Transplantation Ethics

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THE WHOLE-BRAIN-ORIENTED CONCEPT OF DEATH: AN OUTMODED PHILOSOPHICAL FORMULATION

DEBATE OVER THE past 25 years between holders of concepts of death that focus on the brain and those with the more traditional focus on the heart and lungs has created a situation wherein defenders of the neurological concepts of death have not been forced to be particularly precise in specifying the meaning of terms. The seemingly endless prolongation of cellular and organ functioning (in what can be appropriately called human corpses) has been brought about by new death-assaulting technologies giving rise to a new and inhuman form of existence. Although the potential for use of human organs for therapeutic transplantation should never justify adopting a new understanding of what is essentially significant to human life and death, it may require a philosophically responsible clarification of imprecise use of these terms adequate only in a time when little that was morally critical was at stake. These developments have led to an infatuation with the neurologically oriented concepts, which have made the more traditional heart-and-lung definition of death appear totally inadequate and outmoded. The thesis of this chapter, however, is that the time has come when crude formulations of the so-called "brain definition of death" can no longer be tolerated.

Holders of the brain-oriented concept of death would probably grant that the only practical problem with the more traditional concept, which focuses on the heart and lungs, is that it will in special occasions produce false-positive tests for human life. In these rare cases, individuals who should be considered dead are labeled alive because heart and lung functions continue even though brain function may have permanently and irreversibly ceased. Traditional moralists, however, or at least those who tend to hold a more rigorous, life-preserving position regarding moral obligation to an individual human being, have followed the principle of erring in the direction of following the morally safer course. Thus
Hans Jonas' has argued that unless one can be certain of philosophical foundations (technical uncertainty is not being considered here) of the more limited brain-oriented concept, one should opt for the false-positive judgment of continuing life rather than running the moral risk of a false-positive pronouncement of death.

The holders of the brain-oriented concept, however, have apparently satisfied themselves that there is no significant risk of making the philosophical mistake of considering an individual dead because his or her brain function has ceased when, in fact, the correct moral judgment would be that the individual is still alive, although brain function has irreversibly ceased.

This chapter attempts to turn the tables on the holders of the concept of death that focuses on the function of the whole brain and asks them precisely the same question that they have put to holders of the more traditional heart-and-lung-oriented concepts. Because they have opted for a system that would eliminate the rare false-positive pronouncement of life, I consider it fair to ask whether the whole-brain concept of death might also lead to conditions in which there would be a false-positive judgment that life continues. Is it then possible that there could be a condition wherein portions of the brain retain their normal functioning and yet for all practical purposes the individual should, according to our philosophical understanding of the nature of the human, be pronounced dead? In this chapter I argue that this indeed is the case, that our concept or standard of death must be further refined, and our technical criteria for death must be modified accordingly so that our concept and criteria most accurately reflect our understanding of what is essentially significant to the nature of humans.

**Preliminary Philosophical Assumptions**

Before turning to an assessment of the brain-based definition of death itself, I need to make clear that my main focus is on the concept of death (not the criteria) and that any discussion will be in the context of a formal definition of death that can be stated in very general terms.

**The Concept of Death as a Philosophical Rather Than a Technical–Medical Issue**

To make the argument of this chapter, it will be necessary to assume a great deal of the debate about the definition of death that has taken place over the past 25 years. The first major document in this debate was the report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death.² It is crucial for philosophical understanding of this debate to realize that
cal foundations of limited brain-processing of continuing nouncement of apparently satisfied sophical mistake has ceased individual is still of the concept of them precisely traditional heart-system that would consider it fair to ask conditions in which is it then possible retain their normal would, according to in, be pronounced at our concept or criteria for death in most accurately the nature of humans.

ons on of death itself, let of death (not the formal definition of human a to assume a great deal in place over the past report of the Ad Hoc he Definition of Brain's debate to realize that this committee did not in any sense offer a new definition of death or even a new definition of brain death. It merely offered, as the title of the report states, criteria for irreversible coma. In no place in the committee's report did the formulators argue that irreversible coma measured by the criteria it presented is to be equated with brain death and, in turn, that brain death is to be equated with death of the whole human being. In 1968 the distinction between the technical measures of the irreversible loss of a body function and the much more philosophical or moral judgment about the nature of life and death was not clear. This distinction has been made increasingly clear over the years that followed. I have argued previously that the criteria for loss of a body function must be kept radically separate from the philosophical argumentation. This distinction is also emphasized in a report of the Task Force on Death and Dying of the Institute of Society, Ethics and the Life Sciences, which reviewed the Harvard criteria for death² (1972). In this chapter, as in the previous one, I shall keep this distinction clear by using the term concept or standard when referring to a philosophical understanding of that which is essentially significant to a human's nature and by using the term criteria in reference to technical measures of the capacity of a body organ or organ system to function. It should be clear that the validity of a "concept" is to be tested philosophically, whereas "criteria" are to be verified by the empirical methods of biomedical science.

Death Formally Defined as Irreversible Loss of That Which Is Considered to Be Essentially Significant to the Nature of Humans

The distinction between the technical measures of criteria for loss of a body function and the philosophical argumentation needed for a concept of death can be seen if one begins with a completely formal definition of death. I propose such a formal definition:

Death is the irreversible loss of that which is essentially significant to the nature of humans.

Death, as the term is used in the present debate, is not in any sense a biological statement of cessation of cellular respiration or functioning, as the term might be used in referring to the death of a plant or nonhuman animal. When we say that an amoeba has died, we mean that cellular respiration has ceased or mobility of the cellular protoplasm has ceased—and nothing more. When we speak of human death, however, we mean something radically different. We are making a practical statement with policy implications. We are saying that it is now appropriate to behave toward the individual in a different way, what in the previous chapters we called "death behaviors." Human death is a
social and moral concept quite beyond the biological. It may still be appropriate to talk about the death of an individual's cells or even an organ in the more narrow biological sense, but the only reason the definition of death receives any attention at all in the realm of public policy is that the term summarizes and legitimates these "death behaviors," a radically different set of social relationships and actions.

The formal definition of death given here reveals that that formal definition can be given substantive content only by further philosophical analysis. It is necessary to reach some understanding about what is essentially significant to the nature of the human. This can never be determined by biological investigation but only by philosophical or theological reflection.

The Difficult Case for a Brain-Oriented Concept of Death

Before offering criticism of the whole-brain-oriented concept of death and a proposal for refinements that I feel are necessary, I shall first explore some preliminary arguments pertaining to adopting any concept of death that is brain oriented. It is apparent that it is only with difficulty and only by very careful statement of our precise meaning that we are able to justify adoption of any brain-oriented concept. First, I shall deal with the problem of moral doubt, second with the distinction between the death of the whole human being and the death of the brain, and third, I shall examine candidates for a concept of death that would give substantive content to the formal definition I have offered.

The Problem of Moral Doubt

The reason why a brain-oriented concept of death is replacing the more traditional heart-and-lung-oriented concept is that focus on the heart and lungs produces what must be called false-positive diagnosis of the presence of human life. Advocates of the brain-oriented concept, however, must deal with the traditional principles for resolving moral doubt. If there is uncertainty about whether a course of action is acceptable, there are several principles for resolving this doubt. One view (sometimes termed niatiorism) holds that it is never right to perform an action for which there is some reason to think it may perhaps be wrong. A less rigorous position for resolving doubt (called probabilitism) holds that an action may be performed only if arguments in favor of its being legitimate are more probable than the arguments against.

In regard to moral doubt about whether a human with heart and lung but no brain function may morally be treated as dead, many people would plausibly argue that there is sufficient doubt to require taking the safer course and treating
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The human as if he or she were living. Certainly, this would be the position of the tutorist and, conceivably, of the probabilist. Even for the probabilist (i.e., for one who considers a probable moral opinion as justifying an action even though another course of action is as probable or more probable), there are special cases of exclusion for which the safer course is required. One of these cases is that in which a life may be saved when the safer course is taken. Thus even for the probabilist, in the case of deciding whether to treat a being with heart and lung but no brain function as if he or she were dead, there is a strong moral tradition that would support opting for the safer course.

The problem with this method of handling moral doubt is that it tends to assume that only one of two courses of action will lead to morally wrong behavior. In the case of determining whether or not human life exists, however, it appears that immoral behavior results when either of the two concepts of death is incorrectly chosen. If the patient is really alive in the absence of brain activity and is pronounced dead, the more obvious moral infringement occurs: A human life might be terminated improperly. However, we must also consider that there will be moral infringement if a patient who should be considered dead is considered living. There are two problems with the false-positive diagnosis of human living. The first must be the more significant—it is simply an immoral assault on human dignity to treat a corpse as if it were living. It is a moral infringement to fail to distinguish between a living individual and a formerly living individual, who should now be appropriately treated as a corpse. To fail to recognize that the essential qualities of humanness have left an individual is a serious assault on the dignity of humans. To treat an individual who has lost that which is essential to human life as if he or she still had it is to say about that individual and about humanity in general that we fail to perceive the essential dignity and humanness of life.

There is another consideration as well. This is clearly of secondary moral significance, but nevertheless must be introduced. This is the harm done to others by treating a human corpse as if it were still a living human being. The introduction of social, economic, and political considerations into decisions about the treatment of the individual patient is a dangerous act and violates the traditional Hippocratic maxim that the medical obligation is to seek only the benefit of the patient. To compromise patient care for social, economic, or political purposes is a basic violation. If the body before us, however, is a corpse and we continue to treat it as if it were a living being, we are compromising the welfare of others with no benefit to the patient whatsoever. Equipment and space are wasted; resources are squandered. This is true independent of the introduction of the dramatic and over-publicized consideration of the possible use of body parts for transplantation. To change our concept of death for the benefit of the family or
to provide organs for transplant is clearly a moral outrage. To fail to clarify our concept of death simply through philosophical laziness is equally outrageous, however, if the result is harm to the dignity of the patient or harm to the welfare of others. To fail to provide help to others when the individual patient has absolutely nothing further to gain is simply irresponsible.

The implication of these arguments is that if there is moral doubt about the concept of death, it is a case in which the conscience is truly perplexed. There are good reasons to anticipate that there will be moral wrong in either case, whether the action be treating living individuals as if they were corpses or treating corpses as if they were living beings. For some, this will be seen as sufficient reason for abandoning the now no-longer “safer course” of treating the patient with heart and lung function but no brain function as if he or she were living. However, for those persuaded of the necessity of excluding life-risking actions from the general principles for handling cases of doubt, even these arguments based on the probability of wrong from treating the corpse as if it were human may not be persuasive. Thus the movement to a brain-oriented concept of death from the more conservative concept is a difficult case at best. Those who make such a choice do not do so without moral risk.

The Death of the Whole Being and the Death of the Brain
It is also difficult to make the case for “brain death” for another reason. The term brain death suggests that only the brain dies, not the whole organism. Yet it should be clear that it is the entire human being who dies. The behavior of others changes vis-à-vis the entire human and not just the brain, although the brain may be the criterion by which the moral status of the entire individual is assessed. Although this might seem to be only a technical distinction, the point is philosophically important in rejecting arguments about death being arbitrary or a continual process. It avoids the notion that there are many different human deaths—of cells and organs and organ systems. In the early days of the definition of death debate the case was argued forcefully by High.

We no longer can accept imprecise uses, especially when these imprecise uses give rise to the compartmentalizing of the human into a number of isolated organ systems and functions. It is the human as a whole who dies, and our language must reflect this, especially at times when we are trying to be precise. Thus we may speak of a “brain-oriented” concept of death, but if this indicates only the death of a whole individual by loss of bodily function that (according to our current empirical understanding of the body) has an anatomical locus in the brain, we should not use the term brain death. That term implies it is simply the brain that is dying, not the individual as a whole.
Candidates for a Concept of Death
We saw in the previous chapter that several definitions might specify what is essentially significant to the nature of the human such that its loss should appropriately be called death. Traditional religious thought in the Western world characterized death as the departure of the soul. This traditional religious notion of death was gradually replaced by the modern concept of death, which was oriented to the irreversible loss of the ability of the body to maintain the flowing of vital body fluids—in other words, the blood and breath.

Against these more traditional understandings of death, contemporary intellectual thinkers posed a concept of death that focuses on humans and has a neurological locus. Whether it is stated explicitly or not, this recent understanding of what is essential to the nature of humans was something closely related to the individual's capacity to integrate bodily functioning through the neurological system. Starting with the Harvard report of 1968 and the state laws beginning in 1970 the human was considered to be living so long as minimal capacity for integration of the functions remained. Our scientific understanding of anatomy and physiology led us to believe that this function, considered to be philosophically significant, has its locus in the human brain.

Thus the difficult case for a brain-oriented concept of death rests on the plausibility of the philosophical argument for this integrating capacity, or some similar function, as that which is essential to the human's nature. Only if one adequately handles the problem of moral doubt, the distinction between death of the human and death of the brain, and the argument for the plausibility of the neurological concept over the other concepts can one make any move in the direction of a brain-oriented concept.

Given these difficulties, there appear to be strong reasons against moving to a brain-oriented concept. The remainder of the chapter, however, assumes that these difficulties can be overcome by the arguments I have presented, provided the case is stated carefully enough. I shall now turn to the problems involved in focusing on the whole brain as the locus for the functions that are thought to be essential to the human's nature. Previously I argued that in one sense the brain is much too narrow a focus for determining what dies. Now I shall argue that in another sense, it is much too gross and crude a locus.

The Essentially Significant to the Nature of the Human
The Harvard committee had as its objective, if we are to believe its title, the examination of the definition of brain death. Yet the title of its report clearly indicates that what the committee did was attempt to provide criteria for
irreversible coma. Whether the “death” of the brain can be equated without remainder to the state of irreversible coma is in large part a scientific, empirical question. In the perspective of the years since the Harvard report was written, however, it seems on the surface that there may well be a great difference between the death of the entire brain and the state of irreversible coma. Some people who are irreversibly comatose may nevertheless retain some brain-stem functions.

This forces us to be much more precise about exactly what in the functioning of the brain is of critical importance. First, we must gain a clearer understanding of what is so essentially significant to the nature of the human that its loss is called death and appropriately initiates death behavior.

Capacity to Integrate Bodily Function

So far, I have argued that one candidate is the capacity of the body to function as an integrated whole. If we are speaking of the death of the organism as a whole, and not simply the death of isolated cells, organs, or organ systems, it at first seems plausible to consider the complex integrating capacity of an organism as that which is essential to it. If this is the case, then the loss of that integrating capacity could appropriately be equated to the organism’s death. From what we know of the integrating capacity of the human body, the brain is far and away the dominant locus of this capacity. To be sure, the spinal cord and peripheral nerves are also important, but these do not really provide integration. The spinal reflex at most provides a primitive and pale imitation of integrating function. The mysterious integrating capacity of the nervous system, which has fascinated humans and been conceptualized so influentially by Claude Bernard is, by comparison, so much more grand as to make the difference between a simple animal and the human organism.

It seems reasonable from what we think we know about the brain to relate this concept of integrating capacity to the whole brain. If this is what is seen as essentially significant to the human, then the examination of the whole brain for signs of functioning may be a plausible test for death of the individual.

Yet the simple equation of brain death to “irreversible coma” by the Harvard committee should give us pause. Was it really this integrating capacity the committee members had in mind? If so, why did they substitute the term irreversible coma? Henry Beecher, the committee’s chair, writing elsewhere, makes clear which functions he deemed essential, and he does not seem to include all of the brain’s functions. He states that a human is dead when there is irreversible loss of personality, his conscious life, his uniqueness, his capacity for remembering, judging, reasoning, acting, enjoying, worrying, and so on.
Beecher goes on to argue

We have proof that these and other functions reside in the brain. . . . It seems clear that when the brain no longer functions, when it is destroyed, so also is the individual destroyed; he no longer exists as a person; he is dead. 7

Certainly this conclusion follows from what we know about the brain, but there is a fundamental error in the argument. We have suggested that the practical problem with the more conservative heart-and-lung-oriented concepts is that they occasionally produce false-positive tests for life. If the argument is to be made for brain-oriented criteria at all (and we have already argued that this is a difficult but possible case to make), then certainly that argument must be subject to the same criticism. The functions mentioned by Beecher and summarized by the term irreversible coma certainly are in the brain but clearly do not exhaust the brain’s functions. Focusing on the destruction of the whole brain may include additional nonessential functions, just as focusing on the heart and lungs did.

Capacity for Rationality

Beecher’s list of characteristics includes the human’s ability to reason. The Latin name for our species (Homo sapiens) clearly implies that reasoning capacity is somehow an essential characteristic. Could it be that it is reasoning capacity, rather than integrating capacity, that is essential? I believe not. Our considered moral judgments about those members of the species who do not have any capacity for reasoning is that they are still to be considered living in a very real way. They are still to have human rights, protected by both moral and positive law. Babies lacking a language, a culture, and a capacity to reason certainly are living in a human sense in spite of the fact that they have never executed the reasoning function. One might, of course, argue that babies have the potential for reasoning—the capacity for future reasoning. In this sense, they might be included among the category of living humans using this definition. But what of those afflicted with senile dementia, mentally retarded individuals, persons who have apparently permanent psychosis? They also lack a capacity for rationality and in some cases will never regain that capacity. Yet it is clear that they are still living in a meaningful sense of the term. In fact, one of the great dangers of moving to any brain-oriented concept of death is that it might place us on an evolutionary course, a “slippery slope” leading to the eventual exclusion of individuals who lack a certain minimal quality of life from the category of the human. Unless this tendency can be avoided, the dangers of movement to brain-oriented concepts may well exceed the moral right-making tendencies. Whatever may be our propensity to see rationality as the pinnacle of human functioning, it must
not be the characteristic that is essential to consider humans living. We must look elsewhere.

**Capacity to Experience**
Most of the other functions mentioned in lists of essentially human characteristics—consciousness, capacity for remembering, enjoying, worrying, acting voluntarily—characterize the human as an experiential animal. Experience is here taken in the broadest sense. Humans experience cognitively and emotionally. They cathect, comprehend, experience through sense organs and through much more complex experiential modes. It seems clear that a human who has some vestige of consciousness, some capacity to experience in this broadest sense could never be considered dead. To be sure, this human life may not be on the highest plane. It may be limited to blurred vision of reality and stunted emotional experience, but it is nevertheless life of a form that must be protected. Death behavior for such an individual is inappropriate.

**Capacity for Social Interaction**
Although humans may be experiential, they are also social creatures. At least in the Western tradition, the human's capacity to relate to fellow humans is fundamental. Is it meaningful to speak of a living human who lacks the capacity for social interaction? We must make clear that we are not at all saying that actual social interaction must take place for a creature to be alive. We are not even saying that such interaction has ever taken place. To say this would place the human's existence at the mercy of fellow humans. The cruel treatment of a baby who has been abandoned in a room with no human interaction should not define that baby out of existence. Presumably the capacity for social interaction nevertheless remains.

What is the relationship between the capacity for experience and the capacity for social interaction? It appears that they may be synonymous. It is conceivable that a condition could exist that would differentiate the two capacities. But to be able to experience in general but not experience others in particular would certainly be a bizarre form of existence. In practical terms, it would appear to be impossible. If it is the case that capacity to experience and capacity to experience others are coterminous, then we need pursue the matter no further. For practical purposes this seems to be sufficient. We conclude, then, that if we abandon the more traditional concepts of death (those focusing on the departure of the soul or the irreversible cessation of fluid flow) we may well find it more plausible to opt for a concept focusing on the irreversible loss of the capacity for experience or social interaction rather than the irreversible loss of integrating capacity of
living. We must make a
clear distinction between human characterizing, acting volun
tarily, and acting emotionally. They may mean different things in different contexts.

Before exploring those criteria, there must be one final comment about that which is essential to the nature of the human. Is it simply capacity for experience and social interaction per se or must there also be some embodiment of the capacity? Consider the bizarre and purely hypothetical case in which all of the information of the human brain were transferred to a computer hard drive together with sufficient sensory inputs and outputs to permit some form of rudimentary experiential and social function. Would the deleting of this information be murder? The thought is so novel that perhaps we cannot even conceive clearly of the philosophical significance of the question. It seems quite possible that our concept of the essential must include some embodiment. The human is, after all, something more than a sophisticated computer. At least in the Judeo-Christian tradition the body is an essential element, not something from which humans escape in liberation. If this is the case, then the essential element is embodied capacity for experience and social interaction.

Problems with the Whole-Brain-Oriented Criteria of Death

Our methodology at this point will be to begin by reviewing the criteria for brain death as outlined by the Harvard report and defined and endorsed by the Task Force on Death and Dying of the Institute of Society, Ethics and the Life Sciences. I shall attempt to determine the functions implied as being morally significant that are being tested by the various criteria of the Harvard report. I shall then extend the analysis by examining other brain foci, the functions of which might constitute the essentially significant in the nature of the human.

The Harvard committee, in proposing the criteria, and the institute's task force, in endorsing the criteria, simply failed to deal with the apparent gap between criteria for irreversible coma on the one hand and criteria for complete cessation of brain function on the other. Although empirically the two sets of criteria may be the same, they certainly represent different ranges of function. And there is no theoretical reason why the criteria should be identical, nor is there any clarification given in the reports as to which set of functions is of concern.

Brain-Mediated Reflexes

The first criterion for irreversible coma I shall examine will be the absence of brain-mediated reflexes. The Harvard criteria for irreversible coma indicate that there should be no central nervous system reflexes present that are routed through the brain. The contraction of the pupil in response to light is given as the typical case. In later writings, Beecher, the chair of that committee, makes clear that
one must exclude spinal cord reflexes in applying this test. The presence of a spinal reflex arc in a decapitated corpse, according to this view, should not be considered a test for the presence of life. The problem that the committee members did not face, however, is whether a brain reflex, such as the pupillary reflex, should not similarly be excluded. The difference between these reflexes and spinal reflexes is simply that they are mediated through the lower brain stem rather than the spinal cord.

I shall assume for purposes of this discussion that these brain reflexes are used directly as criteria for irreversible cessation of brain function. That is to say, it is the functioning of the brain stem and the ability to dilate and contract the pupil that are considered significant, and the reflex arc is not considered to be some indirect measure of some other brain function. If we can make this assumption, it seems very doubtful that the ability to contract and dilate the pupil and to execute any other reflex arc that happens to pass through the brain stem is in any way a significant sign of human living. If we can exclude a spinaly mediated withdrawal reflex, which might be elicited by pricking an extremity with a pin, as being insignificant in the diagnosis of living, it seems that the same argument must apply to brain-stem reflexes. The ability to maintain nerve circuitry to carry out one of these reflexes does not really add significantly to the human's integrating capacity. Certainly it does not directly measure capacity to experience or interact socially.

**Spontaneous Respiration or Breathing**

Another criterion in the Harvard report is the observation of the presence of spontaneous respiration or breathing. The technique used is to turn off any artificial respiratory device for a period of three minutes and make observations. The moral question that is raised by this criterion is somewhat more difficult than the presence of brain-mediated reflexes. We traditionally had a societally dictated belief that a respiring individual is living. The holder of whole-brain-oriented criteria, however, has made the moral decision that artificial respiration is not a sufficient indicator of human life. Now the same question must be asked with regard to spontaneous respiration. Is the presence of the ability to respire spontaneously essentially significant to humanness? The question is not merely a philosophical one. Early in the brain death discussion, Brierley et al.\(^{11}\) reported two cases in which comatose individuals respired spontaneously for long periods of time, four months in one case and five months in the other. The individuals apparently had no higher-brain function, as indicated by repeated isoelectric electroencephalogram. There was generalized necrosis within the neocortex when examined macroscopically and microscopically after cessation of spontaneous respiration.
Those individuals with spontaneous respiration are capable of a continued existence closely related to biological life as seen in plants and other animal species (the ability to respire, together with ability to carry out some rudimentary circulatory and excretory function, is the minimal essential characteristic of nonhuman biological life). The view that humans are closely related to the animal species is a very modern one, growing in part out of Darwinian evolutionary theory. Nevertheless, there are serious problems with this approach. To view humans as essentially respiratory creatures is to ignore most of the faculties that philosophers and anthropologists have considered essential to the species. It ignores humans' rational capacity, their ability to experience emotion and to reflect on that feeling systematically. It ignores their capacity for consciousness and memory, which gives rise to the systematic organization of experience and, in turn, gives rise to purposes, actions, and the eventual building of language and culture.

It should be clear that no philosophical or scientific argument can be definitive beyond the appeal to that which is reasonable or "obvious on reflection." The claim I make, however, is that one who would see the experiential and social function of the human as essential to its nature would not find spontaneous respiration a sufficient indicator of human life.

It may be that the criterion of spontaneous respiration incorporated into the Harvard criteria is an indirect measure of one of these functions (the experiential or social). The committee may have taken the position, for instance, that consciousness is the essential characteristic of the nature of the human, but the absence of spontaneous respiration is the only criterion that ensures the loss of the future capacity for consciousness. The Harvard committee, however, was established to determine criteria for brain death, not for the irreversible loss of consciousness. It appears that in the absence of any arguments in the report to the contrary, its authors incorporated the criterion of spontaneous respiration as a direct measure of a function of a part of the brain (i.e., the lower-brain center, which is responsible for spontaneous respiratory function). If that was their intention, they have indeed given a measure of functioning of a part of the whole brain. But they have not necessarily given a criterion for diagnosing the presence of a living individual any more significant than spontaneous beating of a heart supported by artificial oxygenation, which are now widely taken to be irrelevant for deciding if death has occurred.

Unreceptivity and Unresponsitvity
The third criterion of irreversible coma, according to the Harvard report, is the presence of unreceptivity and unresponsitivity: "There is a total unawereness to externally applied stimuli and inner need and complete unresponsiveness." It
is incontrovertible that were either receptivity or responsiveness present, the
individual would be alive, whether the concept of death being used is the
irreversible loss of integrating function or the irreversible loss of experiential and
social interaction capacity. What is confusing, however, is that the report's authors
state explicitly that this characteristic of total unawareness is their definition of
irreversible coma. In effect, they are saying that one of the four criteria for
diagnosing irreversible coma is the presence of irreversible coma. The criterion
would be more plausible had they claimed that complete unreceptivity and unres-
sponsiveness were their definition of "coma"; however, they make the confusing
claim that it is their definition of irreversible coma. One wonders whether that
can be maintained empirically with any normal understanding of the meaning
of the words.

In any case, we are left with unreceptivity and unresponsiveness (i.e., coma,
but surely not necessarily irreversible coma) as a criterion of irreversible coma.
We are left wondering, however, whether the committee is really interested in
criteria for complete loss of the capacity for consciousness and experiential and
social functioning or criteria for complete loss of all brain function. In the
preceding paragraph of the report the authors claim that the criteria for irreversible
coma are "characteristics of a permanently nonfunctioning brain," implying that
they are seeking the latter in spite of their avowed purpose. The question remains
whether parts of the brain may retain the capacity for function in the presence of
unreceptivity and unresponsiveness and even apparently permanent unreceptivity
and unresponsiveness. The answer cannot come from these gross behavioral
observations alone. The condition of the patient--corpse described by Brierley et
al.,12 however, implies that some parts of the brain may indeed retain that capacity.

Thus far, we have seen that the criteria of the Harvard report are not
particularly helpful in resolving the underlying philosophical debate about which
concept of death is justifiable. In principle, they could not be, for the concept
of death is independent of the verification of criteria. The fourth criterion,
however, suggests the existence of scientific techniques for confirming the absence
of experiential and social function in spite of ongoing lower brain activity that
continues to carry out complex integrating functions.

Flat Electroencephalogram
The flat electroencephalogram is proposed by the Harvard report as being of
"great confirmatory value" for the diagnosis of irreversible coma. Although the
justification of this claim rests both on the definition of irreversible coma and
empirical tests, I suggest, based on my understanding of the available data, that
this claim must be questioned. On the one hand, the claim may be a simple
present, the use of the reversible coma and its definitions for the criterion of brain death. In the current context, it is confusing whether that meaning is (i.e., coma, reversible coma, interested in periential action). In the context of irreversible implying that action remains in the presence of the unreceptivity of the brain, the EEG may not be a confirmatory test but the central one. The use of tests centered on lower brain function may well be irrelevant (or at least not direct) ones for the irreversible loss of consciousness and experiential and social functions. Thus the EEG may be the most important test. Whether this is true will depend on empirical tests.

One argument against sole reliance on the EEG would be doubt of its empirical validity. The early evidence seemed very convincing, however. Silverman et al. report 2,642 comatose patients with isoelectric EEGs, none of whom recovered (except three influenced by central nervous system [CNS] depressants and thus excluded from the data). The institute's report authors, who endorsed the Harvard criteria, were aware of this but chose not to pursue its implications because they wanted to avoid the critical question of which of the alternative concepts of death was being tested for by the proposed criteria. The implications are clear. If an integrating function or related concept oriented to the whole brain is maintained, the EEG alone is not sufficient for a diagnosis of death and is of only limited confirmatory value. If, however, an experiential and social interaction concept of death is held, or a related one oriented to more narrow brain functions apparently localized in the neocortex, then the EEG does not confirm at all: It is the definitive test. The 2,642 cases are quite persuasive. Perhaps they are so convincing that reasonable doubt of their validity for diagnosing irreversible loss of experiential capacity is removed. If this is the case, the adoption of this criterion for death will still depend on the adoption of the related concept, but a test would be available for measuring this higher-brain-based notion of death.
The Significant Portions of the Cortex

There is one final step in clarifying the concepts of death related to brain function that go beyond the older, more simplistic whole-brain-oriented concepts. If the EEC measures neocortical function, it presumably may measure any neocortical activity. Yet we have concluded that experiential and social integrating function is the essential element in the nature of the human, the loss of which is to be called death. Once again the danger of false-positive diagnosis of living must be raised. The neocortical cells and nerve circuits responsible for experiential and social integrating function are certainly complex. They would have to include some sensory portions of the cortex, as well as the limbic system and other areas responsible for emotion.

Yet is it not theoretically possible that some cortical cells could retain viability and yet the person would be dead in the sense we have discussed? What, for instance, if only motor cortex cells continued to survive through some freak preservation of blood supply to a small area of the cortex or some theoretical artificial perfusion? Whether or not the EEG would be present and whether the existence of only this kind of cortical activity could be distinguished are empirical questions. At the philosophical level, however, for one who sees the essence of the human to be an embodied experiential and social capacity, the presence of viable motor cells would be of no more significance than the presence of the spinal or cranial reflex arc. Thus the concept of death being dealt with cannot be reduced without remainder to the criterion of a flat EEG. The irreversible loss of these essential functions may be compatible with the presence of some form of EEG reading. Whether empirical tests can be made to make such a distinction and whether such solely motor-cell capacity could ever exist are beyond this discussion.

The problem of doubt returns once again—this time with doubt between the older, broader whole-brain-oriented integrating function and the more limited experiential function. This newer concept of death I have called the higher-brain-oriented concept of death. Exactly which functions should be singled out as “higher” will take further philosophical debate. What is critical is that we now have identified a new, significantly different concept of death that must be distinguished from the older, now-outdated whole-brain-oriented concept. As for me, the case for the concept of the human that sees experiential and social functioning as central is persuasive. The debate about the competing philosophical concepts is complex, much more complex than the original proponents of the older and more naive concept of brain death ever realized. They seemed satisfied to orient attention to brain function, failing to perceive that irreversible coma and the death of the whole brain were not exactly the same. Moreover, they failed to perceive that neither of these might be exactly the same as the irreversible loss
brain function concepts. If the neocortical rating function which is to be living must be experiential and have to include and other areas


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Conclusion

Although I personally favor the more limited experiential concept and am now convinced of the empirical validity of the related EEG criterion, I am not convinced that a philosophical issue so complex requires universal conformity. I would thus favor a law that recognizes the complexity of the debate and permits the patient or the patient’s agent to choose among the plausible death concepts—a position I will defend in Chapter 7. My objective in this discussion has been to push beyond the older, simpler whole-brain-oriented concept of death, which is now often used in the literature without careful definition, to obtain more precise usage of terms. Whether a person dies when he or she loses functions that have a primary locus in the whole brain, in a part of the brain, or in some other organs, it is the person who dies. The choice of the concept of death will require a more precise philosophical choice among these alternatives, and the use of criteria for death will, in turn, depend on those philosophical choices.

ENDNOTES

3. See Chapter 3, this volume.