

THE CONSERVATIVE USE OF THE BRAIN-DEATH CRITERION – A CRITIQUE

ABSTRACT. The whole brain-death criterion of death now enjoys a wide acceptance both within the medical profession and among the general public. That acceptance is in large part the product of the contention that brain death is the proper criterion for even a conservative definition of death – the irreversible loss of the integrated functioning of the organism as a whole. This claim – most recently made in the report of the Presidential Commission and in a comprehensive article by James Bernat and others – is based upon a series of fallacious arguments. Chief among these is the argument that whole brain-death is the proper criterion for the conservative definition because the brain is the organ that integrates the rest of the organism. A central part of the paper shows that this argument rests upon a confusion between a function and the mechanism that performs it, and replies to the defenses that the Presidential Commission makes on this point. The concluding portion of the paper argues that this issue is not merely of academic interest, but has the potential for undermining the present consensus that supports the use of whole brain-death criteria.*

Key Words: brain-death, definition of death, determination of death.

A 1978 editorial in the *New England Journal of Medicine* declared that “The inescapable logic of the concept that death of the brain is equivalent to death of the person has now received widespread acceptance” (Sweet, 1978, p. 410). The acceptance of brain-death as the criterion of death has only increased since that time, among both physicians and the general public, so much so that a presidential commission has felt enough confidence in the public acceptability of the brain-death criterion to propose that it be incorporated into the law of all fifty states (President’s Commission, 1981).

In this essay, I do not want to argue against the present acceptance

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of brain-death as a criterion of death, but against the ‘logic’ that has fueled that acceptance. Far from being ‘inescapable’, the reasoning that has been employed in arguing for the use of the brain-death criterion is very much contingent and time-relative, as I will show. This conclusion is not merely of rarified academic interest; if it is true, the widespread acceptance that is now enjoyed by the brain death criterion could be seriously undermined by advances in medical knowledge and technology.

The two most recent examples of the reasoning that I find defective are found in Bernat *et al.* (1981), and in the report of the President’s Commission. Both take seriously the advice offered in 1972 by the Hastings Center Task Force on Death and Dying: “To be avoided is the notion that the new criteria constitute a new or an alternative *definition* of death, rather than a refined and alternative means for detecting the same ‘old’ phenomenon of death” (Hastings Center Task Force, 1972, p. 51). To be politically acceptable, the new brain-death criteria being proposed must not be seen as surreptitiously introducing some radically new, liberal notion of what it is to be dead. The effect of following this sound political maxim has been that the arguments favoring the use of brain-death criteria have concentrated on showing that brain death is the logically sufficient criterion for even the most ‘conservative’ definition of death – the irreversible loss of functioning of the organism as a whole, with no mention of consciousness, capacities for experience, social interaction, or emotion. I will argue, on the contrary, that brain-death *cannot be* a logically sufficient criterion of death defined as the irreversible loss of the integrated functioning of the organism as a whole, and that the use of brain-death criteria is a choice wholly contingent on the present state of medical knowledge and technology. This could prove to be the germ of the conservative’s disenchantment with the brain-death criterion, and of an ensuing breakdown of public acceptance of that criterion.

Before proceeding, let me establish a few terminological conventions. In what follows, I will refer to the definition of death favored by Bernat *et al.* and the President’s Commission as the “conservative” view. By the “liberal” view, I will mean one similar to that proposed by Robert Veatch – death is the irreversible loss of the capacity for experience (Veatch, 1975).¹ I will also use the distinctions made by Bernat *et al.* between the “definition” of death, the “criterion” of death, and the “tests” for death, since such distinctions go a long way toward clearing up confusions that can arise from being unaware of the ambiguities in the expression “defining death”.

THE DEDUCTIVE ARGUMENT FOR WHOLE-BRAIN CRITERIA

Bernat *et al.* define death as “the permanent cessation of functioning of the organism as a whole”, where “the functioning of the organism as a whole means the spontaneous and innate activities carried out by the integration of all or most subsystems . . . and at least limited response to the environment.” However, they warn, the functioning of the organism as a whole must not be confused with the functioning of the whole organism – i.e., “Individual subsystems may be replaced (such as by pacemakers, ventilators, pressors) without changing the status of the organism as a whole” (Bernat *et al.*, 1981, p. 309).²

I will bracket the condition that requires the organism as a whole to have “limited response to the environment.”³ ‘Responsivity’ plays no appreciable role in their argument for the conclusion that death of the whole brain is the appropriate criterion for the conservative notion of death that they define. And it is that conclusion which I want to question.

After a short defense of their definition of death, which I will assume is adequate, Bernat *et al.* go on to argue that the proper criterion for this definition of death is “the permanent loss of functioning of the entire brain.” This is the appropriate criterion of death as they have defined it “because the brain is necessary for the functioning of the organism as a whole. It integrates, generates, interrelates, and controls complex bodily activities.” For example, it “generates the signal for breathing,” “aids in the control of circulation,” and regulates overall body temperature (Bernat *et al.*, 1981, pp. 391–392). As the President’s Commission succinctly puts it, “only the brain can direct the entire organism” (President’s Commission, 1981, p. 34).

The chain of reasoning that thus links the conservative definition of death with the brain-death criterion is simple:

(1) Death is the permanent loss of functioning of the organism as a whole.

(2) (therefore) The criterion of death is the permanent loss of whatever is necessary for supporting the continued functioning of the organism as a whole. (This feature may vary among types of organism.)

(3) In the human being, it is the functions of the whole brain that support the continued functioning of the organism as a whole (controlling, integrating, etc.).

(4) (therefore) In the human being, the criterion of death is the permanent loss of the functioning of the whole brain.

However persuasive this argument may appear, it contains a fatal flaw. It confuses a *function* with the mechanism that performs it. What is necessary for the continued functioning of the organism as a whole is that certain key functions continue to be performed, such as respiratory movement, circulation, temperature control, blood pressure control, etc., and these in turn require the functions normally performed by the whole brain (or brain stem), and listed by Bernat *et al.* as “integrating”, “generating”, “interrelating”, and “controlling”. Now it’s a commonplace that radically different physical mechanisms can be functionally equivalent (e.g., my typewriter may be manual or electric or an electronic word processor). This means that though the *functions* of the whole brain may be necessary for the continued functioning of the organism as a whole, a *functioning whole brain* may not be, so long as some other *functionally equivalent* mechanism is operating. Therefore, although (3) is certainly true, (4) does not follow, since a functioning brain may not be necessary for the continued functioning of the organism as a whole. The inference is invalid.

Thus, the permanent loss of the functioning of the whole brain cannot be a logically sufficient criterion for death defined as the permanent loss of the integrated functioning of the organism as a whole. The *criterion* could be satisfied (a massively destroyed brain), but the *definition* might not be, so long as those functions which support the functioning of the organism as a whole were being performed by something other than the brain.

So long as this device, or system of devices were doing what the brain stem had formerly done, then that system would be the functional equivalent of the brain stem. In that case, the organism would continue to function as an integrated whole, even though the brain stem itself had been irreversibly destroyed.

I should note that this is not a new criticism of the attempt to link the conservative definition of death with the criterion of death of the whole brain. Green and Wikler have made precisely the same point:

The fact that the lower brain is the element in the system which keeps other elements acting as a system does not make its continued functioning essential. It is still one among many organs, and, like other organs, could conceivably be

replaced by an artificial aid which performed its function The source of control is not important; what matters is whether the job is done (Green and Wikler, 1980, p. 113).

Given the potentially devastating impact this criticism would have on the major rationale which now undergirds the acceptance of brain-death criteria, it's remarkable how cursory the responses to it have been. Perhaps the assumption is that this sort of criticism is so obviously flawed that it's not deserving of any serious and sustained treatment. Is there an obvious and decisive response? The President's Commission thinks so. Quoting Bernat *et al.*, the Commission argues that even when some mechanical or other medical interventions are performing the functions of the irreversibly destroyed brain, "when the mask created by the artificial medical support is stripped away what remains is not an integrated organism but 'merely a group of artificially maintained subsystems'" (President's Commission, 1981, pp. 35–36). The Commission refers approvingly to a similar argument by Grisez and Boyle:

. . . we answer the objection (that I have made – TT) by saying that if the functioning of the brain is the factor which principally integrates any organism which has a brain, then if that function is lost, what is left is no longer as a whole an organic unity. If the dynamic equilibrium of the remaining parts of the system is maintained, it nevertheless as a whole is a mechanical, not an organic system (Grisez and Boyle, 1979, p. 77).

But why is it that such an artificially maintained organism "is no longer as a whole an organic unity?" It can't merely be because part of the organism has been replaced by something non-organic and mechanical. Such reasoning would violate Bernat *et al.*'s warning against confusing the integrated functioning of the organism as a whole with the integrated functioning of the whole organism. Someone sporting an artificial heart would not thereby "as a whole" be a mechanical system (and therefore be dead).

The reply must be more sophisticated, so perhaps it can be interpreted in some way that avoids this obvious objection.

When a respirator or other medical devices are performing the functions of the destroyed brain stem, there is no doubt that those functions are being performed by a machine, not a living organism or tissue. But under what assumptions would it follow that the "functioning of the organism as a whole" is thereby mechanical?

One that would do the trick would be the assumption that the functioning of the organism as a whole is *identical with* the function

of integrating the various subsystems that comprise that whole organism. Such an identification, however, would be unsupportable.

First, the concept of 'the *integrated functioning* of the organism as a whole' is logically distinct from the concept 'the *function of integrating* the organism as a whole', even though the use of related words (italicized) might tempt one to think otherwise. Exhibiting an integrated functioning of the organism as a whole is an attribute that is necessarily applied to the whole organism, rather than to any one of its constituent parts. Having the function of integrating the organism as a whole, however, is an attribute that *can* be applied to one of the organism's parts, and not only (if at all) to the whole organism. We also know as a matter of fact that the integrating function is an activity of only one subsystem within the organism as a whole, not of the whole organism – an assumption that forms the factual basis of the conservative's argument in favor of a brain-based criterion.

Perhaps Grisez and Boyle would agree, and explain that what they had in mind was that the notion of an integrating function is an essential *part of* any characterization of an organism as 'functioning as an integrated whole'. After all, to say that an organism is functioning as an integrated whole logically implies that an integrating function is being performed. If that's so, then whatever attributes are attached to the integrating function carry over as a characterization of the integrated functioning of the whole organism. In the present instance, that means that if the integrating function is correctly described as 'mechanical' when it is being performed by some artificial device, then the integrated functioning of the organism as a whole is also 'mechanical' and the organism is dead.

This defense of the argument is also mistaken. Although the existence of integrated functioning implies that something is doing the integrating, that's all that's implied: the integrating function is being performed. As I pointed out earlier, that fact is compatible with the existence of *any* sort of mechanism that might be performing that function. At the level of function, whether the mechanism resides in the brain stem, or the pineal gland, or a computer chip is immaterial. This means that one can determine *that* a function is being performed independently of characterizing the mechanism that is performing the function. In the case of human beings, we can know that the organism is being integrated without knowing what is doing the integrating, or how the integrating works, which was the case before we had any knowledge of the functioning of the brain stem. Imagine

that we were presented with two patients, one with a functioning brain stem, and one without who was supported with sophisticated technology that was hidden from us, but which was the functional equivalent of a brain stem. Whatever evidence supported describing the first patient as “functioning as an integrated whole” would also apply to the second. The fact that the integrating function in the second patient was ‘mechanical’ would have played no part in our determination that the organism before us was functioning as an integrated whole, and would not reveal itself as some distinct ‘mechanical’ property, appearing in the integrated functioning of the organism. Therefore, even if the integrating function is correctly described as ‘mechanical’, this implies nothing about the existence or the nature of the integrated functioning of the organism as a whole.

A comparison with an automobile engine might clarify this point. In order for the engine to run smoothly, the fuel intake and exhaust cycle of the pistons must be coordinated (or ‘integrated’) with the firing of the spark plugs. This integrating function can be performed by a mechanical system, in the manner of the traditional distributor; or it can be performed by an electronic system, as with the newer electronic ignitions. In the first case, we may describe the integrating function as ‘mechanical’, and in the second case we may describe it as ‘electronic’. Now we can imagine two integrating systems, one mechanical and the other electronic, that are functionally equivalent. Each produces exactly the same quality of engine performance, so that no measure of engine performance can reveal to us which sort of system is operating. In that circumstance, to call the engine performance ‘mechanical’ when it makes use of a distributor is meaningless, because ‘mechanical’ can’t be referring to any property of the engine performance that distinguishes it from other sorts of engine performance. At best, it could only be an indirect and misleading way of indicating which sort of integrating device was being used.⁴

Grisez and Boyle are in the same way misleading when they argue that an integrated human organism is ‘mechanical’ rather than organic whenever the integrating function is being performed by mechanical devices. So long as those devices are in all significant respects the functional equivalent of the destroyed brain stem, producing the same level and quality of integrated functioning of the organism as a whole, then it is meaningless to call the organism as a whole ‘mechanical’, since that can refer to no distinguishing

property of the integrated functioning of the system. Here, too, this use of the word 'mechanical' can only be a shorthand, misleading way of referring to the fact that the integrated functioning of the organism as a whole is being artificially maintained – i.e., the person is being kept alive.

For these same reasons it is also misleading for the President's Commission to refer to the 'mask' created by artificial support of an organism with an irreversibly destroyed brain – as if the integrated functioning supported by a machine would be 'less real' than the integrated functioning supported by a brain stem. But integrated functioning is integrated functioning is integrated functioning. So long as the artificial support were the functional equivalent of the brain stem, the integrated functioning present through it would be identical with (indistinguishable from) the integrated functioning supported by a brain stem. In either case the organism would be alive under the terms of the conservative definition of death.

We now have reason to reject the major argument offered in favor of using the death of the brain as the criterion for the conservative definition of death favored by Bernat *et al.* and the President's Commission, since it seems possible that there could be cases in which the criterion was satisfied (a massively destroyed brain), but the definition was not – namely, whenever a human organism continued to function as an integrated whole with the aid of devices that performed the integrating functions of the brain.

There remain several other arguments that have been offered to support the connection between a brain death criterion and the conservative definition of death which are worth examining.

THE PRACTICAL ARGUMENT

One is a practical argument that points to the consequences of the death of the brain for the survival of the rest of the body. Bernat *et al.* observe that "destruction of the brain produces apnea and generalized vasodilatation; in all cases, despite the most aggressive support, the adult heart stops within 1 week, and that of the child within 2 weeks" "Thus," they argue, "when the organism as a whole has ceased to function, the artificially supported 'vital' subsystems quickly fail" (Bernat *et al.*, 1981, p. 392). The argument here seems to be that the failure of the vital subsystems is the sign that the organism as a whole has ceased to function, and since the death of the brain inevitably results in the failure of the vital

subsystems, the death of the brain is the logical choice as the criterion of death of the organism as a whole.

One problem with this argument, of course, is that the inevitability of the failure of the vital subsystems following the death of the brain is a matter of our present medical knowledge and technology. Advances in knowledge and technology will very likely destroy the now perfect correlation between the death of the brain and the failure of the vital subsystems. In that case, the death of the brain will not mark the irreversible loss of the integrated functioning of the various subsystems. The argument given would no longer support using the death of the brain as the criterion of death of the organism as a whole.

Another, more embarrassing, objection to the practical argument is that it uses a criterion of death different from the one explicitly supported by Bernat *et al.* Again, the argument is that the organism as a whole ceases to function (i.e., is dead) when the various subsystems begin irreversibly to fail, and furthermore, that the death of the brain marks the point at which the deterioration of the subsystems begins. But this way of describing the role of brain death makes it a test for death, rather than the criterion for death. The criterion of death that the argument uses is something like "the irreversible deterioration of the organism's subsystems," with the death of the brain taken as the event that normally marks the beginning of this process. Taking the deterioration of the organism's subsystems as the criterion for the conservative definition of death may actually be more intuitively plausible, but it has very different consequences for judgments about whether artificially-supported patients are dead or not. So long as the connection between the death of the brain and the beginning of deterioration is only a contingent one, the "deterioration criterion" of death might rule that brain-dead patients were still alive, even if it continued to be true that brain death was an irreversible condition that eventually resulted in deterioration. It would depend on how long medical interventions were able to forestall deterioration after brain-death occurred. The longer the delay of deterioration, the less plausible it would be to continue claiming that the event of brain death marked the beginning of deterioration, and the more plausible it would be to assert that such brain-dead patients continued to live for some period after their brains had died. A possible case of this sort was recently described in the *New England Journal of Medicine*, which concerned a man on a respirator whose heart

continued beating for 68 days after brain-death (and stopped then only because the respirator was finally disconnected) (Parisi *et al.*, 1982).

THE ARGUMENT FROM TRADITION

The other argument given to support the contention that the death of the brain is the appropriate criterion for the conservative definition of death is an appeal to the continuity with traditional medical practices:

Using permanent loss of functioning of the whole brain as the criterion for death of the organism as a whole is also consistent with tradition. Throughout history, whenever a physician was called upon to ascertain the occurrence of death, his examination importantly included . . . signs indicative of permanent loss of functioning of the whole brain Thus, permanent loss of whole brain functioning has in an important sense always been the underlying criterion of death (Bernat *et al.*, 1981, p. 392).

That is, since the traditional criteria for death are tests indicating that the brain has ceased functioning, the direct use of the death of the whole brain as a criterion of death would declare no one dead who wouldn't also have satisfied the traditional criteria, and so the traditional tests of death and the newer tests of death now being used (e.g., the Harvard tests) are really nothing more than different tests for what has always been the criterion of death (the brain-death criterion). Even if this conclusion is accepted,⁵ it does nothing to establish that the death of the whole brain is the proper criterion of the conservative definition of death. All it shows is that whoever is willing to accept the use of the traditional tests for death should also be willing to accept the use of the newer tests as well, a conclusion that may be acceptable to people who support very different definitions of death, not just the conservative one.

It's important to recognize that there is not a one-one relation between definitions of death and criteria or tests of death (a conclusion it is easier to arrive at once we have disposed of the conservative's attempt to deduce the brain-death criterion from the conservative definition). Even if the irreversible loss of whole brain functioning is a defensible criterion for the conservative definition of death, that would not bar those who took death to be the irreversible loss of the capacity for experience (e.g., Robert Veatch) from *also* using whole brain death as their favored criterion of death.

A coherent and strong reason for doing so would be that even though the death of the *whole* brain is not a necessary condition for death as defined by someone like Veatch, it is sufficient, and the tests available for determining that the whole brain has died are much more reliable than the other tests that might be used for determining that a person has irreversibly lost the capacity for experience. The ethical imperative is to use a test that will produce no false positives, and this is a good reason for using the more 'conservative' criterion when the available medical knowledge and technology make it the best indicator of irreversibility. In the absence of tests like the Harvard tests, someone who took Veatch's view would have every reason to use the traditional heart-lung criteria, so long as experience showed them to be the most reliable available tests for the irreversible loss of the capacity for experience.

Thus, at the level of the criteria and tests used, those who accept the liberal definition of death might well be indistinguishable from those who have a conservative view. The mere fact that the whole brain-death criterion is coextensive with the traditional criteria, therefore, provides no reason for linking either of those criteria with any particular definition of death, conservative or otherwise. Nor does it show that any criterion-definition pair is uniquely consistent with tradition, for the criteria and tests for death that are used do not in themselves reveal what definition of death is accepted by those who apply them. Even though heart-lung criteria are among the traditional criteria for death, it is not at all apparent what the corresponding traditional definition of death might be. It's not obviously the one defended by the President's Commission and Bernat *et al.*, when one considers some of the common metaphors for death – e.g., the 'soul' departing the body, 'the final rest', 'going to sleep' and others that appear to refer to death as the end of experience. Nor does the conservative definition of death appear to be the one that would most easily explain the historical motivation for identifying more accurate tests for death, which has been the fear of premature burial, of waking up in the tomb (Alexander, 1980).

This fear may well be what underlies the different responses that people have to those patients whose brain stems remain intact and those whose whole brain has been irreversibly destroyed. The President's Commission notes "The startling contrast between bodies lacking *all* brain functions and patients with intact brain-stems . . . the former lie with fixed pupils, motionless except for the

chest movements produced by their respirators. The latter can not only breathe, metabolize, maintain temperature and blood pressure, and so forth . . . but also sigh, yawn, track light with their eyes, and react to pain or reflex stimulation" (President's Commission, 1981, p. 35). Indeed, the difference between them is even greater than this — e.g., those who are in a persistent vegetative state, like Karen Ann Quinlan, also go through sleep-wake cycles, and "on cursory examination, these patients will not only appear awake but even 'normal'" (Cranford and Smith, 1979, p. 204). The feeling that such people are conscious, or at worst only sleeping, is for most people irresistible, as would be the haunting fear that they could awaken in the coffin.

But even such a strongly felt contrast shows nothing about the conception of death that is held by those who feel it. Even a Robert Veatch might be unable to resist the impression that Karen Ann Quinlan might be 'only sleeping', and unless he could say with a certainty that she was in no sense sleeping and would never wake up, it would be perfectly coherent for him to act on his impression by refusing to adopt a test that would declare her dead. So the fact that we all feel the contrast that the President's Commission describes, does not show that we all should agree with them that whole brain-death is the criterion of a conservative definition of death.

Even if this argument worked on its own terms, it also is one that is vulnerable to advances in medical knowledge. The impression that the irreversibly vegetative patient is like a sleeper or just severely retarded would become much easier to resist if we knew as much about testing for irreversible loss of all neocortical functioning as we now know about testing for irreversible loss of whole-brain functioning, for then we could say with a medical certainty that patients who fulfilled the test conditions would never 'awaken' and were having no form of experience whatsoever. In such circumstances, the Commission's appeal to the different feelings we have about the two classes of patients would have much less force, since the felt contrast would no longer be as a great.

SOME PRACTICAL CONSEQUENCES

In this paper I have not argued against the present-day use of brain-death as the criterion of death, in large part because given the current state of medical knowledge, brain-death is an acceptable practical

criterion of death not only for the conservative definition of death, but even for more liberal definitions of death like that of Robert Veatch. If that is so, if my argument doesn't show (and is not intended to show) that brain death should now be rejected as a criterion, then what is the practical import of my criticisms of the conservative's arguments for a brain-death criterion? Aren't my criticisms of those arguments purely "academic"?

The answer is "no", and I want to conclude by explaining why not. There is at present a consensus that brain-death is the acceptable criterion of death. Conservatives buy it largely because they have accepted the faulty arguments that this criterion is required by their 'integrated functioning' view of death. Liberals can accept it for the practical reason that tests for whole-brain death are for now the most reliable tests for the irreversible loss of the capacity for experience. This is a happy situation, because it means that current public policy based on the whole-brain criterion of death can win widespread acceptance without having to take on the difficult philosophical and moral question of deciding between the competing conservative and liberal definitions of death. So long as the consensus over the use of brain-death criteria continues, the debate about definitions of death can be kept tidily within academic, intellectual circles.

The practical question is what will happen to that consensus under pressure from developments in medical knowledge and technology. I have two developments in mind: (1) the emergence of knowledge and technology that makes it possible to keep brain-dead human organisms functioning virtually indefinitely, without the subsystem failures that now eventually occur; and (2) the development of reliable tests for the determination of irreversible coma, that are as reliable and scientifically-based as the present tests for whole-brain death. If the arguments that I've given in this paper succeed, then the present consensus is going to be pulled apart, for while the logic of the conservative position is going to force conservatives to back away from the use of the brain-death criterion, the logic of the liberal position will force liberals to move beyond whole-brain death to the use of some criterion that can be applied even in the presence of an intact and functioning brain stem.

Let's take the first development I've mentioned, and assume that I've succeeded in showing that the use of a brain-death criterion is not logically implied by the acceptance of the conservative definition of death advanced by Bernat *et al.* and the President's Commission. Because there is now a good practical reason for linking

the conservative view of death with the use of brain-death criteria, there is no motivation to examine closely the logic of the conservative position. Brain-dead patients usually disintegrate very quickly, as Bernat *et al.* point out, when the other vital subsystems fail. A brain-dead patient very soon becomes an organism that is no longer integrated. So, if one is a conservative, there is not much point in arguing that a brain-dead person may not yet really be dead when he soon will be no matter what one does to maintain him. But the motivation to push the logic of the conservative position becomes much stronger once we can do something to prevent the collapse of the organism following brain-death. It will be much harder for the conservative to continue to accept the use of brain-death criteria when he begins to be faced with organisms that are indeed brain-dead, but that are not disintegrating. The premises of the practical argument (the only one that could work) will have been falsified by changing medical facts. So this first sort of development is likely to pressure conservatives into retreating from the use of brain-death criteria (or into abandoning their conservatism).

It's uncertain whether such sophisticated artificial life supports will in fact be developed. As the case described earlier demonstrates, and as Cranford and Smith admit, "prolonged 'survival' (of brain-dead patients) with respect to continued heartbeat and circulation is theoretically possible" (1979, pp. 202–203). The most significant factor weighing against the actual development of such techniques is the acceptance of brain-death as the legal criterion of death. If the brain-dead patient is declared dead, then that person no longer has an illness to be conquered by further clinical experimentation. There can be no therapeutic reason for maintaining that person on life-support. But although there is no longer a question of benefiting brain-dead patients themselves, there may still be good reason for maintaining them for the benefit of others, if they can be used for the advancement of medical knowledge. In fact, brain-dead patients are being used as research subjects – e.g., in the development of artificial blood substitutes (Marugh, 1979). Brain-dead patients offer a research population that is not protected by existing law and regulation which prohibits risky and non-beneficial research on critically ill incompetent patients, and so there is a significant incentive for increased research using these subjects.⁸ As future lines of research require it, there is no reason not to expect the eventual (if sporadic and piecemeal) development of the level of artificial support I've described.

While the first development will be pulling the consensus apart from one end, the second development I mentioned will be tugging at it from the other. Once medical knowledge and diagnostic techniques have advanced to the point that diagnosis of irreversible coma can be made with unwavering certainty, then those who have a liberal view of the nature of death will no longer have any practical reason to continue use of whole-brain death criteria. At the same time that this development is luring liberals beyond whole-brain death criteria, it will also be weakening one of the most potent objections to the liberal definition of death – the repugnance felt at the idea of burying, cremating, or otherwise treating as dead a human being whose heart continues to beat.⁹ As I argued earlier, the source of this repugnance is the superficial similarity between the irreversibly comatose and those who are merely sleeping. With the development of well-established tests for irreversibility, it will be easier to argue (and easier to believe) that that felt similarity is an illusion.

It is possible to overstate the effects these two developments will have on public consensus on the use of whole-brain criteria for death. The mere fact of consensus produces strong attractive forces independently of the existence of any coherent rationale for the agreement. Both conservatives and liberals will be reluctant to part company with received opinion. But while it's true that reason is not the only factor influencing social opinion, it's false to think that reasons have no social impact. When the two developments just sketched have made it obvious that a whole-brain criterion of death is acceptable for neither the conservative nor the liberal definition of death, then one can remain conventional only at the price of appearing either insincere or dense. This is usually too high a price for partisans, who through their writings and acquaintances may well set other social forces in motion.

In sum, the weaknesses I have exposed in the attempted link between the whole-brain death criterion and the conservative definition of death are not merely academic matters. When these logical fault lines are brought under pressure from scientific and technological advances in medicine, the result is likely to be a severe jolt to the agreement that presently supports acceptance of the use of brain-death criteria.

Once the consensus on the use of brain-death criteria begins to unravel, there will remain no *modus vivendi* between conservatives and liberals that can serve as the convenient basis for public policy,

and the debate between their competing definitions of death will no longer be a matter safely left to scholars.

The President's Commission, we can conclude, was speaking only for the moment when it declared that "... philosophical refinement beyond a certain point may not be necessary Further effort to search for a conceptual 'definition' of death is not required for the purpose of public policy because . . . the 'whole-brain' formulations provide a theory that is sufficiently precise, concise, and widely acceptable" (President's Commission, 1981, p. 36). "Widely acceptable" today, perhaps, but not tomorrow, when public policy will become impossible without philosophical refinement.

NOTES

* I would like to thank Howard Brody and Bruce Miller for helpful suggestions and criticisms.

¹ The word 'conservative' was chosen chiefly for rhetorical reasons, to contrast it with a definition like Veatch's which could ask us to part company with traditional practices (i.e., declaring that the irreversibly comatose are dead). There are, of course, still more 'conservative' ('traditional') views of death – e.g., as the irreversible loss of the capacity for fluid flow.

² The President's Commission's definition is similar: "Death is the moment at which the body's physiological system ceases to constitute an integrated whole . . . (which) requires complex integration, and without the latter, a person cannot properly be regarded as alive" (President's Commission, 1981, p. 33).

³ The relevance of this condition will be indirectly addressed in discussion of an argument made by the President's Commission. See p. 387ff. It should also be noted that making 'responsivity' part of the conservative's definition of death is a potentially suicidal amendment to the central idea of integrated functioning. Unless the reference to 'responsivity' is nothing more than an *ad hoc* and question-begging anticipation of the whole-brain death criterion (i.e., so that 'responsivity' refers to all and only brain-stem reflexes), then its inclusion puts the conservative definition on a slippery slope leading directly to the liberal camp. For if 'responsivity' is a legitimate part of the definition of death, why not the level of responsivity of *consciousness* – i.e., why not the liberal definition of death?

⁴ I owe this analogy to Bruce Miller.

⁵ But see Green and Wikler, 1980, pp. 108–109.

⁶ This question was raised to me by a reviewer for *The Journal of Medicine and Philosophy*.

⁷ Such protocols are increasingly being submitted to Institutional Review Boards prompting discussions of the ethics of such research. See John A. Robertson, 'Research on the brain-dead' (Robertson, 1980). A perhaps prophetic description

of the research possibilities can be found in Willard Gaylin's 'Harvesting the dead' (Gaylin, 1974).

[‡] See Bernat *et al.*, p. 391: "To bury (vegetative) patients while they breathe and have a heartbeat, most would view as at least esthetically unacceptable." Also President's Commission, p. 35.

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