

Ted Peters, "Contingency and Freedom in Brains and Selves," *God's Providence and Randomness in Nature*, eds., Robert John Russell and Joshua M. Moritz. West Conshohocken PA: Templeton Press, 2018) 261-288.

Ted Peters, "Free Will in Science, Philosophy, and Theology," *Theology and Science* 17:2 (May 2019) 149-153.

## 9 CONTINGENCY AND FREEDOM IN BRAINS AND SELVES

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In the face of recent findings in neuroscience, neurophilosophy, and the debate among physicists regarding contingency at the quantum level, this chapter advances this thesis: *Human free will exists, and what we mean by free will is self-determination*. What we experience as free will is actually the human self engaged in deliberation, decision, and action. This understanding of free will is less coherent against a backdrop of Newtonian mechanics but more coherent against a backdrop of the indeterminate interpretation of quantum physics. Human freedom is an indirect by-product of contingency in physical interaction.

We live in what appears to be a determined universe. Yet, at the human level, we experience both contingency and freedom every day.<sup>1</sup> Contingency is due to the dialectic between necessity and randomness at the fundamental level of reality, at the level of subatomic quantum activity. Human freedom is an indirect by-product of this underlying structure of physical interaction. Human freedom is characterized first and foremost by self-determination. What we call *free will* describes the everyday activity of deliberation, decision, and action whereby a human self determines what action will be taken.

My thesis is that *human free will exists, and that what we mean by free will is self-determination*. Unambiguous affirmation of the

existence of human free will is made difficult by deterministic claims proffered by naturalistic philosophers who, in many cases, conscript neuroscience in support of their doctrine. Empirical science does not in itself require a denial of human free will, but it provides evidence that can be mustered by those who wish to reduce what appears to be human freedom to physical or biological determinism.

In what follows I would like to clear up some misnomers. The first misnomer is that neuroscience requires determinism and, with enough research, scientists will soon be able to provide a physical explanation for all mental activities. This is a false assumption because it is the philosopher, not the scientist, who pursues an exhaustive physical explanation for mental events. Such reductionism is an add-on to the science. It is not entailed in the science itself.

The second misnomer is that determinism and freedom are opposites. In fact, determinism does not preclude free actions. What precludes free activity is *predeterminism*. With the term *predeterminism* I refer to explanations of human decision that ascribe a causal role to preconscious neuronal activity, explanations which eliminate the self as the determinant. I contend that the self makes decisions and takes actions and, because of this, determines within limits what will happen. In other words, free actions exhibit a form of determinism, namely, self-determination. In principle, then, determinism and freedom are compatible, at least when rightly understood.

The third misnomer is that the philosophical problem begins with the assumption that a two-part determinism suffices for scientific explanation. The two determinants are nature and nurture. Or, to say it with a bit more nuance, the first determinant is what we inherit from physical laws, biological evolution, and neuronal activity. The second determinant includes the specific history of our universe, natural selection, and recent socialization. This two-part framework is misleading because it overlooks what is obvious to our daily experience, namely, a third determinant. The third determinant is the human self, the self that deliberates, makes decisions, and takes actions. By reducing the question of human action to one of two predeterminants—nature or nurture—the human self is excluded from consideration. With this exclusion, only misplaced questions can be posed.



To advance my thesis I wish to start with the axiom formulated by philosopher Michael Gazzaniga: "We are personally responsible agents and are to be held accountable for our actions, even though we live in a determined universe."<sup>2</sup> With this axiom in mind, I wish to affirm a three-part determinism: nature, nurture, and self. Our self is determined by nature and nurture, to be sure, but our self also determines in part the course of events in our physical history. Unfortunately, to affirm this position with clarity requires correcting the misnomers mentioned.

### **Brains, Minds, and Selves**

The first misnomer, just mentioned, is the widespread belief that neuroscience requires determinism and, with enough research, scientists will soon be able to provide a physical explanation for all mental activities. This misnomer surfaces in the widespread cultural discussion of human free will in light of new knowledge gained by brain research.<sup>3</sup> On the one hand, improvements in brain-imaging technology seem to be providing us with increased data regarding the correlation between brain function and mental activity. On the other hand, the accumulation of this data could be interpreted in a deterministic fashion—that is, we might conclude that mental activity is exhaustively determined by brain activity. If this turns out to be the case, will human free will evaporate? Will what we experience as daily freedom be dubbed an illusion?

Increasingly, proponents of determinism reduce the mind to the brain. Some philosophers such as Daniel Dennett take a brutal stand: "the mind . . . is the brain."<sup>4</sup> Eugene d'Aquili and Andrew Newberg retain Dennett's brutality but with a softer fist:

In our model, the mind and the brain are essentially two different ways of looking at the same thing, the brain representing the structural aspects of the mind, and the mind representing the functional aspects of the brain. They each affect the other and are affected by the other in the rhythmic process of the empiric modification cycle.<sup>5</sup>

The structure of the biological brain is affected by natural selection or socialization, and the resulting brain governs what happens in the human mind. The brain determines the mind, so to speak.

We are losing our freedom because the neuroscientists are taking it away from us, according to science writer Dan Jones:

Neuroscientists increasingly describe our behaviour as the result of a chain of cause and effect, in which one physical brain state or pattern of neural activity inexorably leads to the next, culminating in a particular action or decision. With little space for free choice in his chain of causation, the conscious, deliberating self seems to be a fiction.<sup>6</sup>

Because of the chain of past causes, present choices are not really choices at all. Worse, no self is said to exist. What kind of an explanation is this? Evolutionary? Genetic? Neuro?

Just where do we locate the predetermining causes exerted by the brain on the mind? In our biology? In the genetic code bequeathed us by our evolutionary history? Before proceeding, we pause to note how evolutionary history is determinative only at the species level, whereas our brains are quite individual. Neurobiologist Walter Freeman contends that each human brain is unique. Already in the womb, each brain's path of development is discrete, "growing from the genetically determined groundwork by the grasping for available sensory input from within and outside its own body."<sup>7</sup> In short, evolutionary biology will not provide sufficient specificity to account for brain uniqueness let alone the brain's affect on the mind.

In addition, brain formation does not cease with birth. It continues. Some molecular biologists add in sociality. Our brains are plastic. They adapt to our environment, especially our social environment, at least until they mature at age twenty-five or so.

Our brains become minds—our reflexes become deeds—solely by social interaction. . . . The mind slowly emerges from the brain through imitation of the minds of those people with whom the infant interacts. Experiences of the first two years, before language, lay down much of the stable circuitry of the thinking brain.<sup>8</sup>

Note that the emergence of mind takes the form of organizing the circuitry of the brain. Infants can become thinking persons if they are systematically stimulated by the families who raise them. It takes relationship with an already thinking mind for our brains to produce another thinking mind. This led German philosopher Otfried Höffe to observe, "The actual insights of brain research offer in any event no dogmatic neuro-biologism according to



which mind and consciousness *merely* emerge as natural events and according to which the social nature of humanity occurs exclusively on the basis of biological nature."<sup>9</sup> From this we might draw the following conclusion: An argument for neuro-determinism must rely on more than the biology provided by evolution and more than the biology provided by procreation. It must include social determinants as well as biological determinants.

What we have noticed here is that our evolutionary history does not predetermine our brain. Our specific inheritance and birth does not predetermine what our mind thinks. Whatever influence our brain receives from social stimuli is an ongoing and interactive process, not a predetermined one.

### fMRI and the New Phrenology

Empirical research on human brain activity has accelerated due to functional magnetic resonance imaging (fMRI) techniques. Laboratory experiments search for "patterns of brain activity that appear if and only if the scanned person is having a conscious experience—what I call the 'signatures of consciousness,'" writes Stanislas Dehaene, director of the Cognitive Neuroimaging Unit in Saclay, France. "In one experiment after another, the same signatures show up: several markers of brain activity change massively whenever a person becomes aware of a picture, a word, a digit, or a sound. These signatures are remarkably stable."<sup>10</sup> This stability in brain imaging provides Dehaene with explanatory optimism: In time science will unravel all the mysteries that currently baffle us about human consciousness.

In contrast to this forecast of a totalist explanation, others foresee limits to what fMRI experiments will be able to yield. Writing from within the discipline of social psychology and stretching toward *social neuroscience*, John Cacioppo and his research colleagues identify limitations to the practice of brain imaging for the purpose of localizing centers of brain activity associated with information processes. For one thing, social interaction is itself a factor in brain activity; and neuroscience should partner with social psychology when designing research programs. Second, the assumption on the part of brain-imagers using fMRI techniques—the assumption that we can localize centers of brain activities that provide a physical substrate for mental information processing—is questionable. It provides a virtual twenty-first-century



version of nineteenth-century phrenology. Even though both intuitively and empirically we should look for localization of brain functions, this assumption blinds researchers from looking for the more subtle and nuanced connections between local centers and complex brain interactions. "As processes become more complex, localization necessarily becomes more distributed" throughout the brain. Curiously and importantly, the brain has a "capacity... to achieve the same functional outcomes through diverse neural mechanisms," therefore, locating so-called centers of brain activity associated with specific social activity does not warrant postulating a specific physical substrate. It takes a whole brain, say the globalists against the localists. "The take-home point is not to be disappointed by the limitations inherent in brain-imaging research but simply to realize that just because you're imaging the brain doesn't mean you can stop using your head."<sup>11</sup>

The human brain is marvelous by any measure. With eighty billion neuronal cells, each communicating with thousands of other neurons, between our ears we cradle more connections than stars in the Milky Way. Still, the relationship between these objective facts and our interior life—between our neuronal firings and our subjective consciousness—remains an unsolved mystery in science. Despite two decades of computerized brain imaging (fMRI), the mystery of brain activity remains unsolved even while philosophers and the media run off with unfounded claims of neurocentrism and biodeterminism. "To regard research findings as settled wisdom is folly, especially when they emanate from a technology whose implications are still poorly understood," write Sally Satel and Scott Lilienfeld. "Nevertheless, scientific humility can readily give way to exuberance. When it does, the media often seem to have a ringside seat at the spectacle."<sup>12</sup> When watching the spectacle, we need to pause for sober assessment. "It's all too easy for the nonexpert to lose sight of the fact that fMRI and other brain-imaging techniques do not literally read thoughts or feelings."<sup>13</sup> In sum, neuroscience itself is too new at the study of the brain to draw conclusions regarding the brain-mind relationship; yet nonscientists are already racing about with exuberance.

In an attempt to clarify misnomers, the issue is not that fMRI techniques are too new. Nor is the issue that the brain determines the mind. The issue is whether or not the self exists and whether the self effects action in the physical world. Satel and Lilienfeld fall short of seeing this important point. "The mind cannot exist without the brain. Virtually all modern scientists...



are mind-body monists."<sup>14</sup> Nevertheless, the mind cannot be reduced to the brain, they contend. "The mind is not identical with the matter that produces it. . . . One cannot use the physical rules from the cellular level to completely predict activity at the psychological level."<sup>15</sup> Despite the achievement here of distinguishing between brain activity and mind activity, Satel and Lilienfeld fall short of formulating the issue of human freedom in terms of the self as a determining agent.

Nor is the issue what we learn from research conducted by neuroscientists. The deterministic view that dubs freedom an illusion arises more from the philosopher than it does from the lab rat.

Neurophilosophy . . . works the interface between philosophy's grand old questions about choice and learning and morality and the gathering wisdom about the nature of nervous systems. It is about the impact of neuroscience and psychology and evolutionary biology on how we think about ourselves. It is about *expanding* and *modifying* our self-conception through knowledge of the brain.<sup>16</sup>

If neurophilosophy is philosophical reflection on what we learn from neuroscience, then we have a philosophical problem to confront. The philosophical question is this: Does such a thing as a human self exist? If so, how do we explain it? To explain the self we experience is an admirable task for either a scientist or a philosopher. To explain it away is only confusing.

#### **Just What Is a Self, Again?**

Neuroscience and its nephew, cognitive science, are not the only fields wherein the human mind, consciousness, subjectivity, selfhood, ego, and such have become the foci of attention. Other disciplines have taken up the topic: philosophy of mind, social theory, psychiatry, developmental psychology, and, of course, phenomenology. The shape-shifting body of ideas can be sorted into, roughly speaking, five discernible forms or models. For orientation, let me pause to identify these conceptual options.

1. *Ego Continuity*. Classic anthropology distinguished between body and soul, outer and inner, temporal and eternal. This dualism took its most hypostatized or reified form with René Descartes, who described the soul or inner self or ego as a substance, a spiritual substance distinguishable



from physical substance. The substantial self retains its identity (numerical continuity) through all external bodily or phenomenal changes in one's life story. Without the same metaphysical dualism, Immanuel Kant kept the notion of ego continuity and grounded it reflectively in "a certain internal faculty in relation to an intelligible world."<sup>17</sup>

2. *Personal Self as Confused Expression of a Higher Self.* According to ancient Gnosticism, buried within our physical body is a divine spark, a *penuma*, which will wend its way up above the levels of darkness to the divine light where all things are one. According to American transcendentalists, our individual soul is but a manifestation of the over-soul, the spiritual reality that unites all things. According to New Age Spirituality, our daily self lives in the darkness of the phenomenal world but, if properly guided, it can rise to a realization that it manifests a higher self, a mystical self that links all consciousness in the cosmos. In sum, what we observe as our daily self is but the tip of a giant iceberg, a cosmic self which is only partially manifested in us. India's New Age sage, Sri Aurobindo, contends that "beyond mind is a supra-mental or gnostic power of consciousness ... [which] is at its source the dynamic of consciousness."<sup>18</sup>
3. *Self as Delusion.* The reductionist model gaining cultural ground puts the brain in the driver's seat, with our mental state as what gets driven. What we experience as the interior life of the human self is epiphenomenal—that is, consciousness is a product of brain processes but is itself without any causal effect on those processes. No substantial ego exists, let alone an immortal soul. Despite the appearance that we exist as a self or an ego, we are but a phenomenal criss-crossing of brain activities. The self is a fiction. "No such things as selves exist in the world: Nobody ever *was or had* a self," touts neurophilosopher Thomas Metzinger.<sup>19</sup> Whenever we speak of our self or our ego or make first-person assertions, we are committing a fallacy; we are reifying our delusion.
4. *Self as Story.* Hermeneutical philosophers discard the notion of a continuous or unchanging ego and replace it with a temporal flow of defining events. The self becomes itself through narrative identity, through autobiography. We are not born with a fixed self; rather, who we are becomes a social construction. The self evolves. The self gains in self-understanding as it tells and retells its own story in relationship to other persons and the world. "The person of whom we are speaking and the agent on



know. One brain researcher, Joseph LeDoux, at the Center for Neural Science at New York University, for example, does not know the answer to the key question: How does consciousness arise? "We are far from solving the problem of how consciousness arises."<sup>24</sup> Psycholinguist Peter Hagoort adds, "How the brain solves the problem of binding the signals of these different systems into the sense of a unified self with continuity from past to future is an almost complete *terra incognita* for current cognitive neuroscience."<sup>25</sup> Our research scientists simply do not know how to explain what is still *terra incognita*.

Yet, curiously, a philosopher who interprets the *terra incognita* claims to know exactly how the brain handles the binding problem: The brain creates a nonexistent self. The philosopher, who allegedly bases his or her philosophical speculation on the science, seems to know more than the scientist does. To illustrate, let's look at the argument of Thomas Metzinger, a philosopher who claims to base his self-as-delusion philosophy on neuroscience:

Ultimately, subjective experience is a biological data format, a highly specific mode of presenting information about the world by letting it appear as if it were an Ego's knowledge. But no such things as selves exist in the world. A biological organism, as such, is not a self. An Ego is not a self, either, but merely a form of representational content—namely, the content of a transparent self-model activated in the organism's brain.<sup>26</sup>

Without personally studying the brain in the laboratory, the philosopher knows the answer the laboratory scientist could not provide. Curious.

Note how for Metzinger the qualities or traits we normally ascribe to the self or ego are transferred to the organism's brain. The action of presenting information about the world is now a task of the brain, which it presents to—what?—the ego which the brain has created to view this knowledge. Does the brain create a nonexistent puppet and then tell the puppet what to think? A self does not exist, says Metzinger, but brains exist, which create fictional selves just for the purpose of deluding the nonexistent self with presentational knowledge. Why would brains engage in such a fictional game? Since when have brains become agents with plans and strategies and conspiracies? Does Metzinger's brain look kinda like the old-fashioned self?

Note the term "representational" in Metzinger's "representational knowledge." The brain, allegedly, does not provide empirical data but rather *representational* knowledge. Ponder this for a moment. Representational knowledge requires symbols, language, imagination, construction, alternative



whom the action depends have a history, are their own history," writes Paul Ricoeur.<sup>20</sup>

5. *Self as Experiential Dimension.* Here, "the self is claimed to possess experiential reality, is taken to be closely linked to the first-person perspective, and is, in fact, identified with the very first-person *givenness* of the experiential phenomena," according to Dan Zahavi, who directs the Center for Subjectivity Research at the University of Copenhagen.<sup>21</sup> Phenomenologists such as Edmund Husserl have, since early in the twentieth century, been observing in us an *Urbewußtsein*, "an original and immediate non-objectifying self-givenness."<sup>22</sup> The self is given to conscious subjectivity before the self can reflect on the self as a self.

The Zahavi position on the self as an experiential dimension supplements the fourth position, that of self as story. Prior to consciousness of my ego, I am conscious. Prior to my treating myself like an object, my conscious self-reflection is a given. It also supplements the self as narrative, because the self comes prior to the narrative. "It takes a self to experience one's life as a story," says Zahavi.<sup>23</sup>

Although I am sympathetic to the fourth position, the self as story, the Zahavi position is strongly supported by phenomenological observation and deduction. To understand the self as an experiential dimension renders it ready for a historical life, ready for an autobiography. As I proceed, I will work with the experiential dimension model supplemented with the narrative or story model.

### Self as Delusion?

For the purposes of this treatment, we must acknowledge that the threat to coherence comes from the delusion model, where the subjective self allegedly loses its first-person center and surrenders to extra-conscious or biological determinism. Instead of explaining the role of the conscious self in experience, this so-called scientific approach attempts to explain it away. This is like being asked to explain a phenomenon and then supply an explanation that says the phenomenon does not exist.

Here we must distinguish between laboratory neuroscientists and philosophers of neuroscience. What the former does not know, the latter claims to



deliberation, and such. These are traits we ordinarily ascribe to the ego or self. Metzinger now says all these functions are taken up by the brain—the allegedly selfless brain—and then plopped like a mirage or a chimera or a play on a stage to a viewing self which does not exist. The nonsense here is as uncanny as it is colossal. Metzinger has in effect denied the existence of the self we daily experience and ascribed the equivalent of selfhood to the brain, to the biological or physical substrate that underlies our subjectivity. Instead of explaining subjective selfhood, he has simply moved the qualities of selfhood from the mind to the brain and then eliminated the selfhood we started with. What does this accomplish?

This is not science. It is scientism. Zahavi is not fooled. "To declare everything peculiar to human life fictitious simply because it cannot be naturalized, because it cannot be grasped by a certain mode of scientific comprehension, merely reveals one's prior commitment to a naive scientism, according to which (natural) science is the sole arbiter of what there is."<sup>27</sup> The moral here is this: We should thank our laboratory researchers for upholding parsimonious and cautionary care in sharing the results of their brain research. In addition, we should hold with skepticism the fanciful flights of neurophilosophers who sail off into the clouds of materialist and reductionist ideology while pretending to be grounded in serious science.

#### ***Do Automatic Thought Processes Eliminate Free Will?***

A second on my list of misnomers is this one: Determinism and freedom are opposites. If we define freedom in terms of self-determination, then this opposition collapses. Predeterminism or antecedent determinism would eliminate freedom as self-determination, to be sure; yet, the idea of self-determination is certainly compatible with a general notion of determinism. Let's follow the logic. Note: I'm not arguing in favor of global determinism; rather, I merely wish to demonstrate that human free will understood as self-determination is compatible with global determinism.

The self-as-delusion school of thought makes the case that preconscious or unconscious brain activities are what actually determine human action; so to think that it is a self who determines events is a delusion. Recall, I don't have an aversion to determinism but to a predeterminism that allegedly



eliminates the existence of the human self. The self-as-delusion school relies on predeterminism to explain what appears to be self-determination. So, here let us ask: Do *automatic thought processes* eliminate free will? With advances in neuropsychology regarding the impact of automatic responses to stimuli on our decision making, the specter of brain-mind determinism spooks our assessment of free will.

The kind of experiment psychologists run looks like the following example. A group of mock voters are given only a split second to see a portrait photograph of a candidate for a state or national public office. After this quick viewing, the mock voters are asked to judge the candidates. "Remarkably," observes John Bargh at the Automaticity in Cognition, Motivation, and Evaluation Lab at Yale University, "the straw poll served as an accurate proxy for the later choices of actual voters in those states." Presumably the quick view choice indicates that "people often make decisions without having given them much thought—or, more precisely, before they have thought about them *consciously*."<sup>23</sup>

Here is the difficulty. Even if automatic thought processes can be identified, human consciousness is not limited to automatic thought processes. Automatic thought processes are only one category of processes. The other is *controlled thought processes*. Automatic processes are fast, whereas controlled processes in the mind take more time, requiring "purposeful and relatively slow engagement of conscious thought."<sup>24</sup> If we associate free will with the triple sequence of deliberation, decision, and action, as I have contended, then we have a tacit acknowledgment here that such conscious decision making exists and is not reducible to the automatic. Some human activity can be explained in terms of automatic brain processes, to be sure; yet, other human activity can be explained as conscious decision making. There is room for both. Automaticity does not replace conscious action. If the claim were to be made that no conscious or controlled decision making exists, then we might find a threat to the concept of free will. Evidently, that threat is not being raised by analysts of automatic thought processes.

More could be said here about the human mind. The mind on occasion elects to sequester some thought processes into the automatic category. Not all thought processes could be of the controlled type, because this would confront the human psyche with an overwhelming barrage of unmanageable stimuli. We almost daily decide to relegate certain decisions to habit or



training or automaticity just to reduce the number of items to be addressed in our mental workspace.

I recall as a child watching a refrigerator commercial on television, back in the black-and-white days. The mother of the house was hurriedly removing food from the refrigerator to prepare the evening meal. In her scramble, both hands were filled with items she intended to move from the refrigerator shelf to the drain board. The camera turned downward just in time to catch sight of her ankle and foot—she was wearing nylon stockings and high heels—as her leg flipped, the refrigerator door closed. It appeared the homemaker gave no conscious thought to how she would close the door, but her leg seemed to know exactly what to do at this rushed moment. It might appear to an observer that the purposeful act of closing the door with her leg was automatic because it was so fast; yet, to suggest that it was less than a decision made by her mind would be to overinterpret the phenomenon of automaticity.

Do *automatic thought processes* eliminate free will? No. For two reasons. First, controlled time-taking conscious thought processes still exist, and these exhibit clearly the phases of deliberation, decision, and action. Second, what appears to be fast automatic processes may still be the product of free action; they simply are fast. In short, no good reason exists at present to reduce all controlled thought processes to automatic processes.

We simply cannot deliberate thoroughly about all matters that appear on our screen of consciousness. Each of us, as a self, must select and limit the number of items each day about which decisions must be rendered. What we remember and what we expect need to be factored into deliberation; and we could not tolerate a chaotic inundation of random memories let alone an additional chaotic array of aims and goals. Uncontrolled overstimulation might lead to what Plato identified as mania. If our brain would take on some of the filtering and ordering responsibility prior to our conscious deliberation, this would maintain sanity in the face of the threat of mania.

Neuroscientific studies are beginning to identify quite elegant yet still mysterious pathways where this filtering and organizing take place. Episodic memory, for example, requires something that the brain graciously provides, namely, filtered associations of temporally discontinuous events. "Episodic memory consists of associations of objects, space, and time," write Takashi Kitamura and colleagues. "In humans and animals the entorhinal



cortex (EC)—hippocampal (HPC) network plays an essential role in episodic memory, with medial EC (MEC) and lateral EC (LEC) inputs into HPC providing spatial and object information, respectively.<sup>30</sup> In layer two of entorhinal cortex, these scientists found clusters of excitatory neurons called "island cells," which activate and suppress feeds forward. Island cells provide a control circuit for temporal association memory, so to speak. This input from island cells to the hippocampus is regulated by the control circuit. "Such a regulation is crucial for optimal adaptive benefit; too strong an association of a particular pair of events may interfere with associations of other useful pairs, whereas too weak an association for a given pair of events will not result in an effective memory."<sup>31</sup> In other words, island cells may be important signaling hubs within neural microcircuits for memory.<sup>32</sup> In summary, we can thank our island cells for organizing our episodic memory so that deliberation, decision, and action can take place at the level of consciousness.

Those rare individuals among us with extraordinary memories remind us of our daily need to keep our memory under control. Researchers at the University of California at Irvine study individuals with highly superior autobiographical memory (HSAM). Such persons are able to draw into conscious thought details of each day on their personal calendar going back for decades. Not just dramatic holidays, but everyday ordinary events day after day, year after year. Although these memory systems are "not precise video and audio recorders," the amount of detail recalled is astounding when compared to the average person. "HSAM subjects typically appreciate their special skill," say the researchers.<sup>33</sup> But, not every HSAM subject. Some find too much memory in consciousness to be a burden; they find themselves tortured by their recollections. The quantity of recallable memory does not in itself create a problem for consciousness, rather it is a question of whether recallable memories are well organized and subject to willful arranging in our mental workspace. Such organization must be the product of both preconscious automatic neuro-cataloguing and conscious efforts at filing and retrieval.

In summary, memory provides the conscious moment with a contextualized history organized in such a way that deliberation and decision can be consistent with a select theme or identity embedded in this recall. The brain provides our mental workspace with a clearinghouse service, so to speak. This



is requisite for the self as agent to deliberate, decide, and act at the conscious level. Maybe even at the preconscious level.

### The Conscious Self as Agent

According to the self as experiential dimension model, the first-person perspective is given with consciousness. What more can we say about consciousness?

Dehaene tells us what consciousness is.

Consciousness is global information broadcasting within the cortex: it arises from a neuronal network whose *raison d'être* is the massive sharing of pertinent information throughout the brain. . . . Thus consciousness has a precise role to play in the computational economy of the brain—it selects, amplifies, and propagates relevant thoughts.<sup>34</sup>

This begs the question: What guides the consciousness so that it can determine which pertinent information will be selected, amplified, and propagated? From where does the self derive the self who takes charge of selecting, amplifying, and propagating thoughts judged to be relevant? It appears to me that Dehaene may have identified the primal or *Urbewußtsein*, but he has not taken the step of identifying the very self which we experience each day.

As we have been suggesting, the first mystery of consciousness is subjectivity and the capacity of the human subject to treat itself as an object. Neurotheologian Andrew Newberg stipulates:

I will describe awareness as that which refers to the subjective perspective of things in the environment which are actually registered within the individual's sphere of knowledge. . . . Consciousness is related to awareness in that consciousness represents an awareness of the self as object. Thus, the individual is both the subjective experiencer as well as that which is experienced.<sup>35</sup>

Dehaene calls this *metacognition*, "the capacity to entertain thoughts about our thoughts."<sup>36</sup>

In common parlance, we call this treatment of oneself as an object, *reflection*. Think of looking at yourself in a mirror. Are you looking at yourself as an object? From the outside? As if you were someone else? As if the mirror image were someone other? Are you schizoid? No. Looking at yourself

as an object is a single act of your self-awareness. "Reflection is not a kind of empathy, nor is it a kind of multiple personality disorder; it is a kind of self-awareness. It is, however, a kind of self-awareness that is essentially characterized by an internal division, difference, and *alterity*."<sup>37</sup> What is decisive is that a prior subjectivity makes objective reflection possible, possible at every level of human thinking. For an objectivist science to deny the existence of the subjectivity out of which it arose is like a tree cutting off its own roots.

What is fundamental to human experience is the first-person perspective, reflective thinking, deliberating, making decisions, and taking action. This is best described as self-determination, in my judgment, even though it is commonly known as free will. A scientific explanation should help us understand self-determination, not eliminate it.

Among the startling facts of consciousness is the self's deliberate employment of the brain. The self can order the brain to concentrate, to think rationally, to think poetically, and such. Self-control which includes brain control is a part of generic human experience. So, I ask: Who is the "I" capable of talking about "my brain"? Who is it that can say such things as "I will now use the rational part of my brain" or "I will now delve into the intuitive part of my brain." If the neurocentrists and reductionists are correct in their deterministic assumptions, then one would expect the brain to speak: "I will now tell the mind what to think or the self what to decide." But, such brain directives are not part of our daily experience. What we do experience each day is that each of us as a self deliberates, decides, and initiates action. The task of the scientist and even that of the philosopher is to explain our experience, not to explain it away.

Neurotheologians Nancey Murphy and Warren Brown are careful to avoid explaining self-determinism away. What I have been calling the "self" they refer to as the whole organism, the whole human person, who exerts top-down causation on lower-level physical processes. "Determinism/indeterminism at the neurobiological level is irrelevant," they say, "because downward causation amounts to selection among or constraint of lower-level causal processes . . . free will [should] be seen as a holistic capacity of mature, self-reflective human organisms acting within a suitable social context."<sup>38</sup> They clear up a misnomer: "The issue is not whether the laws of neurobiology are themselves deterministic, but whether neurobiological *reductionism* is true."<sup>39</sup>



In my judgment, reductionism is not true. Human subjectivity which we experience as selfhood or ego is a reality. We experience it daily. What we need to do scientifically is explain it, not explain it away. In addition, if such a thing as human freedom—understood as free will—exists, we need a redescription if not an explanation that fits the data, that elaborates on our daily experience.

It appears that the free will which we intuitively understand and take advantage of depends upon a necessary feature of the physical substrate upon which all human consciousness depends, namely, contingency. The concept of contingency entails an open future, a future not yet predetermined. Without an open future, free will understood as self-determination could not be possible. To contingency and openness in the physical world we now turn.

Before we make this turn, let me sum up our treatment of the three misnomers. First, it is a misnomer to think that brain research is able to explain mental activities exhaustively in terms of physical determinants. This is a misnomer because the mental activities of the human self are not reducible to neuronal firings, reducible to a physical substrate. Second, it is a misnomer to assume that determinism precludes free actions. If we define human freedom as self-determination, then the self becomes one determinant among others. Third, observing self-determination is what resolves the third misnomer, namely, the assumption that we can rely exclusively on a two-part global determinism: nature and nurture. Rather, if the self is a determinant, a minimalist philosophical scheme would require a three-part determinism: nature, nurture, and self.

But this is not enough. Though we need not defend a global indeterminism when supporting the idea of human free will, nevertheless, physical reality must provide at least a minimal opening. Could a larger opening be provided by physical contingency? What I have tried to do thus far is show that the understanding of free will as self-determination might be made compatible with Newtonian mechanics and a philosophy of global determinism. However, free will is more coherently understood within the context of indeterminism and contingency at the subatomic level. Indeterminism at the subatomic level might be a necessary even if not sufficient condition for free will at the human level. Now, we are ready to make this turn to the physical world, to our cosmic and historic home.



### Cosmology, Contingency, and Human Freedom

We now turn from the mind to the cosmos, from the brain to the electron. "The mind-body problem is not just a local problem, having to do with the relation between mind, brain, and behavior in living animal organisms, but... it invades our understanding of the entire cosmos and its history," writes philosopher of science Thomas Nagel.<sup>40</sup> The human self could not deliberate, decide, and take effective action unless some level of contingency exists in the physical substrate, in the physical universe.

For Nobel Laureate Christian de Duve, "determinism and constrained contingency... pervades the history of life."<sup>41</sup> James Bradley, similarly, sees that "randomness is ubiquitous throughout both the living and non-living world."<sup>42</sup> Skeptic Paul Kurtz helps us define the terms:

Contingencies may be accidents, chance events, misadventures, exceptions to the rule, freaks, unexpected or improbable, unpredictable, unique, or bizarre. Although all events are caused—in the sense that they do not pop into existence out of nowhere—we may not know which initial conditions or causes will operate at any one time.<sup>43</sup>

Physicist Henry Stapp rides in the wake of the Copenhagen School of quantum mechanics. Stapp asserts with confidence that we live in an indeterministic universe. Further, physical indeterminism translates directly into human free will understood as causal efficacy. "Contemporary physical theory annuls the chain of mechanical determinism. In a profound reversal of the classical physical principles, its laws make your conscious choices causally effective in the physical world, while failing to determine, even statistically, what those choices will be."<sup>44</sup> In short, we human beings enjoy free will because quantum activity is indeterministic.

Similarly, physicist and theologian Robert John Russell prefers the indeterministic interpretation of quantum theory and, thereby, proclaims that contingency lies in the fundamental physics of all material reality. He further contends that without contingency at the physical level we could not experience freedom at the human level. I will accept this as axiomatic for what follows.

The philosophical position Russell affirms can be called *ontological indeterminism*. "By ontological indeterminism I mean the philosophical interpretation of nature according to which there may not always be an efficient physical cause for every effect."<sup>45</sup> Russell's ontological indeterminism would



find support among others who make the indeterministic interpretation of quantum activity. Referring to the uncertainty principle in subatomic physics, Nobel Prize-winning physicist Charles Townes argues that physical reality can no longer be thought of as deterministic. Chance contravenes a closed or mechanistic view of the universe.

The modern laws of science seem, then, to have turned our thinking away from complete determinism and towards a world where chance plays a major role. It is chance on an atomic scale, but there are situations and times when the random change in position of one atom or one electron can materially affect the large scale affairs of life, and in fact our entire society.<sup>46</sup>

If contingency characterizes the short life of the electron, so also freedom can characterize life at the level of human consciousness.

What we experience at the level of consciousness is a subjective self that deliberates, decides, and takes action; and this action exhibits causal efficacy in our material world. This is difficult though not impossible to explain within the framework of a Newtonian closed causal nexus. If the human self is dubbed a causal agent within the closed causal nexus, then human free will becomes coherent within this worldview.

Yet, the selection process leading to decision and self-determination fits better with a quantum understanding of the brain's physical substrate, wherein the self's decision effects the collapse of the wave function and leads to a new quantum state. According to Stapp,

the selection process is essentially a competition among the experiential possibilities, with the winner becoming the actual experience, which is the reality whose coming into being is represented by the transition to the new quantum state. This conception of the process of selecting the actualized state entails that the experiential aspect of the actualization event is, effectively, the cause of this event.<sup>47</sup>

The self's decisions are not exhaustively predetermined by neuronal direction; rather, the self's decisions become new determiners in their own right. "Each actualization event has its physical side, which is just the collapse of the wave function itself, and also its experiential side."<sup>48</sup> Stapp could not proffer such a hypothesis without assuming the presence of chance or contingency underlying physical processes, opening physical reality to a causative role for human free action.

I follow Stapp and Russell: Indeterminism at the quantum level helps make possible freedom at the human level. Quantum indeterminacy is a necessary condition for human freedom, even if it is not a sufficient condition. More explanation is required to make the move from quantum indeterminism to human subjectivity. Even so I would like to venture a paradoxical proposition: Quantum indeterminacy has determined that we would be free.

Therefore, when I speak of a determined universe, I do not intend to eliminate or preclude the role of physical indeterminism when the world anticipates future events. Future events are contingent, even at the strictly physical level. When I speak of a determined universe I speak of past events in the physical world as *already* determined and determining; and I speak of the human self as a determinant for some future events. My position cannot be described as exhaustively deterministic in the Newtonian or clockwork sense. More in the next section.

#### George Ellis's Three Causes

I opened this chapter by asserting that it appears that we live in a determined universe. It seems that our universe has determined that fundamental physical processes will include contingency along with necessity, randomness along with order, chance along with destiny. At the human level, we have been determined to be free, free to contribute to the determining of future events.

Not everyone would agree. Following Pierre-Simon, Marquis de Laplace (1749–1827), Cambridge physicist Stephen Hawking advocates what he calls “scientific determinism” this way:

Given the state of the universe at one time, a complete set of laws fully determines both the future and the past. This would exclude the possibility of miracles or an active role for God. . . . A scientific law is not a scientific law if it holds only when some supernatural being decides not to intervene.<sup>49</sup>

The cosmic determinism espoused by Hawking applies to the earliest big bang universe as well as to everyday mental activity. Where is the contingency we experience and observe? Where is the self-determination that arises out of our physical history? Must Hawking's deterministic interpretation of physics reign unchallenged?



We can challenge such a global determinism by introducing chance, randomness, and unpredictability. According to mathematician and cosmologist George Ellis, we live in an underdetermined world.

Irreducible randomness occurs in physics at the quantum level, thereby influencing cosmology and the existence of life on Earth. If it were not for this randomness, we would be stuck in the vice of determinism and outcomes would be limited and uninteresting. But it is there, as part of the design of the universe.<sup>50</sup>

Randomness, says Ellis, insures that the physical universe escapes the vice grip of a total determinism.

For Ellis, three kinds of causation characterize the universe in its micro- and macroscopic: necessity, purpose, and chance. Necessity "has an inexorable impersonal quality. It is the heart of physics and chemistry. It can be successfully described by mathematical equations." Purpose, on the other hand, "is the core of human being, as well indeed of all life. All living entities embody some kind of purpose or function in their structure and actions." Finally, chance

embodies the idea of randomness, implying a lack of purpose or meaning. Things just happen that way, not because it's inevitable, but because it's possible, and maybe probable. It is prevalent in the real universe because of the large number of unrelated causes that influence events, and in particular because of the vast numbers of micro-events that underlie all macroscopic outcomes. All three kinds of causation occur in an intricate interplay in the real universe.<sup>51</sup>

The initial conditions at our universe's origin—at the big bang—determined that the physics and hence the biology of what would follow would include contingency, randomness, and chance. The big bang did not predetermine actual events; rather, the principles by which quantum physical and subsequent biological processes operate were determined to include contingency, randomness, and chance. It may seem odd to say that *indeterminism is determined* or *indeterminism determines* other events, but I wish to ready us to see the sense in saying that human free actions are considered a form of determinism, namely, self-determination.

What happened at the big bang and what happens at the quantum level both prepare the physical stage for the drama of meaning that takes place in human subjectivity. Ellis writes,



There is much evidence that molecular machinery in biology is designed to use that randomness to attain its desired results. . . . This is true also in terms of macro levels of behaviour, and in particular as regards how the brain functions. . . . Randomness is harnessed through the process of adaptive selection, which allows higher levels of order and meaning to emerge. It is then a virtue, not a vice; it allows purpose to be an active agent by selecting desired outcomes from a range of possibilities.<sup>52</sup>

In sum, selected outcomes by a thinking self take advantage of quantum randomness and are thereby prepared to contribute to meaning at the subjective level.

I wonder if Ellis along with Russell should consider altering their use of terms. Rather than use "determined" to refer to an inflexible universe governed by necessity, perhaps they could use the term "*predetermined*." The warrant for distinguishing predeterminism from determinism can be seen in the work of theologian John Cobb, who like myself defines freedom in terms of self-determination. "Self-determination . . . must mean that the intention was not in its turn a product of antecedent factors alone. Instead the intention must have been in part self-determined in the moment in which it precipitated the action."<sup>53</sup> Freedom as self-determination would be precluded not by determinism but by predeterminism, by antecedent determination.

The issue is not whether natural events are determined, but rather whether they are exhaustively predetermined. Some events consist of the actualization of certain potentials while other potentials remain unactualized. Given his acknowledgment of chance and randomness, some determining factors are selected from potentials rather than necessarily predetermined.

Might we say that all natural events as well as historical events are determined, yet also say that they are not predetermined? Is not the problem one of predetermination versus determination within a contingent and open future?

Why are we going back to the big bang or to subatomic physics to look for contingency? Because physical contingency is a precursor to human freedom. To deny physical contingency provides the grounds for denying the existence of what appears to be free will. Denying contingency at the physical level turns freedom at the human level into an illusion, at least according to Hawking:

The molecular basis of biology shows that biological processes are governed by the laws of physics and chemistry and therefore are as determined as the orbits of the planets. Recent experiments in neuroscience support the view that it is our physical brain, following the



known laws of science, that determines our actions, and not some agency that exists outside those laws. . . . It is hard to imagine how free will can operate if our behavior is determined by physical law, so it seems that we are no more than biological machines and that free will is just an illusion.<sup>74</sup>

Hawking creates an unnecessary problem: The self-determination we experience daily from a first-person perspective is dubbed an illusion by a physicist who expects some day to provide an exhaustive explanation from a third-person perspective. What if the physics which underlies both the biology and even the psychology of the human person determines indeterminism, and this indeterminism, in turn, makes possible self-determination?

Here is a caveat: Underlying quantum physical indeterminism appears to be a necessary—though not a sufficient—condition for the appearance at the biological level of subjectivity and, in turn, the conscious ability to make decisions as well as to perceive meaning in history.<sup>75</sup>

### Conclusion

There is indeed a self, but what we call "self-identity" is a process and not a fixed entity. This process is underway at all times when we are conscious. "So the conscious self isn't located in any particular part of the brain; rather, it is what's known as an emergent phenomenon."<sup>76</sup> Given that the self is a process always in motion, so to speak, what distinguishes one's self from another is its particular history. A self is a biography, a story, a narrative. As a story, the human self has a past it remembers and a future it anticipates. The meaning of the present moment is determined by its context in the larger text, the total story. "Do you really want to know who I am?" asks Jennifer Ouellette. "Let me tell you a story."<sup>77</sup>

The story Ouellette tells about herself is unique, just as the story each one of us would tell would be similarly unique. Not one of these autobiographical stories is predetermined by the antecedent physics of the universe. Rather, each unique self-story exhibits continuity with underlying physical principles along with singular paths made possible by contingency in the underlying physics. What we refer to as *human freedom* is actually *self-determination* produced by the threefold sequence within human consciousness: deliberation, decision, and action. One's biography is an



after-the-fact account of the history of one person's contingent decisions and experiences.

What I have argued for is this: *Human free will exists, and what we mean by free will is self-determination.* What I have left untouched is the theological matter of the bound will and its liberation by divine grace. That will have to wait for another treatment.

Finally, a cosmic comment. Perhaps there is good reason that the universe we live in appears determined. In saying this, I am not embracing a doctrine of global determinism characteristic of Newtonian mechanics, according to which all events are predestined due to a total cosmic mechanism. Nor am I saying that our present moment can be explained exhaustively as the effect of past causes. I acknowledge and even celebrate how our physical universe makes room for contingency and even unpredictability in events. Specific events are underdetermined in this determined universe. Might we say that underdetermined events are determined to be underdetermined? This is incidental to my thesis, however, which goes like this: *Human free will exists and it takes the form of self-determination.* At least some contingent historical events are determined, determined by a human subject who deliberates, decides, and takes action.

### Notes

1. Evolution has determined that we would be free, says Philip Hefner. "Freedom refers to the condition of existence in which humans unavoidably face the necessity both of making choices and of constructing the stories that contextualize and hence justify those choices." Philip Hefner, *The Human Factor: Evolution, Culture, and Religion* (Minneapolis: Fortress Press, 1993), 38.

2. Michael S. Gazzaniga, *Who's In Charge? Free Will and the Science of the Brain*, The Gifford Lectures 2009 (New York: HarperCollins, 2011), 2, author's italics. "The dominant idea in modern neuroscience is that a full understanding of the brain will reveal all one needs to know about how the brain enables the mind, that it will prove to be enabled in an upwardly causal way, and that all is determined. . . . I will argue that . . . modern neuroscience is not, in fact, establishing what amounts to a wholesale fundamentalism with respect to determinism. I will maintain that the mind, which is somehow generated by the physical processes of the brain, constrains the brain." Gazzaniga, *Who's in Charge?* 4.

3. "The brain is the intellectual excitement for the twenty-first century," says Bill Newsome at Stanford University School of Medicine. Cited by Alison Abbott: "Solving the Brain," *Nature* 499, no. 7458 (July 2013):272-74, 273. Europe's Human Brain Project is attempting to develop computer languages for a supercomputer to interface with the human brain.



Transhumanists are looking forward to downloading an entire human information packet into this supercomputer. Former U.S. President Barack Obama asked for the first \$100 million to launch the BRAIN Initiative "to work out exactly how the billions of neurons and trillions of connections, or synapses, in the human brain organize themselves into working neural circuits that allow us to fall in love, go to war, solve mathematical theorems or write poetry. What's more, researchers want to understand the ways in which brain circuitry changes—through the constant growth and retreat of synapses—as life rolls by," Abbott, "Solving the Brain."

4. Daniel Dennett, *Breaking the Spell* (New York: Viking, 2006), 107. It is possible for a neurophilosopher to hold that the brain is the self and still acknowledge what the facts acknowledge, namely, human persons engage in self-control and free decisions. Patricia Churchland holds this position, describing free will in terms of self-control. "If you are *intending* your action, *knowing* what you are doing, and are of sound mind, and if the decision is not coerced (no gun is pointed at your head), then you are exhibiting free will. This is about as good as it gets." Patricia C. Churchland, *Touching a Nerve: The Self as Brain* (New York: W.W. Norton, 2013), 180, Churchland's italics.
5. Eugene d'Aquili and Andrew B. Newberg, *The Mystical Mind: Probing the Biology of Religious Experience* (Minneapolis: Fortress Press, 1999), 75.
6. Dan Jones, "The Free Will Delusion," *New Scientist* 210, no. 2808 (April 2011): 32–35, 32.
7. Walter J. Freeman, *Societies of Brains: A Study in the Neuroscience of Love and Hate* (Hillsdale: Lawrence Erlbaum Associates, 1995), 120.
8. Robert Pollack, "A Place for Religion in Science?" *Cross Currents* 55, no. 2 (Summer 2005), 262.
9. Otfried Höffe, *Can Virtue Make Us Happy?* trans. Douglas R. McGaughey and Aaron Bunch (Evanston: Northwestern University Press, 2010), 249.
10. Stanislas Dehaene, *Consciousness and the Brain: Deciphering How the Brain Codes Our Thoughts* (New York: Viking, 2014), 13. Along with Jean-Pierre Changeux, Dehaene proffers a *workspace* theory of human consciousness. Awareness moves from subconscious to conscious only when we pay attention to specific sets of information in our brains, information in the form of images, memory, emotional states, and such. These information packets come together in a limited-capacity workspace, so to speak; then readied to broadcast to all brain regions through axons. This purported workspace is where consciousness emerges. Christof Koch complains that this workspace theory fails to explain the "why" of consciousness. Christof Koch, "In the Playing Ground of Consciousness," *Science* 343, no. 6170 (January 2014): 487. See: editorial, "Brain Waves," *Nature* 508, no. 7494 (April 2014): 8.
11. John T. Cacioppo, Tyler S. Lorig, Gary G. Berntson, Catherine J. Norris, Edith Rickett, and Howard Nusbaum, "Just Because You're Imaging the Brain Doesn't Mean You Can Stop Using Your Head: A Primer and Set of First Principles," *Journal of Personality and Social Psychology* 85, no. 4 (2003): 650–61. "The media routinely report on scans showing that specific brain locations light up when we feel rejected or speak a foreign language. These news stories may give the impression that current technology provides fundamental insights into how the brain works, but that impression is deceiving." Rafael Yuste and George M. Church, "The New Century of the Brain," *Scientific American* 310, no. 3 (March 2014): 38–45, 40.
12. Sally Satel and Scott O. Lilienfeld, "Losing Our Minds in the Age of Brain Science," *Skeptical Inquirer* 37, no. 6 (November/December 2013): 30–35, 32.
13. *Ibid.*, 33.



14. *Ibid.*
15. *Ibid.* 34. Not every fMRI researcher is interested in the heavy questions regarding the human self. Some view fMRI analysis as a method for increasing the effectiveness of advertising. Some Stanford researchers are employing electroencephalography to follow brain activity in response to television programs and advertisements. This may become a "useful tool in targeting education or marketing." "Brain Scans Predict TV Hits," *Nature* 512, no. 7512 (August 2014), 8.
16. Churchland, *Touching a Nerve*, 20; Churchland's italics.
17. Immanuel Kant, *Critique of Pure Reason*, trans. J.M.D. Meiklejohn (New York: Dutton, 1934), 248.
18. Sri Aurobindo, *The Essential Aurobindo*, ed. Robert McDermott (New York: Schocken, 1973), 55. See Ted Peters, *The Cosmic Self: A Penetrating Look at Today's New Age Movements* (New York: Harper, 1991), 64–68.
19. Thomas Metzinger, *Being No One* (Cambridge, MA: MIT Press, 2003), 1.
20. Paul Ricoeur, *Oneself as Another*, trans. Kathleen Blamey (Chicago: University of Chicago Press, 1992), 113. Ricoeur's concept of the self actually goes beyond the strictly narrative approach when he declares that the mutually defining interaction of self with the other is primal: "the selfhood of oneself implies otherness to such an intimate degree that one cannot be thought of without the other." Ricoeur, *Oneself as Another*, 3.
21. Dan Zahavi, *Subjectivity and Selfhood: Investigating the First-Person Perspective* (Cambridge, MA: MIT Press, 2008), 106.
22. *Ibid.*, 70.
23. *Ibid.*, 114.
24. Joseph E. LeDoux, "Emotions—A View through the Brain," in *Neuroscience and the Person: Scientific Perspectives on Divine Action*, eds. Robert John Russell, Nancey Murphy, Theo C. Meyering, and Michael A. Arbib (Vatican City and Berkeley: Vatican Observatory and the Center for Theology and the Natural Sciences, 1999), 115.
25. Peter Hagoort, "The Uniquely Human Capacity for Language Communication," in *Neuroscience and the Person: Scientific Perspectives on Divine Action*, eds. Robert John Russell, Nancey Murphy, Theo C. Meyering, and Michael A. Arbib (Vatican City and Berkeley: Vatican Observatory and the Center for Theology and the Natural Sciences, 1999), 55.
26. Thomas Metzinger, *The Ego Tunnel: The Science of the Mind and the Myth of the Self* (New York: Basic Books, 2009), 8.
27. Zahavi, *Subjectivity and Selfhood*, 112.
28. John A. Bargh, "Our Unconscious Mind," *Scientific American* 310, no. 1 (January 2014): 30–37, 32.
29. *Ibid.*, 33.
30. Takashi Kitamura, Michele Pignatelli, Junghyup Suh, Keigo Kohara, Atsushi Yoshiki, Kuniya Abe, and Susumu Tonegawa, "Island Cells Control Temporal Association Memory," *Science* 343, no. 6173 (February 2014): 896–901, 896.
31. *Ibid.*, 901.
32. H.T. Blair, "Charting the Islands of Memory," *Science* 343, no. 6173 (2014): 846–47.
33. James L. McGaugh and Aurora lePort, "Remembrance of All Things Past," *Scientific American* 310, no. 2 (February 2014): 40–45, 42.
34. Dehaene, *Consciousness and the Brain*, 16–17.



35. Andrew B. Newberg, *Principles of Neurotheology* (Aldershot: Ashgate, 2012), chap. 2. Can we avoid simplistic reductionism in neurotheology? Yes, say Wesley Wildman and Ian Cooley. "The authenticity of religious behaviors, the truth of religious beliefs, and the cognitive reliability of religious experiences are questions that cannot be settled one way or another by knowledge of neurological correlates alone . . . such neurological questions calls for large-scale theories whose relative plausibility needs to be assessed against everything we learn. . . . To its credit, neurotheology appears to be holding out for the pursuit of such questions." Wesley J. Wildman and Ian R. Cooley, "Neurotheology," in *The Routledge Companion to Modern Christian Thought*, eds. Chad Meister and James Beilby (London and New York: Routledge, 2013), 821–37, 832.
36. Dehaene, *Consciousness and the Brain*, 247.
37. Zahari, *Subjectivity and Selfhood*, 91.
38. Nancey Murphy and Warren S. Brown, *Did My Neurons Make Me Do It? Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will* (Oxford: Oxford University Press, 2007), 272.
39. *Ibid.*, 273, authors' italics.
40. Thomas Nagel, *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False* (Oxford: Oxford University Press, 2012), 3.
41. Christian de Duve, *Vital Dust: The Origin and Evolution of Life on Earth* (New York: Basic Books, 1995), xviii.
42. What does *Random* mean? Here is James Bradley's definition. *Random = Lacking pattern; incompressible; unpredictable; lacking discernible cause; independent of environmental factors.* James Bradley, "Randomness, God's Providence, and Anxiety," SATURN paper, Bradley's italics. The appeal to two alternative schemes—a deterministic universe versus an uncontrollably random universe—leaves us with no universe in which free will can function, according to Karl Svozil. "Ontologically a clockwork universe, as well as one pushing uncontrollable chance, leaves no room for willable alternatives." Karl Svozil, "Dualistic free will: physical and computational aspects of miracles and oracles," elsewhere in this volume. It appears to me that an utterly random universe without law-like parameters is simply not an option among cosmologists.
43. Paul Kurtz, *The Turbulent Universe* (Buffalo: Prometheus, 2013), 114.
44. Henry P. Stapp, *Mindful Universe: Quantum Mechanics and the Participating Observer*, 2nd edition (Heidelberg: Springer, 2011), vii.
45. Robert John Russell, *Cosmology from Alpha to Omega: The Creative Mutual Interaction of Theology and Science* (Minneapolis: Fortress Press, 2008), 120. Temporal indeterminism has theological implications for eternal redemption, according to Russell. "God must have created the universe such that it is transformable, that is, that it can be transformed by God's action. In particular, God must have created it with precisely those conditions in order to be transformable by God's new act." *Time in Eternity* (Notre Dame: University of Notre Dame Press, 2012), 180.
46. Charles H. Townes, "The Convergence of Science and Religion," *Think* 32, no. 2 (March–April 1966): 2–7, 3. <http://www.templetonprize.org/pdfs/THINK.pdf>.
47. Henry P. Stapp, "The Hard Problem: A Quantum Approach," in *Explaining Consciousness—The Hard Problem*, ed. Jonathan Shear (Cambridge, MA: MIT Press, 1997), 197–216: 209.
48. *Ibid.*, 212.



49. Stephen Hawking and Leonard Mlodinow, *The Grand Design* (New York: Bantam, 2010), 30.

50. George F.R. Ellis, "Necessity, Purpose, and Chance: The Role of Randomness and Indeterminism in Nature from Complex Macroscopic Systems to Relativistic Cosmology," elsewhere in this volume.

51. Ibid.

52. Ibid. In principle, one could see both design and randomness or chance in physical and biological evolution to a sufficient degree that one could credibly affirm the influence of a divine creator. "The beauty, complexity, and apparent design of the biological world could help us appreciate the remarkable nature of cosmic fine-tuning better. It could be argued that in a way we see the fine-tuning through the features of biological life, thus also seeing design. Based on this idea, perhaps an argument could be developed to the effect that the order of biological organisms can still testify of a Creator, even if the proximate explanation for this order is Darwinian evolution." Erkki Vesa Rope Kojonen, "Tensions in Intelligent Design's Critique of Theistic Evolution," *Zygon* 48, no. 2 (June 2013):251-73, 263.

53. John B. Cobb, Jr., "God and the Scientific Worldview," in *Talking About God: Doing Theology in the Context of Modern Pluralism*, eds. David Tracy and John B. Cobb, Jr. (New York: Seabury, 1983), 52.

54. Hawking and Mlodinow, *The Grand Design*, 32.

55. Roger Penrose suggests that quantum activity may affect what takes place in our sub-conscious, but there lies a huge gap between quantum mechanics and consciousness. There even might be a change in the computational rules of physical activity when it becomes biology. "The Quantum Nature of Consciousness," accessed June 8, 2014, <https://www.youtube.com/watch?v=3WXTXoIUaOg>. Brain researchers avoid reducing new properties emerging at the biological level to their underlying influence at the physical level. "... to date, quantum interactions do not seem to bear robustly on the issue of consciousness 'as such.' The biological basis of consciousness has been acknowledged as one of the fundamental unsolved questions in science. The weight of evidence indicates that it is a major biological adaptation. We therefore need to understand its evolutionary, developmental, and experience-dependent foundations in the brain." Bernard G. Baars and David B. Edelman, "Consciousness, Biology and Quantum Hypotheses," *Physics of Life Reviews* 9, no. 3 (July 2012):285-94; [www.elsevier.com/locate/plrev](http://www.elsevier.com/locate/plrev). In order to pursue the emergence of human subjectivity one must pursue history, history in the form of evolutionary history. The study of physics in abstraction from evolutionary history will not suffice.

56. Jennifer Ouellette, *Me, Myself, and Why: Searching for the Science of Self* (New York: Penguin, 2014), 244.

57. Ibid., 282.





EDITORIAL



## Free Will in Science, Philosophy, and Theology

The 2018 CTNS publication, *God's Providence and Randomness in Nature*, provides scholars with a critical if not indispensable treatment of autopoiesis [creaturely creativity] within God's evolutionary creation. In my contribution, "Contingency and Freedom in Brains and Selves," I advance this thesis: *human free will exists, and what we mean by free will is self-determination*. The human self exercises free will in the form of deliberation, decision, and action. Such self-determination, along with nature and nurture, make up a three-part determinism. This thesis is important in the face of free-will-deniers, especially by those today who conscript neuroscience in support of their materialistic, deterministic, and reductionist doctrines. What I did not do in that book chapter, however, was connect the scientific and philosophical treatment of free will with the distinctively Christian understanding of freedom.

Here is the paradox: what looks like free will philosophically looks like a bound will theologically. According to the Augustinian tradition, the natural self is *incurvatus in se*, curved in upon itself. The self cannot but express itself on behalf of its own self-interest. What in the wider culture is celebrated as free will is nothing more than subjective arbitrariness, the unavoidable choosing of what would be in a person's own self-interest. In sum, subjective arbitrariness can be satisfactorily accounted for when drawing upon neuroscience and quantum physics; while Christian freedom remains unaddressed and unexamined in the wider current discussions. This editorial adds what is missing.

### Free Will in Science and Philosophy

I fear I need to supplement what I said in my book chapter, "Contingency and Freedom in Brains and Selves."<sup>1</sup> While reviewing the latest findings in neuroscience and neurophilosophy along with the debate among physicists regarding contingency at the quantum level, that article posed two connected questions: (1) does human free will exist? and (2) is human free will connected to contingency in the physical realm? Here is my answer to the first question: *human free will exists, and what we mean by free will is self-determination*. What we experience as free will is actually the self engaged in deliberation, decision and action.

I argued that this understanding of free will as self-determination might be made compatible with Newtonian mechanics and a philosophy of global determinism. However, free will is more coherently understood within the context of a positive answer to the second question: indeterminism and contingency at the subatomic level provides the necessary even if not sufficient condition for free will at the human level. Contingency in the physical domain as well as the human domain is due to the dialectic between necessity and randomness at the fundamental level of reality, at the level of sub-atomic quantum activity. Human freedom is an indirect byproduct of this underlying structure of physical interaction. That was my argument.

I advanced my argument after conceding an axiom formulated by philosopher Michael Gazzaniga: "We are personally responsible agents and are to be held accountable for our actions, even though we live in a determined universe."<sup>2</sup> With this axiom in mind, I defended



a three part determinism: nature, nurture, and self. Our human self is determined by nature [genes, brain] and nurture [environment, experience], to be sure; but our self also determines in part the course of events in our physical history.

I sought to rescue the human self from disintegration and dissolution by neurocentrist philosophers such as Daniel Dennett and Thomas Metzinger. Against the attacks by these free-will-deniers, I sought to defend free will as self-determination. But, this was strictly a scientific and philosophical struggle. It was not theological.

Once theology enters the skirmish over human free will, the battle takes a different turn. After defending the citadel of selfhood from reductionist bombardment, the theologian breaks down the protective walls and delivers the self to both neighbor and enemy in selfless love. Rather than protect the self, the theologian tries to give the self away. And to make matters more confusing, the theologian's trumpet rallies us to liberate the self from itself.

Freedom simply does not mean the same thing for both the philosopher and the theologian alike. Here in this brief editorial, I'd like to augment the previous exposition of human freedom with a concise answer to the question: just what is distinctively *Christian freedom*?

### Self-Determination and Christian Freedom

To establish the existence of free will understood as human self-determination is not yet to deal with Christian anthropology; it does not yet address the freedom that results from the gospel of divine grace.

In a previous work attending to the implications of so-called genetic determinism, I enumerated four extant concepts of freedom: (1) *political freedom or liberty*; (2) natural freedom, *free will*, or self-determination; (3) *moral freedom* or virtue or the capacity to orient one's self toward the good or toward God; and (4) *future freedom* or the capacity for influencing future events.<sup>3</sup> That is the background. In the foreground, I argued in the article, "Contingency and Freedom in Brains and Selves," for the existence of freedom in the first, second and fourth senses. Freedom is exacted subjectively through deliberation and decision combined with the kind of action that influences the future state of affairs.

This model of freedom as self-determination is by no means foreign to the theologian. Even Karl Barth can acknowledge: "A free man is one who chooses, decides, and determines himself and who acts according to his thoughts, words, and deeds."<sup>4</sup> Or, in the words of John Cobb, "Self-determination ... must mean that the intention was not in its turn a product of antecedent factors alone. Instead the intention must have been in part self-determined in the moment in which it precipitated the action."<sup>5</sup> Natural freedom buttressed by political liberty betoken human beings who exhibit future freedom: we can make history through deliberation, decision, and activity.

Even so, there is something else chiseled into Christian theology which determines its singular profile. To see what marks distinctively *Christian freedom*, we turn to the third in the above list, namely, moral freedom. Moral freedom includes the commitment of the self to sacrifice itself in order to embody a selfless principle or value—that is, a virtue. *Christian freedom* is a form of moral freedom, but it is the neighbor's welfare rather than an abstract value to which the self becomes sacrificed. The result is a freedom *from* the self on behalf of freedom *for* loving the neighbor.

If we understand free will as self-determination, how is it possible for the self to take action on behalf of some good that is other to the self? To pursue virtue is to pursue a good for the sake of the good, not for the sake of the self. When it comes to distinctively Christian freedom, the self sets the self aside, so to speak, in order to pursue the good of the neighbor. Christians are here asking our precious self to transcend itself.



From the point of view of the Christian theologian or ethicist, what we call free will is in fact the bound will; it is a will that is bound to self-expression and not at liberty to represent fully the needs or interests of someone else's self. According to the Augustinian tradition, the natural self is *incurvatus in se*, curved in upon itself. The self cannot but express itself on behalf of its own self-interest. What in the wider culture is celebrated as free will is nothing more than subjective arbitrariness, the unavoidable choosing of what would be in a person's own self-interest.

In the face of this bound will, what Christians intend by the mandate to love God and to love neighbor requires liberation from this bondage to the self. Martin Luther presents the challenge in the form of a stark paradox:

The Christian individual is a completely free lord of all, subject to none.

The Christian individual is a completely dutiful servant of all, subject to all in love.<sup>6</sup>

God's grace liberates the self from the self in order for the self to love another self as itself. Paul Hinlicky employs the term, *decentering*, to make this point.

So true freedom on the earth consists in such decentering freedom from self for others and all in love and hope; freedom in faith from all other claims of allegiance, and just so the Spirit's martyrs refusing to bend the knee to the bullies or to sell one's the soul to their sycophants. Decentering is to dwell in Christ by faith that works in love (and hope).<sup>7</sup>

Love in the form of *agape* love describes a human person in the act of loving either God or neighbor in such a way that his or her self is transcended. Freedom is here understood as freedom *from the self* and *for the neighbor*. Liberation theologian Gustavo Gutierrez follows up.

Freedom is a central element of the Christian message .... It is necessary to consider a freedom *from* and a freedom *for*. The former points to sin, to greed, to oppression, to injustice, to need; conditions that all require liberation. The latter points to the reason for this freedom: love, that is communion, is the final stage of liberation. *Freedom for* gives a profound meaning to *freedom from*.<sup>8</sup>

### The Paradox: Selfless-Expression and Self-Expression

What does this imply for the scientific and philosophical debate? Self-determination does not go away. Even in the case of Christian freedom, we can observe that it is still the human self which deliberates, decides, and acts. Even the liberated person with the decentered self committed to neighbor love still takes action produced by a self that deliberates and decides. Decentered moral action still results from deliberation and decision centered in the self.

Even when graced by God's power, one may never in this life become separated let alone liberated totally from the self which is engaged in self-determination. Paradoxically, "the Spirit sets the conscience free to make moral choices which may not be in the immediate best interests of the self; but the Spirit does not make our choices for us."<sup>9</sup> In the service of neighbor love, the liberated self becomes resourceful, imaginative, creative. Inescapably, it requires the self to transcend itself in love.

From the perspective of the human world, the person liberated by divine grace looks like a rugged individualist: mission-bent, self-creative, independent, and courageous. Eastern Orthodox theologian Verna Harrison avers, "Divine freedom supports human freedom, and human freedom is called to cooperate with divine freedom ... Human freedom is a good gift because it makes it possible for us to love God in return, to assist in God's work, to grow into the divine likeness."<sup>10</sup>



Here is the point: loving one's neighbor or loving God for God's sake cannot avoid taking the form of self-expression, even when engaged in moral self-denial in the interests of the beloved. This paradox is unavoidable. We must accept the reality that in this life our loving actions will inevitably include self-expression and self-determination even when oriented toward a good which transcends the self. Pure selfless action is impossible; yet loving one's neighbor and loving God is possible. This led Luther to a new commandment: sin boldly! "Be a sinner and sin boldly, but believe and rejoice in Christ even more boldly, for he is victorious over sin, death, and the world."<sup>11</sup>

## Conclusion

In the book chapter, "Contingency and Freedom in Brains and Selves," my thesis was this: *human free will exists, and what we mean by free will is self-determination*. Further, I contended that the human self exercises free will in the form of deliberation, decision, and action. I defended this model of human freedom over against neurocentrist philosophers who seek to reduce what we experience as free will to a selfless two-part determinism, nature and nurture.

Here in this editorial, I have supplemented that argument by introducing the theological concept of Christian freedom. On the surface, the doctrine of Christian freedom appears to sacrifice the very self earlier defended when morally prescribing selfless love toward the neighbor. It appears that the very self I had defended philosophically and scientifically must now be given away theologically.

What actually happens, however, is that the human self empowered by divine grace becomes capable of self-transcendence. This is a moral self-transcendence, a giving of the self over to a principle of virtue or to the well-being of a neighbor in need. Such selfless loving requires self-generated initiative, creativity, and courage. Paradoxically, the giving of the self defines the self as a giving self. This makes the self godly.

## Notes

1. Ted Peters, "Contingency and Freedom in Brains and Selves," in *God's Providence and Randomness in Nature*, ed. Robert John Russell and Joshua M. Moritz (West Conshohocken, PA: Templeton Press, 2018), 261–88.
2. Michael S. Gazzaniga, *Who's In Charge? Free Will and the Science of the Brain*, The Gifford Lectures 2009 (New York: HarperCollins, 2011) 2, author's italics.
3. Ted Peters, *Playing God? Genetic Determinism and Human Freedom* (London and New York: Routledge, 2nd ed., 2003), 17–20.
4. Karl Barth, *The Humanity of God* (Louisville, KY: Westminster John Knox, 1968), 84.
5. John B. Cobb, Jr., "God and the Scientific Worldview," in *Talking About God: Doing Theology in the Context of Modern Pluralism*, by David Tracy and John B. Cobb, Jr. (New York: Seabury, 1983), 52.
6. Martin Luther, "The Freedom of a Christian" (1520), in *The Annotated Luther*, ed. Hans J. Hillerbrand, Kirsi I. Stjerna, Timothy J. Wengert (5 volumes: Minneapolis, MN: Fortress Press, 2015–date), 1: 467–518, at 488.
7. Paul R. Hinlicky, *Luther and the Beloved Community: A Path for Christian Theology after Christendom* (Grand Rapids, MI: Wm. B. Eerdmans, 2010), 170.
8. Gustavo Gutierrez, "Liberation Theology and the Future of the Poor," in *Liberating the Future: God's Mammon and Theology*, ed. Joerg Rieger (Minneapolis: Fortress Press, 1998), 96–123, at 115.
9. Hinlicky, *Luther and the Beloved Community*, 336.
10. Nonna Verna Harrison, "The Human Person as an Image and Likeness of God," in *The Cambridge Companion to Orthodox Christian Theology*, ed. Mary B. Cunningham and Elizabeth Theokritoff (Cambridge: Cambridge University Press, 2008), 78–92 at 82.
11. Luther, Letter to Philip Melanchthon (August 1, 1521), *Luther's Works*, American Edition, Vols. 1–30, ed. Jaroslav Pelikan (St. Louis: Concordia, 1955–1967); Vols. 31–55, ed. Helmut T. Lehmann (Minneapolis: Fortress Press, 1955–1986), 48:281–282.
12. See: TedsTimelyTake.com and tedfpeters@gmail.com.

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