THE NEW ATLANTIS
A Journal of Technology & Society

What and When Is Death?

Alan Rubenstein

All living things die. This is not new and it has nothing to do with technology. What is new in our technological age, however, is an uncertainty about when death has come for some human beings. These human beings, as an unintended consequence of efforts to prevent death, are left suspended at its threshold. Observing them in this state of suspension, we, the living, have a very hard time knowing what to think: Is the living being still among us? Is there still a *present* for this person or has the long reign of the past tense begun: *Is* he or *was* he? The phenomenon is popularly known as "brain death," but the name is misleading. Death accepts no modifiers. There is only one death. Has it occurred or not? Alive or dead?

The President's Council on Bioethics has taken up this question in a recently published report entitled *Controversies in the Determination of Death.* At stake in the report is the moral status of those human beings who are "suspended at the threshold." These are human beings who have suffered the worst sort of injury to the brain, but who, with technological support, retain ambiguous signs of life. The brain injury leaves them in a state of incapacitation significantly more profound than that associated with the "persistent vegetative state" (PVS), the condition associated with the cases of Karen Ann Quinlan, Nancy Cruzan, and Terri Schiavo. The name given to their injury is "brain death," or sometimes "whole brain death." The President's Council suggests a more neutral term, which this article will adopt as well: "total brain failure." Calling the condition by this name does not pre-judge the question of whether the patient so diagnosed is alive or dead.

What can we say definitively about the patient diagnosed with total brain failure? He is in an eyes-closed coma twenty-four hours a day. He shows no sensitivity to pain and, on examination by a neurologist, exhibits no reflex responses that would indicate even the simplest brain function. He makes no effort whatsoever to breathe on his own. If the ventilator were removed, his cells and tissues would, in a very short time, shut down. In stillness, the body as a whole would come to look like a familiar corpse.

Alan Rubenstein *is a visiting scholar at Carleton College. As a senior consultant to the President's Council on Bioethics, he was involved in the production of the Council report discussed in this essay. The views presented here are his own.*

But as long as the ventilator remains, that body does not look like a corpse. It remains warm, like the living, and the organs continue to do the work they have always done, albeit with the assistance of chemical interventions. Most significant and most challenging, from the point of view of common sense, is the fact that the heart still beats. The injury to the brain has destroyed the centers in the brainstem that regulate breathing—thus the perpetual need for the ventilator. But the heart of an animal—even one profoundly injured—has its own "inherent rhythmicity," its own originative source of motion. This means that heartbeat and circulation have no *absolute* dependence on the brain in the way that respiration has. The heart, without any input from the brain, can continue to beat as long as its own tissue is intact.

The characteristic puzzle of the total brain failure condition, then, is this: the body remains warm and pink as blood courses through the vessels; the vital organs continue performing their work; but the human being as a whole, permanently unconscious and permanently and profoundly disengaged from his surroundings—eyes closed, making no response to pain, making no effort to breathe—seems something short of alive.

The Heart-Beating Cadaver

In most of the world, the law considers the human being who is carefully diagnosed with total brain failure to be deceased. This has been the case in some American states since the early 1970s and in all fifty states since the early 1980s (the result either of legislation or, in some states, court decisions). This move to uniformity was encouraged by a report issued by a forerunner to the President's Council on Bioethics, a group known as the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research (hereafter: President's Commission). This 1981 report presented the medical facts about the condition as they were then known and summarized arguments for and against equating the condition with the death of the human being. Responding to a patchwork of legal approaches to this question in different parts of the country—the same person pronounced dead in Kansas would be considered alive in neighboring Missouri—the President's Commission proposed a uniform statute for all states to adopt:

> An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A

> determination of death must be made in accordance with accepted medical standards.

This statute puts two standards for determining death—one ancient and one novel—on equal footing: If a doctor can determine that circulation and breathing are gone and will never return, the patient is dead. So it has always been. But then the novelty: if a doctor can determine that the entire brain is non-functional and will never regain its powers, the patient is dead. The existence of cases where the second standard is met and not the first—the existence of patients who are stabilized on a ventilator with beating hearts but destroyed brains—presented the puzzle. The statute provided the answer: These patients are no longer truly patients. They are *heart-beating cadavers*. Cadavers there have always been, but heart-beating ones are products of modern technology—of the ventilator and the modern intensive care unit.

Under this new paradigm of practice, there are two distinct classes of comatose, brain-injured patients: those who have already died and those who might be ethically allowed to die since there is little hope of a meaningful recovery. The two classes can only be distinguished by employing a barrage of neurological tests. If these reveal that some vitality remains in the brain—even if it is limited to the more ancient part of the brain known as the brainstem—the patient is considered still alive. The family and medical staff must decide what course to follow: Will interventions be continued or will they be suspended? Suspending them can mean allowing death to come. At one time such action was controversial, but today, in this context, it is not. If there is evidence of the patient's prior expressed wishes, these are considered. The doctors offer guidance. Family members have their say. While some choose to let death come, others choose to keep up interventions. It is in the latter cases that the patient can, over time, emerge from the eyes-closed coma condition into the vegetative state, a condition of compromised consciousness in which the patient goes to sleep and wakes up, responds minimally to pain, and, in most cases, regains the power to breathe on his own.

But if the initial neurological tests conducted during the crisis period reveal total brain failure, if they reveal that the injury has ravaged both the higher centers of the brain and the brainstem, then the law offers no opportunity for a decision about whether death should be allowed to come. Death has come, says the law, and the ventilator is ventilating a corpse.

The law has been well established for decades. But still we can ask: Is the rationale behind it sound? Why is the case of total brain failure not

seen as a form of human injury—albeit of the most severe kind? Why doesn't the question of whether the patient should be allowed to die apply here just as it applies to other circumstances of injury where life-sustaining technologies are employed? The current President's Council on Bioethics, following the lead of certain strident voices in neurological science and in the wider community of concerned observers, has re-opened the question: Should we believe in heart-beating cadavers? That is, should we believe that a human body with a beating heart can be dead? If so, why?

At this point we must acknowledge the eight-hundred-pound gorilla in the room. For there is a very practical, perhaps even cynical, reason that can be given for believing in heart-beating cadavers: Such a belief is exceedingly useful. Indeed, it serves a noble purpose. For the heart-beating cadaver is the bedrock upon which organ transplantation medicine has been built. It fulfills the two requirements, one moral and one technical, that are necessary for the harvesting of organs for transplant into other human beings. The technical requirement: that the organs remain perfused with oxygenated blood up until the time of their excision, and thus remain protected from oxygen starvation (or "anoxia"). The moral requirement: that the body from which organs are harvested be a corpse—no longer a full human subject.

In 2007, over twenty-eight thousand organs were taken from roughly eight thousand deceased donors. Roughly ninety percent of these donors were pronounced dead by the neurological standard and had their organs removed before the ventilator was detached and the heart stopped beating. Although organ transplantation on this scale might have been unforeseeable for the pioneers of the neurological standard, the connection between the two issues was undoubtedly at the forefront of their attention. When, in 1968, a committee at Harvard Medical School announced the medical consensus that total brain failure (they called the condition "irreversible coma") should be considered the death of the human being, they mentioned the prevention of controversy in obtaining organs for transplantation as one of the primary reasons for the change.

By contrast, when the President's Commission issued its report in 1981, it insisted that the issue was *not* whether organ harvesting was legitimate for patients with total brain failure but rather whether those patients were, in fact, dead. In so doing, the President's Commission followed the lead of thinkers like Leon Kass, Alexander Capron, Paul Ramsey, and Hans Jonas who had argued, in the wake of the Harvard report, that the question of whether the new standard for death was legitimate should be considered on its own merits and not in light of the

impact the standard would have on organ transplantation or any other secondary consequence.

The 2008 report from the President's Council on Bioethics follows the same principle as its forerunner. As the new report puts the matter in its introduction:

> The central question addressed by the Council is, *Does a diagnosis of "whole brain death" mean that the human being is dead?* That is to say, the central question is not, *Does a diagnosis of "whole brain death" mean that the human being is eligible to be a heart-beating organ donor?*

This is surely the most principled first step to take in beginning an inquiry into controversies in the determination of death. The Council steadfastly refuses to accept that utilitarian concerns should have decisive weight. Nonetheless, it would be impossible to conduct a credible inquiry into the neurological standard for determining death without locating the question in its pressure-cooker context. Rejecting the "whole brain death" standard would mean one of two things: Either (1) dealing a severe blow to organ transplantation at a time when talk of "organ shortages" is commonplace—that is, when medical humanitarians already bemoan the constraints that come of the limited number of organ sources; or (2) sanctioning the idea of "death by organ harvesting"—of taking organs from one human being who is on the verge of death but still alive to prolong the life of someone else.

Principled Agnostics and Personhood Theorists

In the immediate aftermath of the Harvard Committee's 1968 report, the philosopher Hans Jonas presented a position that might fairly be called principled agnosticism. Jonas counseled putting the genie back into the lamp: undoing the "redefinition of death" that the Harvard group announced and that had so much momentum behind it. Jonas did not argue that patients with the worst kind of brain injury are indisputably still alive. He argued, rather, that we *cannot know* that they are deceased. In that state of ignorance, the only moral course is to eschew innovative definitions and assume that, in tough cases, life is still present. He put the point this way in an essay collected in his *Philosophical Essays* (1974):

> We do not know with certainty the borderline between life and death, and a definition cannot substitute for knowledge. Moreover, we have sufficient grounds for suspecting that the artificially supported condition of the comatose patient may still be one of life, however reduced—i.e.,

> for doubting that, even with the brain function gone, he is completely dead. In this state of marginal ignorance and doubt the only course to take is to lean over backward toward the side of possible life.

What does "leaning over backward toward the side of possible life" mean? For Jonas and for most others who agree with his position, it does *not* mean continuing to administer aggressive interventions to keep the patient with total brain failure from dying (or, if you will, from dying beyond a reasonable doubt). Again, Jonas stated the distinction with eloquence:

> The question [of interventions to sustain the patient] cannot be answered by decreeing that death has already occurred and the body is therefore in the domain of things; rather it is by holding, e.g., that it is humanly not justified—let alone demanded—to artificially prolong the life of a brainless body… the physician can, indeed should, turn off the respirator and let the "definition of death" take care of itself by what then inevitably happens.

Jonas's position can be stated simply: In the face of total brain failure, remove the ventilator from the body and let it pass through the threshold area of ambiguity to the ground of certain death. Do not, however, simply regard it as a dead body, because it would be immoral to do so, absent a greater level of certainty. Jonas's counsel would surely be the one we followed today, were it not for our need to extract organs from bodies suspended at the threshold. But the need is there and so the precision in knowing when death has come—the precision that Jonas claims is impossible—continues to be sought.

A very different sort of criticism comes from what might be called the "death of the person" or "neocortical death" camp. Holders of this position consider today's neurological standard for death too restrictive. Certainly, they would argue, a human being with total brain failure should be considered dead in spite of persisting signs of bodily life. He should be so considered because, though his body remains living, the *person* has expired. The individual human being, known to his friends and enemies, with all his tastes and fears and quirks of personality, is gone; why should we care if there is still a pulse, warm skin, and functioning kidneys? Indeed, in cases of vegetative-state patients—at least the most severe cases—why should we consider breathing and sleep-wake cycles and responsiveness to pain as signs that the person is still alive? If a brain injury has left a mere *body* behind, this is no impediment to claiming that the life's flame has been extinguished.

If a society were to seriously follow through on the consequences of considering patients in a vegetative state to be dead, then families and hospitals would be *compelled*, not simply *permitted*, to remove life-sustaining interventions like the ventilator or feeding tube. Few who argue for a personhood definition of death draw this conclusion, at least publicly. But there are many, such as Georgetown University bioethicist Robert Veatch, who claim that patients in a vegetative state should be used as heart-beating organ donors so long as it can be shown that this was their pre-mortem wish or is the wish of their surviving family. In this view, their loss of "personhood" makes them at least "dead enough" to be used for this noble purpose.

As things stand today, patients with less severe injuries than total brain failure are never used as heart-beating donors. There is an alternate route to donation for some of these patients, however. During the period when the patient is still dependent on the ventilator (recall that independence from this machine often comes for a vegetative patient after the time of crisis following the injury has passed), he can be taken off the machine and allowed to expire. If this is done in a very particular, deliberate way, then organ harvesting can follow immediately upon the stoppage of heartbeat and circulation. This is known as "non-heart-beating donation" or "donation after cardiac death." The practice, which is becoming significantly more common in the United States, is controversial in its own right. But the mere existence of this alternate route to donation is testimony to the fact that patients in a vegetative state—or, more precisely, patients who can reasonably be expected to emerge into a vegetative state—are not considered by the law to be dead. There are many who would like to see this changed.

Defending the Neurological Standard

From very different angles, these two positions—Jonas's call for greater certainty and the "personhood" camp's call for a looser standard—are both critical of today's well-established law and accepted practice. What is the line of reasoning that defends that practice—the reasoning that says, *contra* Jonas, that we *can* know, with the certainty required for moral action, that patients with total brain failure are dead and, *contra* "personhood theorists," that death is not a matter of losing personality but of losing *bodily life*; that death is a *biological* event, not a psychological or mental one?

The standard defense of today's neurological standard goes like this: The body with total brain failure is, by virtue of its injury, not a unified,

integrated whole. Parts of the organism still function, but the organism itself, which only exists so long as the parts work together in an integrated way, is no more. The body that has suffered total brain failure resembles the proverbial corpse whose hair and nails still seem to be growing even as he is lowered into the grave.

The physiological basis for this position is the important contribution to bodily, or "somatic," integration that is carried out under normal circumstances by the brain, especially the brainstem. Kidney and liver function, blood pressure regulation, temperature control—all of these diverse bodily processes receive input from the brainstem and from hormonal regulatory centers in the brain. When the brain is destroyed, the processes go on working for a time, but the coordination that made sense of their operation, that brought their work together into the operation of the organism as a whole, is gone. Neurologist James L. Bernat and his colleagues, in an influential 1981 paper, put the matter this way:

> This criterion [total brain failure] is perfectly correlated with the permanent cessation of functioning of the organism as a whole because the brain is necessary for the functioning of the organism as a whole. It integrates, generates, interrelates, and controls complex bodily activities. A patient on a ventilator with a totally destroyed brain is merely a group of artificially maintained subsystems since the organism as a whole has ceased to function.

An important corollary to this position was the fact that a body with total brain failure could not be *stabilized*. Since the physiological structures which are required for integration are gone, and since integration is necessary for a stable condition of health, the body with total brain failure could not last in that state, even if the ventilator continued to put oxygen in the body and the heart continued to move the oxygenated blood out to the tissues. The phenomenon of "multiple organ failure"—the deterioration of all the body's organs, usually over a short time—seems to confirm this: The bodies of patients with total brain failure would "come apart" in spite of the ventilator's work and the beating of the heart. Even if the body was only being maintained for the purpose of organ donation, the "coming apart" was often inexorable and had to be fought against by the determined and careful institution of drug therapies.

The "loss of somatic integration" rationale for the "whole brain" neurological standard held sway for over two decades—for all the time that the medical response to "brain death" and its consequences for organ transplantation took on the standard form they have today. In 1981, at

the time of this rationale's first articulation, the use of a human being as a source of organs was by no means a routine occurrence. The development of immunosuppressive therapies and improved surgical techniques during the 1980s, along with crucial financial and logistical support lent to organ transplantation by the federal government, caused the practice to expand greatly and, as a consequence, contributed to the normalization of belief in the heart-beating cadaver. That normalization might have occurred even without a conceptual justification. But a conceptual justification there was, and this was it.

The New Challenge to the Neurological Standard

By the year 2000, anyone taking up a position of skepticism about the neurological standard was seen as voicing an opinion far out of the mainstream. In that year, Pope John Paul II informed a congress of transplant professionals that "the criterion adopted in more recent times for ascertaining the fact of death, namely the *complete* and *irreversible* cessation of all brain activity, if rigorously applied, does not seem to conflict with the essential elements of a sound anthropology." Moreover, he noted (though, to be fair, did not fully endorse) the rationale for this criterion: "The complete and irreversible cessation of all brain activity (in the cerebrum, cerebellum and brain stem)…is then considered the sign that the individual organism has lost its integrative capacity."

As widely as it has been accepted, the rationale for the neurological standard has nevertheless been challenged in recent years—most prominently by D. Alan Shewmon, a veteran pediatric neurologist at UCLA medical center. Shewmon, who had taken many different positions on the question of "brain death" over the years, had his most profound influence when he became the leading critic of the equation of total brain failure with human death.

Shewmon made his contribution in this area not so much by discovering new facts as by shouting loudly what others acknowledged in hushed tones. For one thing, Shewmon pointed out, there are many cases of patients who suffer total brain failure but are stabilized following the period of crisis immediately after their injury passes. In a 1998 paper in the journal *Neurology*, Shewmon gathered together 175 case reports of patients whose bodies were maintained after the total brain failure diagnosis for much longer than the literature on "brain death" suggested was possible. Many of these reports were drawn from media sources or lacked documentation to confirm the diagnosis, but at least fifty of the cases were

well substantiated. The length of "survival" ranged from a month to over a year to—in one remarkable case—over fourteen years.

Still, one might counter, as many critics of Shewmon's *Neurology* article did, that "chronic brain death," as he called it, was too rare an occurrence to be given much credibility. "These cases are anecdotes yearning for a denominator," one prominent pair of critics put it in a letter of response to the journal. The trouble with this objection is that it is very rare for hospitals to *try* to sustain bodies once a diagnosis of total brain failure has been made. Such bodies are either disconnected from the ventilator very soon after diagnosis or they are kept on the ventilator just long enough for surgeons to extract organs. In other words, the quick collapse of the body that occurs in nearly all total brain failure cases is not an intrinsic fact about the injury but a result of how we routinely respond to the injury.

Shewmon also gives an account for why there is so much instability in the body after total brain failure. It is not, as some have assumed, because the brain is the integrator of the body's autonomic work. The brainstem clearly does have an important role to play in bodily integration under normal conditions, but there is no proof that it is *essential* for that integration to occur. Integration might well be, as Shewmon puts it, an "emergent property of the whole organism." When the brainstem is compromised, other parts of the nervous system take on the role of supporting integration. The instability of the body with total brain failure, in this theory, might be a result of a sort of shock that follows injury—a transient condition, in other words. When that shock passes—in some cases at least—the body stabilizes.

Some support for Shewmon's theory is provided by cases of total brain failure that have occurred in pregnant women. A 2003 paper in *Critical Care Medicine* by neurologists David J. Powner and I. M. Bernstein surveyed eleven such cases from the medical literature. In all of the cases, it was possible to sustain the body of the pregnant woman long enough for the delivery of a viable fetus. The length of time that support continued after total brain failure ranged from 36 hours to 107 days. These cases at least suggest that, given the current state of technology, *most* bodies could be stabilized after brain death if those caring for the patient were motivated to do so, as they are with these pregnant women.

Shewmon may have delivered the fatal blow to the "loss of integrative unity" rationale for a "whole brain" standard of death in a 2001 paper in the *Journal of Medicine and Philosophy*. He argued that there are many functions that go on in the bodies of patients with total brain failure that

unquestionably indicate integration in any meaningful sense of that term. It is not only the rare cases of prolonged "survival" that give the lie to claims of lost somatic integration. Even in the more routine cases where the body would very likely fall off the cliff in a short time no matter what efforts were made, there are processes which call on disparate systems of the body to work together in an end-directed, coordinated way. Examples include wound healing, blood pressure control, temperature control, maintenance of chemical homeostasis, elimination of cellular wastes, and fighting infections. To the trained eye, all of these are integrated functions; and all are well documented in patients diagnosed with total brain failure.

Most commentators have acknowledged, either explicitly or tacitly, that Shewmon's critique is absolutely compelling up to this point: The rationale for declaring a patient with total brain failure to be dead cannot rest on the fact that the brainless body is "merely a group of artificially maintained subsystems" and, as a result, is intrinsically and unavoidably unstable. This long accepted "fact" is simply not true.

Death After Shewmon

What are the options for moving forward in the wake of Shewmon's work? One is to renounce entirely the neurological standard for death. The failure of the integrative unity rationale and the presence of "chronic brain death" show that Jonas was right all along: there is too much uncertainty about the line between life and death for us to accept any innovation. Only the age-old means of knowing death is valid: it must be shown beyond reasonable doubt that heartbeat and breathing are gone and could never be restored. If this is the case, we face a stark choice: Either abandon heart-beating organ harvesting, or re-conceive of what we are doing as taking organs from the *nearly* dead rather than the *newly* (but fully) dead. Some very prominent bioethicists, including Robert Truog, Franklin Miller, and Stuart Youngner, argue for this latter course: do away with the "dead donor rule" and save organ transplantation by learning to live with and manage death by organ-extraction.

Another way forward is to confess that all this time the real reason why the neurological standard seemed palatable was that the patient with total brain failure has lost consciousness and will never regain it. All the talk about the body no longer being a whole was just a distraction. The pulsing heartbeat, the warm skin, all the integrated work of the body—these are indicators that the *body* is alive but not the *person.* And it is the

life of the *person* that demands protection, in this case from being made into a source for organs. This kind of dualism opens the door, of course, to the possibility that there are more "personless" bodies—that, for instance, some patients with severe dementia or PVS might meet the description. In any case, the bodies with total brain failure certainly qualify.

There is still another option—one that, until the release of the report from the President's Council on Bioethics, had not been pursued. This option involves rejecting the "integrative unity rationale," just as Shewmon insists that we must, but maintaining that there are other *biologically* sound reasons for considering those with total brain failure to be dead. A clue that this might be a fruitful avenue to pursue comes from this thought: It is neither "mental life" that makes an animal alive nor is it mere "integrative work." Consider the fact that many animals, even when healthy, exhibit no discernable "mental life," as that term is usually employed, and yet we have no trouble calling them *alive*. Any animal without a central nervous system (including a human embryo) could serve as an example here. And consider, at the same time, that complex machines often exhibit "integrated functioning" and we have no trouble saying they are *not* alive. Something is missing from the "brain death" debate—something fundamental about what it means to be a living organism.

The Whole Organism

To develop a sound argument for whether an organism is still alive, we must work harder at understanding what an organism is.* We might reasonably begin where the defenders of the "whole brain" standard for death begin—by asserting that an organism is a whole, not a mere collection or aggregation of parts. Moreover, an organism's wholeness is manifest in the way that the parts—cells, tissues, organs—are actively organized. That is, it is reasonable to mark the *working-together* of the parts. An organism is indeed a fantastically complex example of a whole that, by virtue of its organization, is more than the sum of its individual parts. The etymological connection between the English words "health" and "whole" is illuminating: both are derived from the Old English word *hal*. An organism is a whole because it is the sort of thing that has *health*; the sort of being whose parts can manifest this sort of ordered, balanced activity.

* The argument that follows is my own, although a similar case can be found in the recent report of the President's Council on Bioethics. These ideas owe much to Leon Kass's work on philosophical biology and also to Hans Jonas's writings on this subject, which I here employ to overcome his own stated views on the question of "brain death."

But it is not adequate to leave the matter here—to simply state that the organism is a whole because its parts work together in an integrated way. We must ask what the *work* of the organism as a whole is—what is it that an organism *does* that makes it an organism? Again the comparison with a machine is instructive. While it is true that a clock is a whole by virtue of the integrated operation of its parts toward a common end, and that the whole would be lost if the individual parts were merely piled up in a heap, one cannot understand the clock without understanding the *work* of the clock as a whole, the work of keeping time.

Different sorts of organisms are of course very different from one another. The cheetah does what the cheetah does, the amoeba does what the amoeba does, the human does what the human does. Should we really expect to find some common description of the work of an organism *qua* organism? One reason to think we should is the fact that we have no trouble calling all of these creatures *alive*. But what does it mean to be alive?

At one time it would have been an acceptable philosophical answer to say that being alive means having or partaking in a soul. But this term, "soul," has taken on many connotations that are not particularly useful to scientific, biological accounts of the phenomenon of life. One such distracting notion of soul is that of an immaterial "ghost in the machine" that animates the body but is something other than the body. This notion of soul is at odds with modern biology, or at least is of no help to biology in its project of understanding organisms. There is, however, an older notion of soul that is worth revisiting. Aristotle uses the word *entelechia* to describe the soul. This word was a novel coinage in Greek and it is rendered reasonably faithfully in English by a similarly novel (and clumsy) coinage proposed by translator Joe Sachs: "being-at-work-staying-itself." This, according to Aristotle, is the mode of being distinctive to living things; this is what sets the living apart from the non-living. What does it mean?

It means, for one, that a living thing is never simply reducible to its material parts. The proof positive of this is the fact that a living thing is always exchanging the parts that compose it for new parts. It is always turning over its chemical constituents by taking in new material from the outside world and expelling waste products back into that world. The living thing is not the parts, not the material, but rather the *form* that the ever-shifting material takes as it moves through the living system. In living things, form is more primary than matter: the matter is incidental; the chemicals that make up my body at any given moment are just the ones that happen to be there now and will be gone later. But the form of the body persists. Notice that this is categorically different from the relationship

between the fuel that drives a machine and the machine itself—the fuel does not *remake* or *reconstitute* the machine as it is processed. The engine is not the gasoline in the way that we are what we eat and breathe.

But noticing the constant turnover of material in order to sustain form is just the beginning. The next important observation is that a living thing is not passive in this process. It is not reconstituted by forces outside it but rather at work reconstituting *itself* through interchange with the surrounding world. The living thing is a being-*at-work*-staying-itself. It actively reaches out in a purposeful and discerning way into the world to take what is other and make it "self." The higher animals exhibit this in both the way we go after food and consume it and in the way that we bring oxygenated air into the body system in order to stay alive. Less complex animals have other means of appropriating material from the world, but it is just as much the case that these processes involve action and discernment on the part of the organism. The amoeba exhibits action and discernment in moving toward food in its fluid surroundings so that it can envelop it and bring inside what is needed from the outside.

It should be clear now that in this account, conscious awareness is not a necessary feature of "action and discernment." The activity of breathing demonstrates very nicely how action on the world can be initiated by an organism either deliberately, as in conscious breathing (think yoga, or simply "take a deep breath") or "unconscious" breathing (think breathing while we sleep or, in fact, most of the time that we are awake and not paying attention). Again, the point is not involvement of the mind or the attention but rather end-directed and outward-pointing motion initiated by the organism or, to put it another way, from the organism's center.

This might seem like a very rudimentary way of thinking about the work of an organism—but that is just the point. To get at a characterization of *bare* life, we must put aside in our thoughts all the noble and elegant work of organisms—the cheetah running, the eagle soaring, the human being staring at the heavens. These activities display living things in the fullness of their nature, but they are built upon a humbler foundation. The fundamental work of an organism is to preserve itself by remaking itself. And this remaking involves engaging in commerce with the world, actively and with discernment.

There is still one element of the fundamental work of an organism left out of the description thus far. The organism is not only active and discerning in engaging its world in order to stay alive, it is also *interested.* Leon Kass describes this feature of organisms well in the first chapter of his 1994 book *The Hungry Soul*:

> What moves an organism to feed is not merely the sensed and registered presence or absence of a certain chemical or edible being in its environment but the *inner needy state* of the organism, for which such an absence is a lack, an absence to be overcome or remedied. Bacteria do not measure the concentration of glucose in their environment in the indifferent and detached way of the biochemist who prepared their growth medium.…The organism would not "respond" to perceived food "stimuli" were it not an "interested" or "appetitive" being, were it not already internally ordered toward the necessary activities of self-nourishing.

Kass is focused on the activity of feeding or eating, but the same observation can be extended to breathing, in those creatures who engage in this activity. When an organism brings in air from the world, it does so in response to a felt need that directs it outward to find what it lacks. This is no more a conscious effort of the organism than the bacteria's effort to obtain glucose. But conscious awareness is not the key to understanding bare life—the pre-conscious powers of action, discernment, and appetite are.

Brain Failure and the Organism

The discovery of the total brain failure state in the 1950s launched a long conversation about the moral significance of such a condition of maximal dysfunction. The recent efforts of Alan Shewmon and others in challenging the total brain failure standard for death are an understandable response to the difficulty of articulating why such a loss of function might signal a morally relevant change in the sort of being the family and physicians are confronted with on the hospital bed. But keeping in mind the preceding discussion of the basic work of the organism, we can look anew at the morality of treating patients with total brain failure as deceased human beings. We must begin by asking: What is distinct about the phenomenon that we are presented with in the human being with total brain failure? And what is it about the experience of witnessing a body in this state that has led so many people, expert and non-expert alike, to accept the state as a form of human death?

I would contend that it is precisely the fact that the body is shut off from the world, that the need-driven commerce between organism and world is simply no longer there. The body with total brain failure is disengaged from the world in a significantly more profound way than is true of any other human injury. Colloquially speaking, the body is "closed for

business"; it is no longer engaging in the most fundamental work of living things, and observers recognize the profundity of this fact even if they don't articulate it in just this way.

There are two distinct facets of the body's disengagement with the world after total brain failure. One is the utter lack of consciousness. Even the very compromised form of consciousness in patients with PVS—called by neurologists, somewhat problematically, "awakeness without awareness"—is absent here. The body with total brain failure never wakes up and it fails the simplest tests of reactivity to stimuli—to pain, to light, to anything from the world outside.

The second facet of the body's disengagement is the complete loss of drive to breathe. This aspect of the phenomenon is often brushed aside rather casually by those who ponder the significance of total brain failure. Many are content to say either that breathing is not absent in the body connected to the ventilator or that the absence of the power to breathe is of little importance to interpreting the patient's condition.

Those who claim that the body with total brain failure still breathes betray a deep misunderstanding of this crucial activity. It is true that the ventilator successfully bellows air in and out of the lungs. And it is true, as well, that oxygen from the air enters the bloodstream and is carried out to the body tissues. But these mechanical aspects of breathing are not the whole of the phenomenon. Breathing is an activity of the whole organism, an action taken by the organism, toward the world, and spurred by the organism's felt need. The body of an animal needs what the world has to give and works constantly in its own interests to obtain it. This element of need-driven action on the world must not be forgotten when we evaluate the condition of total brain failure. The fact that there is no sign of this need, no "air hunger" that would disturb the stillness, lends credence to the idea that death has indeed come.

To be clear: The claim being made here is not that patients who cannot breathe on their own are, by virtue of this fact, deceased. This would be an absurd claim given the many cases of conscious patients who, due to spinal cord injuries, require a ventilator to remain alive. The claim is rather that in the presence of an irreversible and complete coma, it is philosophically defensible to give weight to the presence or absence of the drive to breathe. If the first condition here is not met—if there is even a very rudimentary sign of awareness or reactivity to the outer world—then the question of whether the patient is alive should be settled on that ground alone: No conscious being, no being capable of either awareness or awakeness, is dead. But when this more elaborate form of engagement with the

world is gone, we must look for signs of the humbler, more ground-level form of engagement that we call breathing.

When such signs are lacking and when there is reliable evidence that neither consciousness nor drive to breathe will ever return, the body can rightly be called a corpse. At that point, it should be handled with all the dignity that the remains of a human being require. Maintaining the body's persistent functions long enough to take organs to help those in need of them is not inconsistent with this dignity. This action can be done without compromising our adherence to the dead donor rule and without requiring us to revolutionize the concept of death by considering it anything other than a biological event that happens to all living things.