PERSONS AND DEATH: WHAT'S METAPHYSICALLY WRONG WITH OUR CURRENT STATUTORY DEFINITION OF DEATH?

ABSTRACT. This paper challenges the recommendation of 1981 President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research that all jurisdictions in the United States should adopt the Uniform Determination of Death Act, which endorses a whole-brain, rather than a higher-brain, definition of death. I argue that the Commission was wrong to reject the “personhood argument” for the higher-brain definition on the grounds that there is no consensus among philosophers or the general population as to what constitutes “personhood”. I claim that philosophers agree that some potential for cognitive function is necessary for personhood and that, when this is absent in cases of anencephaly and persistent vegetative state (PVS), the individual should be considered dead. I further argue that the lack of consensus among the general population is due in large measure to misunderstandings about the medical reality of PVS and beliefs influenced by feelings for a specific individual in PVS. I also examine and reject two tutorist arguments which have been used to support the Commission’s position: that the higher-brain definition would threaten the severely senile and severely retarded, and that there are not currently adequate medical techniques for determining when all higher-brain activities have ceased.

Key Words: death, personhood, persistent vegetative state, anencephaly

In July, 1981 the President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research published its report Defining Death: Medical, Legal and Ethical Issues in the Determination of Death (President’s Commission, 1981). The Commission’s task was to study “the ethical and legal implications of the matter of defining death, including the advisability of developing a uniform definition of death” (42 U.S.C. § 1802 [1978]). Among its main conclusions was the recommendation that all jurisdictions in the United States adopt the following Uniform Determination of Death Act:

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An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions or (2) irreversible cessations of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards (President’s Commission, 1981, p. 2).

Forty-five American states have subsequently accepted either legislatively or judicially the provisions of this Act (Tomlinson, 1990, p. 254).

One of the major issues that the Commission addressed was whether individuals in persistent vegetative state (PVS), who have irreversibly lost all higher-brain functions but have retained functions of the brain stem such as the regulation of breathing and heartbeat, should be considered dead. In proposing the above statutory definition, the Commission rejected the higher-brain or neocortical formulation of death, which would have considered such individuals dead, in favor of a whole-brain formulation (President’s Commission, 1981, pp. 18, 38–43). The Commission explicitly concluded that it “regards the cessation of the vital functions of the entire brain – and not merely portions thereof, such as those responsible for cognitive functions – as the only proper neurologic basis for declaring death” and stated that “this conclusion accords with the overwhelming consensus of medical and legal experts and the public” (President’s Commission, 1981, p. 18).

Although the Commission did not specifically discuss anencephalics, its conclusion implies that they are living persons. Although anencephalics lack a functional cortex, they have lower-brain-stem functions and therefore are persons. Under the higher-brain formulation, however, anencephalics would not be considered persons, since they have no capacity for cognitive functions.

One argument for the higher-brain formulation of death rejected by the Commission specified certain higher-brain functions as characteristics that a living being must have in order to be a person. According to this argument, the Commission wrote,

Personhood consists of the complex of activities (or of capacities to engage in them) such as thinking, reasoning, feeling, human intercourse which make the human different from, or superior to, animals or things. One higher brain formulation would define death as the loss of what is essential to a person. Those advocating the personhood definition often relate these characteristics to brain
functioning. Without brain activity, people are incapable of these essential activities. A breathing body, the argument goes, is not in itself a person; and without functioning brains, patients are merely breathing bodies. Hence personhood ends when the brain suffers irreversible loss of function (President's Commission, 1981, pp. 38-39).

The Commission rejected this "personhood argument" because it claimed there was a lack of consensus about which characteristics are essential to being a person. "Crucial to the personhood argument", the Commission stated, is acceptance of one particular concept of those things that are essential to being a person, while there is no general agreement on this very fundamental point among philosophers, much less physicians or the general public. Opinions about what is essential to personhood vary greatly from person to person in our society— to say nothing of intercultural variations (President's Commission, 1981, p. 39).

In addition, although the Commission admitted that the concept of death is "fundamentally a philosophical matter", it opined that "abstract definitions (e.g., that death is the irreversible loss of personhood) offer little help in the practical task of determining whether a person has died but they may very well influence how one goes about devising standards and criteria" (President's Commission, pp. 55-56, parenthetical remarks added). The Commission cautioned that such formulations of death "would lead down arcane philosophical paths which are at best somewhat removed from practical application in the formulation of law" (President's Commission, 1981, p. 56). Thus, in addition to its claim that there is no consensus among philosophers about what is essential to being a person, the Commission expressed a general skepticism about the relevance of philosophy to the practical matter of formulating a statutory definition of death.

In this paper, I consider two main issues. First, was the Commission correct in its claim that philosophers disagree about what is essential to being a person in a way that is relevant to invoking the disagreement to justify rejection of the higher-brain formulation of death? I shall argue that although philosophers in the Western tradition have disagreed over which particular characteristics are essential to personhood, there has been a consensus that any being that lacked the potential for cognitive functions would not be a person, and that this latter agreement, not the former disagreement, is what is relevant to the personhood argument for the
higher-brain formulation of death. I thus believe that the Commission's rejection of the "personhood argument" and therewith the higher-brain formulation of death is wildly at odds with what I claim is a philosophical consensus about what is essential to personhood.

The second issue I shall address is: what bearing should a philosophical consensus about persons have on how we define death? In more general terms, what is the relation of philosophy to the very practical matter of defining death? Should the philosophical consensus prevail, or, for whatever reason, should the lack of consensus among the general population about what is essential to personhood carry the day?

In the final section of this paper I consider two objections the Commission raised against implementing the higher-brain formulation of death. I argue that both objections are mistaken.

I

To address the first issue of whether philosophers disagree about "those things that are essential to being a person", it is important to be clear about what "essential" means in the context of the personhood argument. Since the personhood argument claims that any individual lacking certain mental characteristics would not be a person, "essential" should be understood to mean "necessary". This usage, moreover, follows the traditional Aristotelian distinction between "essential" and "accidental" properties.

An "essential" property is a property that a thing cannot lose without ceasing to exist as the kind of thing it is. For example, Aristotle held that "rationality" was an essential property of man. If a man loses rationality, the man no longer exists qua man. An essential property is thus a property that is necessary for the existence of that kind of thing.

An accidental property, in contrast, is a property that a thing can lose without ceasing to exist as that kind of thing. For example, hair color or simply having hair is an accidental property of a man. Aristotle would continue to exist as a man, even though his hair color might change or he might lose his hair completely.

The Commission claimed that philosophers disagree over which properties are essential to personhood. Now it is true that philosophers have defined persons differently and have suggested different properties as essential to personhood. For example,
Aristotle claimed that man is essentially a rational and social animal; Descartes, that thinking is essential to the nature of a person; Locke, that a person is an object essentially aware of its progress and persistence through time; Hume, that persons are bundles of psychological characteristics; Kant, that persons are rational agents who, among other things, can synthesize experience and act on moral principles; and Sartre, that persons are self-conscious, intentional beings.

However, what all these philosophers have in common is the belief that some type of cognitive function is necessary for something to be a person. Any being devoid of the capacity for cognitive function would by implication lack each of the particular characteristics that these philosophers use to define persons. Thus, there is general agreement among philosophers that some cognitive function is a necessary condition for being considered a person.

Another way to understand this point is to consider David Wiggins’ characterization of what he calls the psychological, systemic component of our concept of person. Wiggins holds that persons “perceive, feel, imagine, desire, make projects, move themselves at will, speak, carry out projects, acquire a character as they age, are happy or miserable, susceptible to concern for members of their own species, ... [note carefully these and subsequent dots], conceive of themselves as perceiving, feeling, remembering, imagining, desiring, making projects, speaking, ... have and conceive of themselves as having, a past accessible in experience-memory, and a future accessible in intention ..., etc.” (Wiggins, 1980, p. 171). Wiggins deliberately leaves the characterization open for additional traits and claims that it may be impossible to specify which particular traits are necessary or sufficient for something to count as a person.

Even though philosophers may have disagreed over which particular traits in Wiggins’ systemic component are necessary or sufficient for being a person, all hold that at least some cognitive function is necessary. No major figure in the history of Western philosophy would deny that cognitive function, or at least the potential for cognitive function, is necessary for being considered a person. Consequently, since the neurophysiological basis of any of the cognitive functions that typical persons manifest is destroyed in the case of PVS patients (Ingvar et al., 1988; Jennet and Plum, 1972; Cranford, 1988; American Academy of Neurol-
ogy, 1989) and non-existent in the case of anencephalics (Cranford
and Roberts, 1989; Zaner, 1989), there is a consensus among
philosophers that they are not persons.

In sum, the Presidential Commission erred in its assessment of
the personhood argument for the higher-brain formulation of
death in one of two ways. On the one hand, it may have mis-
takenly interpreted the argument as resting on the claim that
philosophers agree about what is essential to personhood, where
the Commission understood “essential” to mean sufficient condi-
tion. In this case, since the personhood argument rests on a
philosophical consensus about a necessary, not a sufficient,
condition of personhood, namely, the capacity for cognitive
function, the Commission’s rejection of it on grounds that
philosophers disagree about the sufficient conditions of person-
hood is simply a red herring.

On the other hand, the Commission may have correctly under-
stood the personhood argument, but rejected its premise that
philosophers agree about one of the necessary conditions of
personhood. In this case, the Commission erred by failing to give
grounds for rejecting the premise. Indeed, as I have argued, there
is a philosophical consensus that cognitive function is a necessary
condition of personhood.

II

I shall now turn to the second issue: what bearing should this
philosophical consensus have on how we define death? Since the
Commission requested testimony from two professional
philosophers, Robert Veatch and Daniel Wikler, both of whom
concurred in recommending the higher-brain formulation of
death, the Commission viewed their testimony as relevant to the
process of defining death. One therefore wonders whether the
Commission would have deferred to the philosophical “expert
witnesses” if it had correctly understood that philosophers agree
that some cognitive function is necessary for personhood. If, as the
Commission averred, defining death is “fundamentally a
philosophical matter”, then the philosophical consensus ought to
prevail, unless some reason for rejecting or overriding it is
forthcoming.

In addition, there are ontological and conceptual distinctions
related to the identity and individuation of particulars, e.g., the
distinction between a person and a human being, that fall within the discipline of philosophy and are relevant to the matter of defining death. Most people probably identify persons with human beings and assume that the terms “person” and “human being” are coextensive. They then may reason that since the death of a person must mean the death of the human being, the fact that the human being is alive (it is breathing on its own) even though it has no higher-brain functions must mean that the person is also alive. However, if there are good ontological or conceptual reasons for distinguishing persons from human beings, then considering PVS patients and anencephalics as human beings but not persons should not be rejected simply because it conflicts with the common presumption that the terms “person” and “human being” are coextensive.

The fact that most people are unaware of the conceptual and theoretical resources for dealing with an issue such as the nature of death should not preclude presidential commissions from availing themselves of those resources. Nor should it preclude defining death on the basis of the best available philosophical theory.

The Commission, however, also claimed that there is no consensus among the general population on what is essential to being a person: “opinions about what is essential to personhood vary greatly from person to person in our society – to say nothing of intercultural variations”. Again, as in the case with the philosophers, the Commission fails to support its claim. No surveys or statistical studies of what people consider “essential” characteristics of persons are cited. This is no surprise, of course, since who, besides philosophers, ever gives a great deal of thought to the distinction between “essential” and “accidental” properties or the “essential” nature of personhood? Who, besides philosophers, journeys down “arcane” philosophical paths?

Those in the general population who have considered the issue of what is essential to personhood are likely to be those who have been faced with decisions regarding the treatment of anencephalics and PVS patients. The Commission may have inferred that there is no consensus among the general population on whether these individuals are living persons from observation of the behavior of the people who decide on their treatment. However, in this case, the behavior either appears to endorse the higher-brain formulation of death or it is so confusing that no
inferences about what these people believe can be drawn. In the latter case, it is unclear why such behavior should influence public policy on death.

One recent study (Tresh et al., 1991) reports that a majority of family members who had a relative in PVS remained emotionally and physically committed to the patient. They visited the patient frequently and were against restricting therapeutic interventions (antibiotics, intravenous fluids, transfer to acute hospital, and change of cardiac pacemaker generator). Ninety percent of the family members, however, also believed that the PVS patient was aware of pain, lightness and darkness, environment, taste, verbal conversation, or the presence of relatives – beliefs clearly inconsistent with the American Academy of Neurology’s (1986) unequivocal conclusion that the PVS patient lacks a brain with the capacity for consciousness that can translate neural activity into an experience. Since the treatment decision made by these relatives is predicated on the belief (though mistaken) that PVS patients have the capacity for some cognitive functions, the relatives’ behavior cannot be taken as indicating that they believe that cognitive function is not essential to personhood. If anything, their decisions support the view that cognitive function is necessary for personhood.

In another study of knowledge and concepts of death among 195 physicians and nurses likely to be involved in organ procurement for transplantation (Younger et al., 1989), only 35 percent correctly identified the legal and medical criteria for determining death. Fifty-eight percent did not use a coherent concept of death consistently, and 19 percent had a concept of death that was logically consistent with changing the whole-brain standard to classify anencephalics and PVS patients as dead. Inasmuch as this study indicates disagreement and some confusion among health professionals on the meaning of death, it is unclear why it should support a statute that rejects the higher-brain formulation of death, especially when there is strong support from the philosophical tradition for the higher-brain formulation.

It is worth noting further that, when people understand the medical reality of PVS, they often engage in what Robert Veatch (1988) has called “death behavior”. While it is difficult to draw inferences as to what people believe from how they behave, this type of behavior would appear to endorse the higher-brain formulation of death, rather than the whole-brain formulation.
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Relatives and courts are willing to instruct physicians to stop intervention, such as artificial nutrition and hydration, that would normally be stopped at the time of death and not when a patient is seriously ill (Barber v. Superior Court; Brophy v. New England Sinai Hospital; Corbett v. D'Alessandro; In re Colver; In re Gardner; In re Guardianship of Grant; In re Jobes; In re Storar; Rasmussen v. Fleming; In re Torres). Relatives express grief and a belief that the person is "gone"; they begin speaking and reminiscing about the person in the past tense; and they try to cope with the loss of the person. Friends may express condolences to the family. Those who have to care for these individuals may feel it is a waste of time and resources; there simply is no one who can benefit from their care (Cranford and Smith, 1987). In the case of anencephalics, parents recognize the hopelessness of the situation and consider actions, such as organ donation, that they would not normally consider if their child were seriously ill or dying.

In sum, although there may appear to be disagreement on the meaning of "death" among the general population, this disagreement may be due to the misunderstandings that many have about the medical reality of PVS and anencephaly. That many people in our society engage in certain types of "death behavior" towards PVS patients and anencephalics is evidence of some agreement on how such individuals ought to be treated. Those who do not currently engage in this "death behavior" towards PVS patients and anencephalics might do so if they had a better understanding of the capacity and potential of such patients. Moreover, since no one finds such "death behavior" bizarre, it is implicitly socially acceptable. We thus have some reason to believe that society views, on some level, anencephalics as lacking the potential to be living persons and individuals in PVS as dead.

Before closing this section, it is worth noting that some bioethicists, notably Charles Culver and Bernard Gert (1982), have objected to characterizing anencephalics and individuals in PVS as "dead" on grounds that this would be an incorrect use of the term "dead" (see also Downie, 1990, and Lamb, 1985). Although Culver and Gert accept the metaphysical distinction between persons and human beings, they define "death" as "the permanent cessation of functioning of the organism as a whole" (Culver and Gert, 1982, p. 181). Moreover, as the Commission also held, they claim that "death" should mean the same thing when it is applied to human beings as it means when applied to other species, a requirement
violated by the higher-brain formulation. “This is supported”, they argue, “by our ordinary use of the term death, and by law and tradition. It is also in accord with social and religious practices and is not likely to be affected by future changes in technology” (Culver and Gert, 1982, p. 182).

Culver and Gert thus criticize the higher-brain formulation or definition of death:

Though this definition initially seems attractive, it does not state what we ordinarily mean when we speak of death. It is not regarded as self-contradictory to say that a person has lost what is essentially significant to the nature of man, but is still alive. For example, we all acknowledge that permanently comatose patients in chronic vegetative states are sufficiently brain-damaged that they have irreversibly lost all that is essentially significant to the nature of man but we still consider them to be living.

... The alternative definition (i.e. the higher-brain definition of death) actually states what it means for that person to die. Person is not a biological concept but rather a concept defined in terms of certain kinds of abilities and qualities of awareness. It is inherently vague. Death is a biological concept. Thus, in a literal sense, death can be applied directly only to biological organisms and not to persons. We do not object to the phrase ‘death of a person,’ but the phrase in common usage actually means the death of the organism which was the person.

... By our analysis, Veatch (1976) and others have used the phrase ‘death of a person’ metaphorically, applying it to an organism which has ceased to be a person but has not died (Culver and Gert, 1982, pp. 182-183, parenthetical remarks added).

I have quoted Culver and Gert at length to offer a detailed critique of their views. First, there are at least two literal meanings of the word “dead”: (1) “no longer alive, lifeless” and (2) “no longer in existence, use, force, operation” (The American Heritage Dictionary of the English Language, 1975). Even if anencephalics and PVS patients are not dead in sense (1) and (1) is the transpecies sense of death to which they refer, this objection does not address the force of the personhood argument, since the personhood argument claims that anencephalics and PVS patients are “dead” in sense (2). The person that an anencephalic might have been has never existed, and the person that the PVS patient used to be no longer exists. There is nothing “metaphorical” about applying the term dead to these individuals.

Second, contrary to Culver and Gert, it is self-contradictory to say that “a person has lost that which is essentially significant to
the nature of man, but is still alive". If a person has lost an essential characteristic, i.e. a characteristic necessary for its continued existence, then that person no longer exists. It follows that something that no longer exists clearly cannot be alive. Indeed, if it no longer exists, it cannot be anything.

To say that Paul Brophy was still alive in a persistent vegetative state is to equivocate on the reference of the proper name, "Paul Brophy". In "the ordinary way of speaking", "Paul Brophy" refers to the person and the human being. However, after Brophy lost higher-brain functions, "Paul Brophy" no longer refers to Paul Brophy, the person, since Paul Brophy, the person, no longer exists. What lies in the hospital bed and what we refer to by "Paul Brophy" is only Paul Brophy, the human being. So while we can say that, "Paul Brophy, the person, has lost some essential characteristic of personhood, but Paul Brophy, the human being, is still alive," we cannot without contradiction say that "Paul Brophy, the person, has lost some essential characteristic of personhood, but Paul Brophy, the person, is still alive".

Finally, Culver and Gert reject the extension of the term death to individuals like Brophy because "it does not state what we ordinarily mean when we speak of death". As noted above, sense (2) is an ordinary use of the term "dead" and there is nothing metaphorical about extending it to PVS patients and anencephalics. Indeed, before the advances in medical technology that created cases in which the existence of the person diverged from that of the human being, when we applied the term "dead" to persons, we meant that they were dead in senses (1) and (2). Similarly, when we say that a dog or a cat is dead, we mean that the animal is dead in both senses: it is lifeless and no longer in existence.

In addition, just as Locke's (1694) consideration of the hypothetical case of the Prince and Cobbler switching bodies pushed him to reflect on the range of his concepts of person and man (or human being) and led him to reject the common, "ordinary" assumption that the terms are coextensive, consideration of actual medical cases brought about mainly by advances in medical technology forces us to reconsider the normal range of the extension of person, human being, and death.

If I point to a PVS patient in a hospital bed and say, "there is no person there", it makes sense to observe, paraphrasing Culver and Gert, that "it does not state what we ordinarily mean when we
speak of persons”. Ordinarily, living human beings are persons, and, like Locke, I am changing what we ordinarily assume is the extension of the term person. However, the fact that this is a new application or usage of the term does not alone justify rejecting a change.

Similarly, when I apply the term death to PVS patients, this may be a new application of the term that diverges from what has been its customary use. The new usage of the term may not conform to the traditional usage, but neither do the new medical realities conform to what has been traditionally faced in a clinical setting. In the past, death may have meant the same for persons as it did for other species. But this is due to the fact that there were no cases in which persons diverged from human beings in the way they now commonly do. More than simply the novelty of extending the term death to anencephalics and PVS patients is needed to count against its acceptance.

III

The Commission also rejected the personhood argument for the higher-brain formulation of death, because it claimed that applying the argument in practice

would give rise to additional important problems. Severely senile patients, for example, might not clearly be persons, let alone ones with continuing personal identities; the same might be true of the severely retarded. Any argument that classified these individuals as dead would not meet with public acceptance (President’s Commission, 1981, p. 40).

The Commission, however, offers no rationale for its view. If the distinction between the life and death of a person depends simply on whether the capacity for higher-brain functions such as consciousness and feeling exists or potentially exists and not on any assessment of the quality of those higher functions, then severely senile and severely retarded individuals are existing persons and would not be considered dead on the higher-brain formulation. There is no “slippery slope”.

The Commission’s language, in fact, waffles on this very issue. It begins by claiming that applying the personhood argument “would give rise to additional important problems” and then states that “severely senile patients, for example, might not clearly be persons, let alone ones with continuing personal identities; the
same *might be true* of the severely retarded*. Since the higher-brain formulation would clearly consider severely senile and severely retarded patients persons, because those patients are conscious, sentient members of the species *homo sapiens*, there is no reason to think that "additional important problems" would arise for the higher-brain formulation. Senile and retarded patients suffer *dementia* (diminished cognitive functions); anencephalics and PVS patients suffer *amentia* (complete lack of cognitive functions).

The second policy issue that the Commission raised about the higher-brain formulation was whether there are currently adequate medical techniques to implement it. The Commission argued,

In order to be incorporated in public policy, a conceptual formulation of death has to be amenable to clear articulation. At present, neither basic neurophysiology nor medical technique suffices to translate the "higher brain" formulation into policy. First, ... it is not known which portions of the brain are responsible for cognition and consciousness; what little is known points to substantial interconnections among the brainstem, subcortical structures and the neocortex. Thus, the "higher brain" may well exist only as a metaphorical concept, not in reality. Second, even when the sites of certain aspects of consciousness can be found, their cessation often cannot be assessed with the certainty that would be required in applying a statutory definition (President's Commission, 1981, p. 40).

This is the Commission's strongest argument against basing a statutory definition of death on the higher-brain formulation at this time. However, it is important to distinguish the question of whether the higher-brain formulation can be clearly articulated from the question of whether we have adequate medical criteria for determining when someone has died under that formulation.

The formulation that the death of a person occurs when there is complete, irreversible loss of higher-brain functions is, itself, quite clear. The unclarity of articulation that concerned the Commission was whether we have adequate means for determining when an irreversible loss of higher-brain functions has occurred.

Robert Veatch has similarly pointed out that the Commission's argument may lead to the policy conclusion that in order to pronounce people dead (based on higher-brain conceptualizations of death) we must revert to the old whole-brain oriented criteria. The logic of such a move is that persons will be considered dead when they lose higher brain function, but that the only way we can
know for sure that higher brain function has been lost is to demonstrate that all brain function has been lost (Veatch, 1988, p. 177).

Veatch's point is that although the argument may lead to the conclusion that for policy purposes alone we ought not at this time to distinguish whole-brain from higher-brain formulations of death, "the decision is surely not a sound argument against the position that people ought to be considered dead when it can be determined that they have irreversibly lost higher-brain function" (Veatch, 1988, p. 177).

Ronald Cranford (1988, pp. 29–30) details the diagnostic and prognostic complexities surrounding PVS, the condition often cited as representative of a complete, irreversible loss of higher-brain functions. Cranford writes,

...for several reasons, the degree of certainty about diagnosis of this syndrome is less absolute than a diagnosis of brain death. ... With the persistent vegetative state ... there is no broadly accepted set of specific medical criteria with as much clinical detail and certainty as the brain death criteria. Furthermore, even the generally accepted criteria, when properly applied, are not infallible. There have been a few unexpected, but unequivocal and well documented, recoveries of cognitive functions in situations where it was believed that the criteria were correctly applied by several neurologists experienced in the diagnosis of the condition. In cases in New Mexico and Minnesota, the patients recovered full cognitive functioning, although they were left with a severe and permanent paralysis of all extremities and some paralysis of facial and head movements, i.e., a locked-in syndrome.

... Presently, there are no specific laboratory studies to confirm the clinical diagnosis of the persistent vegetative state. After a variable period of time (weeks to months), some studies such as MRI and CAT (computerized axial tomography) scanning will show extensive structural damage to the cerebral hemispheres consistent with the clinical diagnosis but these studies are not quantifiable. The most promising test on the horizon that will be of value in confirming a clinical diagnosis of the persistent vegetative state is the PET (positron emission tomography) scan. This test measures in quantitative fashion the metabolic rates of glucose and oxygen in various parts of the brain, including the cerebral cortex, an important index since consciousness cannot be sustained below certain quantifiable levels of metabolism. ... However, PET scanning is new and extremely expensive... Furthermore, there is not yet sufficient data to document unequivocally the value of this test in the diagnosis of the persistent vegetative state....

The electroencephalogram (EEG) also does not provide absolute certainty because the degree of abnormality of the EEG will vary widely in individual
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cases. Some appear remarkably normal considering the extent of damage to the cerebral hemispheres. ...

Prognostic assessments of patients in a persistent vegetative state are not free of controversy. A major problem is attributable to the multiple causes and pathophysiologic changes associated with the syndrome. In brain death, the underlying cause of the brain injury is not so important once the basic sequence of pathophysiologic events begins and leads inexorably to its conclusion (severe primary injury – brain swelling – marked increase in intracranial pressure – increased intracranial pressure exceeding blood pressure, causing secondary loss of blood flow to the entire brain – infarction of cerebral hemispheres and the brain stem). In the persistent vegetative state, however, there are multiple causes for the syndrome, and no single pathophysiologic sequence of events. Therefore, the prognosis about recovery of neurologic function, when the prognosis can be made, and its degree of certainty will vary considerably according to the underlying cause of the brain damage and the specific pathophysiology.

These diagnostic and prognostic problems argue for a tutorist approach in declaring dead every individual that satisfies the generally accepted criteria for a diagnosis of PVS. It is better to treat these individuals as living persons if we cannot conclusively determine that they have irreversibly lost all higher-brain functions.

However, these diagnostic and prognostic problems do not support a tutorist line in all cases of PVS. Cranford’s statement that “the degree of certainty (of the prognosis for neurologic recovery) will vary considerably according to the underlying cause of the brain damage and the specific pathophysiology” suggests that in some cases the certainty of the prognosis may be quite high or at least higher than in other cases.

Although Cranford does not elaborate on what specifically affects this degree of certainty, i.e., which causes of brain damage and specific pathophysiology yield a higher degree of prognostic certainty, studies of some PVS patients’ EEG activity, cerebral blood circulation and duration of survival yield a very high degree of prognostic certainty. For example, some long-surviving (up to seventeen years) patients with apallic syndromes studied by Ingvar et al. (1978) showed over many years repeated isoelectric EEG’s and extremely low supratentorial blood flow (about 10–20 percent of the normal level), indicating the reduced metabolic demand of gliotic scar tissue. It strains credulity to think that these patients had any hope of regaining cognitive functions.
Thus, while further detailed clinical studies of PVS patients involving radiographic techniques, EEG, measurements of cerebral blood flow and oxygen uptake, and computerized tomography are needed to arrive at covering laws concerning the diagnosis and prognosis of this class of cases, some individual cases can already be diagnosed and prognosticated with an extremely high degree of certainty.

It is worth noting further that the Commission erred in taking the interconnections among the brain stem, subcortical structures and neocortex as evidence that the brain stem and subcortical structures might be sufficient and not merely necessary for cognition and consciousness. Suppose someone asked, “Which part of the human body is responsible for manual dexterity?” It would be right to point out that this function is dependent on the brain and nervous system in addition to the hands. However, no one thinks that this function could be retained without hands. Activity in the brain and nervous system are thus necessary but insufficient for manual dexterity. Similarly, if we ask, “Which part of the human body is responsible for cognition and consciousness?” it may be right to point out that these functions depend on the brain stem and subcortical structures. However, there is no evidence that these functions can exist without higher-brain structures.

Douglas Walton (1980; see also Walton, 1981), however, has maintained that feeling and sensation might exist even in the absence of higher-brain functions. For example, concerning the pupillary reflex mediated by the lower brain stem, Walton writes,

The pupillary reflex could, for all we know, indicate some presence of feeling or sensation even if the higher cognitive facilities are absent. Even if we cannot resolve the issue with the precision we would like and, indeed, just because of that, we should be on the safe side. ... Following my tutorist line of argument, it is clear that we cannot rule out the possibility that brain stem reflexes could indicate some form of sensation or feeling, even if higher mental activity is not present (Walton, 1980, p. 69).

Roland Puccetti has effectively criticized Walton on this point. Puccetti argues that Walton’s view

fairly reeks of superstition. As we all know, when the doctor flashes his penlight on the eye, we do not feel the pupil contract, then expand when he turns the light off. If not, then why in the world does Walton suppose that a deeply comatose
patient feels anything in the same testing situation? The whole point of evolving reflexes like this, especially in large brained animals that do little peripheral but lots of central information processing, is to shunt quick-response mechanisms away from the cerebrum so that the animal can make appropriate initial responses to stimuli before registering them consciously. If one could keep an excised human eye alive in vitro and provoke the pupillary reflex, the way slices of rat hippocampus have been stimulated to threshold for neuronal excitation, would Walton argue that the isolated eye might feel something as the pupil contracts (Puccetti, 1988, p. 78)?

Puccetti’s argument is supported by the unequivocal position taken by the American Academy of Neurology that PVS patients cannot experience pain and suffering. In its amicus curiae brief filed in Brophy v. New England Sinai Hospital, the Academy stated,

No conscious experience of pain and suffering is possible without the integrated functioning of the brainstem and cerebral cortex. Pain and suffering are attributes of consciousness, and PVS (persistent vegetative state) patients like Brophy do not experience them. Noxious stimuli may activate peripherally located nerves, but only a brain with the capacity for consciousness can translate that neural activity into an experience. That part of Brophy’s brain is forever lost (398 Mass. 417, 497 N.E.2d 626 [1986]).

Critics of extending the higher-brain standard of death to cover anencephalics (Shewmon, 1978; Capron, 1987) also raise issues about the “diagnostic reliability” of anencephaly. D. Alan Shewmon (1988, pp. 11–12), for example, states that

In the great majority of cases, the diagnosis of anencephaly is very obvious, and there is little chance of mistaking it for another condition. Nevertheless, not all cases are so straightforward. If anencephaly were clearly distinct from all other congenital brain malformations, it should be possible to give an operational definition of it that includes all cases of anencephaly and excludes cases of everything else, yet such a definition has not been offered by anyone so far.

Shewmon goes on to give examples of diagnostic ambiguity between anencephaly (“a partial or total absence of the brain”) and other less severe congenital malformations: exencephaly (“exposure of the brain”), encephaloceles (“hernias of the brain protruding through a congenital opening of the skull”), mero-anencephaly or meroacrania (“a partial absence of brain and calvarium”), and amniotic band syndrome (“a broad continuum of severity that can mimic anencephaly”).
Shewmon’s point is that these cases constitute a spectrum of neural organization and that in some cases it is impossible to distinguish one condition from another. Individuals that fall on the less developed end of the spectrum, such as anencephalics, clearly have no cerebral tissue and thus no cerebral function. Individuals on the other end of the spectrum, such as meranencephalics, have some rudimentary cerebral tissue and therefore may have some cerebral function, e.g., they might be capable of suffering. Shewmon (1988, p. 12) concludes:

These examples are not intended to exaggerate the potential for diagnostic confusion surrounding anencephaly: it is still quite true that in the vast majority of cases the diagnosis can be made easily and without risk of error. Nevertheless, the commonly encountered contention that ‘anencephaly’ is so well defined and distinct from all other congenital brain malformations that misdiagnoses cannot occur and that organ harvesting policies limited to ‘anencephalics’ cannot possibly extend to other conditions, is simply false.

The possibility of diagnostic error in some rare cases, however, is not a reason for questioning the certainty of the diagnosis in the vast majority of other cases. As Shinnar and Arras (1989, p. 730) point out, the diagnosis of anencephaly in the vast majority of cases can be made by ultrasound, and there is little chance of mistaking it for another condition. The absence of skull and telencephalic structures usually makes the diagnosis obvious. If the infant is born, an experienced clinician can usually diagnose the condition upon inspection.

Moreover, the chance of diagnostic error in some rare cases is insufficient reason for rejecting the higher-brain formulation of death and a policy of declaring “dead” the anencephalics that can be diagnosed “without risk or error”. If absolute certainty were required before implementing a medical policy, no medical policy, not even the whole-brain standard of death, could ever be implemented. As Norman Fost (1988, p. 8) points out, “not all clinicians or hospitals would be equally competent at making the diagnosis (of anencephaly) and errors have occurred with anencephaly, just as they have with the simpler (or easier) diagnosis of brain death”.

Whether the higher-brain, whole-brain, or heart-and-lung standard of death is adopted, there will always be the possibility of misdiagnosis.
NOTES

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1 There are estimated to be in the United States 5,000 to 10,000 individuals in persistent vegetative states (Cranford, 1988, pp. 27-32). It is not unusual for an individual to survive in a persistent vegetative state for five, ten or even twenty years. The longest documented survival was 37 years, 111 days (Cranford, 1988, p. 31. See also Cranford, 1984, pp. 36-44).

2 Anencephaly is defined as "a severe and uniformly fatal abnormality resulting in the congenital absence of skull, scalp and forebrain. Although some telencephalic tissue may be present, by the time of birth there is no functional cortex but only a hemorrhagic fibrotic mass of neurons and glia" (Shinnar and Arras, 1989, p. 730). Approximately, 1,125 anencephalic infants are born each year in the United States (Shewmon, 1988, pp. 11-18). Approximately one-half of anencephalics are stillborn. Of the other half, most studies report that 90 to 100 percent died in the first week. Survival beyond a few weeks, however, has been reported in some well documented cases (Shinnar and Arras, 1989, p. 730. See also The Medical Task Force on Anencephaly, 1990, pp. 669-673; Lemire and Warkany, 1978; Baird and Sadovnick, 1984; Elwood and Elwood, 1980; Peabody et al., 1989; Pomerance and Schifrin, 1987).

3 That anencephalics are persons under the current statutory definition has had implications for organ donation. Parents and guardians are prohibited from donating the anencephalics' organs until they are legally dead, at which time the organs in most cases are unusable.

4 Alexander Capron (1987, p. 8), arguing against applying the higher-brain formulation of death to anencephalics, has pointed out the rationale for consistency in according anencephalics the same legal status as PVS patients: "A statute that labels anencephalics 'dead' is a bad idea because either it will treat differently another group that is identical on the relevant criteria (the permanently comatose, who are dying and lack consciousness) or it will lead to a further revision in medical and legal standards under which the permanently comatose would also be regarded as 'dead' although many of them can survive for years with nothing more than ordinary nursing care".

5 The Commission cited Engelhardt (1975) and Veatch (1975) as proponents of this argument.

6 By "cognitive function" I mean the capacity for mental awareness, including consciousness, sentience, and thought.

7 Despite this fact, the Executive Director of the 1981 Presidential Commission, Alexander Morgan Capron (1987, p. 8), has maintained that "the accepted criterion for being considered a person ... [is] live birth of the product of a human conception". It is unclear who in the history of western philosophy Capron thinks "accepts" this criterion.
The Presidential Commission (1981, p. 41) points out that certain orthodox Jews and American Indians accept only the heart-and-lung formulation of death. For example, Rabbi J. David Bleich (1977) and others (Rosner, 1986; Soloveichik, 1978) have rejected whole-brain death on a strict interpretation of Talmudic law. These minority views, however, did not prevent the Commission from holding that there is a "consensus" for the whole-brain formulation, and that the need for a definition of death for the society as a whole outweighed statutory recognition of the diverse views. This same concern for an acceptable definition for society as a whole presumably would argue for ignoring these minority views and adopting the higher-brain formulation. However, compare Robert Veatch's (1988) claim that such disagreement on the definition of death in our pluralistic society should lead to a policy that enables individuals to choose their own definition of death from among the three main formulations: heart-and-lung, whole-brain, and higher-brain.

Even on the most conservative definitions of "person" that have been offered by Robert Joyce and John Noonan in the context of the abortion debate, "person" is defined as a being with the "potential" or "capacity" for cognitive functions. Thus, Joyce (1988, p. 200) defines "person" as "a whole individual being which has the natural potential to know, love, desire, and relate to self and others in a self-reflective way". While this definition may be used to support the claim that normal fetuses are persons, it does not support the claim that anencephalics or PVS patients are persons. Since these individuals lack the physiological basis for the "potential to know, love, desire ... ", they cannot be persons.

Noonan (1968, p. 35) holds that "Whoever is conceived of human beings is human". On its face, this criteria for human beings or persons would seem to admit anencephalics and PVS patients into the class of human beings or persons. Moreover, it seems to conflict with what I have claimed to be the consensus among philosophers that having the potential for cognitive functions is necessary for something to count as a human being or person. Being conceived by human parents does not explicitly entail that such a being would have the potential for cognitive functions.

However, if we look closer at Noonan's argument for adopting this criteria, which he claims to be the accepted criteria that emerge from the Catholic tradition, we see that it assumes that any product of human conception would have, as Noonan (1968, p. 135) puts it, "the capacity for rational thought". Since this assumption underlies his criterion of personhood, the criterion is inconsistent with the claim that individuals lacking the potential for cognitive functions, including rationality, are persons.

See, for example, John Locke's distinction between same man and same person in Chapter 27 of his Essay Concerning Human Understanding (1694). See also Fletcher (1979); Green and Wikler (1980); Engelhardt (1975); French (1988); and Lizza (1991, Ch. 6).

It is difficult, in principle, to infer what people believe from how they behave, especially if the belief is as specific and philosophically sophisticated as one.
about the "essential" nature of personhood. Assuming that some relatives of PVS patients would want "life-sustaining" treatment continued, what does that imply? Does it imply that these relatives believe that the PVS patient retains those characteristics that are essential to personhood? Or does it mean that these relatives are unable to accept the idea that their family member has no hope of regaining consciousness and has died? Does it mean that these relatives value life, even if the life is not that of a person? Or does it mean that these relatives have misunderstood the capacities and potentials of the PVS patient? Since any of these alternative beliefs (and many others) are consistent with the behavior, more evidence is needed to decide among them and conclude that there is no consensus on the essential nature of personhood.

12 See Tomlinson (1990) for another study indicating confusion over the concept of brain death among health professionals and how it affects their communication to families about the status of brain-dead respirator patients.

13 It is worth noting that some people do not readily exhibit death behavior toward individuals who are even whole-brain dead. Relatives and guardians refuse to acknowledge that a death has occurred. After all, if respiration and heartbeat are maintained by artificial ventilation, these patients do not appear to be dead: their bodies still breathe, their hearts still beat, their skin color has not changed. In several recent cases (Avarado v. New York City Health & Hosp. Corp.; In re Bowman; Dority v. Superior Court of San Bernardino), relatives or a court-appointed guardian unsuccessfully sued to prevent termination of "life" support for young children whom doctors had determined to be brain-dead. However, just as it is necessary for these relatives and guardians of brain-dead individuals to acknowledge that the appearance of life does not mean that there is life, so too, I believe, it is necessary for the relatives and guardians of anencephalics and PVS patients to acknowledge that a death has occurred.

14 The term "apallic syndrome" has been advocated by David Ingvar et al. to denote the condition in which an individual has a complete loss of higher-brain functions, including speech, voluntary motor activity, emotional reactions, and signs of memory, but good retention of brain-stem functions, including spontaneous respiration.

Emphasizing the functional and behavioral loss, this condition has also been labeled as "permanent vegetative state", "irreversible coma", and "persistent vegetative state". Ingvar et al. emphasize the pathanatomic basis of the syndrome and argue that "the term 'apallic syndrome' has the advantage in that it implies a severe total or almost total irreversible destruction of the cerebral cortex. This may serve to differentiate it from instances of transient disturbances of higher functions, as well as from states of permanent coma and unresponsiveness due to brain-stem lesions, in which there is severe dementia or global aphasia, and severe cortical lesions, sometimes in combination with brain-stem lesions" (Ingvar et al., 1978, p. 185).

15 This passage from Walton is also cited by Roland Puccetti (1988) in his defense of the neocortical formulation of death.
See also Goodman et al. (1985), who report that the clinical assessment of brain death was in error in three of 204 cases referred for radioisotope confirmation, an error rate of 1.5 percent.

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