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Female Genital Mutilation

Female genital mutilation (FGM) is thought to be a custom practiced for the subjugation of women. The significance of FGM for practicing communities, however, is much more profound. The best hope of eradicating this practice lies in the recognition and comprehension of its cultural and social meanings.

The term 'female genital mutilation', also known as 'female genital cutting' or infrequently as 'female circumcision', encompasses "all procedures involving partial or total removal of the external female genitalia or injury to the female genital organs for non-medical reasons."¹ The term 'female circumcision' has largely been abandoned. It implies similarity with the male procedure, from which it is markedly different, far more invasive, and without any medical benefit albeit with numerous and frequent complications.

FGM is carried out on girls between the ages of 0 and 15 years and less frequently on adult women. Every year 3 million girls are thought to be at risk of FGM, with approximately 140 million estimated to have undergone the procedure.² The origins of the practice are shrouded in antiquity, with the earliest documentation of FGM dating back nearly six thousand years.³ This chronology sets the origins of the custom prior to the advent of all major contemporary religions, including Islam, with which FGM is erroneously associated. Prominent Islamic scholars have condemned FGM and ruled that it has no association with Islam.

Fortunately the practice is geographically circumscribed, with the highest prevalence in Africa and a few countries in Asia and the Middle East.⁴ It is also prevalent in migrant communities from these regions, but measures of its incidence are often conservative approximations, as research in this area has been limited. Both the prevalence and age of FGM are subject to regional variation within countries. However, the prevalence has been sufficient to warrant the attention of international health bodies such as the WHO, UNICEF and numerous women's rights groups.

The new WHO Interagency Statement

In 1997, the WHO, UNICEF and UNFPA issued a Joint Statement on Female Genital Mutilation.⁵ This statement has been replaced by a new statement, Eliminating Female Genital Mutilation – An Interagency Statement issued earlier this year.⁶ The new statement is based on latest research on the determinants of FGM, its typology and

adverse effects. It also highlights the social significance of the practice, and describes the elements necessary for the "complete abandonment" of FGM and "caring for those who have suffered, and continue to suffer, from its consequences".⁷ A wider group of UN agencies are signatories to the new statement, a testament to the increasing awareness and support for the eradication of FGM.

Typology

In the past, the definitions of the various types of FGM based on degree of severity, and invasiveness have been fraught with ambiguity. To address this issue, the new statement has revised the definitions and classified FGM into four types:⁸

Type I: Partial or total removal of the clitoris and/or the prepuce (clitoridectomy).

Type II: Partial or total removal of the clitoris and the labia minora, with or without excision of the labia majora (excision).

Type III: Narrowing of the vaginal orifice with creation of a covering seal by cutting and appositioning the labia minora and/or the labia majora, with or without excision of the clitoris (infibulation or Pharaonic circumcision).

Type IV: All other harmful procedures to the female genitalia for non-medical purposes, for example: pricking, incising, scraping and cauterization.

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The procedure is often carried out with little or no anaesthesia and without antiseptics. It is usually done by village midwives using razor blades or pieces of glass.⁹ The cut flesh is then held together using thread or thorns, and the legs may be bound together to facilitate healing. In case of Type III (infibulation), a straw is inserted posteriorly to allow a small opening to form after healing, to allow the elimination of urine and menstrual blood.¹⁰ The invasiveness and brutality of the procedure result in numerous immediate and long term complications. Immediate complications include bleeding, infection and pain. In severe cases, one or more of these complications may result in death. The long term consequences of FGM include recurrent reproductive and urinary tract infections, painful intercourse and obstetric complications.

In case of infibulation, the scar tissue may have to be incised for intercourse and child birth, and in most instances reinfibulation or re-stitching is done after delivery. Due to large family sizes in the majority of practicing communities, women may undergo several reinfibulations during their reproductive age, causing further mutilation and increasing the risk of complications. Women also undergo reinfibulation when they are divorced, widowed, and when separated from their husbands for long periods of time.¹¹

Cultural context

To the non-practicing majority, FGM appears to be a horrific act, and no interpretation may attempt to rationalize this practice. Yet the practice of FGM endures, and brutal as we may think it is, the perpetrators are always the parents and guardians (mostly grandmothers) of the girls who are subjected to it. What, then, is the ideology that drives these people to continue the practice? To comprehend this dilemma, we must understand the cultural context within which FGM is practiced. It is only this understanding and a resulting sensitivity to the issue that may enable us to formulate effective strategies to eradicate FGM.

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For practicing communities, FGM is “an assertive, highly meaningful act that emphasizes female fertility by de-emphasizing female sexuality.”¹² This is a complex concept alien to the non-practicing intelligence, but for some communities it is the coming of age ritual whereby girls embrace womanhood and prepare for the sacred act of procreation. In these communities, male circumcision and FGM occur concurrently symbolising the uncovering of male genitalia and the covering or veiling of female genitalia: this process “accomplishes the social definition of a child’s sex.”¹³ The procedure is followed by festivity and gifts for the child. There is a sense of social cohesion and the privilege of inclusion into the adult female circles

for the girls, who are then prepared for marriage. In many practicing cultures, girls who have not undergone FGM are considered un-marriageable. This is taboo as the social fabric is constructed on the family unit, formed by the union of man and woman through marriage.

Contrary to what we on the ‘outside’ believe, for these women FGM, with its perceived enhancement of fertility and virginity, is not seen as a manifestation of gender inequality. For them, it is an elevation of their status, from mere sexual partners and servants for their husbands, to the status of “mothers of men.”¹⁴ This perception has resulted in older women becoming the staunchest supporters and implementers of FGM. Another reason for their continued support may be their need to justify the mutilation they experienced themselves.

Due to its cultural significance, the social pressure to practice FGM makes it impossible for the few who wish to abolish the practice. The fear of stigmatisation and excommunication for the girls and their families is a major determinant of the persistence of FGM. It is therefore essential to understand the social context of this practice, and structure community oriented interventions based on local beliefs and perceptions regarding FGM.

Studies have provided evidence for increasing medicalization of FGM. For health professionals in practicing communities, an FGM procedure taking place in a controlled hospital environment, under sterile conditions with anaesthesia, may seem to be the lesser of the two evils, considering the alternative. However, this is not the solution, since acquiescence to FGM in any form is unacceptable, and the risk to the majority cannot be eliminated until the practice is completely uprooted.

To state it clearly, we are opposed to FGM not only on the basis of procedural brutality, but also on the basis of principle. This practice is wrong in principle: it violates basic human rights of children and women, such as the right to the highest attainable standard of health, the right to equality and non-discrimination on the basis of sex, the right to life when the procedure results in death, and the right to freedom from torture or cruel, inhuman or degrading treatment.¹⁵ But to try to abolish the practice, we must delve deeper into the psyche of those practicing FGM, understand their perspective, and speak to them in a manner that appeals to their mindset.

A recent six year follow-up study done to assess the effect of the criminalization of FGM in Egypt, showed no significant reduction in the practice.¹⁶ Despite the criminal law, 84.9% of participants reported having undergone FGM in the last six years. This finding bears proof that criminalization of a cultural custom is not sufficient to discourage its practice. It is important to understand the ideological framework in order to educate people and empower them, by providing the tools to affect a change.

Australian perspective

The emergence of FGM in traditionally non-endemic regions can be attributed to immigration and settlement of practicing communities in these areas. It is not possible in Australia to estimate accurately the extent of FGM in migrant communities. However, it is a fact that obstetricians and gynaecologists often encounter cases in their practice. Most of these cases are women who have been subjected to FGM in their countries of origin and present to clinics for obstetric care. In case of antenatal presentation, the preferred management of FGM is an elective reversal surgery to prevent obstetric complications. Rarely, adolescents and older women may also seek medical care as a result of complications of FGM.

Families residing in non-practicing countries who want FGM for their daughters most commonly have the procedure done while visiting their native countries. However, the possibility of FGM being practiced by communities while residing in Australia and other countries cannot be ruled out. For instance, there is some anecdotal evidence of the performance of FGM in Queensland.¹⁷ All states in Australia have criminal legislation regarding performance of FGM in the country as well as the prosecution of persons involved in taking a child abroad to have the procedure done.

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The way forward for non-practicing countries is to enhance research into this area, to estimate the magnitude of the problem, and to put in place specific legislation to ban the practice. However, criminalization of FGM is not the only solution, and we must adopt a culturally sensitive approach to educate and empower communities to opt out of FGM. As in the international context, this approach must be non-judgemental and supportive for the victims of FGM.

Parallels for FGM

It is probably the brutality of female genital mutilation, that makes one recoil in horror and which focuses international attention in an effort to abolish the practice. But in my view, there are other social evils that plague society in a similar albeit less traumatic way. I refer to the projection of the 'ideal' body shape in popular media, in the form of an anorexic and gaunt female model. Images that idealize undernourished models on the catwalk set a standard for all young women, especially highly impressionable teenagers. This phenomenon and the induction of progressively younger girls into modelling, is rapidly giving rise to a generation with a confused body image. Girls as young as 12 years of age are found to be dieting, depriving themselves of proper nutrition at an age when they are still growing up. The incidence of unhealthy eating habits and disorders such as anorexia and bulimia is also rising.

A major reason for this epidemic is media promotion of an unhealthy 'ideal body image' coupled with peer pressure. As well, mothers may encourage such behaviour in their daughters. It may be argued that at least in this case there is the element of choice, whereby girls choose to subject themselves to tedious dieting regimens. On the other hand, FGM may be inflicted upon adolescents without their consent. True as this can be, the dominant paradigms of peer pressure and societal expectations are common to both practices. In one instance, a teenage girl from an FGM practicing community who had escaped genital mutilation opted to have the procedure done when she was older, in an attempt to "look like her peers." Does this not draw a parallel between unhealthy dieting practices and FGM? Girls undergo the procedure under parental and peer pressure. It is their attempt to belong, driven by a fear of ostracism.

Another example of atrocities suffered by women in the name of tradition was the practice of foot binding in China which began in the 10th century. It was inflicted on girls between 4 and 7 years of age. The foot was soaked and then wrapped with all but the big toe folded under the foot, using long bandages, which were progressively tightened. The arches of the foot were broken which caused the foot to shrink in size. This process continued for three or more years. The result was a deformed tiny foot about three inches in length referred to as the "lotus foot." The child suffered excruciating pain, and often infection and gangrene.¹⁸

Like FGM, this practice also had deep social and cultural roots, and was used as a means for social control over women for around 1000 years. Women with bound feet were less independent, more easily controlled, and seen as more desirable for marriage. Bound feet were a status symbol of the affluent, and were thought to empower women by enhancing their social standing. This practice was ultimately abolished, but that took political will and an understanding of the cultural context.

Conclusion

Foreign imperialism and the 'big brother' approach will only serve to alienate practicing communities. First and foremost, it is important to understand that for women from practicing communities, FGM is considered to be empowering, elevating the status of a woman to that of a wife and mother. Misplaced as the idea might seem to us, without this insight we cannot hope to establish effective strategies to eliminate this practice.

ENDNOTES

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A Nurse’s Perspective on the Victorian Euthanasia Bill

This article explores the Victorian Medical Treatment (Physician Assisted Dying) Bill from a nursing perspective.

In Australian society, care of the dying is a compelling social duty and responsibility. In health and social terms, this is known as palliative care, whereby the provision of physical, psychological, spiritual and emotional support to terminally ill people and their families ensures that suffering at life’s end is lessened and minimised.

A Private Member’s Bill, *The Medical Treatment (Physician Assisted Dying) Bill 2008*, was introduced into Victorian Parliament in May by Greens MP Colleen Hartland. Submitted during the 2008 National Palliative Care Week, Hartland’s Bill intends to make an analogous connection between the social duty of public health to ensure the provision of palliation for the terminally ill and the legalisation of the act of euthanasia. It is of some irony therefore that the Palliative Care Week theme for 2008 was ‘*A Matter of Life and Death.*’ It seems that the Bill is really about only one aspect of this theme – death. The Bill suggests that the terminally ill person is living a futile existence. It is true that terminally ill persons are preparing for death (as we all are in some way...). However, they are first and foremost living beings who can flourish in their humanness even while dying.

A fundamental flaw in the Bill is its failure to provide a definition of what constitutes palliative care. This is an important omission, for the absence of an adequate definition leads to a subjective determination in a legal framework of the nature of care provided for dying persons by dedicated health professionals each day in Victoria. The Bill references many assertions about palliative care, the lack of access to services, and the occasional failure of such care to provide some people with adequate relief from suffering. Yet without even defining what actually constitutes palliative care, the Bill essentially makes an assumption of ‘no to care...yes to terminal solutions.’

There are other inconsistencies to be found in the Bill, none more evident than the actual title of the proposed legislation. The *Medical Treatment (Physician Assisted Dying) Bill* indicates that after a request to provide knowledge or the means to end life, a physician participates in the direct and intentional killing of a human being. ‘Physician Assisted Dying’ is not an uncommon term when it comes to international legislation governing euthanasia. However, in the proposed Victorian legislation there is a significant difference to international counterparts – a registered nurse is able to follow ‘in good faith’ instructions of a treating doctor and directly act to end a person’s life.

Nurses are essentially contravening their fundamental mandate of clinical practice – to care, not to kill. The ethical principle of non-maleficence ‘first of all, do no harm’ has been a foundational guiding principle governing nursing (and medical) practice for centuries. Among medical professionals, some may argue that it will largely be their role to administer or provide the means for assisted suicide to occur, and therefore that nurses will largely not be directly involved. However, as most nurses will affirm, the reality of clinical practice is that the nurse will be asked to follow through on the action of assisted suicide directed by the doctor. Evidence of this can be found in the Netherlands, a country that has legalised euthanasia since 2001. There, nurses are not legally permitted to assist with the preparations or administration of euthanatics that result in the active termination of human life. However, research undertaken by Dutch nurses reported in 2008 that over 50% of interviewed nurses admitted having had both an indirect and direct role in the death of a patient under the Netherlands’ euthanasia law.¹ Nurses reported that the inexperience of physicians to successfully intravenously cannulate the person, to prepare the solutions, and to manage the fluid and drug

administration equipment all led to the nurse taking over the role of 'physician assisted suicide,' and therefore knowingly committing an illegal act.

The Dutch research has wide ranging implications for Victorian nurses. One of the most recent international evaluations of nurses' attitudes to the role that they have in assisted suicide, it concludes that such activities have an extraordinary moral character that strictly speaking falls outside the professional domain of nurses.² These same authors affirm "because euthanasia and physician assisted suicide are neither diagnostic nor therapeutic procedures, preparatory activities in this area do not belong to the professional responsibility of nurses."³

Australian feminist author Katrina George wrote in 2007 an article titled "A woman's choice? The gender risks of voluntary euthanasia and physician assisted suicide." Her conclusions were that a disproportionate number of women seek assisted suicide and euthanasia because of social and cultural gender disparities.⁴ Thus, when George's findings are connected with the data from the Dutch research, it can be concluded that nurses as a predominately female profession are therefore doubly at risk if euthanasia was introduced under any form.

There is further evidence of professional disparities within the proposed Victorian *Physician Assisted Death* legislation. The medical professional has a right to conscientious objection, but nurses (presumably falling in the defined category of 'health care provider') are not under any 'duty' to participate in the provision of 'assistance' in the Act. However, this fails to distinguish between a moral and practical duty for the nurse. For example, a nurse may consider that the action of euthanatics administration with the intent to kill is morally wrong, but due to a lack of experience or confidence in self-assertion may not voice these objections. Australian nurses have a professional Code of Ethics that espouses the nurses' right to conscientious objection.⁵ However, there is substantial evidence in nursing literature which reveals that nurses will often remain silent about questionable practices for fear of personal or professional sanctioning.⁶ Fear of workplace reprisals, conflict among peers, being labelled a 'troublemaker,' and therefore limiting ability for workplace promotion are legitimate reasons why many nurses may not voice conscientious objections to participation in direct care that results in the intentional killing of another person.

The Royal College of Nursing Australia (RCNA) in their position statement on euthanasia and assisted suicide highlights that "nurses have a professional responsibility to stay reliably informed about the ethical, legal, cultural and clinical implications of voluntary euthanasia and assisted suicide."⁷ It is questionable, however, that newly graduated Victorian nurses are able to meet these requirements outlined by the RCNA when only a small number of undergraduate and post graduate educational curricula for nurses in Victoria have units of study in

ethics and moral decision making in clinical practice. The ability to deliberate upon challenging ethical issues in clinical practice and weigh up the 'rightness' and 'wrongness' of an action through moral reasoning, therefore, is neither adequately taught nor encouraged among nurses at both an educational and institutional level. The weighing up of a breach in their moral conscience to care versus the clinical duty to intentionally take another person's life will be too much of a burden for many nurses in Victoria.

Public trust of the nursing profession, held in such high regard for decades in this country, will also be lessened with the introduction of any law that permits euthanasia or assisted suicide. The routine and warranted administration of a dose of a narcotic analgesic to a person receiving palliative care may be interpreted with mistrust and suspicion by the patient and the family. Appropriate questions about terminal planning directives may be seen as a method of obtaining permission for administration of lethal euthanatics. All of these factors suggest that in an already stretched public health care sector where nurses are in short supply, many Victorian nurses as a silent protest to the introduction of any legislation that supports euthanasia might abandon their profession.

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Medical professionals will also be concerned about the introduction of this Act due to the possibility of being open for criminal persecution. For example, if a doctor fails to refer a person to access services for assisted suicide, they could be charged with an offence according to this Act. Thus, a General Practitioner or treating physician who objects to being a part of assisted suicide and who chooses not to refer their patient to another service provider, could be prosecuted. On the other hand, those doctors, nurses or health professionals who intentionally contribute to the taking of the life of another human being are 'immune' from any legal charges under the provisions of this Act. In other words, a doctor who chooses not to intentionally kill could be charged, but a doctor who intentionally contributes to killing is exempt from any prosecution. How can this legislation be a serious response to the care of terminally ill Victorians? It is an illogical assertion, one of many flaws in this proposed legislation.

In a media release when the *Medical Treatment (Physician Assisted Dying) Bill 2008* was introduced into Victorian parliament, Greens MP Colleen Hartland stated that "... there are a number of really good safeguards" present in the Bill to prevent any opportunistic abuses of subjective legislation interpretations.⁸ It is obvious that Hartland has not really understood the special needs of terminally ill people and those who care for them.

At a superficial level, the proposals of Hartland's Bill

may at first seem attractive to some of the Victorian public. If the Bill is passed, however, its practical consequences might be much more worrying. The envisaged costs of palliation of an ageing generation of Baby Boomers, not enough hospital beds or services to meet the complex care needs of the terminally ill, and the lack of qualified staff in the already stretched public health system that has faced years of financial neglect from the both Federal and State Governments are the background of this proposed legislation. Might the passage of this Bill lead to the utilitarian calculation that it is cheaper to give assisted suicide than to provide adequate palliative care?

Thus, before there is talk even of a conscience vote on this Bill, there needs to be adequate consideration of how to improve access to and funding of State palliative care services, an increase in the support networks for the terminally ill and their families, and funding provided for education of health care professionals (especially nurses) at an undergraduate and post graduate level on ethical issues in clinical practice.

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ENDNOTES

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EDITOR'S NOTE:

Since this article was written, the Victorian Medical Treatment (Physician Assisted Dying) Bill was defeated by a wide margin. With a conscience vote on the Bill, on 10 September 2008 Upper House MPs voted 25 to 13 against it. Bishop Christopher Prowse, Catholic Auxiliary Bishop of Melbourne, commented, "I think the Parliament is to be praised for this result.... Many in our community were concerned that the proposed Bill put at risk the care and well being of our most vulnerable and dependent patients.... I know the medical profession particularly considered the legislation would have corrupted the fundamental ethos of medicine to care for and to heal the sick."

Brain Death and the Catholic Church

This article explores investigations and statements about brain death by the Catholic Church. It also counters claims that the church has rejected this concept.

In recent years, some speakers at Catholic conferences and a few articles on Catholic websites and in Catholic newspapers have claimed that brain death is not really death. Some Catholics may be confused by this – particularly if they are asked to agree to the removal of mechanical ventilation or the procurement of organs from a relative or friend who has been declared brain dead. At the same time, these claims might damage the reputation of the Church within the scientific and health care communities. This article reviews what brain death is, and then details Catholic investigations and statements about this concept.

Brain Death

History: Two medical developments led to the concept of brain death. Firstly, Intensive Care Units (ICUs) were developed in the 1950s. Some patients, however, remained unconscious and totally dependant on mechanical ventilation. Were these patients dead? If so, could

mechanical ventilation be turned off? Secondly, the world's first heart transplant was performed on 3 December 1967. Thus, it became necessary to confirm that a donor had died before their organs could be removed.

In 1968, an ad hoc committee of Harvard Medical School defined and described brain death, and detailed clinical tests to identify it. In 1981, a (US) President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research reaffirmed this concept of brain death, and updated the clinical tests to identify it. This in turn led to a Uniform Determination of Death Act, which was subsequently enacted in most US states.¹ This concept of "whole brain death" also underpins the laws on brain death in most countries of the world, including Australia.

A slightly different path was followed in the United Kingdom. In 1976, a Conference of the Medical Royal Colleges and Faculties of the United Kingdom equated brain death with death of the brain stem, and detailed

clinical tests to identify this. A Memorandum issued in 1979 affirmed that this “brainstem death” was truly death. And in 1995, the Conference reiterated that brain death was brainstem death, manifest as irreversible loss of the capacity for consciousness together with irreversible loss of the capacity to breathe.² This definition of brain death is used in the United Kingdom as well as some Commonwealth countries, but not in Australia.

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Finally, since the mid-1970s, some theorists have advocated for yet another understanding of brain death. They seek to define death as the irreversible loss of our uniquely human capacities, such as our consciousness and self-awareness and our capacities to reason, choose and relate.³ This “higher-brain” formulation of brain death would count as dead, anencephalic infants and those in a state of post-coma unresponsiveness (vegetative state). This proposal, however, has won little support. Those without these higher functions are clearly damaged, but they are just as clearly still alive. Their condition is not what we mean when we speak of death. For this reason, there is no legal system anywhere in the world which uses this “higher-brain” formulation of brain death.

Analysis: To understand brain death conceptually, we must consider three related matters. Firstly, we need a definition of death – that is, a philosophical account of what death is. Secondly, we require criteria for death – medical conditions which instantiate our definition of death. And thirdly, we need clinical tests to assess whether or not an individual patient has developed one of these medical conditions.

When we are alive, we are an integrated organism, a unified whole. We are not just any number of unrelated or unconnected chemical processes. Rather, the chemical processes of our bodies are brought together or integrated so that they are all parts of the functioning of the one organism, an integrated or unified whole. Death occurs, therefore, when we cease to function as a unified whole. Death is defined philosophically as the permanent cessation of the functioning of an organism as an integrated whole. For a time, some chemical processes may continue – for example, the stomach might continue to digest food, or hair and nails may continue to grow. However, integration as a single organism is lost – and lost permanently. This definition of death holds across species: it is consistently what we mean by death whether we are talking about the death of a plant, the death of an animal, or the death of a human being. This definition also holds cross-culturally: across cultures and throughout human history, it is universally what we have understood as death.

Two criteria instantiate this definition.⁴ The first is the cardiopulmonary criterion, which is permanent or irreversible cessation of circulation and respiration. Thus,

for example, a massive pulmonary embolism stops the lungs. Deprived of oxygen, the brain dies soon afterwards. Within a short period, the heart stops too. Or again, a serious heart attack stops the heart. For a few minutes, there is the possibility of auto-resuscitation, whereby the stopped heart begins spontaneously to beat again. Or, in other circumstances, cardiopulmonary resuscitation (CPR) might be attempted. But if the heart is not re-started, within a short time the brain dies from lack of oxygen, and the lungs, which are activated by the brain stem, cease to breathe. In the vast majority of cases, death is detected using the cardiopulmonary criterion.

The second criterion for death is neurological. Because the brain stem activates the lungs, in usual circumstances the death of the brain leads quickly to death according to the cardiopulmonary criterion. However, in an Intensive Care Unit (ICU), the functioning of the lungs is maintained by a ventilator. But some ventilated patients develop a syndrome of coma, areflexia and apnoea: they do not recover consciousness; all the reflexes mediated by the brain are absent; and when the ventilator is turned off for a short time, they do not begin to breathe spontaneously. This is brain death: most if not all of their brain has died. Now, it is the brain through the nervous and hormonal systems which integrates us into a single organism. Death of the brain, therefore, is truly death of the organism: brain death is truly death. A patient who has suffered the death of their brain is truly dead. This is death according to the neurological criterion.

We have already noted that most countries including Australia use the neurological criterion of “whole brain death,” whereas the United Kingdom and some Commonwealth countries use a slightly different criterion of “brainstem death.” In the former, the criterion for death is irreversible cessation of all functions of the entire brain; in the latter, the criterion is irreversible loss of both consciousness and the capacity to breathe. In the vast majority of cases, these slightly different criteria will not make any practical difference at all to the determination of death. However, there might be some, very rare cases where the damage is primarily to the brain stem (e.g. a brain stem haemorrhage or infarction). In these cases, every brainstem function might be lost, while for a time some cortical functions might be preserved. While this situation continues, the brainstem criterion would assess this patient as brain dead, whereas the whole brain criterion would assess them as inevitably dying but not yet dead. Apart from that, there are no other practical differences connected with the two, slightly different criteria for neurological death.⁵

Finally, there must be clinical tests to assess whether or not someone is dead. Cardiopulmonary death involves all the classic signs of death: there is no heart beat or breath, and the body soon becomes pale, cold and stiff. Even so, standards must be set. What tests should be used to confirm the absence of heartbeat and breath? If CPR is attempted, how long should it be continued before the situation becomes hopeless? And how long should we

wait to exclude the possibility of auto-resuscitation?

Neurological or brain death does not involve all the classic signs of death. If there were two patients on ventilators, we could not immediately tell which one was brain dead and which one was not. Assisted by the ventilators, both are breathing. Both have heartbeats. Both look alive. A sophisticated series of tests is therefore used to identify brain death. There must be definite evidence of acute brain pathology. The patient must remain in an unresponsive coma for a specified number of hours. Some conditions might mimic the areflexia of brain death, so these conditions must be excluded before clinical testing can begin. Thus, intoxication and certain metabolic and endocrine disorders must be ruled out; the patient must have substantially normal temperature and blood pressure; and s/he cannot be sedated by any agents that depress responsiveness. Clinical testing must confirm that the patient manifests no responsiveness (i.e. a Glasgow Coma Score of 3). All brainstem reflexes must be absent. Thus, there cannot be a pupillary light reflex, any reflex response to touching the cornea, or any reflex response to pain in the trigeminal distribution. The vestibular-ocular reflex, the oculocephalic reflex, the gag reflex, and the cough/tracheal reflex must also be absent. If all these reflexes are indeed absent, there must then be apnoea testing under controlled conditions to investigate if the patient is able to breathe spontaneously. Finally, there might also be confirmatory testing. Because brain cells die without blood flow, an absence of intracranial blood flow confirms brain death. This can be assessed by such techniques as three or four vessel contrast angiography, radionuclide imaging such as SPECT (single photon emission computerised tomography), contrast computed tomography (CT) or CT angiography (CTA), or (perhaps less reliably) by magnetic resonance imaging (MRI), magnetic resonance angiography (MRA), and transcranial Doppler (TCD) ultrasound. The absence of cerebral metabolism also confirms brain death. This may be assessed by such techniques as positron emission tomography (PET), and functional magnetic resonance imaging (fMRI). And the absence of electrical activity within the brain also confirms brain death. This can be assessed by electroencephalogram (EEG), or by such techniques as median nerve somatosensory evoked potentials (SSEPs) and auditory brainstem responses (ABRs). Most protocols require that the testing for brain death is repeated, perhaps with a specified period of time between assessments. They also specify what qualifications and training are required to make this assessment.⁶

Catholic Investigations and Statements about Brain Death

The Catholic Church has no special competence to assess the concept of brain death. As Pius XII observed, "It is for the doctor... to give a clear and precise definition of 'death' and the 'moment of death.'"⁷ Even so, the Church has taken a lively interest in this matter. It has done so to

guide its health care institutions, and also to advise Catholic health care professionals and Catholic individuals.

Above all, this issue has been investigated by the Pontifical Academy of Sciences (PAS). In the 1980s, the Academy convened two expert conferences – one in 1985, the other in 1989 – which affirmed brain death as true death. For example, their 1985 Declaration considered the definition, criteria, and clinical tests of death. It defined death in terms of integration: "A person is dead when he has irreversibly lost all capacity to integrate and coordinate the physical and mental functions of the body." As well as the cardiopulmonary criterion that "the spontaneous cardiac and respiratory functions have definitively ceased," it affirmed the neurological criterion "if an irreversible cessation of every brain function is verified." Finally, it noted that their conference "analysed the different clinical and instrumental methods that enable one to ascertain the irreversible arrest of the cerebral functions."⁸ All this is unequivocal support for the concept of whole brain death.

The Pontifical Council for Pastoral Assistance to Health Care Workers published its *Charter for Health Care Workers* in 1995. It quoted the PAS definition and criteria for death, and commented that the Pontifical Academy of Sciences has made an "authoritative contribution" to the task of determining when death has occurred. It added that "faith and morals accept these findings of science."⁹

The concept of whole brain death is further endorsed in John Paul II's *Address to the XVIII International Congress of the Transplantation Society* on 29 August 2000.¹⁰ Because this speech makes a number of important points, we must examine it in some detail. Firstly, John Paul noted that there are really two definitions of death. There is the philosophical definition which we have already considered, and which the pope describes as "the total disintegration of that unitary and integrated whole that is the personal self." But there is also a theological definition of death. Death occurs when the soul separates from the body. In other words, death is "the separation of the life-principle (soul) from the corporeal reality of the person." John Paul rightly added that this theological definition rather than the philosophical one is "primary." Secondly, the pope noted that we cannot tell exactly when the soul separates from the body. He stated that "the death of the person, understood in this primary sense, is an event which *no scientific technique or empirical method can identify directly.*" Thirdly, however, John Paul noted that "once death occurs *certain biological signs inevitably follow.*" Because we cannot determine exactly when the soul separates from the body, the pope suggests that we should not regard these biological signs as "the technical-scientific determination of the *exact moment* of a person's death." Rather, we should think of them only as "a scientifically secure means of identifying... *that a person has indeed died.*" These first three comments are important. We are invited to expand our understanding of death from the merely

philosophical to the truly theological. And we are helped to understand the exact meaning of the biological signs of death in this expanded context.

Fourthly, then, John Paul turned to the neurological criterion for death. “According to the clearly determined parameters commonly held by the international scientific community,” he specified this as whole brain death, “the complete and irreversible cessation of all brain activity (in the cerebrum, cerebellum and brain stem).” Fifthly, the pope repeated the caution of Pius XII that the church does not have special competence in this area. He noted, “With regard to the parameters used today for ascertaining death... the Church does not make technical decisions.” But with that caveat, sixthly, the pope endorsed the concept of whole brain death. He stated that “the criterion adopted in more recent times for ascertaining the fact of death, namely the *complete* and *irreversible* cessation of all brain activity, if rigorously applied, does not seem in conflict with the essential elements of a sound anthropology.” Indeed, “a health-worker professionally responsible for ascertaining death can use these criteria in each individual case as the basis of arriving at that degree of assurance in ethical judgement which moral teaching describes as ‘moral certainty.’” Thus, John Paul II said that the proper application of the whole brain criterion for death enables us to identify death with moral certainty. This is a ringing endorsement of the concept of brain death.

... John Paul II... specified... whole brain death as “the complete and irreversible cessation of all brain activity (in the cerebrum, cerebellum and brain stem).” ...

Both within the scientific and health care community and within the church, there is a minority who do not accept brain death. Noting this, in March 2004 John Paul II asked the Pontifical Academy of Sciences to re-examine the issue. Eventually, they held two conferences. On 3-4 February 2005, they heard predominately from those who oppose brain death. During this conference, the pope requested in writing that the proceedings be given to the Congregation for the Doctrine of the Faith. The Vatican then decided not to publish the proceedings. In a breach of normal protocol, however, several participants did publish their papers. These and some other writings are collected in a 336-page book edited by Roberto de Mattei, Vice-President of the National Research Council of Italy and titled *Finis Vitae: Is Brain Death Still Life?*¹¹ Of the 17 papers in the book, 9 are from the conference. Prominent critics of brain death who have papers in it include American neurologist D. Alan Shewmon, American neonatologist Paul A. Byrne, Brazilian neurologist Cicero Galli Coimbra, German philosopher Robert Spaemann, Liechtenstein philosopher Josef Seifert, and Bishop Fabian W. Bruskewitz of Lincoln, Nebraska.

After John Paul’s death, Benedict XVI requested that the investigations continue. Thus, the second conference was

held on 11-12 September 2006. As well as academicians from the Pontifical Academy for Life, the Pontifical Academy of Sciences, and the Pontifical Academy of Social Sciences, 19 internationally-known neurologists and other experts participated. These included neurologists James L. Bernat, Robert B. Daroff, Marcus E. Raichle, Allan H. Ropper and Eelco F.M. Wijdicks (from USA), Conrado J. Estol (from Argentina), Werner Hacke and Michael G. Hennerici (from Germany), Lüder Deecke (from Austria), Heinrich P. Mattle (from Switzerland), José C. Masdeu (from Spain), Paolo M. Rossini (from Italy), and Stephen Davis (from Australia). This time, the Pontifical Academy of Sciences did publish the papers and transcripts of the discussion at the conference. The 558-page book is titled *The Signs of Death: The Proceedings of the Working Group 11-12 September 2006*. It is edited by Bishop Marcelo Sánchez Sorondo, the Chancellor of the Pontifical Academy of Sciences.

The critics of brain death advance at least ten arguments against it. Firstly, they argue that those declared brain dead cannot be dead because they do not appear dead. Whereas death means a pale, cold body with no breath and no pulse, those declared brain dead are pink and warm with both heartbeat and breath. Former transplant cardiologist Walt Franklin Weaver counsels those interested in these matters to “be at the bedside of a donor.” He adds, “I would challenge anyone... to claim that the ‘donor’ is dead.”¹² Secondly, the critics note that those declared brain dead still exhibit some spontaneous movements and reflexes. Spontaneous movements range from finger jerks and toe flexion to the so-called Lazarus sign in which the arms are raised over the chest and the body moves to sit up. Brain dead donors are anaesthetised when organs are removed as otherwise there could be grimacing and squirming and increases in pulse rate and blood pressure. The critics argue that a body which does all these things cannot be dead. Thirdly, the critics believe that brain death is simply a fiction concocted to get organs for transplantation. For example, Paul A. Byrne argues that the 1968 ad hoc committee of Harvard Medical School had “a predetermined agenda... from the onset”: “The primary reason for the origination and propagation of ‘brain death’ was and is the desire to obtain vital organs for transplantation.” He adds, “With an agenda like that at the outset, the data could be made to fit into their already arrived at conclusions.”¹³

Fourthly, the critics claim that there is no global consensus on the criteria for brain death. Further, “a physician can choose any one of the many disparate sets to declare a patient ‘brain dead,’ yet the other sets would declare the same patient to be alive and not ‘brain dead.’”¹⁴ Fifthly, critics point to the dangers of misdiagnosis. What if someone is wrongly declared brain dead? What if their ventilator is then turned off, or their body used to procure organs for transplantation? Sixthly, Alan Shewmon argues that it is not the brain that integrates us into a single or unified organism. He claims instead that integration is “a non-localized emergent

phenomenon involving the mutual interaction among all the parts.”¹⁵

Seventhly, the critics note that with ventilation and other care there have been a number of cases of long-term survival in a state of brain death. Some pregnant women have been sustained sometimes for a few months until their infants have become viable. A boy, “TK,” declared brain dead at 4½, was sustained until the age of 24. In 1998, Alan Shewmon collected a series of 175 such cases with survival of at least a week. The critics argue that such long-term survivals raise the question whether these individuals are truly dead. Eighthly, Cicero Galli Coimbra argues that the apnoea test could impair the recovery of a brain-injured patient, and may even cause death. Coimbra somewhat controversially believes that non-functioning brain cells may only be silent rather than irreversibly damaged – a phenomenon he calls the “penumbra” of nervous tissue. In these circumstances, the apnoea test “may cause irreversible damage to brain tissue,” or indeed “death... might occur as a consequence of apnoea testing.”¹⁶ Ninthly, the critics object to the claim that the loss of function in brain death is irreversible. As Bishop Fabian Bruskewitz comments, “How does one determine irreversibility? Irreversibility is not an empirical concept, nor an observable condition.”¹⁷

Finally, the critics of brain death are concerned that the philosophical definition of death might not be equivalent to the theological definition. “Is clinical death... the equivalent of theological death?” Bishop Bruskewitz asks. “Nobody can demonstrate that brain death determines the separation of body and soul and therefore the effective death of the individual,” Roberto de Mattei adds. Indeed, as “human life in the sense of the presence of the human soul in the body cannot be simply refuted by proving the absence of integrated bodily function,” Josef Seifert suggests that “the soul... may very well be present in the brain dead individual.”¹⁸

The presenters at the 2006 conference were each assigned specific topics so that speech by speech a comprehensive account of brain death and its clinical assessment was gradually developed. At the same time, in their speeches and discussions, these proponents of brain death addressed all the objections of its critics. Firstly, as regards the objection that those who are brain dead do not appear dead, they admit that this circumstance can cause difficulties for some people. When someone is pink and warm with both heartbeat and breath, it is counter-intuitive to see them as dead. Part of the difficulty is that we cannot directly observe the dead brain within. And yet, something can be counter-intuitive without being incorrect. Here, science can help us recognize something which is not immediately apparent. Allan H. Ropper comments, “Medicine is allowed to have a logical progression based on evidence... medicine is permitted, if not obliged, to change our notions of death over time.”¹⁹ Secondly, as regards the movements and reflexes, Conrado J. Estol explores them in detail, and affirms that they are simply “spinal cord reflexes” and “spinal

automatisms.” He concludes, “These movements do not question the accuracy of a brain death diagnosis.” Allan Ropper adds, “How could a dead body move?... You can cut the head off and the body can move; the brain is not required.”²⁰ Thirdly, against the claim that brain death is simply a fiction to obtain organs for transplant, its proponents observe that the primary concern of the Harvard group was the futility of continuing ventilation for patients who had developed that syndrome of coma, areflexia and apnoea. Nor did any concerns about obtaining organs for transplant destroy their scientific objectivity.

The fourth claim was that there is no global consensus on brain death. Eelco F.M. Wijdicks responds to this by examining the standards from 80 countries around the world. He affirms that there are “procedural differences,” and adds that a greater consensus of standards would be desirable. (This requires not only harmonisation of clinical standards, but also international agreement on a single neurological criterion for death.) However, he concludes that “there is broad medical and legal acceptance of the concept of brain death throughout the world.” Ropper agrees that “the differences are subtleties; they are not about brain death as death.” About the possibility of mistakes, he adds, “Does it negate brain death? Of course not, it is a competency and professional issue. We have to educate our colleagues and insist on the highest standards.”²¹ Sixthly, this conference strongly rejected Shewmon’s claim that there are other sources of bodily integration apart from the brain. They wrote:

Whatever ‘integrative sub-systems’ the rest of the body may have, they are few, fragile, and poorly coordinated... The other bodily structures which effect some integration (nerves in the heart and bowel or bones that make up the skeleton, for example) are entirely irrelevant in discussions about brain death as the death of the individual.²²

Seventhly, as regards long-term survival after brain death, these proponents of brain death report that after brain-mediated integration is lost, sustaining the patient’s body becomes “extraordinarily difficult.” For this reason, there are probably only three cases of survival beyond a year. In any case, this does not affect the concept of brain death. Instead, it simply demonstrates that in some, rare cases “it is possible to keep a corpse going for a long period of time.”²³ Eighthly, as regards the apnoea test, Allan H. Ropper discusses how it should be conducted, and concludes that the possibility that “the test could lead to death, or is risky or cruel” can be “avoided by attending to details and to guidelines.”²⁴ Ninthly, as regards irreversibility, brain death generally depends on a pathological process called brain herniation. Serious injury to the brain causes brain swelling. This increases intracranial pressure. This in turn reduces intracranial blood circulation. And this causes further brain swelling. Eventually, this ongoing process causes the brain to herniate through the tentorium and through the foramen magnum. Herniation through the foramen magnum

destroys the brain stem, totally blocks the blood supply of the brain, and therefore leads to the destruction of almost every brain cell. Demonstrating that this process has occurred therefore confirms irreversibility.²⁵

Finally, regarding the connection between the philosophical and theological definitions of death, these proponents of brain death review the Aristotelian-Thomistic account of the interconnection of body and soul. This account recognises that the soul is the form of the body, and that the soul unites with the body as form without any intermediary. However, this account also recognises that the soul is the motor of the body, and in this case it does operate through an intermediary, which is the brain. For this reason, when the brain dies, the soul as motor separates from the body. They note that St Augustine himself recognised this when he wrote:

Thus, when the functions of the brain which are, so to speak, at the service of the soul, cease completely... it is as if the soul was no longer present and was not [in the body], and it has gone away.²⁶

According to the Aristotelian-Thomistic account of the interconnection of body and soul, then, theological death is brain death, and the theological and philosophical definitions of death are equivalent.

The findings of the 2006 conference are summarised in a nine-page statement titled ‘Why the Concept of Brain Death is Valid as a Definition of Death.’ It is signed by 28 of the 31 participants, including Cardinal Georges Cottier (then-theologian of the papal household), the late Cardinal Alfonso Lopez Trujillo (then-President of the Pontifical Council for the Family), retired Cardinal Carlo Maria Martini of Milan, Bishop Marcelo Sánchez Sorondo (Chancellor of the Pontifical Academy of Sciences), and Bishop Elio Sgreccia (then-President of the Pontifical Academy for Life). It states, “Brain death is not a synonym for death, does not imply death, or is not equal to death, but ‘is’ death.”²⁷ Similarly, at a press conference on 14 September 2006, Bishop Sanchez said that the Academy had reaffirmed Pope John Paul’s position that brain death is equivalent to the death of a person. It had also concluded that “there are no reasons to again go over” the criteria accepted by the overwhelming majority of the scientific community.

... “Brain death is not a synonym for death, does not imply death, or is not equal to death, but ‘is’ death.” ...

But after all this, the matter is not yet over. On 2 September 2008, the Vatican newspaper *L’Osservatore Romano* had a front-page article by history professor Lucetta Scaraffia which was critical of the concept of brain death. In an unusual move the next day, however, the Vatican distanced itself from its newspaper. The Vatican’s chief spokesman Fr Frederico Lombardi clarified that this was “not a Vatican document” nor “part

of Church teaching.” Lombardi noted John Paul II’s support of brain death in 2000, and added that the Holy See “is not changing its position on Church teaching.” Or again, two weeks earlier, the *New England Journal of Medicine* published an article by Robert Truog of Harvard Medical School and Franklin Miller of the (US) National Institutes of Health, which claimed that with brain death “the medical profession has been gerrymandering the definition of death to carefully conform with conditions that are most favorable for transplantation.”²⁸

We may conclude that there is an enduring minority both within the scientific community and within the church who do not accept the concept of brain death. On the other hand, brain death is a concept which is clear, logical, well considered, and well researched. It is accepted by professional associations of neurologists around the world, and recognised by law in most developed countries. It is also accepted by the Catholic Church and most other major religions, as well as by the vast majority of scientists and health care professionals. If we occasionally encounter articles by critics of brain death, the context for assessing their claims must always be this overwhelming support around the world for the concept of brain death.

ENDNOTES

¹ “A Definition of Irreversible Coma: Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death,” *Journal of the American Medical Association* 205 (1968): 337-340; (US) 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 Issue in the Determination of Death* (Washington, DC: US Government Printing Office, 1981); *Uniform Determination of Death Act*, www.law.upenn.edu/bll/archives/ulc/fnact99/1980s/udda80.htm, [accessed 15 September 2008].

² Conference of Medical Royal Colleges and their Faculties in the United Kingdom, “Diagnosis of Brain Death,” *British Medical Journal* 6045 (1976): 1187-1188 and *Lancet* 7994 (1976): 1064-1066; Conference of Medical Royal Colleges and their Faculties in the United Kingdom, “Diagnosis of Death,” *British Medical Journal* 6159 (1979): 332 and *Lancet* 8110 (1979): 261-262; Working Group of the Royal College of Physicians, “Criteria for the Diagnosis of Brain Stem Death: Review by a Working Group Convened by the Royal College of Physicians and Endorsed by the Conference of Medical Royal Colleges and their Faculties in the United Kingdom,” *Journal of the Royal College of Physicians* 29 (1995): 381-382.

³ For example, see Robert M. Veatch, “The Whole-Brain-Oriented Concept of Death: An Outmoded Philosophical Formulation,” *Journal of Thanatology* 3 (1975): 13-30; Michael B. Green and Daniel Wikler, “Brain Death and Personal Identity,” *Philosophy and Public Affairs* 9 (1980): 105-133.

⁴ Neurologist James L. Bernat (and many others) argue that there really should be only one criterion for death, the neurological criterion of brain death. Conceptually, they are correct. Ultimately, death is death of the brain. Irreversible cessation of circulation and respiration lead both quickly and inevitably to the death of the brain. Further, we would hardly call irreversible cessation of circulation and respiration ‘death’ unless it did have this effect. Practically, however, it makes sense to keep

N cessation of circulation and respiration as a criterion for death. After all, the vast majority of deaths are declared using this cardiopulmonary criterion. For this reason, irreversible cessation of circulation and respiration should remain a practical criterion for death, even if it is not the ultimate or conceptual criterion. For one example of Bernat's argument, see James L. Bernat, Charles M. Culver, and Bernard Gert, "Defining Death in Theory and Practice," *Hastings Center Report* 12, no. 1 (February 1982): 5-9.

⁵ For further discussion of this matter, see Pontifical Academy of Sciences, *The Signs of Death: The Proceedings of the Working Group 11-12 September 2006*, Scripta Varia 110 (Vatican City: PAS, 2007), 48, 49-50, 53-54.

⁶ For the recently revised standard of the Australian and New Zealand Intensive Care Society (ANZICS), see *The ANZICS Statement on Death and Organ Donation*, ANZICS, <http://www.anzics.com.au/uploads/ANZICSstatementonDeathandOrganDonation.pdf> [accessed 15 September 2008].

⁷ Pius XII, 'The Prolongation of Life,' in *Medical Ethics: Sources of Catholic Teachings*, 3rd ed., ed. Kevin D. O'Rourke and Philip Bourke (Washington, D.C.: Georgetown University Press, 1999), 80.

⁸ Pontifical Academy of Sciences, "Report on Prolonging Life and Determining Death," in *Medical Ethics*, 78-79; cf *L'Osservatore Romano* 18, no. 45 (11 November 1985): 10. Note too that like James Bernat, the Academy concluded that "cerebral death is the true criterion of death, since the definitive arrest of the cardio-pulmonary functions leads very quickly to cerebral death."

⁹ Pontifical Council for Pastoral Assistance to Health Care Workers, *Charter for Health Care Workers*, Holy See, http://www.vatican.va/roman_curia/pontifical_councils/hlthwork/documents/rc_pc_hlthwork_doc_19950101_charter_en.html, #129.

¹⁰ John Paul II, *Address to the 18th International Congress of the Transplantation Society*, Holy See, http://www.vatican.va/holy_father/john_paul_ii/speeches/2000/jul-sep/documents/hf_jp-ii_spe_20000829_transplants_en.html, [accessed 15 September 2008].

¹¹ Roberto de Mattei, ed., *Finis Vitae: Is Brain Death Still Life?* (Rome: Consiglio Nazionale delle Ricerche, 2006). An Italian edition was released on 27 February 2008.

¹² Walt Franklin Weaver, "Unpaired Vital Organ Transplantation. Secular Altruism? Has Killing Become a Virtue?" in *Finis Vitae*, 285-314 at 297.

¹³ Paul A. Byrne, "Death: the Absence of Life," in *Finis Vitae*, 63-84 at 69-70.

¹⁴ *Ibid.*, 74.

¹⁵ D. Alan Shewmon, "'Brain Body' Disconnection: Implications for the Theoretical Basis of 'Brain Death,'" in *Finis Vitae*, 211-250 at 232; cf further comments by Shewmon quoted in Robert Spaemann, "Is Brain Death the Death of the Human Being? On the Current State of Debate," in *Finis Vitae* 251-263 at 258-259.

¹⁶ Cicero Galli Coimbra, "The Apnea Test – a Bedside Lethal 'Disaster' to Avoid a Legal 'Disaster' in the Operating Room," in *Finis Vitae*, 113-145 at 116, 118, 120.

¹⁷ Fabian W. Bruskewitz, "A Brief Summary of Catholic Doctrine Regarding Human Life," in *Finis Vitae*, 45-61 at 48.

¹⁸ Bruskewitz, 46; Roberto de Mattei, "Genuine Science or False Philosophy?" in *Finis Vitae*, 85-98 at 98; Josef Seifert, "On 'Brain Death' in Brief: Philosophical Arguments," in *Finis Vitae*, 189-210 at 196.

¹⁹ Allan H. Ropper, "The Apnoea Test and Rationale for Brain Death As Death," in *Signs of Death*, 237-249 at 246.

²⁰ Conrado J. Estol, "Movements in Brain Death," in *Signs of Death*, 13-17 at 14-15; Ropper, 245.

²¹ Elco F.M. Wijidicks, "The Clinical Criteria of Brain Death Throughout the World," 41-46 at 46; Ropper, 245-246.

²² "Response to the Statement and Comments of Prof. Spaemann and Dr. Shewmon," in *Signs of Death*, 388-394 at 390.

²³ Elco F.M. Wijidicks, Conrado J. Estol, and Allan H. Ropper, in *Finis Vitae*, 258, 124-125, 147.

²⁴ Ropper, 240.

²⁵ James L. Bernat, "How do Physicians Prove Irreversibility in the Determination of Death?" in *Signs of Death*, 159-176 at 169-174; cf Lüder Deecke, "The Neurologist's View on the Determination of Death," in *Signs of Death*, 183-193 at 189.

²⁶ Augustine of Hippo, *De Gen. ad lit.*, L. VII, chap. 19; PL 34, 365; quoted in *Signs of Death*, xxv, 392-394, cf 279-282. The Pontifical Academy of Sciences recognises the importance of this quote by including it on the cover of *Signs of Death*. Note too that the connection between the brain and the soul as motor of the body is further evidence that brain death is the true, ultimate or conceptual criterion of death.

²⁷ "Why the Concept of Death is Valid as a Definition of Death," in *Signs of Death*, xxi-xxix at xx. participants who did not sign the statement were Giovanni M. Rocchi, Alan Shewmon and Robert Spaemann.

²⁸ Robert D. Truog and Franklin G. Miller, "The Dead Donor Rule and Organ Transplantation," *New England Journal of Medicine* 359, no. 7 (14 August 2008): 674-67

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