

# *Secularism and Loss of Consensus about the Diagnosis of Death*

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*Abstract.* This paper explores the determination of death as it pertains to ethical decisions about organ and tissue donation. The Church holds that death can be diagnosed on the basis of evidence showing the complete cessation of all brain function and the corresponding loss of integration of the body. On the basis of evidence presented by D. Alan Shewmon and others, influential secular bodies have rejected the integrationist view, arguing instead for a much more liberal view that a loss of spontaneous breathing and loss of consciousness are sufficient for a diagnosis of death; that is, some brain function may continue after death. New laws and guidelines in various countries are based on this mode-of-being view. The author defends the Church's integrationist view, arguing that loss of all brain function means loss of integration in the intercommunicative sense that pertains to the separation of the life principle, or soul, from the body in death. *National Catholic Bioethics Quarterly* 10.3 (Autumn 2010): 491–514.

Many members of Christ's faithful face the issue of organ donation and transplantation as either recipients or donors or as their family members. Recently, there has been renewed discussion about the diagnosis of death by the brain criteria and new developments involving organ donation after cardiac death (DCD). Secular discussions by official agencies and changes in medical standards indicate that, in

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many jurisdictions, the Church's support for accepted medical practices in determining death and procuring organs for transplantation can no longer be given.

Gaps have emerged between the Church's understanding of death, expressed in terms of the loss of integration of the body, and the secular standards for defining death. These gaps are certainly apparent in the United Kingdom, where the legal definition of death since 1995 has been brain-stem death (the irreversible loss of brain-stem function) rather than the loss of all function of the brain.<sup>1</sup> In 2008, national advisory and standard-setting bodies in the United States and in Australia and New Zealand moved away from defining death according to the loss of all brain function and established lesser standards.<sup>2</sup> In some jurisdictions that support DCD, approval has been given for a diagnosis of death even when a patient's circulation could still be restored. Approval has also been given for nontherapeutic procedures performed before a patient's death to facilitate organ donation after death.<sup>3</sup>

This leaves people of good faith with difficulties in participating in organ donation and transplantation programs, which are usually managed at national or provincial levels according to secular standards, and it may create yet another point of difference between Catholic and pro-life health professionals and their secular colleagues.

### Changing Standards

Catholic codes of health care ethics—such as the United States Conference of Catholic Bishops' *Ethical and Religious Directives for Catholic Health Care Services*; the Catholic Health Alliance of Canada's *Health Ethics Guide*, which has the nihil obstat of the Permanent Council of the Canadian Conference of Catholic Bishops; and Catholic Health Australia's *Code of Ethical Standards*, published with the approval of the Australian Catholic Bishops Conference<sup>4</sup>—accepted organ procurement

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<sup>1</sup>Department of Health [UK], *A Code of Practice for the Diagnosis of Brain Stem Death, Including Guidelines for the Identification and Management of Potential Organ and Tissue Donors* (London: Crown, 1998), [http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_4035462.pdf](http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4035462.pdf).

<sup>2</sup>President's Council on Bioethics, *Controversies in the Determination of Death: A White Paper* (Washington, DC: PCB, December 2008), <http://bioethics.georgetown.edu/pcbe/reports/death/index.html>. Australian and New Zealand Intensive Care Society, *The ANZICS Statement on Death and Organ Donation*, edition 3.1 (Melbourne: ANZICS, 2008), 15, <http://www.anzics.com.au/death-and-organ-donation>.

<sup>3</sup>See, for example, Organ and Tissue Donation and Transplantation Authority and National Health and Medical Research Council [Australia], *National Protocol for Donation after Cardiac Death—Draft* (Canberra: NHMRC, 2009), [http://www.nhmrc.gov.au/\\_files\\_nhmrc/file/guidelines/consult/consultations/Draft\\_National\\_Protocol\\_for\\_DCD.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/consult/consultations/Draft_National_Protocol_for_DCD.pdf). See also British Transplantation Society, *Guidelines Relating to Solid Organ Transplants from Non-Heart Beating Donors* (London: BTS, 2004), <http://www.bts.org.uk/transplantation/standards-and-guidelines/>.

<sup>4</sup>U.S. Conference of Catholic Bishops, *Ethical and Religious Directives for Catholic Health Care Services*, 5th ed. (Washington, DC: USCCB, 2009); Catholic Health Alliance of Canada, *Health Ethics Guide*, 2nd ed. (Ottawa: CHAC, 2000); and Catholic Health Australia,

practices within a set of regulatory standards, but the standards have changed and may not now be acceptable. The regulatory environments and medical practices are no longer necessarily those for which the Church expressed support when it approved established practices of diagnosing death and permitting organ procurement.

Of particular significance is the publication in the United States of *Controversies in the Determination of Death: A White Paper* by the President's Council on Bioethics in December 2008.<sup>5</sup> This paper is significant because in it the council majority rejected the view expressed in a 1981 report, *Defining Death*, by the earlier President's Commission, which the Church had previously adopted: namely, that determining death by the brain criteria could be understood in terms of the essential role that the brain plays in integrating the body, and that death could be understood as the loss of integrative functioning of the whole organism when there is irreversible cessation of all function of the brain.<sup>6</sup> The 2008 document is also significant in that Dr. Edmund Pellegrino, the chairman of the council and a leading Catholic medical bioethicist, included a dissenting statement in which he claimed that the white paper lacked a satisfactory philosophical definition of death and, further, that the reasons for favoring the determination of death by the brain criteria are not compelling.<sup>7</sup>

Also of significance is the *Statement on Death and Organ Donation* by the Australia and New Zealand Intensive Care Society (ANZICS), also published in 2008,<sup>8</sup> which for the first time discusses organ DCD and revises the society's guidelines on the determination of death by the brain criteria.

In 2009, the Australian Organ and Tissue Donation and Transplantation Authority published a draft version of a national protocol for DCD that would permit procedures to be done to a patient before death to facilitate transplantation of the patient's organs after death. Equally controversial is its proposal that death can be diagnosed after circulation has ceased for only two minutes, even though resuscitation might still be achieved.<sup>9</sup> The legal standard in Australian law still states that the cessation of circulation must be irreversible.

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*Code of Ethical Standards for Catholic Health and Aged Care Services in Australia* (Deakin ACT, Australia: CHA, 2001).

<sup>5</sup>President's Council on Bioethics, *Controversies in the Determination of Death*.

<sup>6</sup>President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, *Defining Death: A Report on the Medical, Legal and Ethical Issues in the Determination of Death* (Washington, DC: US Government Printing Office, 1981), 32–33, [http://bioethics.georgetown.edu/pcbe/reports/past\\_commissions/defining\\_death.pdf](http://bioethics.georgetown.edu/pcbe/reports/past_commissions/defining_death.pdf).

<sup>7</sup>Personal statement of Edmund D. Pellegrino, MD, in *Controversies in the Determination of Death*, by the President's Council on Bioethics, 107–120.

<sup>8</sup>ANZICS, *Statement on Death*.

<sup>9</sup>See, for example, National Health and Medical Research Council [Australia], *National Protocol for Donation after Cardiac Death*.

These events indicate that changes are occurring in standards and practices, and there is a greater need to explain the philosophical and theological bases for the Catholic Church's acceptance of the practice of organ and tissue donation and the concept of death determined by the brain criteria. There is also a need to provide guidance about new developments in DCD so that both professionals and the general community can apply the Church's teaching.

There is a shortage of organs for transplantation, and many people who are waiting for transplants suffer either earlier death or prolonged disease and disability because of the insufficient number of available organs. Major organs such as hearts, lungs, kidneys, and livers from dead donors usually become available only after their donors have suffered loss of all brain function. Donation after death by the brain criteria is thus dependent on donors dying in intensive care units, which provide ventilation and support for heart function. Many people do not die in these circumstances, however, and their major organs are usually too damaged after death to be used for transplantation, though some tissues such as skin and corneas may be used.

The shortage of organs has led to efforts to salvage organs very quickly after death from loss of circulation rather than loss of brain function. This is called DCD,, and the donors are typically patients whose lives have been sustained by ventilators following devastating brain injury. In these circumstances, death results from the withdrawal of life support—specifically, the withdrawal of inotropic agents (to sustain heart function) and ventilator support (to sustain breathing); it is thus likely to occur in predictable circumstances. Although DCD may make many more organs available for transplantation, the medical and ethical issues of determining death very early and making arrangements before death to salvage organs immediately after it have given rise to new issues that the Church has not previously addressed.

The withdrawal of life support raises the question of what “irreversible cessation of circulation” means, because in many cases in which circulation ceases because of the withdrawal of life support, it might be restored if resuscitative measures were used and the withdrawn treatment reinstated. Irreversibility thus depends on excluding the possibility of resuscitation and restoration of treatment. One could imagine a situation in which, after a diagnosis of death on these grounds, a relative or staff member demands resuscitation and restoration of life support. In such a case, the person who has been declared dead might be restored to life.

The purpose of this paper is to examine ethical advice that may be given to assist lay people and health professionals in making decisions with respect to death and organ and tissue donation in the contexts of both cardiac death (which is becoming more common) and death by the brain criteria.

### **No International Consensus**

In Australian law, with some variation between States, death is defined as (a) irreversible cessation of all function of the brain or (b) irreversible cessation of the circulation of blood in the body. The law does not specify the medical criteria that need to be met to verify either of these conditions.

Worldwide, there is no consensus on the medical criteria for determining brain death,<sup>10</sup> and few challenges to diagnoses of death by the brain criteria have been reported. Two challenges—one in London in 2000 and one in Washington, DC, in 2008—were made by Orthodox Jews who wished to avoid the withdrawal of care from children whose deaths had been diagnosed by the brain criteria but whose hearts were still beating.<sup>11</sup> A similar challenge was made in Boston in 2006 by the family of a Buddhist man.<sup>12</sup> Of the three challenges, only two involved legal proceedings. While those cases challenged the use of brain criteria to determine death, there appears to have been no court challenge to the specific medical criteria by which brain death is determined. Standards such as those put forth by ANZICS are thus important for their effects on medical practice.<sup>13</sup>

The laws in various countries are variable. In 1995, the United Kingdom uniquely defined brain death as brain-stem death, which is the irreversible loss of the capacity for consciousness together with the irreversible loss of the capacity to breathe.<sup>14</sup> This definition is used in some Commonwealth countries but not in Australia, New Zealand, or the United States.<sup>15</sup>

The definition of death in the United States, which is similar to the definition in Australia, states that “an individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation 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.”<sup>16</sup>

In some European countries, such as France, Italy, and Spain, and in Singapore, the required standard for diagnosing death by the brain criteria is zero blood volume transfer to the brain as shown by the use of angiography to produce an image of blood flow after the injection of contrast dye into the blood vessels supplying the brain.<sup>17</sup>

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<sup>10</sup>Eelco F. M. Wijdicks, “Brain Death Worldwide: Accepted Fact but No Global Consensus in Diagnostic Criteria,” *Neurology* 58.1 (January 8, 2002): 20.

<sup>11</sup>David Inwald, Immanuel Jakobovits, and Andy Petros, “Ethical Debate: Brain Stem Death—Consideration and Compromise Are Possible,” *British Medical Journal* 320.7244 (May 6, 2000): 1266–1268. Erin Maguire, “Orthodox Jews Sue to Keep Brain Dead Son on Life Support: DC Hospital Suing to Cease Life Support,” *The Bulletin* [Philadelphia], November 7, 2008, <http://www.freerepublic.com/focus/news/2128098/posts>.

<sup>12</sup>Megan Tench, “After Buddhist Dies, Legal Battle Continues,” *Boston Globe*, December 3, 2006, [http://www.boston.com/yourlife/health/other/articles/2006/12/03/after\\_buddhist\\_dies\\_legal\\_battle\\_continues/](http://www.boston.com/yourlife/health/other/articles/2006/12/03/after_buddhist_dies_legal_battle_continues/).

<sup>13</sup>ANZICS, *Statement on Death*.

<sup>14</sup>UK Department of Health, *Code of Practice*.

<sup>15</sup>ANZICS, *Statement on Death*, 9.

<sup>16</sup>National Conference of Commissioners on Uniform State Laws, *Uniform Determination of Death Act*, 1980, <http://www.law.upenn.edu/bll/archives/ulc/fnact99/1980s/udda80.htm>.

<sup>17</sup>One of my students, Dr. Colin Ong, an emergency care physician from Singapore, explained the situation in Singapore in relation to requiring blood flow testing. I visited

The gold standard is referred to as the “four-vessel test,” in which the dye is injected into both carotid arteries and both vertebral arteries.<sup>18</sup> Other forms of imaging, such as Doppler ultrasound, may also demonstrate the absence of intracranial blood flow. The major advantages of this standard are greater certainty in the diagnosis and easier communication with the family. A medical team can use images from the tests to show family members that the patient’s brain is completely dead because it lacks a blood supply.

Being able to show relatives an image indicating lack of blood supply to the brain is important, because many people do not accept that brain death is really death. Many family members who consent to organ donation still hold that the patient was only “really dead” when the heart finally stopped beating. Undertaken at the Westmead Hospital in Sydney, in the Australian State of New South Wales, a study of the relatives of brain-dead patients reported that of the 50 percent who responded to a questionnaire, 36 percent said that they had doubts about whether their relative was dead, 66 percent said that they felt emotionally that the patient was still alive at the time organs were requested, 52 percent said that they would prefer x-ray images, diagrams, a model, or pictures to help explain, and 36 percent said that they had insufficient information.<sup>19</sup> It is worth noting that organ donation among Australian aboriginal people is almost nonexistent, and there is little indigenous support for the practice. There are cultural complexities and end-of-life rituals that make the decision to donate organs difficult, but these issues do not preclude a family from making the decision to donate organs at the end of life.<sup>20</sup>

In Japan, the clinical tests must be supplemented by an electroencephalogram indicating an absence of neurological activity in the brain, a so-called “flat EEG.”<sup>21</sup>

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intensive care units in France myself and observed the required practice of blood flow testing, and other authors refer to similar requirements in several countries. See Amir Halevy and Barauch Brody, “Brain Death: Reconciling Definitions, Criteria, and Tests,” *Annals of Internal Medicine* 119 (September 15, 1993): 519; and James Tibballs, “The Non-Compliance of Clinical Guidelines for Organ Donation with Australian Statute Law,” *Journal of Law and Medicine* 16.2 (October 2008): 335–355. See also G. Saposnik et al., “Problems Associated with the Apnea Test in the Diagnosis of Brain Death,” *Neurology India* 52.3 (September 2004): 342; R. Raper and M. Fisher, “Brain Death and Organ Donation—A Point of View,” *Anaesthesia and Intensive Care* 23.1 (February 1995): 16; Tibballs, “The Non-Compliance of Clinical Guidelines.”

<sup>18</sup>Sam Shemie et al., “Brain Blood Flow in the Neurological Determination of Death: Canadian Expert Report,” *Canadian Journal of Neurological Sciences* 35.2 (May 2008).

<sup>19</sup>I. Y. Pearson et al., “A Survey of Families of Brain Dead Patients: Their Experiences, Attitudes to Organ Donation and Transplantation,” *Anaesthesia and Intensive Care* 23.1 (February 1995): 88–95.

<sup>20</sup>D. Stephens, “Exploring Pathways to Improve Indigenous Organ Donation,” *Internal Medicine Journal* 37.10 (October 2007): 713–716.

<sup>21</sup>M. Morioka, “Reconsidering Brain Death: A Lesson from Japan’s Fifteen Years of Experience,” *Hastings Center Report* 31.4 (July 1, 2001): 41–46.

## **New Standards That Allow for Continuing Function of the Brain**

Applying the Australian definition, ANZICS states,

Determination of brain death requires that there is unresponsive coma, the absence of brain-stem reflexes and the absence of respiratory centre function, in the clinical setting in which these findings are irreversible. In particular, there must be definite clinical or neuroimaging evidence of acute brain pathology (e.g., traumatic brain injury, intracranial hemorrhage, hypoxic encephalopathy) consistent with the irreversible loss of neurological function.<sup>22</sup>

The Australian standard does not require a test to show an absence of blood supply to the brain. In its reliance on the testing of some brain-stem functions, the standard leaves open the possibility that other parts of the brain may still function. For example, *ANZICS Statement on Death and Organ Donation* asserts that the following functions, which are known to be mediated by the brain, are consistent with a diagnosis of brain death by the above criteria: sweating, blushing, and tachycardia (abnormal heart rhythm); normal blood pressure without pharmacological support; and the absence of diabetes insipidus. The absence of diabetes insipidus indicates normal functioning of the osmolar control mechanism, which is regulated by the midbrain and operates through the hypothalamic-pituitary axis. The medical criteria applied here may be consistent with the legal definition of death in the United Kingdom—death of the brain stem only—but are not consistent with the legal definitions of death in Australia, the United States, and Canada, which require irreversible loss of all brain function.

Numerous articles in the literature provide lists of functions of the brain continuing in persons who are diagnosed as dead by the clinical criteria.<sup>23</sup>

### **The Apnea Test and Brain Damage**

Concern has been raised by some intensive care and critical care practitioners that the apnea test, which is used to diagnose brain death prior to organ donation, may in fact cause damage to the brain.<sup>24</sup> Apnea is the inability to breathe unaided. In

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<sup>22</sup> ANZICS, *Statement on Death*, 11.

<sup>23</sup> A. Grenvik et al., "Cessation of Therapy in Terminal Illness and Brain Death," *Critical Care Medicine* 6.4 (August 1978): 284; D. Fiser et al., "Diabetes Insipidus in Children with Brain Death," *Critical Care Medicine* 15.6 (June 1987): 551; M. Grigg et al., "Electroencephalographic Activity after Brain Death," *Archives of Neurology* 44.9 (September 1987): 948; A. Barelli et al., "Do Brainstem Auditory Evoked Potentials Detect the Actual Cessation of Cerebral Functions in Brain Dead Patients?" *Critical Care Medicine* 18.3 (March 1990): 322; R. Truog and J. Fackler, "Rethinking Brain Death," *Critical Care Medicine* 20.12 (December 1992): 1705; Halevy and Brody, "Brain Death: Reconciling Definitions," 519; R. Truog, "Is It Time to Abandon Brain Death?" *Hastings Center Report* 27.1 (February 1997): 29; D. Shewmon, "Recovery from 'Brain Death': A Neurologist's Apologia," *Linacre Quarterly* 64.1 (February 1997): 30.

<sup>24</sup> Saposnik et al., "Problems Associated with the Apnea Test," 342; Raper and Fisher, "Brain Death and Organ Donation," 16; Tibballs, "Non-Compliance of Clinical Guidelines."

apnea testing, ventilation is reduced to cause the level of carbon dioxide in the blood to rise. The problem is that the increasing carbon dioxide level also causes dilation of brain blood vessels if the brain is still alive. The resulting increase in blood flow increases pressure inside the skull (intracranial hypertension), which opposes further blood flow and may result in brain death.

The skull is a rigid container (box), and 90 percent of the contents are three incompressible tissues: brain tissue (80 percent of volume), blood (5 percent), and cerebrospinal fluid (5 percent). Hence, if one component increases in volume, another must decrease or exit the skull.<sup>25</sup> The apnea test therefore should not be performed if other tests are available. Arguably the apnea test should never be done, because it is not therapeutic and it risks harm. Instead tests demonstrating the absence of intracranial blood flow are required by 40 percent of guidelines in seventy countries; these tests include radionuclide perfusion scanning (scintigraphy), and four-vessel cerebral angiography (of both carotid and both vertebral arteries).<sup>26</sup>

Dr. James Tibballs suggests that it would be better to mandate a test for brain perfusion to diagnose whole-brain death before performing the apnea test. The perfusion test would avoid causing harm to the patient or even death of the brain, the condition it aims to diagnose; it would also eliminate confounding factors, strengthen the diagnosis of whole-brain death, and provide an image to help convince family members and health care personnel that organs are not being taken from donors who are not truly dead.<sup>27</sup>

In an address to the 2009 Colloquium of the Australian Catholic Association of Catholic Bioethicists, Dr. Geoffrey Dobb, chairman of the ANZICS Committee on Organ and Tissue Donation, argued that the apnea test would never be done on someone who was not thought to have already sustained death of the brain.<sup>28</sup> It suggests that the apnea test is somewhat akin to the symbolic tap on the skull of a dead Pope with a silver hammer, reportedly to declare that death has occurred after the diagnosis has been made. But Dobb's assertion seems to challenge the rationale

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<sup>25</sup>This is referred to as the Monro-Kellie hypothesis. Tibballs, "Non-Compliance of Clinical Guidelines."

<sup>26</sup>Ibid.

<sup>27</sup>Presentation by James Tibballs in a debate on "The Medical Determination of Death," National Colloquium for Catholic Bioethicists, January 27, 2009, John Paul II Institute for Marriage and Family, Melbourne.

<sup>28</sup>Presentation by Geoffrey Dobb in the debate at the 2009 colloquium. Dr. Dobb made the comment in response to the paper presented by Dr. Tibballs, who raised concern about the risk of brain damage caused by the apnea test. The proceedings have not been published. However, *The ANZICS Statement on Death and Organ Donation* states that the apnea test should not be done on a patient until negative results of clinical tests for brain function have been obtained. At the 2010 National Colloquium for Catholic Bioethicists, Dr. Graeme Duke, director of intensive care at the Western Hospital in Melbourne, Australia, said that because of the risk of brain damage from the apnea test, he does not do the test until he has a negative result for a four-vessel brain-blood perfusion test.



for using the apnea test to diagnose death of the brain, and indicates that other tests should be used to diagnose loss of all brain function prior to apnea testing. Either the apnea test is done after death has been determined, in which case it has no use, or it is done when the patient may still be alive and it may cause brain damage.

### **Problems with the Standard Clinical Criteria**

These are the problems, then, in advising people about the diagnosis of death by brain criteria and providing a satisfactory explanation on the basis of our traditional Catholic understanding of the human person: First, there are differences in how various jurisdictions define death and what medical criteria they accept for diagnosing it. Second, standard medical criteria permit diagnosis of death by the brain criteria even though some functions of the brain continue, and blood flow tests that would give much greater certainty to the diagnosis are not routinely used except in those countries that require them. Third, test results currently used do not help doctors explain how someone who looks alive, breathes (with assistance), and still has a functioning heart and spinal reflexes can be dead. Fourth, the apnea test, one of the tests routinely used to diagnose death by the brain criteria, may damage the brain of a person whose brain is not already dead.

### **Abandoning the Loss-of-Integration Concept for the Mode-of-Being Concept**

In addition to problems with the clinical criteria for diagnosing brain death, there are problems with the definition itself, which holds that a person is dead when all functions of the brain have permanently ceased. Arguments by Alan Shewmon and others—that the body remains integrated even if a medical diagnosis of death by the brain criteria has been made—influenced the U.S. President’s Council on Bioethics to abandon the notion of integration as the philosophical explanation of death by the brain criteria in 2008.<sup>29</sup> Up to then, the explanation that death of the brain is associated with loss of the integrated functioning of the body was widely accepted; it was affirmed in 1981 by the President’s Commission,<sup>30</sup> was readily accepted by the Catholic Church, and remains the basis for the Church’s acceptance of the diagnosis of death by the brain criteria.

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<sup>29</sup>See, for example, the following works by D. Alan Shewmon: “Mental Disconnect: ‘Physiological Decapitation’ as a Heuristic for Understanding ‘Brain Death,’” in *The Signs of Death: The Proceedings of the Working Group, 11–12 September 2006*, ed. Marcelo Sánchez Sorondo, Scripta Varia 110 (Vatican City: Pontifical Academia Scientiarum, 2007), 292–333, [http://www.vatican.va/roman\\_curia/pontifical\\_academies/acdscien/documents/newpdf/sv110.pdf](http://www.vatican.va/roman_curia/pontifical_academies/acdscien/documents/newpdf/sv110.pdf); “Brain-Body Disconnection: Implications for the Theoretical Basis of Brain Death,” in *Finis vitae: Is Brain Death Still Life?* ed. R. De Mattei (Rome: Consiglio Nazionale delle Ricerche, 2006), 211–250; and “The Dead Donor Rule: Lessons from Linguistics,” *Kennedy Institute of Ethics Journal* 14.3 (September 2004): 277–300. See also President’s Council on Bioethics, *Controversies in the Determination of Death*.

<sup>30</sup>President’s Commission, *Defining Death*.

The Australian National Health and Medical Research Council has recently restated its support for the integration view. It explains death by the brain criteria in *Organ and Tissue Donation after Death, for Transplantation*:

The death of a person is understood to consist of the irreversible loss of the integrated and coordinated life of the person as a single living organism. When this functional unity is lost irreversibly, the person has died, even if “life” continues at the sub-personal level of cells, individual organs or isolated physiological systems. A body that lacks all function of the brain lacks this intrinsic unified organisation, even though it may retain some degree of organisation due to the maintenance of some functions by technological means.<sup>31</sup>

The NHMRC guidelines do not require ancillary tests to establish loss of blood flow, but do place emphasis on neuroimaging to determine the extent of brain injury. The guidelines also recognize that clinical brain-stem tests have a place only to show that the known destruction of the cerebrum and cerebellum extends to include the brain stem; the guidelines also recognize that brain-stem tests are confirmatory only for a known pathway of damage in which loss of blood flow results in total destruction.<sup>32</sup>

The NHMRC thus supports the view that the Church has taken. NHMRC and ANZICS differ somewhat in emphasis, with ANZICS depending more on clinical tests than on neuroimaging. The NHMRC also differs from the President’s Council in relation to loss of integration of the body as a result of loss of all brain function.

In 2000, Pope John Paul II wrote,

It is a well-known fact that for some time certain scientific approaches to ascertaining death have shifted the emphasis from the traditional cardio-respiratory signs to the so-called “neurological” criterion. Specifically, this 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. With regard to the parameters used today for ascertaining death—whether the “encephalic” signs or the more traditional cardiorespiratory signs—the Church does not make technical decisions. She limits herself to the Gospel duty of comparing the data offered by medical science with the Christian understanding of the unity of the person, bringing out the similarities and the possible conflicts capable of endangering respect for human dignity.<sup>33</sup>

In 2006, the Pontifical Academy of Sciences addressed the issue of doubts about death as diagnosed by the brain criteria and argued for the following conclusions:

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<sup>31</sup>National Health and Medical Research Council [Australia], *Organ and Tissue Donation after Death, for Transplantation: Guidelines for Ethical Practice for Health Professionals* (Canberra: NHMRC, 2007), [http://www.nhmrc.gov.au/\\_files\\_nhmrc/file/publications/synopses/e75.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/e75.pdf).

<sup>32</sup>Ibid.

<sup>33</sup>John Paul II, Address to the Eighteenth International Congress of the Transplantation Society (August 29, 2000), n. 5, original emphasis.

- There is not more than one form of death.
- “Brain death means the irreversible cessation of all the vital activity of the brain (the cerebral hemispheres and the brain stem). This involves an irreversible loss of function of the brain cells and their total, or near-total, destruction. The brain is dead and the functioning of the other organs is maintained directly and indirectly by artificial means.”
- Loss of all brain function is death because it is associated with loss of integration of the body as a single whole.
- Death by the brain criteria can be diagnosed with certainty only with evidence that there is no blood supply to the brain.
- The “established clinical criteria” are in most circumstances a reliable indicator for the loss of all brain function.<sup>34</sup>

The 2008 report by the President’s Council was, therefore, a significant development, for the council’s rejection of the integration view ended the existing consensus between the secular world and the Church on brain-death criteria. The Council wrote,

There remains considerable public confusion, both about the meaning of the term “brain dead” and about its relation to the death of a human being. There is persistent dissent by some clinicians, philosophers, and other critical observers who have never been convinced that “brain death” is, indeed, the death of the human being. There are, as well, pressures against insisting that declaring death, or at least “organ donation eligibility,” requires the irreversible loss of function in the whole brain. And, perhaps most important, there are critics who have published evidence of ongoing integrated bodily activities in some persons meeting the criteria of “whole brain death” and who have claimed that this evidence invalidates the rationale for today’s consensus position.<sup>35</sup>

The majority report of the Council goes on to abandon the integration view on which Church teaching is based. Council members reject the integration view on biological grounds largely on the evidence of Shewmon and his collaborators.

For the integration view they substitute what they call the mode-of-being view: that what an organism “does” distinguishes it from nonliving things, and what it does distinguishes a *living* organism from the dead body it becomes when it dies. They claim that the work of the organism, expressed in its commerce with the surrounding world, depends on three fundamental capacities: (1) openness to the world, that is, receptivity to stimuli and signals from the surrounding environment; (2) the ability of the organism to act upon the world to obtain selectively what it needs; and (3) the basic felt need that drives the organism to act as it must to obtain what it needs and what its openness reveals to be available.<sup>36</sup>

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<sup>34</sup>Pontifical Academy of Sciences, “Why the Concept of Brain Death Is Valid as a Definition of Death: Statement by Neurologists and Others and Response to Objections,” included in an excerpt from *Signs of Death*, ed. Sorondo, [http://www.vatican.va/roman\\_curia/pontifical\\_academies/acdscien/2008/excerpt\\_signs\\_of\\_death.pdf](http://www.vatican.va/roman_curia/pontifical_academies/acdscien/2008/excerpt_signs_of_death.pdf).

<sup>35</sup>President’s Council on Bioethics, *Controversies in the Determination of Death*, 6.

<sup>36</sup>*Ibid.*, 61.

The majority report concludes that “appreciating these capacities as mutually supporting aspects of the organism’s vital work will help us understand why an individual with total brain failure should be declared dead, even when ventilator-supported ‘breathing’ masks the presence of death.” The council thus abandons the integration view and in its place adopts the mode-of-being view, which requires the living being to be receptive to stimuli, to act upon the world to obtain what it needs, and to be driven by basic felt needs.<sup>37</sup>

There may be a degree of opportunism in the council’s reliance on the Shewmon view. Shewmon does not support the mode-of-being view put forward by the council; he argues for a more restrictive view that would exclude diagnoses of death by the brain criteria. Tragically, his arguments have been used to support even more liberal proposals for the determination of death.

Shewmon’s empirical argument against the view that brain death results in total loss of integration is summarized in the following passage:

It takes only a single property at the level of the “organism as a whole” to prove that there is a “whole.” But the bodies of TK [a patient] and other long-term survivors in brain death demonstrate many holistic properties, such as, for example, complex homeostasis of hundreds if not thousands of interacting chemicals and enzymes, assimilation of nutrients and elimination of wastes, proportional growth, maintenance of body temperature (albeit subnormal and with the help of blankets), wound healing, overcoming of infections, ability to recover from illnesses serious enough to require hospitalization and be discharged home again, systemic stress responses to noxious stimuli, feedback balance of various endocrine functions, etc.<sup>38</sup>

Some of these functions, such as maintenance of the endocrine system, may indeed occur in patients in whom death has been diagnosed by the clinical criteria alone. This occurrence is, however, an argument against relying on the clinical criteria by which death of the brain may be diagnosed even though some brain function continues.

As I argued earlier, the clinical criteria are not sufficient. For instance, the clinical criteria would permit diagnoses of death in patients who do not develop diabetes insipidus, the absence of which indicates that endocrine functions continue to be moderated by the hypothalamic pituitary axis within the brain. Such patients should not be considered dead according to the legal and ethical definition of irreversible loss of all function of the brain.

I am therefore puzzled as to whether Shewmon’s empirical observations of integrative functions in those diagnosed as dead according to the brain criteria are due to widespread but improper diagnosis by the clinical criteria alone, which permits the diagnosis even though some functions of the brain continue. If so, then Shewmon’s argument is not a sufficient basis for rejecting the loss-of-integration

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<sup>37</sup> Ibid.

<sup>38</sup> Alan Shewmon, “Mental Disconnect: ‘Physiological Decapitation’ as a Heuristic for Understanding ‘Brain Death,’” in *Signs of Death*, 292–333.

thesis supported by the Church. Rather, it is an argument for stricter medical criteria for determining the irreversible loss of all brain functions.

A second puzzle is Shewmon's inclusion, in his list of integrative functions in those who are dead according to the brain criteria, of functions such as wound healing, homeostasis, assimilation of nutrition, waste elimination, and the overcoming of illness and infection. Are these really activities of the organism as a whole in the sense that John Paul II meant when he referred to the integrative capacity of the individual organism? Are such functions sufficient for us to say that "the unitary and integrated whole that is the personal self" is continuing to exist?

Our problem is, as John Paul II asserted, that no scientific technique or empirical method can identify directly the separation of the life principle, or soul, from the body, which is death.<sup>39</sup> At best we are relying on evidence that the body is no longer integrated and that the disintegration is permanent. The assumption is that, were the body to continue to be informed by a human soul, that connectedness would be evident in the body's integrated functioning.

Shewmon's observation raises the question as to what counts as integrated functioning of the body. We can refer to the functions of clusters of cells in the body, the functions of complex organs, and even the interrelated functions of organs, but do such functions indicate the unitary and interrelated whole that is the personal self?

In 2008, I chaired an Australian government committee that developed national ethical guidelines for the care of people who are in an unresponsive or minimally responsive state. It was my conviction that when there was some brain function in circumstances of unresponsiveness, we needed to give patients the benefit of the doubt and continue to treat them with the full respect due to human beings. That view was based in part on the fact that some people had recovered responsiveness, and even meaningful communication, after prolonged periods of unresponsiveness.

I asked myself this question, however: Suppose biomedical technology developed to a point where we could identify a condition from which no one had ever recovered responsiveness, and suppose we knew with certainty that no thought processes were occurring within a patient's body and none were possible in the future. Suppose further that some brain functions continued in the patient. Would it be reductionist to consider such a person dead?

The teaching of the Church is clearly that such a person is an integrated whole and must be considered a living human being. The committee decided unanimously to favor a presumption for continued nutrition and hydration for patients in an unresponsive state unless the method of delivery became overly burdensome.<sup>40</sup>

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<sup>39</sup> John Paul II, Address to the Eighteenth International Congress of the Transplantation Society, n. 4.

<sup>40</sup> National Health and Medical Research Council [Australia], *Ethical Guidelines for the Care of People in Unresponsiveness (Vegetative State) or a Minimally Responsive State* (Canberra: NHMRC, 2008), [http://www.nhmrc.gov.au/\\_files\\_nhmrc/file/publications/synopses/e81.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/publications/synopses/e81.pdf).

I suspect, however, that circumstances like those I imagined would have influenced the committee to decide differently.

As a Catholic, I am opposed to the reductionism that would consider such a person dead. However, I am not convinced that we are guilty of reductionism if we claim that wound healing, homeostasis, assimilation of nutrition, waste elimination, and the overcoming of illness and infection are not sufficient evidence of the unitary and interrelated whole that is the personal self. The notion of the unitary and interrelated whole that is the personal self does require something more.

On the other hand, I am inclined to think that we must give the benefit of the doubt to a patient who retains some brain functions, because we do recognize empirically that brain functions are associated with the integration of the entire organism. This is not to say that a person is reducible to his or her brain function, but that empirically some brain function is essential to integration of the entire human body.

Brain function is essential because the two systems of the body that communicate between the parts of the body, the neural and endocrine systems, both rely on the brain to mediate them. Without at least some brain function, all the parts of the body are no longer in communication with one another, and their functions cease to interrelate. Functionally, a body without brain function has lost integration in the sense that the parts can no longer communicate with one another other as a unified whole.

In this respect, Shewmon's arguments against adopting the brain criteria for death have not served us well, because the integration to which they refer is not a communicative notion but a lesser notion that seems to have little to do with the separation of the life principle, or soul, from the body. It does seem important that *integration* mean at least "intercommunication."

### **Donation after Cardiac Death**

A further development related to the determination of death is a return to defining death by the irreversible loss of circulation, or "cardiac death." In many ways this may be a helpful development, because defining death by the loss of circulation creates the possibility that more organs will become available for transplantation. Only a small proportion of people die after catastrophic brain injury and with life-support by a ventilator—the two essential circumstances for organs to be made available after death as defined by the brain criteria. Many more people die after failure of the circulatory system. The circulatory criteria are also helpful because they avoid some of the conceptual difficulties of defining death by the brain criteria. People more readily accept that death has occurred when the heart has stopped beating permanently.

However, the diagnosis of death by the circulatory criteria also has some problems. The first problem is the practice of undertaking interventions before death to make organs available after death. Such interventions include the administration of drugs to prevent blood from clotting after it ceases to flow, and the surgical placement of large tubes in the femoral arteries in the groin. The tubes are used to flush the major organs with a cool preserving solution as soon as death has been diagnosed,

but the arteries are difficult to access after death, when blood flow has stopped and there is no blood pressure.

A second problem is the lack of agreement over how long circulation must have ceased before its loss is irreversible and death can be diagnosed. The time varies depending on the cause of death and the age of the patient. Children, for example, can recover after a much longer loss of circulation than adults. The question of irreversibility is likely to arise when death has been diagnosed by the loss of circulation after life support has been withdrawn. Life support may include the administration of inotropic drugs that sustain heart function or the use of a ventilator.

The law requires that the loss of circulation must be irreversible for a diagnosis of death. If the loss of circulation is a result of withdrawal of a treatment, the question of irreversibility arises. Could the patient not be resuscitated and the treatment re-applied to re-establish circulation? If this were possible, the loss of circulation would not be irreversible.

Finally, it is important that those involved in transplantation be kept separate from those involved in the decisions to withdraw life support and diagnose death. However, the transplant team must be notified and involved prior to death to make it possible to obtain major organs before they are badly damaged by being left warm and without blood flow after circulation has ceased.

### **A Catholic Response to Determining Death**

The American bishops accept that the determination of death should be made by a physician or competent medical authority in accordance with responsible and commonly accepted scientific criteria.<sup>41</sup> The *Ethical and Religious Directives for Catholic Health Care Services* make no more demand than that.

Catholic Health Australia's *Code of Ethics Standards*, following John Paul II, explains death as determined by the brain criteria in these terms:

The death of a human being consists in that total disintegration of the unitary and integrated whole that is the personal self. Although death is an event which cannot be directly identified, biological signs or "clinical markers" that inevitably follow can be recognised with increasing precision. These clinical markers indicate the irreversible loss of the integrated and coordinated life of the person as a single living organism.<sup>42</sup>

The CHA document goes on to warn about pressures to change the criteria for determining death from the loss of all brain function to the loss of some brain function, and notes the need to resist such a change and to try to perfect the diagnostic criteria for death.

The question for us today is whether the accepted standard for determining death by the brain criteria, as it is explained by the President's Council (and by ANZICS, which sets the Australian medical standard) is acceptable or whether it has developed along the lines the CHA warns against. It is certainly the case that

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<sup>41</sup>USCCB, *Ethical and Religious Directives*, 62.

<sup>42</sup>Catholic Health Australia, *Code of Ethical Standards*, para. 5.21, 46–47.

the President's Council rejected the philosophical explanation on which the Church has relied in its acceptance of death as determined by the brain criteria. Instead the Council proposed an entirely reductionist view that is more consistent with the current practice of diagnosing death by the clinical criteria, which allow that some brain functions may continue in a person who has been diagnosed as dead in this way.

The literature identifies several different views of death:<sup>43</sup>

- The *disaggregator view* holds that death is a process, not a single event, and that the key question is when removal of organs may begin. Peter Singer, for example, holds that the definition of death is not the issue: We can treat someone as dead and take their organs if they are no longer able to experience harm; we do not have to declare that they actually are dead. Some, like Singer, thus reject what is called the dead-donor view.<sup>44</sup>
- The *integrationist view*—affirmed by John Paul II, the Pontifical Academy of Sciences, and the 1981 President's Commission—holds that the loss of *all* brain function constitutes the defining criterion for death.<sup>45</sup>
- The *somaticist view*, held by Shewmon and others, considers the defining criterion for death to be the body's loss of integration at the organ level.<sup>46</sup>
- The *mentalist view*, held by Robert Veatch and others, is that permanent lost consciousness or irreversible coma is the defining criterion for death.<sup>47</sup>
- The *mode-of-being view*, put forth for the first time in 2008 by the President's Council, holds that death has occurred when no spontaneous respiration and no other signs of interaction with the environment are present.<sup>48</sup>

The Christian tendency to accept the integrationist view is based on the notion that the human being is an embodied spirit and the soul is the form of the body—the soul forms matter into life. Irreversible loss of the integration of the body indicates that the matter is no longer formed or informed by a soul. We can thus link a traditional understanding (that death is the separation of the soul from the body) with an integrationist view. Given that the soul is the substantial form of the body, the life

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<sup>43</sup>I owe much of this analysis to Robert M. Veatch, "The Death of Whole-Brain Death: The Plague of the Disaggregators, Somaticists, and Mentalists," *Journal of Medicine and Philosophy* 30.4 (August 2005): 353–378. This analysis was previously published in Nicholas Tonti-Filippini, "New Issues in Organ Donation," *Linacre Quarterly* 73.4 (November 2006).

<sup>44</sup>Peter Singer, *Rethinking Life and Death: The Collapse of Our Traditional Values* (New York: St. Martin's Griffin, 1994), and "Is Our Changing Definition of Death for the Better?" *USA Today*, May 18, 1995, 15A, available at <http://www.utilitarian.net/singer/by/19950518.htm>.

<sup>45</sup>See, for example, John Paul II, Address to the Eighteenth International Congress of the Transplantation Society; Pontifical Academy of Sciences, "Why the Concept of Brain Death Is Valid"; and President's Commission, *Defining Death*.

<sup>46</sup>See, for example, Shewmon, "Brain and Somatic Integration."

<sup>47</sup>See Veatch, "Death of Whole-Brain Death."

<sup>48</sup>President's Council on Bioethics, *Controversies in the Determination of Death*.



and the type of life imply the presence of a soul—in our case, an intellectual soul. Christians cannot say confidently that the soul has separated from the body while the body remains actively integrated in the sense that the organs are in communication with one another and are functionally related as a single unity.

The point I wish to add to this conclusion is that the notion of integration implies that the parts of the whole are intercommunicative—they communicate with one another. Empirically, the brain is necessary for this intercommunication, because it mediates the two systems that are essentially responsible for that intercommunication, the neural and endocrine systems.

The debate over this position among Christians in some way mirrors an age-old debate: St. Augustine (influenced by Plato) thought that there were many souls for different functions of the body and that there were two deaths—a death of the body and a death of the person. St. Thomas Aquinas (influenced by Aristotle) thought that the human being had only one soul and therefore only one death.

St. Augustine taught that when “the brain by which the body is governed fails,” the soul separates from the body: “Thus, when the functions of the brain which are, so to speak, at the service of the soul, cease completely because of some defect or perturbation—since the messengers of the sensations and the agents of movement no longer act—, it is as if the soul was no longer present and was not [in the body], and it has gone away.”<sup>49</sup>

What Augustine seems to have meant is that the person as we know him has died when the functions of the brain *that are at the service of the soul* cease completely. That is, Augustine thought that bodily life may continue even though the soul has departed. The departure of the immortal soul is what the Church then and now understands to be the death of the person, even though the person will be resurrected. Death of the person does not mean death of the immortal soul, of course, but rather the soul’s separation from the body.

The significance of Augustine’s position is that while the Church now believes that death is a single event that happens when the soul leaves the body, and that this is characterized by the complete loss of integration of the body, Augustine held that when the parts of the body that maintain thought and memory no longer function, the soul has departed, and therefore death of the person may precede death of the body. This is what is referred to in modern terms as the two-deaths view.

Augustine’s two-deaths view is different from St. Thomas’s, which has been Church teaching since the Council of Vienne (1311–1312)—namely, that it is the soul that forms, or informs, the body. On this view, John Paul II asserted that death is a singular event, not two events, that occurs when there is complete loss of integration. This happens when all parts of the brain have died. The contemporary view of the Church is that the departure of the soul is the death of the body and that what remains possesses only the nonintegrated life of the individual organs, rather than the life of the body as an integrated whole. Augustine, in contrast, acknowledged

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<sup>49</sup> Augustine, *De genesi ad litteram* 7.19 (Migne PL 34.365), quoted in Pontifical Academy of Sciences, “Why the Concept of Brain Death is Valid,” xxv.

that departure of the soul could occur even though the body continued to function and to live, the loss of the soul being reflected in the loss of capacity for thought and memory, not the loss of life of the body.

It is entirely consistent with the way in which the Church describes death to consider death the end of earthly life but not the end of the immortal soul. The Catechism thus states, “By death the soul is separated from the body, but in the resurrection God will give incorruptible life to our body, transformed by reunion with our soul. Just as Christ is risen and lives forever, so all of us will rise at the last day” (n. 1016).

It is a mystery to us what happens between death and resurrection. It is not at all clear that human beings experience life for a time as a soul only. There is no contradiction in referring to the death of the person and believing in resurrection of the body as the reuniting of an immortal soul with the body.

In contrast, however, the two-deaths, or mentalist, view (that irreversible loss of consciousness is the defining criterion of death) requires some significant conceptual leaps. It seems to involve, first, an acceptance of either materialism or dualism and, second, a rejection of the Boethius/Aquinas notion of the unity of the human person, with the soul as the substantial form of the body, as adopted by the Council of Vienne.

The two-deaths view also involves a medical leap in relation to consciousness and the observability of unconsciousness. In reality, the consciousness of another person is an inference we draw from the person’s behavior. Loss of consciousness is not an observable or measurable phenomenon. This prompts the question whether irreversible coma can be diagnosed while some brain functions continue. The evidence would suggest that it cannot.

For the Church, the significance of the body’s integration is that while integration exists, we are unable to hold that the soul has left the body, because integration provides evidence that the soul continues to form, or inform, the body as a united whole. The words “forming” and “informing” were used in the first decree of the Council of Vienne, which proclaimed the doctrine:

The only begotten Son of God, subsisting eternally together with the Father in everything in which God the Father exists, assumed in time in the womb of a virgin the parts of our nature united together, from which he himself true God became true man: namely, the human, passible body and the intellectual or rational soul truly of itself and essentially informing the body. . . . We, therefore, directing our apostolic attention, to which alone it belongs to define these things, to such splendid testimony and to the common opinion of the holy fathers and doctors, declare with the approval of the sacred council that the said apostle and evangelist, John, observed the right order of events in saying that when Christ was already dead one of the soldiers opened his side with a spear. Moreover, with the approval of the said council, we reject as erroneous and contrary to the truth of the catholic faith every doctrine or proposition rashly asserting that the substance of the rational or intellectual soul is not of itself and essentially the form of the human body, or casting doubt on this matter. In order that all may know the truth of the faith in its purity and all error may be excluded, we define that anyone who presumes

henceforth to assert defend or hold stubbornly that the rational or intellectual soul is not the form of the human body of itself and essentially, is to be considered a heretic.<sup>50</sup>

We can take from this doctrine that the ongoing causative effect of the soul is its informing of the body. Therefore, the relevant type of integration is a communication of information among all parts of the body. Because integration implies unity, the type of integration that is relevant is the transfer of information that keeps the body united and hence a single whole.

On these grounds, the transfer of information merely between one part of the body and another part may be insufficient to establish that the soul had not separated from the body. Furthermore, circulation in itself is not a transfer of information that integrates the body.<sup>51</sup> Rather, the circulatory system, like the endocrine system, is a means by which information might be transferred. Similarly, in a person lacking both a unified neural system and a unified endocrine system, healing of one part of the body might involve activities of other parts of the body, but these would be activities of parts only, rather than of the whole, and hence would not be integrative in the sense of preserving the unity of the whole.

Most of Shewmon's examples of integration in someone who lacks all brain functions do not involve integration in the sense of a communication that unites the parts of the whole. The examples do not provide evidence that the soul has not separated from the body. However, Shewmon's claim that a body that has suffered complete loss of all brain function can maintain homeostasis does challenge the integration explanation.

Homeostasis is the maintenance of "equilibrium in the body with respect to various functions, [such as blood pressure] and the chemical compositions of the fluids and tissues."<sup>52</sup> Homeostasis seems to involve the transfer of information in a way that keeps what is left of the body functioning as a single dynamic unit; one might thus conclude that it is evidence that the body is being maintained as a single functioning being with the parts in a functioning relationship to one another. I am troubled by this, although in general I do not think Shewmon has been rigorous enough in defining what he considers to be integration. Shewmon employs evidence of integration as evidence that the soul remains, and he therefore needs to use *integration* in the relevant sense of "preserving the functional unity of the body," since this is the effect of the soul's continuing to "form" the body. I am inclined to conclude that functional unity of the body is unlikely when a major part, the brain, is no longer functioning. The remaining integration can only be partial.

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<sup>50</sup>*Decrees of the Ecumenical Councils*, ed. Norman P. Tanner, vol. 1 (London: Sheed and Ward, 1990), 361.

<sup>51</sup>The blood system is like a postal service that can carry mail, but for there to be communication, someone must actually post a letter. In the body the analogue of a letter would be the release of a hormone by the brain into the bloodstream to cause another part of the body to react.

<sup>52</sup>*Stedman's Medical Dictionary*, 27th ed. (Philadelphia: Lippincott Williams and Wilkins, 2000).

Shewmon's claims about homeostasis in people who have suffered loss of all brain function have been regarded as controversial and were not accepted by the Pontifical Academy of Sciences.<sup>53</sup> To support his claims, Shewmon made available the medical reports of a young man known in the literature as T. K., who was diagnosed as brain dead at the age of four years. By 1998, T. K. had survived the diagnosis of brain death for fifteen years and had "grown, overcome infections, and healed wounds."<sup>54</sup> Shewmon's evidence was accepted by the President's Council on Bioethics and given as their reason for rejecting the notion of loss of integration as an explanation for death by the brain criteria.<sup>55</sup> It is deeply troubling that the council used this evidence as a reason for abandoning the integration explanation for diagnosing death by the brain criteria. My view is that they did not give adequate consideration to the meaning of integration as evidence that the soul has not separated from the body.

Somaticists like Shewmon maintain that the body has no primary integrative organ and assert that if brain-stem-mediated somatic integration "counts" for life-death status, so should spinal-cord-mediated somatic integration. They argue that the body without brain function remains an integrated whole and therefore that loss of all brain function does not result in loss of an integrated whole. But Shewmon overlooks the intercommunicative meaning of integration. What he considers integrative is less than meaningful in the context of the separation of the life principle, or soul, from the body. If the soul is present, the parts are intercommunicative and the body remains a functional whole.

In 2008, the President's Council on Bioethics wanted to reaffirm the ethical propriety of the dead-donor rule and the ethical acceptability of the neurological criteria (total brain failure, including the brain stem) as well as the cardiopulmonary criteria (irreversible cessation of both cardiac and respiratory functions) for the diagnosis of death. The council rejected the use of patients in permanent vegetative states as organ donors. They also recognized two important positions on death: the integrationist view and the mode-of-being view. The council rejected the two-deaths approach (loss of consciousness and loss of bodily life).

The council majority rejected the integrationist view by accepting the somaticist view of integration. But instead of adopting the somaticist conception of death, they proposed a new view, the mode-of-being view. The council majority then placed emphasis on spontaneous breathing as evidence that the human mode of being is interaction with the environment; loss of spontaneous breathing is significant though not sufficient for a diagnosis of death if there is evidence of other aspects of the human mode of being, such as consciousness. Therefore, the medical determination of death by the mode-of-being view can occur without the loss of all brain function. All that is required is (1) evidence of the loss of spontaneous breathing and (2) no

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<sup>53</sup>Pontifical Academy of Sciences, "Why the Concept of Brain Death Is Valid."

<sup>54</sup>D. Alan Shewmon, "'Brainstem Death,' 'Brain Death' and Death: A Critical Re-Evaluation of the Purported Equivalence," *Issues in Law and Medicine* 14.2 (Fall 1998): 125–145.

<sup>55</sup>President's Council on Bioethics, *Controversies in the Determination of Death*.

evidence of interaction with environment. Loss of clinical brain-stem responses is taken as that evidence, provided that masking circumstances are excluded.

In contrast to the integrationist view, the mode-of-being view allows some brain functions (such as those of the hypothalamic pituitary axis in the midbrain) to be present in a person diagnosed as dead by the brain criteria. The mode-of-being view depends only on loss of spontaneous respiratory function and no evidence of brain-stem functions.<sup>56</sup>

The problem is that the Church has supported the notion of determining death by the brain criteria on the grounds that the brain is essential for the body to be an integrative whole. This requires evidence of loss of *all* brain function. It would appear that many in the medical community, however, including the majority on the former President's Council, reject the scientific basis of the integrationist view on the grounds that the body without a functioning brain retains some integration—that it is still an integrated whole. The alternative mode-of-being view, based on loss of breathing and consciousness, admits that integration and some brain function may continue in someone who is diagnosed as dead by the brain criteria. The mode-of-being view is most definitely not consistent with the doctrine established at the Council of Vienne.

In Australia, the adoption by ANZICS, too, of a standard that allows for diagnosis of death while some brain function continues seems to be on the same philosophical plane as the adoption by the President's Council of the mode-of-being view. The rejection of the philosophical approach taken by the Church indicates that as Catholics we can no longer rely on the secular determination of death by the brain criteria according to evidence that irreversible loss of all brain function has occurred. The secular medical standards would not seem to apply that definition strictly.

The chair of the President's Council, Edmund Pellegrino, basically jumped ship, rejecting not only the view of the council majority but also the position taken by the Church in favor of defining death by the irreversible loss of all brain function. He said in his minority report that defining death as separation of soul and body does not provide a working definition of death, and that lacking an adequate working definition of death means that the clinical determination of death by the brain criteria remains uncertain.<sup>57</sup>

Pellegrino asserted instead that the irreversible loss of circulation remains a more certain basis than the loss of all brain function for the determination of death. In effect, he reverted to the view espoused by the philosopher Hans Jonas in 1968 affirming the cardiorespiratory criterion.<sup>58</sup> Another view put forth in 1968 was that of the ad hoc Harvard Committee, which introduced brain death as a second, alternative criterion

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<sup>56</sup>Ibid.

<sup>57</sup>Ibid., 107–120.

<sup>58</sup>President's Commission, *Defining Death*. See Hans Jonas, "Against the Stream: Comments on the Definition and Redefinition of Death," in *Philosophical Essays: From Ancient Creed to Technological Man* (Englewood Cliffs, NJ: Prentice-Hall, 1974), 138.

for the determination of death.<sup>59</sup> In 1981, the President's Commission accepted the Harvard Committee view; the commission's report then informed the U.S. Uniform Determination of Death Act, which was approved in 1981.<sup>60</sup> This is a draft state law based on diagnosis of death by either the irreversible cessation of circulatory and respiratory functions or the irreversible loss of all brain functions. This standard was adopted more or less worldwide but is now under challenge by the medical practice approved now by the President's Council of accepting that some brain functions may continue after death by the brain criterion.

With Jonas, Pellegrino asserts that we do not know with certainty the borderline between life and death, and a definition cannot substitute for knowledge. Moreover, he notes, we have sufficient grounds for suspecting that the artificially supported condition of the comatose patient may still be a condition of life, however reduced. Thus, we have reason for doubting that a patient is completely dead even when all brain function is gone. In this state of marginal ignorance and doubt, the only course to take is to presume that life is still present.

Another dissenting member of the President's Council in 2009 was the philosophy professor Alfonso Gómez-Lobo. He argued, "If a body is able to process nutrition, eliminate waste, and exhibit proportional growth, homeostasis, etc., and moreover, it engages in these functions in an integrated manner, we shall correctly deem it to be alive. If it fails to do this, and starts to decompose and disintegrate, we will rightly judge it to be dead."<sup>61</sup> Gomez-Lobo claimed on this basis that loss of brain function does not equate with death.

There is a need to resolve the public confusion that has been generated, which is likely to become worse now that there is a division of opinion between the Church and British Law and those groups like ANZICS and the President's Council that have moved away from an integrationist view. The Church holds that death can be diagnosed on the basis of evidence that shows a complete loss of brain function, but that death may not be diagnosed if some function of the brain remains.

The current situation seems to be the one that Catholic Health Australia's *Code of Ethical Standards* warns about: changes are being made to the way that death is determined, "from the loss of *all* brain function to the loss of *some* brain function."<sup>62</sup> The code urges Catholic hospitals to resist pressures for such changes and try to perfect the diagnostic criteria for death.

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<sup>59</sup>Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, "A Definition of Irreversible Coma: Report," *Journal of the American Medical Association* 205.6 (August 5, 1968): 337–340.

<sup>60</sup>President's Council on Bioethics, *Controversies in the Determination of Death*. National Conference of Commissioners on Uniform State Laws, *Uniform Determination of Death Act*, adopted by the American Medical Association (1980) and the American Bar Association (1981), <http://www.law.upenn.edu/bll/archives/ulc/fnact99/1980s/udda80.pdf>.

<sup>61</sup>President's Council on Bioethics, *Controversies in the Determination of Death*, 96.

<sup>62</sup>Catholic Health Australia, *Code of Ethical Standards*, para. 5.23, 47.

In resisting such pressures, it remains important to ensure that so-called brain death is a term that is not used loosely or for anything other than the loss of all function of the brain. It is also important to distinguish between death by the brain criteria and irreversible coma or unresponsiveness.

As discussed above, the ANZICS statement and the NHMRC guidelines concede that clinical criteria alone do not establish loss of all function of the brain, but may indicate that a known process resulting in destruction of parts of the brain and evident by other testing and the medical history, has extended to include parts of brain stem. The clinical findings may be sufficient for the UK definition of death as brain-stem death, but they would appear not to be sufficient for the legal context in America, Canada, Australia, and New Zealand, which requires evidence of loss of *all* brain function.

To establish greater certainty that loss of all function of the brain has indeed occurred, Catholic hospitals could insist that ancillary tests, including brain perfusion tests, be done as a standard part of diagnosing death by the brain criteria. Furthermore, from a family perspective, potential donors and their families might be advised by the Church that in our pluralist society there are different views and different practices about death by the brain criteria, and that they have a right to insist that the apnea test not be done prior to a negative blood-flow test result, because the apnea test has no therapeutic benefit and may be harmful to the patient if some brain function remains.

Diagnosis of death by the brain criteria should, therefore, first involve imaging of blood flow to the brain to ensure that there is indeed loss of all brain function. This would also provide families with convincing images showing the lack of blood supply to the brain and would promote greater confidence that death had indeed occurred. Doing the blood flow test first would also prevent concerns about possible brain damage caused by apnea testing.

Key issues in relation to DCD in the circumstances of a controlled death also need to be resolved. First, it needs to be clear in each case that the decision to withdraw life support has been made independently, that the decision has been based on the genuine grounds that life support is either ineffective or overly burdensome, and that consent has been obtained to withdraw the support. Second, there needs to be a clear policy that establishes how soon cessation of circulation is considered irreversible, so that death may be declared and organ procurement begun. The policy needs to take account of the fact that cessation of circulation in children may be reversible for a much longer time than in adults and that the cause of death may be relevant. Also, if a heart is obtained for transplantation after cardiac death, the community may question whether the loss of circulation at the time of death was indeed irreversible.

Another issue that needs to be resolved is whether cessation of circulation must be irreversible or, on the other hand, only permanent on the grounds that resuscitation will not be attempted and life-support treatment will not be restored. It would be an odd situation if death could be declared and then a change of treatment decision resulted in the restoration of circulation.

The use of interventions before death to facilitate organ procurement of transplantable organs after death (such as femoral cannulation and treatment to prevent clotting) should be permitted only if the patient, while competent, has consented to such nontherapeutic procedures for the purpose of organ procurement and transplantation or if the family has good reason to think that this would be the patient's view. Such treatments are ethically similar to altruistic decisions to donate tissue while one is alive. They are nontherapeutic interventions that are not in the interests of the patients but are undertaken to facilitate major organ donation to someone else.