

We Die When Entropy Overwhelms Homeostasis

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Abstract

In this chapter I develop and defend the thesis that we die when entropy overwhelms homeostasis. I explain the concept of “brain death” and why it is not death, in spite of the medical community’s scientifically baseless insistence to the contrary. I review the higher-brain theory of death, explaining it as an application of a metaphysical theory of personal identity or related concepts to the context of severe brain injury involving cessation of consciousness. I argue that a pluralism of views about the metaphysical and moral status of such patients should be accepted in society. Finally I argue that contemporary death determination practices are conceptually confused and create significant ethical concerns.

Keywords: determination of death, brain death, homeostasis, personal identity, disability

Introduction

Death is a natural, biological phenomenon, and the death of a human is no different, metaphysically or biologically, from the death of other organisms. When the organism no longer resists entropy, when its ability to preserve physiologic stability is lost, when the organism has transitioned from consuming energy and actively maintaining homeostasis to disintegration and decay, then the organism has died.

In this chapter I develop and defend the thesis that we die when entropy overwhelms homeostasis. I explain the concept of “brain death” and why it is not death, in spite of the medical community’s scientifically baseless insistence to the contrary. I review the higher-brain theory of death, explaining it as an application of a metaphysical theory of personal identity or related concepts to the context of severe brain injury involving cessation of consciousness. I argue that a pluralism of views about the metaphysical and moral status of such patients should be accepted in society. Finally I argue that contemporary death determination practices are conceptually confused and create significant ethical concerns.

Evolution, Entropy, Death

Like everything else in the universe, humans are products of, and beholden to, fundamental physical forces and processes. On Earth, the tremendous diversity of life forms results from evolution by natural selection, a result of random genetic mutation and differential adaptation to the environment relative to conspecifics, creating differential abilities to survive and procreate, which in turn drives selection for organisms better adapted to their environmental niche. The process of evolutionary change and species differentiation tends to be gradual and iterative, building on existing mechanisms rather than creating new ones. This is why there are

conserved biochemical pathways, anatomical homologies, common behavioral patterns, and even similar patterns of social relationships across species.

Furthermore, while humans communicate, are capable of learning and problem-solving, and exhibit complex social relationships, many nonhumans also have these abilities. Humanity exists on a continuum with other creatures, not in a position of stark difference or superiority.

This is important because it is often assumed that humans are fundamentally different from other creatures so that what it means for “one of us” to die is somehow different from what it means for “one of them” to die; that death for a human is ontologically different than death for a rabbit. This idea is at the root of the higher-brain concept of death and, derivatively, the whole-brain concept as well: That humanity is fundamentally different from other creatures, therefore death for humans is “the irreversible loss of that which is essentially significant to the nature of [humanity]” (Veatch 1975, 23).

This conceit of human difference and superiority is as old as humanity itself, and it is both scientifically and ethically baseless. We are products of physical forces and evolution; we evolved in similar ways as other creatures; our evolutionary forebears lived and died for billions of years before hominids arrived. Other creatures experience pain and fear, have lives that can go well or ill for them, and they die – just like humans. And the universe cares no more for my death than for that of a cockroach. So let us investigate death as it is: a biological phenomenon with an ancient evolutionary history.

The human body is composed of approximately 100 trillion cells, all of which are bathed in fluid, known as extracellular fluid. This fluid is in constant motion, circulated in blood and passing across capillaries. Because of the constant mixing and movement, this fluid has a

homogenous composition throughout the body. Thus it is known as the internal environment, or *internal milieu*. It is the environment within which all of our cells live and function (Hall 2016).

One fascinating aspect of the extracellular fluid is that it appears to approximate the chemical composition of the primordial seas during the Paleozoic era, when organisms first began to migrate from the seas to land (Banfalvi 1991). This suggests that early organisms developed the ability to carry the life-sustaining environment of the primordial seas within them, enabling them to exit the sea and venture onto land. Intriguingly, it is as if we all carry the primordial seas within us in the form of extracellular fluid.

Extracellular fluid contains water, ions, oxygen, glucose, lipids, and many other factors, all of which are actively maintained within certain parameters by multiple organs, tissues, and cells, operating in a mutually interdependent fashion. Consider, for example, ions in extracellular fluid: hydrogen and bicarbonate, sodium, potassium, magnesium, calcium, chloride, and phosphate. Their concentrations must be actively maintained within specific boundaries, or cells (and by extension the organism) will not survive. These concentrations are maintained by complex interactions between the kidneys, lungs, hypothalamus, pituitary, pancreas, adrenal glands, parathyroid glands, bone, liver, intestines, and red blood cells. Regulation and storage of energy is maintained by the stomach, pancreas, gallbladder, liver, small intestine, enteric nervous system, muscle, and the production of the basic energy source of the body, adenosine triphosphate (ATP), the final step of which occurs in the mitochondria of all cells. There are many other physiologic variables that must be maintained within specific limits which, again, is a function of multiple organs, tissues, and cells, operating in a mutually interdependent fashion (Hall 2016).

The process of maintaining physiologic stability within the organism, and especially the chemical composition of the extracellular fluid, is known as *homeostasis* (Hall 2016). This is the core concept underlying the science of physiology.

A related concept, drawn from gerontology (the scientific study of aging), is *homeostenosis*. This term derives from “homeostasis” and “stenosis” – which means to narrow (as in coronary artery stenosis). The idea is that as we age, the capacity of the organism to recover from threats and stresses – or the ability to preserve homeostasis – diminishes (or, “stenoses”). For example, a trip and fall in an otherwise healthy 30 year old would not pose much of a threat; whereas a trip and fall in a 90 year old person, especially one who is frail, is a significant threat to health and life. The same threat or stressor – a fall – has a differential impact due to homeostenosis (Khan et al. 2017).

Finally, the second law of thermodynamics is a fundamental physical law which states, roughly, that things tend toward chemical and thermal equilibrium with their surroundings; another term for this is *entropy*. The second law of thermodynamics explains things like passive diffusion, where molecules cross a permeable membrane from the direction of higher concentration to lower, without any infusion of energy. Entropy explains why a hot cup of coffee and a cold cup of water, on the same table in the same room, will change temperature in opposite directions. They’re both going to reach room temperature, following their natural path towards thermal equilibrium.

Unlike the cup of coffee, I hope to avoid reaching room temperature anytime soon; because that would mean that I am dead. Living organisms resist entropy – we resist equilibrium with our immediate environment, perhaps most obviously in the case of thermal regulation as alluded to just a moment ago. We do so by maintaining homeostasis, an energy-demanding

process. For a different example, the sodium-potassium pump, which maintains concentrations of sodium and potassium on either side of the cell wall, requires energy in the form of ATP because it pumps these ions against their electrochemical gradient, thereby maintaining the electrical and chemical difference (or non-equilibrium) across the cell wall; this is a precondition for most cellular functions.

Putting these ideas together, we get the following conceptions of life and death.

Multicellular living organisms are collectives of many cells, trillions in the human case, which work together to maintain the cellular environmental conditions necessary for their continued existence and functioning, especially by preserving the chemical composition of the extracellular fluid. Living organisms are localized pockets of anti-entropy, achieved by the mutually interdependent functions of organs, tissues, and cells, all of which both require and contribute to homeostasis. This is what it means to live. But the inexorable force of entropy will, sooner or later, prevail.

Death, therefore, is a thermodynamic point of no return. It is the event that separates the processes of homeostasis and anti-entropy from disintegration and decay. Alternatively, following the homeostenosis theory of aging to its natural conclusion, death occurs when the organism's homeostatic reserves are spent: It can no longer preserve internal stability nor resist entropy.

Some clarifications are in order. First, this theory explains death as an instantaneous event – a threshold – not as a process. Dying is a process; death is an event; being dead is a state. Second, knowing *that* an individual is dead does not entail knowing *when* the event of death occurred. It is usually easy to know *that* an organism is dead. Thus we infer that the event

of death has occurred. But specifying the exact timing of the thermodynamic point of no return in precise mathematical language is an extremely complex, and as yet unfinished task.

Third, it is plausible that this theory does not comport with “ordinary language”, nor with a commonsense concept of death. This is irrelevant to the project we are undertaking.

By analogy, consider that water is H₂O; that heat is mean molecular kinetic energy; that rust is combustion; that lightning is electromagnetic discharge. These scientific identifications are not beholden to anyone’s intuitions nor to commonsense concepts. Instead, we should evaluate scientific theories or definitions by the following criteria: How well does the theory cohere with other well-accepted scientific beliefs about the world? Does the theory draw on similar ontological posits or theoretical frameworks found in other, well-accepted scientific domains, or does it require positing wholly new kinds of entities or forces? Does it explain or predict empirical phenomena?

From this perspective, the theory of death as a thermodynamic threshold draws on or is implied by fundamental posits of physiology, gerontology, thermodynamics, and evolutionary biology. It is part of a larger, coherent story of the world based in well-accepted mechanistic principles from physics, chemistry, and biology. We are a part of the natural world, and our lives and deaths can and should be explained in the same terms as we explain the rest of the natural world.

Whole-Brain Death

In the United States, the Uniform Determination of Death Act defines death for legal purposes as the irreversible cessation of circulatory and respiratory functions, or, irreversible cessation of all functions of the entire brain, including the brain stem (President’s Commission

1981). The latter clause defines the condition commonly referred to as “brain death”, or “whole-brain death”, since it requires the cessation of functioning of the whole brain, setting it apart from the higher-brain theory of death discussed below.

The concept of brain death was developed around the 1960s in response to ethical and legal concerns (Nair-Collins 2015). Specifically: Would removing mechanical ventilation from patients who lacked a respiratory drive be homicide (since stopping ventilation would result in death)? Is it a just use of resources to maintain the lives of patients who were ostensibly irreversibly unconscious? Would maintaining the lives of these patients create needless emotional and financial burdens on their families? And finally, could these patients be vital organ donors? Lack of blood flow, or ischemia, quickly damages organs, so organs taken from truly dead bodies are not viable for transplant. Yet, “brain dead” patients, so long as they are supported with mechanical ventilation, have continued circulation and oxygenation, and apart from severe brain injury, are often otherwise healthy, making them seem ideal organ donors. But surgically removing vital organs from a living body is lethal, obviously. Would it nonetheless be permissible to remove their organs while on the ventilator and with a beating heart?

The solution arrived at for all of the above concerns was simple, ingenious, and profoundly mistaken: *Redefine death itself*, so that physicians would be permitted to declare a subclass of comatose patients to be dead bodies while they remained on the ventilator (Ad Hoc Committee of the Harvard Medical School to Determine the Definition of Brain Death, 1968). No scientific evidence was presented for why this subclass of comatose patients were corpses. No physiological changes occurred that would justify their reclassification from living human patients to corpses. And no input from their families was either sought or allowed. Instead, these living patients were simply reclassified as dead bodies because of the perception that doing

so made certain ethical, social, and legal problems more tractable. In particular, it allowed medicine to (falsely) declare that vital organ procurement does not kill the donor, thus protecting surgeons from charges of homicide while preventing public outcry against organ transplantation.

In spite of its broad acceptance within medicine and law, brain death is deeply problematic. First, it is not a reliable diagnosis: many patients who are labeled “brain dead” have some preserved brain function, usually of the hypothalamus; and there are a number of other concerns regarding the credibility of brain death diagnostic practices (Nair-Collins and Miller forthcoming 2019). But the bigger problem is that brain death is not death.

Patients declared “brain dead” are capable of maintaining homeostasis and resisting entropy; they have not crossed the thermodynamic threshold into entropy and disintegration. Such patients can gestate fetuses and deliver healthy babies; can grow, sexually mature, and remain alive with life support for years; can heal wounds and develop a fever in response to infection; can absorb and digest nutrients through the gut and produce waste; along with many other biological functions. In fact, if the patient survives the initial, acute phase of the injury, they transition to a chronic, stable phase in which they can be discharged from the hospital on home ventilation. Such patients may be even more physiologically stable, with more homeostatic capacity than other unconscious and dying patients, whom no one would claim are biologically dead (Shewmon 2001; Nair-Collins and Miller 2017).

One might think that it is the ventilator and other medical interventions that are responsible for supporting the aforementioned functions. This is both true and irrelevant. The ventilator is life-sustaining technology, without which the patient would die. But it only provides support: it is impossible for a ventilator, which merely blows air in and out of the lungs, to cause gas exchange (a cellular function), nor for the ventilator to cause the heart to beat, nor

for the ventilator to preserve homeostasis of the extracellular fluid (Nair-Collins and Miller 2017). The ventilator blows air in and out. The living organism does all the rest. This is as true for the “brain dead” patient as it is for any other patient on a ventilator. Of course the patient *would die* without the ventilator. This is not in dispute. But the fact that a patient *would die* if life-sustaining treatment were removed does not show that the patient is *already dead*; indeed it shows precisely the opposite.

Finally, the major attempt to justify brain death as biological death is based on the claim that the brain is the central integrator without which the organism as a whole can no longer preserve homeostasis (President’s Council 1981). This is an empirically false claim, as discussed above. The preservation of homeostasis cannot be localized to any particular organ, including the brain. It is the result of multiple, mutually interdependent functions of organs, tissues, and cells throughout the body, all of which require, and contribute to, the maintenance of homeostasis.

The science underlying brain death is profoundly flawed; more accurately, there is no science underlying brain death. Brain death is not biological death.

Higher-Brain Theory of Death

Altered Carbon is a dystopian cyberpunk novel adapted into an internet television series (*Altered Carbon*, 2018). In its futuristic setting, technology has been developed that allows a person’s mind to be uploaded into a disk known as a “stack”. The stack is implanted into the skull of a human body, can be removed, stored, backed up, and implanted into a different body. Revealingly, the bodies that stacks inhabit are referred to as “sleeves”; these sleeves can be donned and removed at will. The allegory here is that our bodies are mere clothing, which can

be discarded or replaced, but they are not essential aspects of who we are as human persons. Instead, the functional activities of the stack – consciousness, sensations and perceptions, memories, love, regrets, sorrows – these things constitute the human person. These things constitute who and what we truly are.

Takeshi Kovacs, a lead character, was a member of an elite fighting force, engaged in rebellion against the imperialist, plutocratic new world order (not quite so “new” – this is a dystopic allegory for the modern global order). The uprising was defeated, Takeshi’s body was killed, and his stack was deactivated. Two hundred and fifty years later, a narcissistic, amoral plutocrat purchased his stack and implanted it into a new sleeve, “reawakening” Takeshi after centuries of unconsciousness.

Though disoriented, being in a new body and learning that centuries have passed, Takeshi quickly adjusts. His memories and character traits remain, particularly his love for his little sister and memories of their traumatic yet bonding childhood; his deep and abiding love for his romantic interest; and his exceptional intellect and intuition. He also has vivid recollections of the failed rebellion which, along with the belief that everyone he loves is dead, lead to a predictable nihilism in his outlook on this new world in which he has been unwillingly thrust.

His (first) body was shot to death hundreds of years ago. His mind is clearly intact. Is Takeshi alive or dead? Is he the same person now as he was when he was fighting for the rebellion, centuries ago?

I suspect that most people reading this would say that, in some meaningful sense, Takeshi is alive, and the same person now as he was then. Because of the continuity of his sense of self through memories, and his retained personality traits, Takeshi lives on even though he “wears a new sleeve”. Indeed, this basic ontological assumption about Takeshi’s continued personal

identity is a fundamental assumption of the entire narrative. The writers, actors, and audiences of this work would not be able to make sense of any part of the story without this basic assumption.

This reveals something important: The concept of continued personal identity as rooted in psychological continuity and not necessarily in bodily continuity is a deeply rooted cultural assumption. *It just makes sense*, to most of us, intuitively and immediately. And for good reason: There is a long tradition in Western philosophy that develops and defends the idea of personal identity in precisely these terms (e.g., Parfit 1984).

Now consider an alternative plotline. Instead of killing his body, the soldiers destroyed Takeshi's stack. His "empty" sleeve was placed on life support, and publicly displayed in an exhibit by the ruling class, as a warning to would-be pursuers of freedom and equality.

Is Takeshi alive or dead? I suspect most people will reach a different conclusion in this scenario: Takeshi is dead. Everything that made him "who he was" is gone forever. Although he left behind a living body, Takeshi Kovacs himself was killed.

In a nutshell, this is the basic suite of ideas underlying the higher-brain theory of death. So long as our capacity for consciousness is preserved, we remain alive. When that capacity is lost, we are dead – even if a biologically living body is left behind.

While there are several variations of the higher-brain theory of death, there are features common to all of them. First, the higher-brain theory is not a theory of biological, organismic death. Higher-brain theorists are explicit about this. For example, John Lizza argues for a "semantic bifurcation," with "death" taking on two distinct meanings: the death of the organism, and the death of the human person or human being (Lizza 2018). Robert Veatch argues that death for humans occurs at "the irreversible loss of that which is essentially significant to the

nature of [humanity]” (Veatch 1975, 23) – not necessarily when the biological organism dies. And Jeff McMahan is similarly explicit that his version of the higher-brain theory defines “death” as a technical term of art (McMahan 2001, 425), whose meaning is different from the ordinary, biological concept of death; in this way he offers something similar to Lizza’s semantic bifurcation.

Second, on all versions of the higher-brain theory, this non-biological concept of death is in some way a function of the cessation of consciousness or of the capacity for consciousness. Third, all higher-brain theorists acknowledge that the body or organism is biologically alive in brain death.

Therefore, by their own lights, higher-brain theorists are literally talking about something else. They are having a different conversation than the debate about biological death and whether brain death is biological death. In essence, higher-brain theorists are developing or expanding metaphysical and moral concepts such as personal identity, personhood, and similar ideas, and applying them to a new social context, a context in which unconscious patients can be kept alive for extended periods, when in the past, they would have died. Advances in medicine created the new possibility of living but unconscious humans, able to survive potentially indefinitely with life-sustaining therapy, but without recovering the capacity for consciousness. As a scientific matter, they are clearly alive. But, though they are alive, there are also interesting and important questions to be addressed about their moral and metaphysical status. The higher-brain theory offers one perspective on this, drawing from the Western cultural and intellectual tradition; we will learn of a few more perspectives on their moral and metaphysical status shortly.

It is unfortunate that higher-brain theorists choose to use the word “dead” in this bifurcated way. Indisputably, “dead” has a biological meaning, whatever else it might mean. “Dead” is used to describe a cockroach and a tree and a human, all in the same biological sense. Using “dead” to mean something entirely different and non-biological, and intended to apply only to humans, seems to unnecessarily muddy the discourse about what is already a complex intersection of difficult philosophical and scientific topics. Unless its meaning is explicitly distinguished from the other, biological side of the semantic bifurcation, use of the term “dead” to mean something like “cessation of personal identity in a living human body” creates needless confusion.

Death Determination Practices

When do we die? According to standard medical practices, supported by law, we die either at the cessation of cardiopulmonary function, or the cessation of neurological function (i.e., brain death). The mainstream medical view is that brain death and cardiac death are, biologically, one and the same: That brain death is biological death, even though it may not appear that way to the non-expert observer (Russell et al. 2019). According to the higher-brain theory, the mainstream medical view is both right and wrong. It is wrong, because brain death is not biological death. However, the higher-brain theory also holds that human death is not a matter of biology, or not solely a matter of biology. Instead it is a function of consciousness in some way. Assuming the patient is truly unconscious, and assuming that this is irreversible (both very strong assumptions), then the human person or human being has ceased to exist, leaving behind an “empty shell” of a living body. And so the brain dead patient *is* dead – just not biologically.

The higher-brain theorists are correct that brain death is not biological death. Even bracketing the arguments I've offered above, recall that the transition to brain death was never justified on scientific grounds. No physiologic reasons were given for why this subset of comatose patients should be targeted for "death by redefinition"; no scientific or theoretical advances were offered to justify their reclassification from very ill but living patients, to corpses. Instead, brain death was supposed to make certain ethical, legal, and social problems more tractable. Whether it did or didn't, that has nothing to do with science and biology. The medical profession, and specifically the neurology and intensive care community, is damaging its credibility by continuing to insist that brain death is biological death. For example, the idea that a "brain dead" pregnant woman gestating a fetus over a period of many weeks, then delivering a healthy baby, has really been a corpse, a biologically dead body, a cadaver that is dead in the same way that cadavers in an anatomy lab are dead the entire time, is just beyond belief. Insisting on such manifestly false claims can only damage the credibility of those professional societies that endorse them, such as the American Academy of Neurology (Russell et al, 2019).

The current situation in death determination is unnecessarily convoluted and opaque. The brain dead patient is legally dead, biologically alive, and with a moral and metaphysical status that is reasonably disputed or uncertain. The higher-brain camp sees these patients as no longer human beings or persons; that which is fundamentally significant to the nature of humanity is already lost, on their view. Because of this position on the metaphysics of human identity, they take the moral position that, even though the body is alive, it is not part of the human moral community anymore, it is no longer "one of us", and it has the moral (but not biological) status of a corpse.

But the view of human identity that undergirds the higher-brain theory of death is not the only reasonable view on these matters. In fact, there are many competing views, backed by their own reasons and evidence, philosophical arguments, cultural and religious traditions, and so on. Some people see a living unconscious human as a full moral person, because they take moral status to be inherent in every human from conception to natural death as a result of religious commitments. Others might see the patient as having full moral status because they take the essence of human identity to reside, *not* in psychological states, but in continued biological life. Others yet see our lives as stories, as narratives, which can continue even after consciousness is lost, because the key characters in our life story still relate to us, still care for us, we still exist within a social nexus, and our life's drama carries on.

From an Eastern cultural perspective, one might see the essence of personal identity in circulating chi, which does not require the presence of consciousness. Also from this perspective, one might see personhood as relational and existing within a web or network of obligations, as part of a community first and an individual only derivatively; in which case, similar to narrative identity, one would see the unconscious patient as still a member of the community, worth being cared for and indeed playing a role in the community precisely as one needing and deserving of care, and thus still "one of us", still a human being.

The feminist perspective of the ethics of care offers a similar perspective and argument, where the embodied relationship of care, often between mother and child, is itself held to be a source of independent moral value. The moral status of the one-caring and the cared-for are derivative on that embodied, caring relationship, which itself partly defines the human and personal identities of those involved. From the perspective of disability studies, the living unconscious human body is a full-fledged moral person, with severe physical and cognitive

disability, on the far end of the spectrum of disorders of consciousness. From the perspective of standard bioethical concepts of end of life planning and advance directives, I've argued that "brain dead" patients are relevantly similar in moral status to patients with severe, end-stage dementia and retain all the rights to precedent autonomy, bodily integrity, etc., that patients with severe dementia have (Nair-Collins 2017). Thus, the metaphysical and moral status of the living unconscious patient is surely not settled, and there are reasonable arguments to be made for a variety of views.

It is important to reflect on how fundamental and personally meaningful these deep philosophical and religious matters are, and especially around times of tragedy or grief. Beliefs about our ultimate nature(s), as human persons, as animals, as social beings, as moral beings, as spiritual beings – these are derived from large-scale metaphysical, religious, and moral worldviews. They are rooted in thousands of years of cultural tradition, religious practice, philosophical analysis, and aesthetic, spiritual, and religious reflection. They are not arbitrary or capricious, and there are good reasons supporting a variety of views about "who we are," about our ultimate nature, or about the nature of the universe and humanity's place within it. No single fundamental metaphysical or religious worldview, from which views of personal identity and related concepts are derived, holds sway as "the" objectively correct worldview which all rational people would be forced, by virtue of reason and evidence alone, to endorse. Instead, reasonable people with access to all the same evidence and arguments can reasonably disagree about some of these foundational philosophical questions, including about the nature of the self, personhood, and human identity.

That's an important point. It doesn't mean that there is no truth about these issues and I'm not endorsing any kind of relativism. Instead, it means that these questions are so deep, so

conceptually and epistemologically foundational, and so personally meaningful, that a certain amount of epistemic and moral humility is warranted, on all of our parts. Furthermore, respect for persons demands that we allow each other (within limits) to try to live our best life and die our best death, according to *our* conceptions of the meaning of life and existence, the role of spirituality or some divinity, the nature of personhood or the self, and so on, and not to have someone else's conceptions imposed upon us.

And that is precisely what is wrong with contemporary death determination practices. The social and legal status of "corpse" is compulsorily and coercively imposed onto the living unconscious patient, based either on a false biological claim or on one among many reasonable views on the moral and metaphysical status of these patients. In effect, no other view on the moral and metaphysical status of the biologically living patient is permitted: The living patient must be, and is, treated as a corpse, regardless of the patient's or family's views, or the views of their community. No pluralism of fundamental worldviews or theories of personhood, human identity, or moral status is accepted when it comes to brain death. In this regard, brain death is like the pro-life/anti-choice view in abortion: Both think that *their* view of personhood as applied to each particular context (a fetus, or a "brain dead" patient) is not only objectively correct, but that their view should be implemented via the coercive force of law, so that other views of the metaphysical and moral status of the entity in question will not be tolerated. Brain death, like the pro-life view on abortion, is an anti-choice stance.

Many people want to donate organs after death, but find biological life morally relevant in and of itself, and would consider being killed by organ procurement a grave moral and religious violation. They are grossly misled into doing exactly what they wanted to avoid. More generally, people considering organ donation are not even offered the simple respect of accurate

information in order to make an informed choice. In particular this includes the clearly relevant fact that heart-beating organ procurement is biologically lethal, so that they can choose for themselves, based on their values, their understanding of the nature of the good, or their notion of the self or personhood. In a similar fashion, some people, usually parents whose children have suffered this horrible injury, seek continued care for their child. These parents most certainly do not agree with the higher-brain theorists, in concluding that their biologically living, profoundly disabled child, is not a human being, is not “one of us”, or has the moral status of a corpse. But our medicolegal system nonetheless seeks to force the removal of life-sustaining treatment anyway, again, because the imposition of the social and legal status of “corpse” onto these living human bodies is compulsory, not optional. This is what I mean when I say that a single, rationally contestable theory of human identity is forced onto us all – and this practice has serious, real world, life and death consequences that both disrespect and harm people.

To conclude, in a diverse, multicultural, global world, a pluralism of views on the metaphysical and moral status of living, unconscious patients should be accepted. The higher-brain view is certainly one reasonable view. But it is not the only one, and it should not be imposed onto all, by way of compulsory cessation of life-sustaining treatment from living patients, or by way of false or misleading information about the lethality of heart-beating organ procurement. On the other hand, whatever else we may be, we are also biological creatures, products of an ancient evolutionary history. As biological organisms, we die when entropy overwhelms homeostasis.

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