An Alternative to Brain Death

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Some Common but Mistaken Assumptions about Death

Most contributors to the debate about brain death, including Dr. James Bernat, share certain assumptions. They believe that the concept of death is univocal, that death is a biological phenomenon, that it is necessarily irreversible, that it is paradigmatically something that happens to *organisms,* that we are human organisms, and therefore that our deaths will be deaths of organisms. These claims are supposed to have moral significance. It is, for example, only when a person dies that it is permissible to extract her organs for transplantation.

It is also commonly held that our univocal notion of death is the permanent cessation of integrated functioning in an organism and that the criterion for determining when this has occurred in animals with brains is the death of the brain as a whole – that is, brain death. The reason most commonly given for this is that the brain is the irreplaceable master control of the organism's integration.

Before presenting my own view, let me say something about a couple of these assumptions and about the case for brain death. It is, perhaps, a measure of the heretical cast of my mind that I reject *all* of these widely shared assumptions.

I do not think the concept of death is univocal. When Jesus says that "whosoever liveth and believeth in me shall never die," he does not mean that some human organisms will remain functionally integrated forever. He means that believers will never cease to exist. (Admittedly, Jesus did not use the English word "die." But this seemed an intelligible use of the word to the translators.)

But "death" also has a biological meaning. It makes sense to say that when a unicellular organism, such as an ameba, undergoes binary fission, it ceases to exist; but in the biological sense it does not *die.* There is no cessation of functioning that turns this once-living organism into a corpse. So death as a biological phenomenon is different from the ceasing to exist of a living being and may or may not involve an entity's ceasing to exist. It is intelligible, for example, to say that when an animal organism dies, it does not cease to exist. Rather, it simply becomes a corpse. The living animal becomes a dead animal – but nothing ceases to exist until the animal organism disintegrates.

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I also do not think our concept of death makes it a necessary truth that death is irreversible. If that were true, the claim that Lazarus was raised from the dead, or that Jesus was resurrected, would be incoherent. I think these claims are false; but if it were a conceptual truth that death is irreversible, they would not be false, but nonsensical.

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I do think, however, that there is something true and important in the idea that death as a biological phenomenon is irreversible. It may well be a conceptual truth that an organism can be revived from death only by a violation of the laws of nature – that is, only by a literal miracle of the sort that Jesus is thought by some to have performed. For in cases not involving miracles, if an organism that was thought to be dead is restored to integrated functioning, our tendency is to conclude that we were mistaken in assuming that it was dead. (Subsequent references to irreversibility should be understood as having the implicit qualification "except by miracle.")

Some people, of course, will say that the organism was dead but was non-miraculously restored to life. To make this claim acceptable, they will need to offer good reasons for thinking the organism was dead, given that it is now alive. For reasons that I will give later, I think that nothing of importance depends on this. It is just a question of how we use certain words. But for those who believe that we are organisms and that we always have special value or sanctity while we are alive, this is a very important issue indeed.

While we are considering whether death is necessarily irreversible, I should mention that I am puzzled that Bernat and others define death as the permanent cessation of functioning – or of the critical functions – of an organism as a whole.[1] Surely what they should say is that it is the irreversible cessation of functioning. (By "irreversible" I mean irreversible in principle, not in practice. If an organism stops functioning but its functioning could be recovered by means of a device that we do not in fact possess, it is not dead. There are, however, metaphysically determined constraints on what kind of device this could be. It would, for example, have to restore the same life, not create a new one.

Let me explain why the notion of irreversibility is preferable to that of permanence. Suppose there is an organism in which integrated functioning has ceased but could be revived. If it is up to you whether to revive the functioning, your decision now will determine whether the organism was dead a moment ago. For if you decide to revive the functioning, the cessation will not have been permanent and the organism will have been alive a moment ago. But if you decide not to revive it, you thereby make permanent the cessation of functioning that occurred in the past. But whether the organism was dead a moment ago is a matter of its intrinsic state at the time; it cannot be determined retroactively by what you do now. (Bernat, I should note, urges a similar point in his cogent objections to the proposal for non-heart-beating organ donation.[2])

Brain Death and the Cessation of Integrated Functioning

Turn now to the central contention of the defenders of brain death, which is that at least certain critical functions of the brain are necessary for integrated functioning in the organism. (I put aside the interesting question whether they are also sufficient.) This claim raises two related questions. First, what counts as the right sort of integration? Second, is the claim empirical or conceptual?

There are several ways in which the functions of the various organs and subsystems of an organism might be integrated so as to maintain homeostasis and resist entropy. It might be, for example, that integration occurs via a central integrator, a master control that receives signals from the various organs and subsystems, processes them, and then sends return signals that coordinate the functions of the organism's many parts. The defenders of brain death typically claim that the only possible central integrator is the brain. They say that the brain is irreplaceable, that nothing else could possibly carry out its regulative functions.

Critics of brain death, by contrast, often speculate that a mechanical brain – or to be more precise, a mechanical substitute for the brain stem – could adequately replicate the regulative functions of the brain and hence could be the central integrator of a living human organism. Some, indeed, have claimed that the resources of the modern intensive care unit (ICU) already constitute an external and multifaceted substitute for the regulatory functions of the brain stem.[3]

In defending the irreplaceability of the brain, Bernat writes that, "although some of the brain's regulatory functions may be replaced mechanically, the brain's functions of awareness, sentience, sapience, and its

capacities to experience and communicate cannot be reproduced or simulated by any machine."[4] Let us grant that this is true. The problem is that these are not somatic regulatory functions.[5]

A second way in which the functions of an organism's various organs and subsystems might be integrated is through decentralized interaction, in which these parts achieve coordination by sending, receiving, and processing signals among themselves. In a series of papers, Alan Shewmon has argued that this sort of decentralized integration of functioning can and sometimes does occur among the parts of an organism without any input from the brain at all.[6] He cites numerous actual cases involving high cervical transection, functional isolation of the brain in Guillain-Barré Syndrome, or even brain death with artificially induced respiration in which there is a high degree of functional integration in the absence of regulation by the brain – and, indeed, without any central integrator at all. He notes, for example, that some brain dead organisms have the same range of functions as certain uncontroversially living patients in an ICU, and yet maintain these functions with *fewer* sources of external support.

If the familiar claims about the necessary role of the brain in integrating the functions of an organism are empirical claims, I think that Shewmon's cases and arguments force the defender of brain death to admit defeat. But it is possible for the defender of brain death to respond to Shewmon's challenge by interpreting the claim that the brain is necessary for integrated functioning as a conceptual rather than empirical claim.

The defender of brain death can, in other words, retreat to the claim that while certain forms of integrated functioning can be sustained via an artificial central regulator or via decentralized interaction, these forms of integration are not the kind of integration that is necessary for life in a human organism. Only the brain as central regulator can provide that.

This may be a reasonable interpretation of Bernat's claim that "the brain is the critical system of the organism without which the remaining organs may continue to function independently but cannot together comprise an organism as a whole."[7] He might be saying that, even if all the organs are alive and doing their job, they cannot together constitute a living organism without the mediation of the brain.

There are various responses to such a view. One is to ask how much the brain must contribute to the integration of functioning among the parts of the organism in order for the organism to be alive. Clearly it need not regulate *every* aspect of functioning. Indeed, it seems that those who would defend the idea that somatic regulation by the brain is a conceptually necessary condition for life in a human organism must accept something like the following. First we have to identify a range of "critical" regulatory functions. As long as the brain continues to carry out any single one of these functions, that is sufficient for life in the organism. For if we were to insist on the necessity of the brain's carrying out more than one, then an organism in which the brain carried out only one critical regulatory function would be dead – but it would not be brain dead.

But now imagine a case in which only one critical regulatory function is being carried out by the brain. All others are being carried out by external life support. Suppose that right at the moment the brain is about to lose the capacity to carry out this one remaining critical function, a mechanical replacement takes over for it with perfect efficiency. Could *this* be the difference between life and death? Note that, because the mechanical replacement would carry out the regulatory functions in exactly the same way the brain did, the state of the organism would be unchanged apart from this one small change in the brain itself. It is very hard to believe that such a change could make the difference between life and death in an organism, either as a matter of fact or, especially, as a matter of conceptual necessity.

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If presented only with information about the loss of supposed critical functions in the brain and information about the unchanged but externally supported functioning of the various organs and subsystems within the organism, most people, I suspect, would not know what to say about whether such an organism was alive or dead. Our concept of death simply fails to deliver an immediately intuitive verdict that the organism is dead. This strongly suggests that the loss by the brain of critical regulatory functions is no part of our *concept* of death.

Another response is simply to point to the case of human embryos, which seem to be living human organisms whose somatic functions are not regulated or integrated by the brain. If this is a correct description, it cannot be a necessary truth that the kind of inte-

grated functioning necessary for life must be regulated to some degree by the brain.

There are a great many other problems with the notion of brain death but I will not rehearse them here.[8] Instead I will conclude by sketching an alternative view.

An Alternative Understanding of Death

I accept that it is largely correct to say that a human organism dies when it irreversibly loses the capacity for integrated functioning among its various major organs and subsystems. But the death of a human organism will necessarily be *my* death only if I am an organism. The view that we are organisms is the most important of the widely shared assumptions that I noted at the outset. But, as I mentioned, I think it is mistaken.

The question whether we are organisms is not a biological question, or even a scientific question – just as it is not a scientific question whether a statue and the lump of bronze of which it is composed are one and the same thing or distinct substances. Whether we are organisms is also, and more obviously, not an ethical question. It is a metaphysical question.

There are two arguments that convince me that the answer to this question is "no." One appeals to the hypothetical case of brain transplantation – or, better yet, cerebrum transplantation. If my cerebrum were successfully grafted onto the brain stem of my identical twin brother (whose own cerebrum had been excised), I would then exist in association with what was once his organism. What was formerly my organism would have an intact brain stem and might, therefore, be idling nicely in a persistent vegetative state without even mechanical ventilation. Since I can thus in principle exist separately from the organism that is now mine, I cannot be identical with it.

The second argument appeals not to a science fiction scenario but to an actual phenomenon: dicephalus. Certain instances of dicephalic twinning, in which two heads sprout from a single torso, seem to be clear cases in which a single organism supports the existence of two distinct people. The transitivity of identity prevents us from saying that *both* these people *are* that organism; for that implies that the people are identical, that is, that there are not really two people but only one. And because each twin's relation to the organism is the same as the other's, it cannot be that one twin but not the other is the organism. The best thing to say, therefore, is that neither of them is identical to the organism. Since we are essentially the same kind of thing they are, we cannot be organisms either.

If I am right that we are not organisms, what are we? The most widely held alternative view is that each of us is essentially a cartesian soul – that is, a nonmaterial conscious entity that in life is linked with a particular brain and body but at death continues to exist and indeed remains conscious and is psychologically continuous with the person prior to death. Because the soul, so conceived, is nonphysical, it can be individuated only by reference to a single field of consciousness. Thus, any conscious state that is not accessible in my field of consciousness must belong to a different person, or soul. This conception of the soul is, however, undermined by what we know about the results of hemispheric commissurotomy – a procedure in which the tissues connecting a patient's cerebral hemispheres are surgically severed. This procedure gives rise, at least in certain experimental settings, to two separate centers of consciousness in a single human organism. If persons were cartesian souls, we would have to conclude that the procedure creates two persons where formerly there was only one. Since this is clearly not what happens, we cannot be cartesian souls.[9]

How should we think about the problem of determining what kind of thing we essentially are? Here is a quick thought-experiment. Imagine that you were facing the prospect of progressive dementia. At what point would you cease to exist? To most of us it seems clear that you would persist at least as long as the brain in your body retained the capacity for consciousness. For there would be somebody there, and who might it be, if not you? But would you still survive if your brain irreversibly lost the capacity for consciousness? It seems that the only thing there that might qualify as you would be a living human organism. But if I am right that you are not a human organism and there would be nothing else there for you to be, it seems that you must have ceased to exist when your brain lost the capacity for consciousness. I infer from this that you are in fact a mind, a mind that is necessarily embodied.

Recall now my earlier claim that the concept of death is not univocal. The term "death" can refer to our ceasing to exist (as in the earlier quotation from Jesus) or it can refer to a biological event in the history of an organism. This makes things easy; for we already have the two concepts of death that we require if I am right that we are not organisms.

An organism dies in the biological sense when it loses the capacity for integrated functioning. The best criterion for when this happens is probably a circulatory-respiratory criterion. There is bound to be considerable indeterminacy about how much functional integration is required for life in an organism. But if we are not organisms, this is of little consequence.

What it is important to be able to determine is when we die in the nonbiological sense – that is, when we cease to exist. If we are embodied minds, we die or cease to exist when we irreversibly lose the capacity for

consciousness – or, to be more precise, when there is irreversible loss of function in those areas of the brain in which consciousness is realized. The best criterion for when this happens is a higher-brain criterion – for example, what is called "cerebral death." But I do not pretend to any expertise here.

Note that when I say the right criterion of our death is a higher-brain criterion, I am not claiming that a human organism in a persistent vegetative state is dead. If persistent vegetative state involves the loss of the capacity for consciousness, then neither you nor I could ever exist in a persistent vegetative state. But you could be survived by your organism, which could remain biologically alive in a persistent vegetative state even though you were dead (that is, had ceased to exist). My view thus avoids the embarrassing implication of most proposals for a higher-brain criterion of death that an organism with spontaneous respiration and heartbeat might be dead.

From an ethical point of view, what matters is not whether an organism remains alive, but whether one of us continues to exist. Of course, we cannot survive unless our organisms remain alive (though this might change if brain transplantation were to become possible). Indeed, although brain death is not sufficient for the biological death of a human organism, it is sufficient for the death or ceasing to exist of a person.

The problematic cases are those in which a person has ceased to exist but her organism remains alive. Might it be permissible to remove the organs from such an organism for transplantation? I believe that it would be, provided that this would not be against the expressed will of the person whose organism it was. But if the person had consented in advance, there would be no moral objection to killing the unoccupied organism in order to use its organs to save the lives of others.

The organism itself cannot be harmed in the relevant sense, it has no rights, and it is not an appropriate object of respect in the Kantian sense. I believe that the treatment of a living but unoccupied human organism is governed morally by principles similar to those that govern the treatment of a corpse. The latter also cannot be harmed or possess rights. But respect for the person who once animated a corpse dictates that there are certain things that must not be done to it. Taking its organs for transplantation with the person's prior consent is not one of these.

References

1. J. L. Bernat, "A Defense of the Whole-Brain Concept of Death," *Hastings Center Report* 28, no. 2 (1998): 14-23, at 17.
2. See J. L. Bernat, "Defending Challenges to the Concept of 'Brain Death,'" *at* <http://www.lahey.org/NewsPubs/Publications/Ethics/JournalFall1998/Journal_Fall1998_Feature.asp> (last visited December 5, 2005); and M. A. DeVita and R. M. Arnold, "The Concept of Brain Death," *at* <http://www.lahey.org/NewsPubs/Publications/Ethics/JournalWinter1999/Journal_Winter1999_Dialogue.asp> (last visited December 5, 2005).
3. For an early suggestion of this sort, see M. B. Green and D. Wikler, "Brain Death and Personal Identity," *Philosophy and Public Affairs* 9 (1980): 105-33, at 113.
4. Bernat, *supra* note 1, at 19.
5. Bernat also claims that "consciousness, which is required for the organism to respond to requirements for hydration, nutrition, and protection, among other needs," is therefore among the "critical functions of the organism as a whole." *Ibid.*, at 17. But this still does not make it a somatic regulatory function of the brain.
6. See, for example, A. Shewmon, "Recovery from 'Brain Death': A Neurologist's Apologia," *Linacre Quarterly* 64 (1997): 30-96; A. Shewmon, "Chronic 'Brain Death,'" *Neurology* 51 (1998): 1538-45; and A. Shewmon, "The Disintegration of Somatic Integrative Unity: Demise of the Orthodox but Physiologically Untenable Physiological Rationale for 'Brain Death,'" manuscript on file with the author.
7. Bernat, *supra* note 2.
8. See J. McMahan, *The Ethics of Killing: Problems at the Margins of Life* (New York: Oxford University Press: 2002): chapter 5, section 1.2.
9. For further argument, see McMahan, *supra* note 8, at 7-24.