IS THE BRAIN-DEAD PATIENT REALLY DEAD?

Introduction

On August 29, 2000, Pope John Paul II addressed the 18th International Congress of the Transplantation Society that was being held in Rome. His brief discourse to that meeting of physicians was significant because it was the first explicit statement by a pope regarding the diagnosis of death by neurological criteria. It was hailed by many as the long-awaited Magisterial pronouncement on the brain death (BD) controversy that has divided moralists, physicians and lawyers both within the Catholic Church and within society at large, vindicating the prevailing opinion that death of the whole brain (also called total brain death, TBD) is an adequate definition for the death of the human being. This interpretation of the Pope's statement, however, has not gone unchallenged. The heated debate continues today.

In a recent issue of the National Catholic Bioethics Quarterly, Dr. Edward J. Furton of the National Catholic Bioethics Center...
in Boston (U.S.A.) published an essay in which he argued that "brain death criteria confirm certain long-held-philosophical views about the nature of death and the human soul within Catholicism."\(^4\) Furton's paper is the most recent and, probably, the strongest argument for the pro-brain death position written by a Catholic bioethicist.

In this essay, I will respond to Furton's thesis by showing that the recent scientific data described by Dr. Alan Shewmon raise serious questions as to whether the currently dominant BD criteria are, in fact, compatible with an authentic anthropology that is faithful to the Catholic tradition. Shewmon, a Catholic physician, professor and chief of pediatric neurology at UCLA, has written several seminal papers where he has challenged the BD criteria with clinical data that attacks the presuppositions of those who advocate BD. His argument is considered by many to be the strongest challenge to the pro-brain death position.

This paper is divided into six parts. First, I open with a philosophical analysis of the concept of death. As others have shown, any discussion of the validity of brain-based criteria for death must begin by distinguishing three distinct levels of inquiry: the definition of death, diagnostic criteria to meet this definition of death, and clinical tests to evaluate whether these criteria have been satisfied. Second, I present a historical sketch of the movement to change the criteria for death from the traditional cardio-pulmonary criteria to brain-based criteria and describe the current state of the question in our society. Next, I summarize the argument made by Dr. Alan Shewmon that has challenged the consensus opinion that BD is in fact equivalent to the death of the human individual. Fourth, I move to the papal address to the International Congress of the Transplantation Society. In light of Shewmon's critique, I suggest that questions still remain regarding the accuracy of the scientific and medical facts that are presupposed by both sides of the BD debate. Fifth, I summarize the line of reasoning used by Edward Furton to defend the validity of the BD criteria against Shewmon's challenge and show that it is incoherent and incompatible with an authentic Christian anthropology. His defense of the BD criteria would allow too much because it is unable to distinguish those individuals suffering from either whole-brain death, cortical brain death or the persistent vegetative state (PVS). Finally, as an alternative to brain-based criteria for death, I propose that our understanding of death should involve a holistic perspective that looks at the destruction not of any single organ but of the entire integrated network that is the human body.

Definitions, Criteria, and Tests for Death: Philosophical Overview

The debate over the validity of different criteria for death is a complex one. As different scholars grappling with this issue have pointed out, however, the dispute can be clarified by distinguishing the three levels of discourse that are present in the arguments put forward by every side in the debate.\(^5\)

First, every interlocutor in the debate has a definition of death. This involves the conceptual basis underlying that individual's understanding of death. Three dominant categories of definitions for death exist in the BD literature.\(^6\)

1. Biological definitions: Basically, death involves the loss of the physiological integrative unity of the body. This definition is species-nonspecific and corresponds to the ordinary rationale for "brain death in both secular\(^7\) and Catholic circles including:


\(^7\) James L. Bernat, "A Defense of the Whole-Brain Concept of Death," Hastings Center Report 28 (1998): 14-23; and President's Commission for the
ing both Working Groups of the Pontifical Academy of Sciences. These individuals propose that loss of the entire brain leads immediately and necessarily to the loss of bodily integrity. This is the so-called whole-brain or total-brain formulation of the brain death criteria.

2. Psychological definitions: Basically, death involves the permanent loss of consciousness or other essential human properties associated with personhood. This definition is species-specific. This is the rationale advocated by those who propose that death occurs when an individual loses only those parts of his brain associated with the "higher" functions of human being including the abilities to think, feel, and reason. This is the so-called higher-brain or neocortical formulation of the brain death criteria.

3. Sociological definitions: Basically, death involves the loss of societally conferred membership in the human community. This definition is culture-specific and it is the rationale advocated by those who believe that death is an arbitrary, culturally relative, social construct, which presently in developed countries happens to be brain-based.

Note that disagreements at this first level of discourse would involve philosophical arguments. There is no need for medical expertise here since definitions of death arise primarily from one's anthropological vision of the human person.

Second, every interlocutor has a set of criteria for death that he uses to determine when his particular definition of death has been fulfilled. For instance, if an individual held that death involved the permanent loss of consciousness (a psychological definition for death), it is likely that he would also embrace a set of criteria for death that included the destruction of those parts of the brain necessary for consciousness. However, two individuals who held identical definitions for death could still disagree on the appropriate criteria that would be used to determine when death actually occurred. For instance, two proponents of a psychological definition for death could disagree on exactly which parts of the brain need to be destroyed in order for there to be the permanent loss of consciousness that they both agree signals death. At this level of discourse, disagreements would involve both philosophical and medical arguments. Philosophers would need to understand human biology before they would be able to identify and distinguish the criteria that will be needed to meet their definition of death.

Third, every interlocutor in the BD debate has a list of clinical tests for death that is used to evaluate whether his criteria for death have been satisfied. To return to our individual who held that death involved the permanent loss of consciousness, his list of tests could include either an MRI or a CT scan or EEG measurements, medical procedures that could determine whether the critical parts of the brain necessary for consciousness are still intact or not. Again, two individuals who share both the same definition and the same criteria for death could still disagree on the appropriate tests that would could be used to determine whether a particular individual could in fact be declared dead. At this level of discourse, disagreements would involve predominantly medical arguments over how clinical tests best ascertain criteria for death.

As we shall see below in the historical overview of the debate, the last forty years have witnessed disagreements at every level of the conceptual discourse over death. However, it is still disagreements over the appropriate definition for death that
lie at the heart of much of the current controversy over the BD criteria.

The Development of Brain-based Criteria for Death: Historical Overview

For hundreds, if not thousands, of years, the absence both of respiration and of pulsation of the arteries was acknowledged as the definitive sign for death by both the medical and the legal communities. For instance, in the 1746 book, *The Uncertainty of the Signs of Death, and the Danger of Precipitate Interments and Dissections Demonstrated*, one of the earliest medical texts to focus on the question of death, the common signs for death listed include the absence of pulsation of arteries and the absence of respiration associated with paleness of complexion, coldness of the body, and rigidity of extremities.11 In the legal profession, the first four editions of the classic reference text, *Black's Law Dictionary*, dating from 1891 to 1968 consistently listed the following as a definition for death: "The cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereupon, such as respiration, pulsation, etc."12 These criteria would reflect what today would be called the cardio-pulmonary criteria for death. They were the long-accepted standard for determining death.

The medical and legal consensus began to change in 1968. In August of that year, the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death first proposed the concept of brain death as a more accurate definition for death.13 The committee listed the following as characteristics of BD: 1) unreceptivity and unresponsivity; 2) no movements or breathing; and 3) no reflexes. We should also mention here that the Ad Hoc Committee did include one test for its criteria - a flat electroencephalogram - that could be used to confirm a diagnosis of BD.

Note that the list of characteristics provided by the committee is primarily a list of criteria for death. Significantly, there was no attempt to provide a justification for the validity of these criteria including an argument to show why these particular characteristics were authentic signs of death. No definition of death was provided. Some commentators, noting that the Ad Hoc Committee had advocated whole-brain criteria for death (characteristics two and three mentioned above require loss of the total brain), have suggested that the committee and its chairman, Dr. Henry K. Beecher, had embraced a biological definition of death that saw death as the loss of organic integration, but this claim has been challenged by proponents of higher-brain definitions.14 As one historian has pointed out, however, both sides distort Beecher's concerns because "his primary concern was not which theory of life won out, nor whether his own theoretical positions were consistent. What counted was solving such practical problems as protecting transplantation and ending useless treatments."15 What is key for our discussion here is that the Harvard Ad Hoc Committee did not provide a conceptual justification for its proposal to equate BD and death.

Why did the Ad Hoc Committee propose the new criterion for death? This is one question that often comes up in the debate.

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12 Most recently, see the entry for 'death' in Henry Campbell Black, *Black's Law Dictionary*, 4th revised edition (St. Paul, MN: West Publishing, 1968). In the 5th edition of the dictionary published in 1979, the definition for 'death' was changed. Instead of listing the cardio-pulmonary criteria, the entry now included a notation that many states had "statutory definitions of death which include brain related criteria."


15 Ibid.
over BD. In its published report, the Committee noted that there were two reasons why there was a need for a new definition for death:

1. Improvements in resuscitative and supportive measures have led to increased efforts to save those who are desperately injured. Sometimes these efforts have only partial success so that the result is an individual whose heart continues to beat but whose brain is irreversibly damaged. The burden is great on patients who suffer permanent loss of intellect, on their families, on the hospitals, and on those in need of hospital beds already occupied by these comatose patients.

2. Obsolete criteria for the definition of death can lead to controversy in obtaining organs for transplantation. 

One way to read this is that the Committee sought to redefine death because of two independent reasons: the increasing use of respirators and the need to protect physicians who do organ transplants. However, one could also link the two and argue that the Committee claimed that there was a need to redefine death because there were a lot of brain dead patients on respirators and the need for their organs was great. As Peter Singer has pointed out, this interpretation can claim much support for itself. In fact, the utilitarian presuppositions behind the Ad Hoc Committee’s intentions were actually softened in the final report since an earlier draft stated that one reason for changing the definition of death was the “great need for tissues and organs of, among others, the patient whose cerebrum has been hopelessly destroyed, in order to restore those who are salvageable.”

Another commentator has noted that it was not a coincidence that the Ad Hoc Committee’s report on the brain-based criteria followed shortly after Christiaan Barnard’s pioneering heart transplant: “A new standard of death was needed to determine when organs could be removed from a still “living” body.”

Though some have disputed the role of organ transplantation in shaping the Harvard criteria, the link seems clear. Significantly, this is how the Harvard report was presented to the public: All 17 New York Times articles on the issue of BD from 1967 to 1970 and 9 of 14 such articles from 1971 to 1974 attributed the need to redefine death primarily to transplantation. In fact, some of the media presented the BD criteria as one way to protect the patient from unscrupulous doctors who were eager to harvest organs from dying individuals.

Nevertheless, as Peter Singer rightly notes, the Harvard Ad Hoc Committee proposal marked a fundamental shift in our understanding of life and death. We could now take “warm pulsating human beings,” declare them dead, and even cut out “their hearts and other organs” for transplantation purposes.

The next major milestone in the history of the redefinition of death was the publication, in 1981, of the recommendations of the President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research. The Commission had been mandated by President Carter to study “the ethical and legal implications of the matter of defining death, including the advisability of developing a uniform definition of death.” In its conclusions, the Commission articulated a formulation of brain death that has come to be known as the “whole-brain standard” or “total brain death.” It also proposed a model statute for brain death, the Uniform Determination

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Death Act, in which the Commission specified two criteria for determining death: (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brainstem.24

Significantly, the Commission's report included several chapters to justify both its mission and its recommendations. First, in defending its mission, the Commission maintained that the most important reason for redefining death was not the need for viable organs. Rather, the new criteria for death were mandated by "the need both to render appropriate care to patients and to replace artificial support with more fitting and respectful behavior when a patient has become a dead body."25 Furthermore, it argued that another incentive to update the criteria for determining death "stems from the increasing realization that the dedication of scarce and expensive intensive care facilities to bodies without brain functions may not only prolong the uncertainty and suffering of grieving families but also preclude access to the facilities for patients with reversible conditions."26 Thus, the Commission attempted to improve upon the position of the Harvard Ad Hoc Committee by spelling out how the BD criteria would benefit the BD patient — it would allow him to be treated with respect and in a fitting manner.

Second, in defending its recommendations and its advocacy of the TBD criteria, the Commission advanced a philosophical argument for its position. First, it embraced a biological definition for death. It affirmed that "one characteristic of living things which is absent in the dead is the body's capacity to organize and regulate itself."27 Thus it concluded: "Death is that moment at which the body's physiological system ceases to constitute an integrated whole."28 As one piece of evidence for this, the Commission pointed out that BD bodies cannot be maintained indefinitely. They inexorably and imminently deteriorate to cardiovascular collapse despite the most aggressive therapy and resuscitative efforts. The Commission wrote: "Even with extraordinary medical care, these [somatic] functions cannot be sustained indefinitely — typically, no longer than several days."29

In other words, the Commission argued that the brain must be the central integrator of the body because in its absence, the BD body is unable to stay alive for an extended period of time, i.e., it has lost its homeostatic integration. Next, the Commission went on to argue that the brain was the complex organizer and regulator of bodily functions because "only the brain can direct the entire organism."30 Thus, according to the Commission, the BD body has lost many integrative functions. Commenting on this point, James L Bernat, an influential proponent of TBD has written:

"It is primarily the brain that is responsible for the functioning of the organism as a whole: the integration of organ and tissue subsystems by neural and neuroendocrine control of temperature, fluids and electrolytes, nutrition, breathing, circulation, appropriate responses to danger, among others. The cardiac arrest patient with whole brain destruction is simply a preparation of unregulated individual subsystems, since the organism as a whole has ceased functioning."31

Thus, loss of the brain necessarily leads to the loss of the integration of the body, which is death. This argument proposed by the President's Commission has become what one philosopher has called the standard paradigm used to justify the TBD criteria for death.32

Finally, there is one more important event that needs to be mentioned in this historical overview of the development of brain-based criteria for death. This is the 1975-76 case of Karen

24 Ibid., p. 73.
26 Ibid.
27 Ibid., p. 32.
28 Ibid., p. 33.
29 Ibid., p. 35.
30 Ibid., p. 34
Anne Quinlan that brought extensive media attention to the question of end-of-life care.\(^{33}\) Though most news accounts carefully explained that Quinlan did not meet the criteria for BD, the reports also argued that the use of the BD criteria for death was one way to stop physicians from using futile machinery that prolonged and intruded upon a good death.\(^{34}\) According to one commentator, this shift in the media’s explanation of why BD was necessary—from a way to protect the public from organ thieves to a way to protect the public against futile and medical interventions—probably played a central role in the speed with which the model brain-death legislation proposed by the President’s Commission was enacted.\(^{35}\) Since the publication of the 1981 report of the President’s Commission, the TBD criteria has been endorsed by all the states in the United States and by many other western nations. In a recent survey of brain death criteria throughout the world, 70 of the 80 countries (88%) that had legal standards for death have accepted some definition of BD as their standard.\(^{36}\) In addition, detailed clinical tests to diagnose TBD have now been published to try to standardize the medical diagnostic criteria for the TBD condition.\(^{37}\) These usually consist of a battery of tests and procedures, including establishment of an etiology sufficient to account for the loss of all brain functions, diagnosing the presence of coma, documenting apnea and the absence of brainstem reflexes, excluding reversible conditions, and showing persistence of these findings over a sufficient period of time.\(^{38}\) Today, the TBD criteria for death have replaced the cardio-pulmonary criteria as the medical and legal standard for death.

Despite the apparent universal acceptance of the neurological criteria for death, however, BD—from now on, all references to BD patients will presume the TBD criteria—has remained controversial even where it has become the legal standard. Significantly, thirty-five years after the publication of the Harvard criteria, the public at large still does not really believe that BD individuals are really and truly dead. In 1994, a *Miami Herald* story was headlined "Brain-Dead Woman Kept Alive in Hopes She’ll Bear Child." After the same woman did bear her child, the *San Francisco Chronicle* reported: "Brain-Dead Woman Gives Birth, then Dies."\(^{39}\) Newspaper reporters are not the only ones who deny that the brain dead are really dead. In a study of doctors and nurses who work with BD patients at hospitals in Cleveland, OH, one in three of them thought that people whose brains had died could be classified as dead because they were "irreversibly dying" or because they had an "unacceptable quality of life."\(^{40}\) In India, 17.3% of the medical staff surveyed believed that BD is reversible.\(^{41}\) Peter Singer suggests that the common-place and persistent refusal of both the ordinary layman and the medical professional to equate brain death and death is probably because "people have enough common sense to see that the brain dead are not really dead. [...] The brain death criterion of death is nothing other than a convenient fiction. It was proposed and accepted because it makes it possible for us to salvage organs that would otherwise be wasted, and to withdraw medical treatment when it is doing no good."\(^{42}\) Though this proposal is certainly a controversial one, it is striking to me that no hospital or medical school has ever proposed that medical students perform pathology dissections on BD individuals or that experimental drugs be used on BD patients to test

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\(^{33}\) For extensive discussion on the Karen Quinlan case, see PENCE, Classic cases, pp. 3-17.

\(^{34}\) PERNICK, "Brain Death," p. 18.

\(^{35}\) Ibid., p. 17.


\(^{39}\) Cited by Peter SINGER in "Is the Sanctity of Life Ethic," p. 295.


\(^{42}\) SINGER, "Is the Sanctity of Life Ethic," p. 295.
their efficacy. Why is this? If BD patients are truly dead then why treat them any differently from cadavers?

Critiquing Brain Death: The Argument of Alan Shewmon, MD

In the academy, criticism of the TBD criteria originally came from advocates who wanted this set of criteria to be replaced by a higher-brain formulation of death. As noted above, this definition of death, also called the cerebral or neocortical criteria for death, would be fulfilled when the individual lost only those parts of his brain associated with the "higher" functions of the human being including the abilities to think, feel, and reason. In the last ten years or so, however, there has been a significant and growing opposition to all brain-based criteria for human death. One of BD's most influential critics is Alan Shewmon, MD, professor and chief of pediatric neurology at UCLA. Shewmon's critique has focused on the proposition that the brain is the central integrator of the body. Recall that this is an essential premise for the standard paradigm proposed by the President's Commission to justify TBD. Shewmon argues that if the brain is not the central integrator of the body, then even total loss of the brain cannot lead to the loss of physiological integration that is indicative of death.


In its proposal of the TBD criteria, the President's Commission argued that the brain was the central integrator of the body. Recall that in support of this, the Commission and other advocates of TBD cite two lines of evidence. First, they pointed to the BD patient's cardiovascular instability. Second, advocates of TBD like James Bernat, cited earlier, point to a list of brain-mediated integrative functions and argue that the BD patient could not possibly be a unified organism without these. For proponents of TBD, both of these empirically verifiable signs are clear proof that the brain is the central integrator of the body.

Alan Shewmon has challenged both lines of evidence that have been used to justify TBD. First, to counter the claim that BD patients are imminently going to experience cardiac arrest and whole-body system failure because of physiological instability and the loss of integration, Shewmon has published a study of approximately 175 cases of diagnosed BD patients with survival exceeding one week. These cases were obtained from the professional literature, from the media, and from his own clinical practice. Significantly, of those cases with enough information for more extensive study (56 cases), more than half survived longer than one month, a third longer than two months, seven survived longer than six months and four longer than one year, the record being eighteen years and still going! These are cases of BD patients who did not manifest the instability expected from a body without physiological integration. Furthermore, the study revealed that the differences in the survival rates of the BD patients are largely explainable by non-brain factors: The process of brain damage leading up to BD frequently induces secondary damage to the heart and lungs and it is this damage and not damage to the brain per se that eventually leads to the rapid death of the individual.

Of the approximately 175 cases documented by Shewmon, the case of the patient named TK stands out. TK contracted...
meningitis at age 4, causing such intracranial pressure that his skull bones split. Since then, multiple brain-wave EEG tests have been flat, and no spontaneous respirations or brain stem reflexes have been observed over the subsequent 18 years. Physicians suggested discontinuing support, but his mother would not consider it. TK was eventually transferred home, where he remains on a ventilator, assimilates food placed in his stomach by tube, urinates spontaneously, and requires little more than nursing care. While BD, he has grown, undergone puberty, overcome infections and healed wounds. Shewmon's clinical examination of TK revealed that there is no blood flow into his cranium and an MRI scan revealed that the entire brain, including the brain stem, has been replaced by disorganized membranes and fluid. As Shewmon put it, there is no question that he became brain dead at age 4, but neither is there any question that he is still alive at age 19. Counter to the claims of the President's Commission and those who hold that BD patients are imminently dying, TK's case is a clear demonstration that BD patients are able to maintain a physiological stability superior to that found in many ICU patients still considered alive.

Second, to counter the claim that BD patients lacking brain-mediated integrative functions lack physiological integration, Shewmon has made the following argument. First he defines integrative unity. For him, 'integrative unity' is possessed by a putative organism if the latter possesses at least one emergent, holistic-level property. A property of a composite is defined as "emergent" if it derives from the mutual interaction of the parts, and as "holistic" if it is not predicative of any part or subset of parts but only of the entire composite. Next, he points out that any body requiring less technological assistance to maintain its vital functions than some other similar body that is nevertheless a living whole must possess at least as much robustness of integrative unity and hence also be a living whole. Finally, he makes a distinction between brain-mediative functions and somatically-mediative functions. For instance, "breathing" is a brain-mediative function if "breathing" is understood as moving air in and out of the lungs. This function is coordinated by the brain stem. However, if "breathing" is understood as a somatically mediative function, it is better understood as "respiration" in the technical sense of exchange of oxygen and carbon dioxide. This function is coordinated by the mitochondria in each single cell of the body. Similarly if "nutrition" is understood as eating, it is surely coordinated by the brain. If, however, it is understood as the breakdown and assimilation of nutrients for energy and bodily structure (the only sense relevant to somatic integration), then it is a chemical function of every cell throughout the body.

With these distinctions in place, Shewmon then points out that many BD patients manifest integrative functions that are somatically mediated and can only be accomplished by the body working as a whole. For instance, BD individuals can assimilate nutrients (requiring the coordinated activity of the entire digestive and circulatory systems); they can fight infections and foreign bodies (requiring the coordinated activity of the entire immune system); they can undergo sexual maturation (requiring the coordinated activity of the hormonal and reproductive systems); and some can successfully complete the gestation of a fetus (requiring the coordinate activity of a host of systems). All of these functions are examples of emergent holistic properties that depend upon the functioning of the entire, integrated composite. Even more compelling, some BD patients (like TK) require less technical support than many other extremely sick or dying patients who are nevertheless still alive. Therefore, according to Shewmon, these BD patients, who manifest even more physiological integration than their ICU counterparts, must also be alive. He concludes that BD patients are not dead because they still manifest the physiological integration that would be missing in truly dead individuals. To put it another way, BD patients are not dead because they do not meet the biological definition of death that is advocated by the Uniform Determination of Death Act.

Besides the essay of Edward J. Furton that will be discussed below, no advocate of TBD has yet to respond to Shewmon's most developed argument. However, Shewmon's argument has been well received by his peers in the medical profession as well as by philosophers working in bioethics. For instance, two
physicians, Stuart Youngner, a professor at Case Western University's School of Medicine (U.S.A.), and Robert Arnold, a professor at the University of Pittsburgh School of Medicine (U.S.A.) conclude that "Shewmon effectively argues that many of the body's most important integrative functions are not carried out by the brain at all, and continue once the brain has ceased to function. He supports his argument with a plethora of clinical evidence and leaves Bernat and his colleagues [ proponents of TBD] in the untenable position of saying, "Oh, but we didn't mean or care about those functions."\(^48\) Dr. Amir Halevy of the Baylor College of Medicine (U.S.A.) in commenting on Shewmon's position concludes that it is "compelling: many of the integrative functions of the organism as a whole are not brain mediated. [...] Additionally, the strongest argument that somatically integrative functioning continues despite satisfying the whole brain criterion of death, and thus independent of brain base mediation, is the persistent ventilator-supported "survival" of some brain dead bodies."\(^49\) Andrew Lustig of the Department of Religious Studies at Rice University (U.S.A.) writes: "Shewmon adduces powerful empirical evidence that most brain functions usually mentioned as integrative do not, in fact, confer somatic unity but instead sustain a unity "already presupposed."\(^50\) Finally, Michael Potts, a philosopher specializing in end-of-life issues, concludes: "Shewmon's argument remains successful in showing that the standard paradigm used to justify whole brain death is no longer viable. Requiescat in pace."\(^51\)


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The Papal Address on Brain Death, August 29, 2000

As noted in the introduction, John Paul II's statement to the 18\(^{\text{th}}\) International Congress of the Transplantation Society on August 29, 2000, was heralded as the long-awaited magisterial pronouncement on BD. In light of Alan Shewmon's critique of BD, however, I suggest that the philosophical and theological debate over BD cannot be closed simply because the scientific and medical facts that are presupposed by both sides of the controversy have been disputed.

The Pope's argument in support of the TBD criteria is relatively straightforward. First, the Pope adopts a biological definition for death. He says that the "death of the person is a single event, consisting in the total disintegration of that unitary and integrated whole that is the personal self." According to the Pope, this disintegration results from "the separation of the life-principle (or soul) from the corporal reality of the person." Presupposed in this definition of death is a Christian anthropology that acknowledges two truths. First, the human being is an embodied spirit, a substantial unity of body and soul.\(^52\) Second, the soul is the formal principle of the body, that principle that integrates and unifies the body, making it what it is.\(^53\) Note that this definition of the soul is extremely important because it lies at the heart of the Pope's argument: if death is the separation of the soul from the body, and the soul is the integrating principle of the body, then the only empirical data for the absence of the soul will be the loss of bodily integration. Next, the Pope presumes that the scientific and medical communities have shown

\(^{52}\) "The human body shares in the dignity of "the image of God": it is a human body precisely because it is animated by a spiritual soul, and it is the whole human person that is intended to become, in the body of Christ, a temple of the Spirit." *Catechism of the Catholic Church*, no. 364.

\(^{53}\) "The unity of soul and body is so profound that one has to consider the soul to be the "form" of the body, i.e., it is because of its spiritual soul that the body made of matter becomes a living, human body; spirit and matter, in man, are not two natures united, but rather their union forms a single nature." *Catechism*, no. 365.
that TBD leads to the loss of bodily integration: "Specifically, this [death] consists in establishing, according to clearly determined parameters commonly held by the international scientific community, the complete and irreversible cessation of all brain activity (in the cerebrum, cerebellum and brain stem). This is then considered the sign that the individual organism has lost its integrative capacity." Thus, the Holy Father concludes that "the fact of death, namely the complete and irreversible cessation of all brain activity, if rigorously applied, does not seem to conflict with the essential elements of a sound anthropology."

Clearly, Pope John Paul II's argument endorsing the neurological criteria for death is an instance of the standard paradigm used by proponents of TBD. As we have seen above, however, Shewmon's critique of the scientific and medical data seriously undermines this defense of TBD. The scientific and medical communities have not shown that TBD leads to the loss of bodily integration. The BD patient still manifests bodily integration and thus must still possess his soul—because, by definition, it is the soul that integrates the body. Thus, the BD patient has not met the biological definition of death that is presupposed by the Pope and the Catholic tradition.

Edward J. Furton's Defense of the TBD Criteria

Dr. Edward J. Furton, a Catholic bioethicist at the National Catholic Bioethics Center in Boston (U.S.A.) has recently published an essay to defend the TBD criteria in light of Alan Shewmon's critique. So far, it is the only response to Shewmon's most developed argument from a Catholic bioethicist.

Furton's essay, entitled "Brain Death, the Soul, and Organic Life" is divided into two halves. In the first half, Furton describes the long and careful deliberation process undertaken by the Holy See over the thirty years that preceded the decision of the Pope to deliver his address to the International Congress of the Transplantation Society. He concludes that the Church has given the question of BD adequate consideration and that "the small but vocal minority within the Catholic community who rejects neurological criteria has had ample opportunity to present its case to the Vatican." This part of the essay, though interesting, is not really relevant to the philosophical issues that concern us here.

In the second half of the essay, Furton proposes his own defense of the TBD criteria. He begins by outlining the anthropological framework presumed by the Catholic tradition. Not surprisingly, his account is in substantial agreement with the Pope's—the human being is a body/soul composite where the soul is the formal principle that unifies and integrates the body. However, Furton makes a distinction that the Pope does not make. He emphasizes that in the human body, the soul is an intellective or rational soul. As Furton puts it, "the intellective or rational soul is the source of integrative unity in the human body." He then goes on to point out that medical science tells us...
us that the brain is the seat of cognitive life. Thus Furton concludes: "If the human being is a substantial union of intellective soul and physical body, which union takes place through the organ of intellectual cognition, then it is logical to conclude that when the brain is dead the soul has departed." For Furton, the BD individual is dead because, in the absence of the brain, the rational soul is unable to be "tethered" to the body, and thus, departs. What is left behind is not a corpse but a living "subhuman" being that has a soul not unlike the souls of human cells living in culture dishes in the laboratory. For Furton, the BD body is another form of organic life.

There are two problems with Furton's argument. First, it is unable to properly distinguish the BD individual who is presumed to be dead and the Persistent Vegetative State (PVS) individual who is presumed to be alive. This is a problem with the argument as it stands because it presupposes that one can clearly define the loss of all brain function. Second, Furton's argument is internally incoherent because of his presupposition that an organ is needed to mediate the union between the bodily matter and the soul. This presupposition is mistaken because it is based both upon an outdated hierarchical view of organic life that simply cannot account for all the empirical data and upon a flawed interpretation of a bona fide metaphysical principle that describes the union of the body and the soul.

First, central to his argument, Furton claims that the condition for death properly obtains when the entire brain is dead. As numerous critics of BD have pointed out however, bona fide BD patients, patients who have been properly diagnosed as TBD, often retain some brain function. Furthermore, the litany of brain functions in clinically certified BD patients is not short. First, a significant number of BD patients do not have diabetes insipidus (water diabetes), a condition where the kidneys produce abnormally large volumes of dilute urine. Since the brain is the only source of the hormonal regulator responsible for preventing this type of diabetes, BD patients without diabetes insipidus still manifest brain function. Next, many patients who fulfill the tests for brain death (20% in one study) continue to show electrical activity on the EEG. While there is no way to determine how often this electrical activity represents true "function" (which would be incompatible with the criterion for TBD), in at least some cases the activity observed seems fully compatible with function. Finally, clinicians have observed that BD patients frequently respond to surgical incision at the time of organ procurement with a significant rise in both heart rate and blood pressure. This suggests that integrated neurological function at a supraspinal level may be present in at least some patients clinically diagnosed as TBD. These studies show that most patients who have been clinically certified as brain-dead retain some brain function. Furthermore, as Dr. Robert Truog has convincingly argued, empirical work has shown that it is practically impossible to develop clinical tests that can determine that total brain function has been lost. A study of over 500 patients with both coma and apnea showed that "it was not possible to verify that a diagnosis made prior to cardiac arrest by any set or subset of criteria would invariably correlate with a diffusely destroyed brain." In other words, one can never clinically diagnose the total loss of brain function. BD patients will always show some residual brain function.

But if BD patients will always show some residual brain function, which functions are relevant for the diagnosis of TBD?

59 Ibid., p. 467.
60 This paragraph is heavily indebted to the essay by Robert D. Truog, "Is It Time to Abandon Brain Death?" Hastings Center Report 27 (1997): 29-37.
For those who hold that bodily integration is the function of the brain relevant to the BD debate, the critical functions that need to be lost for TED to obtain are those functions that are important for integration including those mediated by the brain stem. Thus, they can defend a whole-brain formulation for death. Furton, however, rejects bodily integration as a adequate criterion for death. Instead, he has chosen to focus upon cognitive life as the function of the brain that is relevant in the BD debate. Recall that the brain is critical, he states, because science has shown that it is “the seat of cognitive life.” Thus, Furton has to conclude that the critical functions that need to be lost for TBD to obtain are those functions that are important for cognition. Here, he has a problem, because PVS patients—patients who have lost all higher-brain functions—like TBD patients have also lost all cognitive capacities. Therefore, either Furton has to conclude that the PVS patient like the TBD patient is dead—a conclusion rejected by the Catholic Church and most mainstream bioethicists—or he has to conclude that the TBD patient like the PVS patient is still alive.

Second, Furton’s argument is internally inconsistent because he presupposes that an organ is needed to mediate the union of body and soul. As Furton put it, this union “takes place through the organ of intellectual cognition.” But why does this have to be? Why does an organ have to mediate the union of a soul to its matter? Or more generally, why does a part have to mediate the union of the soul to the whole? In his own essay, Furton himself does not hold consistently to his own presupposition. First, he argues that the BD patient’s body is alive because it is animated by a subhuman soul. Given his argument, this is certainly a plausible scenario. But if this is the case, what is the organ that allows that subhuman soul to animate the BD patient’s body? The liver, the heart, the immune system? None is obvious, I would argue, because there is none. All the parts in the BD patient’s body are equally important for the functioning of the whole. To take another example, in his essay, Furton again talks about the organic life of an extracted kidney that is alive outside the donor’s body. He argues that this organic life must arise from the presence of a subhuman soul that animates the kidney. In this, Furton is again correct. However, again, what is the mediating part in the kidney, the analog to the brain in the complete body, that allows it to be ensouled? Again, none is apparent. These two examples taken from Furton’s own work demonstrate that he presumes that there is no need for any one part of a living whole to mediate the union of the soul to subhuman organic life. But if there is no need for a part to mediate the union of the soul and the matter either in the BD patient’s body or in the extracted kidney, then why the need for one, the brain, in the intact human being?

I submit that Furton’s presupposition that an organ is needed to unite the body and soul is mistaken and that it is mistaken for two reasons. First, as my colleagues and I have argued elsewhere, the presupposition that an organ of integration or mediation must exist in every organic being to unify the body and the soul is a presupposition based upon a flawed understanding of the hierarchical constitution of living organisms that cannot account for all the empirical evidence. Briefly, this flawed view conceives of organic life as hierarchical where one part, the master part, necessarily exists to integrate and govern the whole. However, there are many forms of organic life—for example, plants, flatworms, mammalian embryos, and in light of Shewmon’s work, the adult human being—that are not organized hierarchically. They do not have a central integrating...

organ. Instead, as I will describe in the last section of this paper, a holistic systems understanding of the body is a more accurate view of the human being that is able to better account for the unity and integrity of all forms of organic life. This systems perspective also points to an alternative to brain-based criteria for death.

Second, I propose that Furton’s mistaken presupposition is based upon a flawed interpretation of a *bona fide* metaphysical principle that is presupposed by the anthropology embraced by the Catholic tradition. This metaphysical principle holds that matter has to be disposed to receive a particular kind of form. In other words, according to many commentators, for a body to be informed by a rational soul, it must possess a level of complexity and organization appropriate to that form of life. This is probably the principle Furton wishes to affirm when he says that an organ proportionate to the soul is needed for the soul to inform the body. But his is a mistaken interpretation. To see this, I ask a question: How do we know when a body has attained a level of organization appropriate to a particular type of soul? Simply, when it is organized in such a way that it possesses the functional capacity associated with a particular type of soul. This follows from the classical metaphysical axiom that the only way one can know what a thing is, is from how it acts, i.e., from how it functions. Thus, Furton is wrong in interpreting this principle to mean that a body must have the proportionate structural capacity, i.e., an organ, in order for it to be disposed to a particular type of soul. If he wants to invoke this metaphysical principle in his argument, he properly should say that the body of a human being is disposed to a rational soul when it has the functional capacity for rational life. Again, however, Furton faces the same problem pointed out earlier because science has shown that properly speaking, the whole brain is the seat of cognitive life only in a qualified sense. Rather, it is the neocortex that is truly the seat of cognitive life. Functionally, the patient who has lost all neocortical function has ceased being disposed to a rational soul in the same way as the patient who has lost whole-brain function. Thus, Furton would again have to conclude that the PVS patient is dead. Like the TBD patient, the PVS individual is not functionally disposed to and thus lacks a level of organization fit for a rational soul. However, as we have already noted, the Catholic Church and most mainstream bioethicists have rejected this conclusion. As I will discuss in the last section of this essay, by focusing upon the criteria of bodily integration as the only appropriate sign for the presence of the soul in the body, a holistic, a systems understanding of the human being can properly affirm the metaphysical principle that matter has to be properly disposed to form without leading to the insurmountable problems encountered by Furton.

Finally, I think that it is important to see how Furton’s argument differs from the standard paradigm used by both the President’s Commission and the Pope. For the Pope, the absence of the soul is made manifest by the loss of bodily integration. This is a species-nonspecific definition for death. For Furton, the absence of the soul is made manifest by the loss of that organ in the body whose presence allows the soul to be present. This is a species-specific definition. (What organ would have to be missing to declare a dog dead?) In fact, I would propose that Furton’s argument is actually the argument of those who advocate a higher-brain formulation of BD cast in classical Aristotelian terms. For higher-brain advocates, the criterion for death is the loss of those parts of the brain responsible for those functions unique to persons, i.e., to think, to feel, and to reason. For Furton, the criterion for death is the loss of that organ of the body responsible for those functions unique to rational souls, i.e., to think, to feel, and to reason. The parallel is striking. By replacing the loss of bodily integration as the hallmark sign for the separation of the soul from the body with another standard, the loss of the organ of cognitive life, Furton has unwittingly replaced a biological definition for death with a psychological one.

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48 For instance, see St. Thomas Aquinas, *Summa Theologiae* 1a, 76, 5, ad 1, 3.
Death from the Systems Perspective: An Alternative to the Brain-based Criteria

As Pope John Paul II has re-emphasized in his discourse to the International Congress of the Transplantation Society, the only reliable indicator for the separation of the soul from its body is the loss of bodily integration. This follows directly from the definition that the soul is the formal principle of the body that unifies and integrates the body making it what it is. To ascertain the death of a patient; we must therefore look for criteria and tests that manifest this loss of bodily integration. In this last section of my essay, I propose that this loss of bodily integration is best ascertained from within a holistic, systems perspective of the human body.

As I have described in detail elsewhere, from the systems perspective, the body is a dynamic, complex, and seamlessly integrated network not of organs nor of cells but of molecules, including DNA, RNA, lipids, and proteins, connected by reaction pathways that generate shape, mass, energy, and information transfer over the course of a human lifetime. In contrast to the prevailing reductionist and mechanistic view, the organism is seen here as a single, unified whole, a complex and dynamic network of interacting molecules that appear and then disappear in time. It is an embodied process that has both spatial and temporal manifestations. From the systems perspective, this particular pattern, this organization of the molecules of the human being, would be a manifestation of his immaterial soul. As noted above, one metaphysical principle that governs the relationship between the body and its soul is that matter has to be properly disposed to receive a form. From within the context of the systems perspective, this principle means that matter is disposed to receive a soul when it contains all the molecules required to give rise to the species-specific network that corresponds to a particular type of soul. Thus, a human body is disposed to receive a human soul at fertilization and would cease being disposed when the molecular network disintegrates.

From the systems perspective, therefore, death would coincide with the disintegration of the molecular network that makes up the body as a whole. This view rejects the idea that one organ in the body is essential for integration. Rather the whole system is integrated and united by the soul. Undoubtedly, Shewmon would agree with this perspective. In his most recent essay, he has argued that his data also show that there is an inherent non-localizability for integration. In other words, "each part of the body, especially the brain, contributes to the stability, robustness, and richness of the body's vitality and unity, but no one part or even combination of parts constitutes that vitality or unity." (This is not a coincidence since Shewmon also attributes much of his thinking to the emerging science of systems biology.) Note that this is not a return to the traditional cardio-pulmonary criteria since the absence of respiration and circulation does not immediately lead to the disintegration of the body (otherwise, we could never use CPR to restore bodily function). Instead, death would occur when enough time has passed after the cessation of respiration and circulation such that individual cells scattered randomly throughout the body would die from lack of oxygen. This sporadic but system wide loss of cells would quickly and necessarily lead to the irreversible loss of molecular integrity of the whole system and thus to death.

Systems Death and Organ Transplantation

One argument that is often leveled against critics of the BD criteria is that abandoning the criteria would exacerbate the already limited supply of transplantable organs thus leading to more deaths of patients. This is a utilitarian argument not

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70. SHEWMON, "The Brain and Somatic Integration," p. 472.

71. For instance, Eugene F. Diamond, a Catholic physician has suggested that replacing the BD criteria with criteria in line with Shewmon's position would effectively end 90% of all human organ transplantation, and possibly 100% of unpaired vital organ transplantation. I should note here that
compatible with the Catholic moral tradition. However, it is still important to ascertain the effects of replacing the BD criteria with systems-based criteria for death on organ transplantation procedures. At the outset, we should acknowledge that it is not clear how long a period of time must pass after the cessation of respiration and circulation before the molecular integration of the body has been irreversibly lost. This would require much empirical and clinical work. Shewmon has suggested that twenty minutes may be sufficient. In response, critics have charged that this would effectively end 90% of all human organ transplantation, and possibly 100% of unpaired vital organ transplantation. I would respond, however, that this does not have to follow from a systems-based understanding of death. The Catholic Church's moral prohibition against the donation of unpaired vital organs from a living individual is based upon her moral prohibitions against murder and suicide — harvesting a living heart or another vital organ from a living human being would necessarily lead to his death — and no one, including the individual himself, is morally permitted to do this. However, as Shewmon has pointed out, this no longer applies to the person whose heart and lungs have stopped functioning — removing a living heart or another vital organ from a living human being whose body has ceased respiration and circulation does not lead to the patient's death. The patient's death, the disintegration of his body, occurs from the lack of oxygen experienced by individual cells scattered throughout his body. In other words, after systole, the heart ceases to be a vital organ for the life of the individual. In fact, from the systems perspective, after the cessation of respiration and circulation, none of a human being's organs is vital. Thus, after systole, shouldn't it now be morally permissible for the still living individual to donate his once but no longer vital organs as a last act of charity before his death?

**Conclusion**

Organ transplants are valuable. As the Pope pointed out in his discourse to the International Congress of the Transplant Society, not a few people today owe their lives to organ transplant technology. From a Christian perspective, however, the value of organ donation goes beyond its utility. Ultimately, its value is grounded in the dignity of the human person who is able to give of himself in a very concrete and tangible way. As John Paul II said: 'Here precisely lies the nobility of the gesture [of organ donation], a gesture which is a genuine act of love. It is not just a matter of giving away something that belongs to us but of giving something of ourselves, for by virtue of its substantial union with a spiritual soul, the human body cannot be considered as a mere complex of tissues, organs and functions ... rather it is a constitutive part of the person who manifests and expresses himself through it.' Only the human person, precisely because he is a person, is able to give himself away through organ donation. It is a privilege that comes with human dignity. However, it is also in the name of this same human dignity that the Catholic Church challenges the medical and scientific communities to make sure that their definition of death is consonant with an authentic anthropology. The medical evidence and philosophical reflection upon that evidence now suggest that the TBD criteria proposed both by the Harvard Ad Hoc Committee and the President's Commission do not in fact cohere with a true anthropology. Thus the time has come for the criteria to be replaced precisely to protect the dignity of the individual.

_Diamond is not a utilitarian because he quickly acknowledges that "this would not be an unacceptable price to pay if the result were to be the restoration of a societal respect for the sanctity of human life that had somehow been lost in the acceptance of whole-brain death as tantamount to death of the person." See Diamond, "Brain-Based Determination," p. 77.


74 For Shewmon's position, see "Brainstem Death, Brain Death and Death," pp. 128-129.

75 Pope John Paul II, "Address," p. 90 (Quoting *Donum vitae*, Introduction, no. 3).
human being, alive and dead, organ donor or organ recipient. Only in this way will our society embrace a culture of life fulfilling the suggestion of John Paul II who in his encyclical, *Evangelium vitae*, suggested that one way of nurturing a genuine culture of life "is the donation of organs, performed in an ethically acceptable manner, with a view to offering a chance of health and even of life itself to the sick who sometimes have no other hope."  

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*Evangelium vitae*, no. 86.

POPE JOHN PAUL II AND THE WAR IN IRAQ

In the aftermath of the armed intervention in Iraq and the overthrow of the regime of Saddam Hussein, commentators have noted what appears to be a significant change in policy on the part of the Papacy, expressed in the pronouncements of Pope John Paul II.¹ The Pope's words seem to have been more forthright and specific than comparable papal declarations in the past. The clearest statement he made was that contained in his address to the diplomatic corps in January 2003:

"No to war! War is not always inevitable. It is always a defeat for humanity. International law, honest dialogue, solidarity between States, the noble exercise of diplomacy: these are methods worthy of individuals and nations in resolving their differences. I say this as I think of those who still place their trust in nuclear weapons and of the all-too-numerous conflicts which continue to hold hostage our brothers and sisters in humanity." ²

The Pope had earlier made similarly strong statements condemning all war. In his *Angelus message* for Sunday, 27 January 2002, the Pope said: "Violence never again! War never again! Terrorism never again! In the name of God, may every religion bring upon the earth justice and peace, forgiveness and love!" ³

¹ The changes, while manifested clearly in this period, have been in process, in the Pope's thinking, for many years. See, Giovanni Miccoli, "La guerra nella storia e nella teologia cristiana," in Piero Stefani and Giovanni Menestrina eds., *Pace e guerra nella bibbia e nel corano* (Brescia: Morcelliana, 2002) 138.
