughts—thoughts about scheduling a meeting, finding a new doctor, getting the car repaired, paying the heating bill—would be impossible to have without our physical, social, and linguistic environment. But this traditional externalist point is far short of EM.

Human brains make human persons possible by constituting our thoughts and experiences. But recall that what makes the thought or experience the very one it is is its content, not what constitutes it. And the content of a thought or experience (for example, the experience of missing a crucial free-throw in a basketball game) may depend on all manner of features outside the brain and outside the skin. A quantity of paint on a canvas may constitute a (painted) dagger, but because a dagger is an artifact, nothing could be a painted dagger without multiple conventional and unconventional relations to the social and physical environment. Just as the quantity of paint is on the canvas, one’s neural state is in one’s brain. What the quantity of paint constitutes (a painted dagger)—like what the brain state constitutes—could not exist in the absence of complex relations to the environment.

Being a subject of experience with a first-person perspective is at a different ontological level—the personal level—from the level of neural circuitry. And, as I explained earlier, the level of a person is different from the levels both of neural circuitry and an organism. Traditionally, the vehicles of thoughts are brain states. With my modest proposal, we extend the vehicles to include not only brain states but also bionic tools that are integrated with the brains (or other bodily parts). So, a person’s mental processes may be constituted not wholly by brain states but by fusions of brain and bionic states. With enough implants and prostheses, a (formerly?) human person may be constituted by a (wholly?) bionic body.<sup>19</sup>

The intentional agent, the subject of thought, is the person *however* she is constituted. Thoughts and deeds are the person’s thoughts and deeds, no matter what constitutes them, that is, whatever material vehicles they have. We are familiar with the fact that there is no isomorphism between vehicles and contents of traditionally conceived mental states. There may be general constraints on the kinds of brain states that can be vehicles for various kinds of mental states. But the identity of a contentful mental state is, as I said, determined by the content, and—according to content-externalism—the content is not determined by the vehicle, the hopes of narrow functionalism to the contrary. To understand contentful mental states, vehicles matter little.

Consider a sign on a highway: Curve ahead. The vehicle of that sign must be strong enough to withstand severe weather conditions. So there

are certain constraints on the kinds of things that can be road signs. But within these rather broad constraints, all manner of things can serve as vehicles for the sign: different kinds of metal, different colors of paint, different letters (English or Farsi), icons without letters. There is no relation between the vehicle (within the broad constraints) and the content of the sign. Similarly, for most of our thoughts it seems that there is no systematic relation between the vehicle (within broad constraints) and the content of our thoughts. And what effects our thoughts have is usually determined by content, not by vehicle.

Although I think that this is correct, there are (note: highly unusual) circumstances in which the vehicle does causal work that is determined by the thought. In these cases, the connection of the vehicle to the content of the thought becomes important.<sup>20</sup> Quadriplegics have been taught to control cursors on computer monitors by their thoughts. They think, "Move left," and the cursor on the screen moves left. The vehicle of their thinking "Move left" is hooked up to electrodes that send radio signals to devices that move the cursor (Sender 2004). However, it still does not matter what the vehicle is. Scientists monitor patients' brains and ask their patients to think certain thoughts and see where neural activity increases. Sometimes, it increases in unexpected places—parts of the brain associated with moving a leg, say. The electrodes hooked up to the computer are placed *wherever* in the brain the activity is discovered to be.<sup>21</sup>

The material vehicles of our thoughts are either parts of the brain or parts of the brain integrated with bionic devices. The bionic parts may protrude outside the skin (some neuroprostheses require something akin to a morphine pump). And the bionic devices may themselves have parts that are not attached to the body (a neural implant may communicate with an external computer wirelessly). As I said earlier, I am open to vehicle externalism. Just as Otto's notebook can be part of a vehicle of Otto's cognitive processing without being part of Otto's body, so too can an external computer accessed by the working of a neural implant.

Although the skin is not a boundary for vehicles of cognition, the skin (enlarged by what is permanently attached to it) is still a boundary for persons and their bodies. A person is constituted by a body that may have nonbiological parts causally integrated into its operation. An in-place neural implant is part of a person's body; a computer across the room that the person controls via thought is not part of a person's body. But the computer across the room, like Otto's notebook, may be part of a vehicle of a person's cognitive activity. Similarly, although an artificial heart is part of a person's body, a ventilator is not part of a person's body. But the ventilator may be part of a vehicle of vital respiratory activity.

Here is a rule of thumb for whether a bionic device is part of a person's body. The bionic device is part of a person's body only if (a) it is causally integrated with the other parts that maintain the functioning of the body

and (b) it is permanently in place either inside the skin or attached to the skin on the outside. It is not merely hooked up intermittently, nor can it be taken off at night or disconnected from the rest of the body. And, of course, vehicle externalism allows that bionic devices can be parts of vehicles of a person's cognitive processing without being parts of her body. (I take this to be the lesson of Otto and his notebook.)

To sum up where I stand, a person can have subpersonal parts that are not organic, and these can be material vehicles (or components of vehicles) of a person's mental states. In this way, the person can have extended cognition, because the material vehicles of her contentful mental states may be inorganic. But the person is constituted by a body, perhaps partly bionic, and the person spatially coincides with the body that constitutes her and does not extend beyond it.

The boundary between human organism and machine may someday be largely erased; yet persons may remain intact, constituted by integrated systems that have as components parts of a human organism and a machine, or perhaps in the distant future by only a machine (inorganic). What constitutes the person may change while the person remains the same. The continuity of a person does not require any kind of immaterial substance or property to persist through the changes of the constituter. As long as the first-person perspective continues, so does the person, whatever constitutes her.

#### SCIENCE AND RELIGION

My Constitution View of persons provided the background for the modest proposal that we can have subpersonal bionic parts that play an essential role in cognitive processing. The Constitution View is neutral with respect to religion. In chapter 4 of *The Metaphysics of Everyday Life* (2007a) I argue for what I call *quasi-naturalism*, an epistemological view of the natural world that makes no ontological claims. Quasi-naturalism concerns only the natural world. Perhaps the natural world exhausts reality and perhaps not; quasi-naturalism does not say. So, my proposal is neutral with respect to religion, too. As long as science does not rule out there being intentional agents or subjects of experience, I believe that science and religion are compatible. (Of course, whether any particular religion is true or not is another matter.)

Someone may object: If EM, rather than your modest proposal, is correct, science does rule out there being agents or subjects of experience. What we have thought of as agents or subjects of experience are just shifting combinations of organic and inorganic entities or processes—tool use with no users, thinking with no thinkers.

To this I reply: Where is the science? Transitory hybrids don't form any kind for which there could be laws. Moreover, if there are just processes, as

EM suggests—such as thinking with no thinkers—then there are no scientists, either. The idea of science without scientists is barely intelligible. So it is difficult to see how EM could have the imprimatur of science. Even if EM rules out there being agents or subjects of experience, it does not follow that science does.

There is another objection to the claim of compatibility of science and religion: The sciences traffic in naturalistic explanations. Over the centuries, the sciences have brought more and more phenomena into their domains. There is no stopping place; they will not stop until they have brought all phenomena into their domains. At the end of inquiry, we'll see that everything is naturalistic and there is no place for a deity or any immaterial entity.

How to respond to such an argument? Perhaps, in some way that we cannot envisage now, everything will be explained in some naturalistic way that we will then count as scientific. Maybe, maybe not. The prudent thing is to wait and see. To accept the claim that all phenomena can be described and explained by science is to accept a closure principle—" . . . and that's all there is, folks!" The inductive argument from history seems to me too weak to support such a closure principle. At best, we should wait and see whether anything resists integration into science.

In any case, all that I am claiming is that my modest proposal, which entails that we are not essentially biological, does not render science and religion incompatible.

#### CONCLUSION

Persons cannot have extended minds in the sense of EM; shifting and transitory hybrids can hardly be persons. However, persons can have partly (or perhaps wholly) inorganic, bionic bodies, and some persons currently do have bodies with bionic parts that play essential roles in cognitive and motor activity. So my modest proposal that persons may have subpersonal bionic parts is empirically true. What makes this proposal a step toward extended cognition is that it allows bionic devices—in particular, prostheses—to be parts of a person's body. What makes this proposal *modest* is that the person coincides with her body and is not a transitory hybrid of her body and various items in her environment.

## NOTES

Thanks to Gareth B. Matthews, Hilary Kornblith, and Beth Preston for reading a draft.

1. For a book-length treatment of difficulties with EM, see Adams and Aizawa 2008. The authors emphasize the need for a theory of cognition adequate to the needs of cognitive psychology.

2. See Burge 1979; Putnam 1975. I have been pursuing similar externalist lines for more than twenty years. See Baker 1987; 1995.

3. I believe that content-externalism is true, and I have argued for it in many places. See Baker 2007b, for example.

4. This is not how I formulate my own view of belief. I take the material carrier of content to be almost irrelevant to understanding belief. Suppose that a German and a Saudi both believe that the United States has pursued dangerous policies in the Middle East. Their brains may be in quite dissimilar states (see Baker 1995).

5. One could endorse wide vehicles but be an internalist about content; but because content externalism already has breached the boundary of the skin for determining content it seems to me natural to see EM as an extension of the breach of the boundary of the skin.

6. John Adams and Kenneth Aizawa (2008) argue that “coupling” is the wrong way to approach extended cognition. The notion of coupling conflates ways that cognition *causally* depends on the environment with ways that it *constitutively* depends on the environment.

7. Coupling also can be effected by gestures, artifacts, or shared practices.

8. An early article along the way is Dennett 1978.

9. For my response to Dennett, see Baker 1989; 1994. For my detailed work on persons, see Baker 2000; 2007a.

10. At least one proponent of EM agrees on this point. Robert Wilson (2004, 141–42) holds that mental states may be locationally wide, extending into the world, but the subject of those states remains the individual organism. I take the nonderivative subject of such mental states to be not the organism but the person. The organism is the subject derivatively.

11. This is a view of Gareth B. Matthews that I also endorse.

12. I am using *constitution* according to my technical definition here. See next section. For details see Baker 2007a, chap. 8.

13. Nonhuman animals also have rudimentary first-person perspectives, but they are not persons. An entity with a rudimentary first-person perspective is a person only if it is of a kind that typically develops a robust first-person perspective, that is, the conceptual ability to think of oneself as oneself.

14. The human organism has a first-person perspective derivatively, in virtue of constituting an entity that has it nonderivatively. This is spelled out in great detail in Baker 2007a.

15. Although the ability knowingly to interfere with natural selection has been only recently acquired, persons have always had the ability to acquire such an ability when knowledge and technology became available. The fact that this ability is contingent is irrelevant to my point.

16. Indeterminacy of temporal boundaries (and of constitution) does not entail “vague identity.” See Baker 2007a, chap. 11.

17. “I wish that I had more food” or “I believe that I am getting sick” are examples of grammatically complex sentences that indicate a robust first-person perspective.

18. I would not formulate this point as Clark and Chalmers do: “Language appears to be a central means by which cognitive processes are extended into the world” (Clark and Chalmers 1998, 11).

19. I do not know whether it is physically possible to create an all-bionic body from the start that would come to constitute a person.

20. I am confident that there will never be a science of vehicles, whether vehicles are taken to include things in the environment like Otto’s notebook or not. Even if vehicles are confined to neural states, vehicles are too idiosyncratic to be systematized and treated scientifically. I am not doubting that neurophysiology is a science; what I doubt is that there will be a science that connects things like dopamine, serotonin, and electrical spiking activity to thoughts with particular content—for example, that Brazil’s deforestation increases global warming.

21. “Most systems based on EEG biofeedback fall into the ‘subject learns computer’ category; subjects are required to learn to control their own neural signals in the form that the computer presents them. While these systems do perform signal processing on the EEG signal,



they do not attempt to link into specific motor commands a priori to biofeedback training. The reason for this is self-evident—they are based on signals that are not the natural movement signal, but are rather a surrogate for it” (Donoghue and Serruya 2003).

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