

# Crossing the Rubicon: Death in ‘The Year of the Transplant’

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**Abstract:** How death should be measured was a subject of intense debate during the late 1960s, and one in which transplant surgeons had a particular interest. Legislation required a doctor to first pronounce ‘extinct’ the patients from whom ‘spare parts’ were sought for grafting. But transplant surgeons increasingly argued the moment of death was less important than was the moment of establishing that a patient was beyond the point of no return in dying, at which time she or he should be passed to the transplant team. This raised concerns that people identified as being a potential source of organs might not be adequately cared for in their own right. In 1968 the World Medical Association issued an international statement on death at its meeting in Sydney, Australia following a debate between delegates about how and by whom death should be assessed prior to organ removal. Soon afterwards Australian surgeons performed two of the one hundred and five heart transplants carried out around the world that year, dubbed by the *New York Times* to be one during which an ‘international epidemic’ of such grafts were carried out. This essay examines debates about death and transplanting, then analyses the pioneering Australian heart transplants, in the context of the Declaration of Sydney and continuing international discussions about whether these operations were moral and legal.

**Keywords:** Death, Heart transplantation, World Medical Association, Declaration of Sydney, Harvard report, Medical ethics

## Introduction

By the mid-1960s newspaper readers around the world were learning of startling surgical endeavours. Suddenly it seemed, remarkable human repairs were being carried out. Diseased aortic heart valves could be replaced with healthy ones procured from a corpse; blind people could look at the world ‘through dead men’s eyes’; in 1962 Russian scientists

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performed a heart ‘swap’ on Gregory the Alsatian dog; and the following year in the United States a man survived for eighteen days with a ‘borrowed’ lung.<sup>1</sup> Corneal and kidney transplants were increasingly successful, one man having lived for three years by 1966 with a kidney procured from a corpse.<sup>2</sup> By then too, liver grafts and a lung transplant had been carried out in the US. Only the ‘great hurdle’ posed by the fact that recipients’ bodies often destroyed the ‘invaders’ sewn into them appeared to be holding transplantation back.<sup>3</sup> ‘We are now on the threshold of a new phase in the science of spare-part surgery’ London’s *Daily Mail* proclaimed, though ethical problems abounded. Envisaging human heart transplants, that newspaper pointed to the surgeon’s dilemma: ‘when is it morally right to remove a living organ from . . . the newly dead and when is it morally wrong?’<sup>4</sup> Then, to great acclaim, the world’s first successful human-to-human heart transplant was performed in Cape Town in December 1967. ‘What will it be next in the miracle-making world of spare parts surgery?’ asked the *Age* newspaper. ‘Perhaps even, one day in the future, the brain?’<sup>5</sup>

Yet transplant surgery posed ethical and legal questions for those engaged in it and the societies in which they operated. Following Christiaan Barnard’s pioneering heart transplant the serious matters transplanting raised were pondered both by the medical profession and laypeople. Some doctors and surgeons feared a headlong rush to perform heart transplants before these problems had been resolved.<sup>6</sup> *The Times* reported concerns that hospitals might resort to ‘heart snatching’, akin to historical body-snatching to obtain corpses for medical students to dissect.<sup>7</sup> A Russian journalist speculated that ‘a bandit corporation’ could arise to meet the demand for organs by murdering people to acquire them.<sup>8</sup> Lord Brock, a past president of England’s Royal College of Surgeons, raised the matter of organ rejection as well as the publicity surrounding heart transplants, with donor and recipient names being published in the world’s press.<sup>9</sup> Summing up the concerns one journalist wrote:

The subject bristles with problems over and above those of surgical technique: how to reconcile experimental surgery with the best interests of the patients; the indefiniteness of the point of death; priorities between competing claims on medical resources and between eligible patients; the legal entitlement to use a corpse for medical purposes; the limits, if any, to which it is proper to patch up one human body with parts and organs from others.

Of these problems, he argued, ‘the anxiety most present to the lay mind concerns the possible removal of vital organs from persons who may not be in some absolute sense dead’.<sup>10</sup>

<sup>1</sup> Joan Holloban, ‘Hail Heart-Graft Triumph’, *Globe and Mail*, 23 June 1966, 5; Anon., ‘Blind of Ceylon Live in Hope’, *Canberra Times*, 13 February 1964, 29; Anon., ‘Soviets Plan Heart Swap’, *Canberra Times*, 8 August 1962, 13; Anon., ‘18 Days Life After Lung Transplant’, *The Times*, 20 December 1963, 8. On media interest in earlier scientific endeavours see Susan Lederer, *Flesh and Blood: Organ Transplantation and Blood Transfusion in Twentieth-Century America* (Oxford and New York: Oxford University Press, 2008) and Duncan Wilson, *Tissue Culture in Science and Society: The Public Life of a Biological Technique in Twentieth-Century Britain* (London: Palgrave Macmillan, 2011).

<sup>2</sup> ‘Kidney Transplant Lasts Eight Years’, *The Times*, 1 November 1966, 13.

<sup>3</sup> Anon., ‘Big Advances with Transplanted Organs’, *Canberra Times*, 23 August 1963, 16.

<sup>4</sup> Rhona Churchill, ‘Spare-Part People’, *Daily Mail*, 29 April 1966, 10.

<sup>5</sup> Anon., ‘Spare Parts’, *Age*, 5 January 1968, 4.

<sup>6</sup> Christine Doyle, ‘Now Surgeons Fear Rush for Heart Transplants’, *Observer*, 10 December 1967: 2.

<sup>7</sup> Anon., ‘“Heart Bank” for Transplants’, *The Times*, 20 January 1968: 4.

<sup>8</sup> Quoted in Lederer, *op. cit.* (note 1), 98.

<sup>9</sup> Lord Brock, ‘A Plea for Anonymity in Heart Transplants’, *The Times*, 1 February 1968, 9.

<sup>10</sup> Anon., ‘Transplant Surgery’, *The Times*, 14 February 1968: 11.

The Australian cardiac surgeon Harry Windsor was among those pondering the morality of these operations. He had carried out the first cardiac valve replacement in Sydney and would soon conduct Australia's first heart transplant there. Writing in the *Medical Journal of Australia* in May 1968 Windsor considered Barnard's feat from the perspectives of the three 'actors' involved in the 'drama': recipient, surgeon and 'donor'.<sup>11</sup> In Windsor's assessment any surgeon contemplating such an operation must first examine his motives to be sure he was not being influenced by 'the flame of ambition and the possibility of renown', but honestly believed he could offer the recipient 'an indefinite period of comfortable life' despite the risks involved.<sup>12</sup> Windsor asserted that:

our thinking about death must be none too easy . . . otherwise we shall be too easily distracted from that fundamental of medicine, how to save the donor. Doctors everywhere remember head injuries awakening from deep and prolonged coma . . . If one felt a slight chill at the surgery in Cape Town, it was because of the rapidity with which hope was abandoned for the donor and a decision made by one man.

Windsor was commenting on the fact that a neurosurgeon at Groote Schuur Hospital had deemed the cerebral lesion Denise Darvall had suffered to be 'lethal and beyond treatment'. The Australian surgeon pointed out that that assessment of her case as hopeless was 'the Rubicon where [her] life was terminated, not when the respirator was turned off'. Yet prognosis was a fallible art.<sup>13</sup>

Barnard's accomplishment had proved the technical feasibility of human heart transplantation despite the fact that the recipient of Darvall's heart died eighteen days after the operation. Soon, surgeons around the world were undertaking heart transplants. By June 1968, with depressing results, twenty-three had been carried out: in Cape Town, New York, Palo Alto, Bombay, Paris, Houston, London, Richmond (Virginia), Sao Paulo, Montreal, Buenos Aires, Dallas and Valparaiso. Only one recipient remained alive six months after the operation, with a further three having by then survived for two months.<sup>14</sup> Increasingly, urgent questions were being posed about recipient deaths as well as when and how the patients from whom these hearts were been acquired, had died. The 1968 'epidemic' of heart grafts also drew strong criticism because transplant teams appeared to be vying against each other to perform the first such operation in their country, in the glare of publicity and despite poor prospects of success. Even medical admirers of Barnard's operation, like Harry Windsor and British transplant surgeon Roy Calne decried the 'nauseating publicity' surrounding it.<sup>15</sup>

Focusing on Britain's early heart transplants, Ayesha Nathoo argues that these operations destabilised trust in the medical profession. Her analysis reveals how interactions between the surgeons who performed them and the media posed a fundamental challenge to long-standing conventions which held that doctors should not self-advertise and must always maintain their patients' confidentiality. Some transplant surgeons defied

<sup>11</sup> Harry Windsor, 'Heart Transplantation, or Keeping Both Feet on the Ground', *Medical Journal of Australia*, 1, 20 (1968), 869–70. 'Donor' appears in quotation marks because those from whom organs were taken at this time had rarely bequeathed them. For a discussion see Helen MacDonald, 'Conscripting Organs: "Routine Salvaging" or Bequest? The Historical Debate in Britain, 1961–75', *Bulletin of the History of Medicine and Allied Sciences*, 70, 1 (2015), 425–61.

<sup>12</sup> Windsor, *ibid.*, 869.

<sup>13</sup> *Ibid.*

<sup>14</sup> G.E. Bauer, 'Cardiac Transplantation: Reflections of a Cardiologist', *Medical Journal of Australia*, 2, 20 (1968), 915–7: 916.

<sup>15</sup> Calne, quoted in Ayesha Nathoo, *Hearts Exposed: Transplants and the Media in 1960s Britain* (Basingstoke: Palgrave Macmillan, 2009), 99.

that code of professional conduct, alerting the media to their readiness to perform a country's first heart transplant and, once they had operated, holding press conferences, posing for photographs and giving personal interviews to journalists. Nathoo argues that this had the effect of turning their patients into 'public property'.<sup>16</sup> Surgeons defended themselves by inferring that they were the helpless victims of relentless media interest in their operations. To some extent this was accurate: they tried to manage the media's portrayal of their work but were inexperienced in doing so. However, Nathoo reveals that particular surgeons were not mere media pawns. Rather, they actively sought publicity for reasons of prestige – personal, professional and national – and in the hope of influencing the direction of government and private research funds.<sup>17</sup> In one journalist's evocative phrase heart transplanters were 'tripping over their sterilised gowns in their urgency to make statements and appear before the television cameras'.<sup>18</sup>

This essay contributes to the historical literature on transplantation's early history by analysing Australia's contributions to such debates and that country's pioneering heart transplants performed in 1968, designated 'The Year of the Transplant'.<sup>19</sup> That August the World Medical Association (WMA) held its annual congress in Australia, where delegates debated the terms that should be included in the Declaration of Sydney, an international code on death that has thus far not been critically evaluated by scholars in contrast to the better-known report of an Ad Hoc Committee of the Harvard University Medical School that was published the same month.<sup>20</sup> Yet the WMA meeting was one of those moments of contestation, doubt and debate out of which, the medical anthropologist Lesley A. Sharp has argued, rich data can emerge.<sup>21</sup> The *Lancet* reported that the WMA had worked to produce a new formula to 'resolve ... the dilemma of deciding who should be chosen as donors for organ transplantation and when' by establishing when the processes leading to a patient's death could be pronounced irreversible, a matter that had aroused both public and professional 'uneasiness'.<sup>22</sup> I here consider the Declaration of Sydney in the context of other contemporary statements and international debates on death and then, in the light of these, examine Australia's early heart transplants, which were part of a spate of more than one hundred such operations that year but have not until now been examined in their international context.<sup>23</sup>

<sup>16</sup> *Ibid.*, 67.

<sup>17</sup> *Ibid.*, 111.

<sup>18</sup> Cyril Kersh, *Sunday Mirror*, 4 February 1968, quoted in Nathoo, *op. cit.* (note 15), 103.

<sup>19</sup> Renée C. Fox and Judith P. Swazey, *The Courage to Fail: A Social View of Organ Transplants and Dialysis* (University of Chicago Press: Chicago, IL, 1974), 122–3.

<sup>20</sup> Most who discuss the Harvard report have not noticed the simultaneous release of the Sydney Declaration. See Renée C. Fox and Judith P. Swazey, *Spare Parts: Organ Replacement in American Society* (New York and Oxford: Oxford University Press, 1992); Mita Giacomini, 'A Change of Heart and a Change of Mind? Technology and the Redefinition of Death in 1968', *Social Science and Medicine*, 44, 10 (1997), 1465–82; Martin S. Pernick, 'Brain death in a cultural context: The reconstruction of death, 1967–81', in Stuart J. Youngner, Robert M. Arnold and Renie Schapiro (eds), *The Definition of Death: Contemporary Controversies* (Baltimore, MD and London: The Johns Hopkins University Press, 1999), 3–33; Margaret Lock, *Twice Dead: Organ Transplants and the Reinvention of Death* (Berkeley, CA: University of California Press, 2002); Lederer, *op. cit.* (note 1); David Hamilton, *A History of Organ Transplantation: Ancient Legends to Modern Practice* (Pittsburgh, PA: University of Pittsburgh Press, 2012); and Gary S. Belkin, *Death Before Dying: History, Medicine, and Brain Death* (Oxford: Oxford University Press, 2014).

<sup>21</sup> Lesley A. Sharp, *The Transplant Imaginary: Mechanical Hearts, Animal Parts, and Moral Thinking in Highly Experimental Science* (Berkeley, CA: University of California Press, 2014), 29.

<sup>22</sup> Anon., 'Patient or Donor?', *Lancet*, 292, 7569 (September 21, 1968), 671–2: 671.

<sup>23</sup> The only article thus far on the Australian heart transplants is physiologist John Carmody's 'Trampled in the Rush: Ethical Casualties in the First Australian Heart Transplant', *Health and History*, 16, 2 (2014), 87–106.

## Death and Transplanting

The fraught matter of when a patient's body could be deemed available for organ procurement only became urgently relevant during the 1960s. During an earlier period of grafting, a procedure which Thomas Schlich argues was invented between 1880 and 1930, tissues were taken from non-human animals and human beings to transplant into human patients – skin, thyroid and adrenal glands, the pancreas, ovaries and testicles – but the operations failed when the material was rejected by recipients' bodies.<sup>24</sup> These early grafts did not pose the fundamental ethical challenge raised by transplantation's second iteration from the mid-twentieth century because such glands and skin, when procured from corpses, were taken from people who had been assessed as dead in the conventional way, their hearts having stopped beating.

The historiography of particular relevance to this essay is that which focuses on how transplants entered contemporary discussions about the assessment of death prior to a patient's organs being acquired. This became increasingly urgent during the 1960s following the inception of vital organ transplants, for, while a twinned organ like a kidney could be taken from a living donor or following a conventional assessment of death, a liver, heart or lung had to be removed very quickly and preferably while blood continued to circulate through the donor's body. The best material was cut from patients whose condition had been assessed a hopeless due to a severe brain injury and who lay in a hospital in which they were attached to a ventilating machine. When such a person was viewed as a potential source of organs, as Mita Giacomini contends, waiting too long 'into the dying process' risked damaging these. Such patients could not be allowed to become 'too dead'.<sup>25</sup> Such matters raised concerns about the medical care of potential donors. In London, intensive care specialist Geoffrey Spencer of St Thomas's Hospital publicly characterised transplant surgeons as akin to 'vultures', hovering over critically ill people waiting to snatch their organs out.<sup>26</sup> Keith Simpson, professor of forensic medicine at Guy's Hospital in London, pointed out in 1967 that when such a patient's doctors withdrew 'sustenance' and permitted death to occur in these circumstances others, including lawyers, were watching this 'delicate situation' with concern. If artificial maintenance was withdrawn to test whether brain damage was irreversible on behalf of another patient (the potential organ recipient) the practice lay 'uncomfortably close' to euthanasia, for Simpson noted that support was being withdrawn 'at a given moment (the words are carefully chosen)' to effect the transplant. The time when 'all hope of a sustained existence is finally abandoned' (cast by Harry Windsor as the Rubicon moment) had become the new 'moment of death'.<sup>27</sup>

The best-known report to consider death in this new medical world was published in 1968 by an ad hoc committee of the Harvard Medical School chaired by anaesthetist and medical ethicist Henry K. Beecher. The Harvard report listed characteristics that would enable irreversible coma to be defined as 'a new criterion of death' and recommended tests to elicit the presence or absence of central nervous system activity, spontaneous movement or breathing, reflexes and so on, suggesting that these be repeated at least twenty-four hours later during which the person's condition had not changed. This

<sup>24</sup> Thomas Schlich, *The Origins of Organ Transplantation: Surgery and Laboratory Science 1800–1930* (Rochester, NY: University of Rochester Press, 2010); Lederer, *op. cit.* (note 1), 3–25.

<sup>25</sup> Giacomini, *op. cit.* (note 20), 1470.

<sup>26</sup> Anon., 'Doctor Criticizes Heart Transplant "Vultures"', *The Times*, 11 September 1968, 1.

<sup>27</sup> Keith Simpson, 'The Moment of Death: A New Medico-Legal Problem', paper, 46th South African Medical Congress, Durban, subsequently published in *The Solicitors' Journal*, 31 (1968), 435–6.

report's authors gave two reasons for the necessity of recasting death at this time. First, improvements in 'resuscitative and supportive measures' had resulted in the existence of patients whose hearts continued to beat but whose brains were 'irreversibly damaged', a phenomenon that placed a great burden on these patients, their families and the hospitals accommodating such individuals, who occupied beds other patients required. Secondly, the traditional criteria for determining death had led to 'controversy in obtaining organs for transplantation'. The Harvard report recommended that henceforth such a patient could be declared dead prior to the respirator being switched off, this decision being made by physicians who were not involved in a later effort to transplant the patient's organs to 'avoid any appearance of self-interest by the physicians involved'.<sup>28</sup> This recommendation enabled organ procurement while the patient's heart continued to beat.

The links between an articulated need to revisit how death could be assessed, and an interest in organ procurement, form something of a Gordian knot in the literature on historical aspects of transplantation. Scholars differ in evaluating the extent to which the Harvard committee's work was driven by the needs of transplant surgery. Most follow Mita Giacomini's 1997 examination of the committee's archives, assessing the committee's work as having been influenced by the quest to acquire the freshest possible organs to transplant and protect the medical profession from being prosecuted for taking them.<sup>29</sup> Gary S. Belkin has recently taken issue with this view, arguing that Beecher's justification for the committee was instead primarily grounded in his ethical concern for the dilemmas that arose from experimental knowledge, in this case about using intensive care measures on severely brain-damaged patients.<sup>30</sup> When were such measures supporting someone who might recover, and when were they instead fruitlessly supporting a corpse?

What seems clear is that in 1967 and 1968 it suddenly became imperative in Britain, the US and elsewhere to produce formal documents to address the matter of neurological death – and include in them a recommendation that transplant surgeons and physicians be excluded from making this assessment. Each such document thus reflected concerns about what might happen when medical professionals who held different interests in a particular patient's body decided that continuing to support that patient was a doomed undertaking.

The initiation of heart transplantation in December 1967 is generally given as the precipitating factor for this apprehension. 'Almost overnight', English cardiologist Walter Somerville would write in 1969, the definition of death escaped medical control to become 'a problem of first priority to legal, religious, medical and political leaders.'<sup>31</sup> The historian David Rothman also makes this argument: heart transplants turned brain death into a public issue rather than one mainly being discussed within the medical profession.<sup>32</sup> However, concerns about the circumstances of donor deaths had actually been expressed for years prior to heart transplants, for members of the medical profession and government health authorities were aware that some surgeons acquired kidneys from heart-beating bodies attached to respirators. Swedish physician Dr Gunnar Björck articulated the problem in

<sup>28</sup> Further, the physician in charge of the patient should consult with one or more other physicians who were directly involved in the case, to protect against 'later questions which might be raised' ('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, 6 (1968), 85–8: 85, 87).

<sup>29</sup> Giacomini, *op. cit.* (note 20); Lock, *op. cit.* (note 20).

<sup>30</sup> Belkin, *op. cit.* (note 20).

<sup>31</sup> Walter Somerville, 'Problems in Cardiac Transplantation from the Cardiologist's Viewpoint', *Progress in Cardiovascular Diseases*, XII, 2 (1969), 174–89 174.

<sup>32</sup> David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York, Basic Books, 1991), 159–60.



the following way: while kidney transplanters could disconnect a patient's 'life-supporting devices' and so cause death before cutting out the organ 'this would have been against their purpose, because they were interested in getting a living, perfused kidney and not a dying one'.<sup>33</sup>

In Britain, too, considerations about neurological death were paired with discussions of kidney transplants. I have found that there, health authorities had been concerned since at least 1966 that these organs were being taken from patients who were not dead as assessed by conventional means, information Britain's long-standing chief medical officer Sir George Godber hoped to keep from the public lest it increase perceptions that dying patients would not be properly cared for in the quest to obtain their organs for transplants. Godber sought a discrete yet authoritative statement on death in the context of transplant surgery from the presidents of England's three Royal Colleges – of Surgeons, Physicians and Pathologists – one that recommended transplanters be removed from deciding on such a patient's status. 'We do not want a set of rules laid down of course' Godber wrote, but 'a more uniform policy would be easier to defend, and defence is certain to be needed at some time'.<sup>34</sup> The College presidents were reluctant to define death 'too closely' at this time but agreed that transplant interests must be separated from assessing this state. The dying donor 'should not be looked after by a kidney transplantation team but [rather] by an entirely independent one which would be the one that had the sole responsibility for pronouncing death'.<sup>35</sup>

The first example I have found within medical circles of this anxiety about a potential conflict of interest being expressed was articulated in 1964 by Britain's pioneering kidney transplant surgeon Sir Michael Woodruff. He noted that it seemed 'inevitable' the knowledge someone was waiting for a kidney would 'to some extent influence the decision' about the envisaged donor's death, as a treating doctor 'could scarcely fail to know that their unseen colleagues were waiting poised for action' on behalf of their own patient, who was 'hoping desperately for a graft'.<sup>36</sup> Two years later the desirability of separating transplanters from a patient's primary care team was again discussed at a London Ciba Foundation symposium. Woodruff had urged that Foundation, which promoted international co-operation in medical research, to organise a small conference to discuss ethics in medical progress with specific reference to organ transplantation. There, the French transplant surgeon G. P. J. Alexandre stated that the only way to avoid 'cheating the potential cadaver donor' was to ensure the existence of two separate teams, though even then there was always 'some pressure' from the transplant group on the others, for example not to give the patient certain drugs that may affect the organ being sought.<sup>37</sup>

<sup>33</sup> Dr Gunnar Björck, 'On the Definitions of Death', *World Medical Journal*, 14, 5 (1967), 137–9: 138. In England, *R v Potter* (1963) had revolved around the cause of such a patient's death. Had death occurred when Mr Potter stopped breathing spontaneously due to an assault, or later, when the surgeons who cut out his kidneys had turned off the ventilating machine? For a discussion see Duncan Wilson, *The Making of British Bioethics* (Manchester: Manchester University Press, 2014), 108–9.

<sup>34</sup> Godber to Himsworth 17 October 1967, National Archives, Medical Research Council Registered Files, Death: Correspondence Concerning Setting up the Working Group on the Definition of Death (1966–70), FD 23/1899.

<sup>35</sup> Memorandum 'Meeting at Royal College of Physicians on 27 June 1967'. Eight years later the Royal Colleges reluctantly issued a report on brain death following an incorrect assessment of this state in a case of an attempted kidney transplant (Helen MacDonald, 'Guarding the Public Interest: England's Coroners and Organ Transplants, 1960–75', *Journal of British Studies*, 54, 4 (2015), 926–46).

<sup>36</sup> M.F.A. Woodruff, 'Ethical Problems in Organ Transplantation', *British Medical Journal*, 1 (1964), 1457–60: 1459–60.

<sup>37</sup> G.E.W. Wolstenholme and Maeve O'Connor, *Ethics in Medical Progress: With Special Reference to Transplantation* (London: J. & A. Churchill Ltd., 1966), 68–9.

In contemplating the knot entwining questions of neurological death and transplant surgery two further matters are salient. During the 1960s the medical profession and health authorities were conscious that vital organ transplants, which required deaths to be managed with the use of a respirator, would soon burgeon. In the US in 1964 James Hardy had been prevented from performing the world's first human-to-human heart transplant when no member of his team 'was prepared to stop the respirator of the potential human donor'.<sup>38</sup> Further, transplant researchers and surgeons were pushing for brain-based definitions of death, Francis Moore at Peter Bent Brigham Hospital being the first to propose one in 1964.<sup>39</sup> This was also the case in Europe where Swedish and French initiatives in this direction were directly linked to transplant needs, both in terms of kidney grafting and envisaged heart transplants.<sup>40</sup> And when in October 1967 Henry Beecher proposed to the dean of the Harvard Medical School that a committee be formed to redefine death it is noteworthy that he stated both he and pioneering kidney transplant surgeon Joseph Murray thought the time had come to do so, adding: 'Every major hospital has patients stacked up waiting for suitable donors'.<sup>41</sup> Heart transplants had thus dramatically raised the stakes in talks about neurological death rather than initiating them.

In 1968 Britain became the first country in the English-speaking world to produce a statement on death in the context of transplant surgery. As I have examined elsewhere, that March – while the Harvard committee was meeting, and the World Medical Association's ethics committee pondered the matter – Sir George Godber formed the MacLennan conference, which comprised representatives of medicine, the law, other vocations and religious groups but which was dominated by its medical members. The conference's twofold mission was to increase organ supplies while reassuring the public that the patients from whom these were cut were truly dead. It ratified a statement on death Godber had crafted: the decision an organ could be removed from a 'cadaver' could be made when a patient's spontaneous cardio-respiratory function had ceased and the clinician responsible for his or her care concluded that this condition was irreversible. However, the conference added to this statement a recommendation that transplant interests be excluded from assessing this state. If organ procurement was envisaged, two doctors (one of whom had been qualified for at least five years) should make the decision to turn off the respirator, both of them being independent of the transplant team.<sup>42</sup> Subsequently, at the world's first symposium on heart transplantation held in July 1968 in Cape Town a member of Britain's heart transplant team asserted that in London no transplant surgeon could 'place a finger on the donor, until he is irrecoverably dead'.<sup>43</sup> The following month the MacLennan formula was joined by the Harvard report and the Declaration of Sydney which I discuss below. All three documents linked neurological death with transplant surgery, recommending a means

<sup>38</sup> James D. Hardy and Carlos M. Chavez, 'The First Human Transplant in Man: Developmental Animal Investigations with Analysis of the 1964 Case in the Light of Current Clinical Experience', *The American Journal of Cardiology*, 22 (1968), 772–81: 776. In December 1967 heart transplant surgeon Adrian Kantrowitz also found that his colleagues at Maimonides Medical Center insisted he allow the donor's heart to stop naturally before removing it (Adrian Kantrowitz, 'America's First Human Heart Transplantation: The Concept, the Planning, and the Furor[sic]', *ASAIO Journal*, (1998), 244–52: 250).

<sup>39</sup> Giacomini, *op. cit.* (note 20), 1469.

<sup>40</sup> Editorial, *World Medical Journal*, 14, 5 (1967), 133–4.

<sup>41</sup> Quoted in Rothman *op. cit.* (note 32), 160–1.

<sup>42</sup> Helen MacDonald, 'Considering Death: The Third British Heart Transplant, 1969', *Bulletin of the History of Medicine*, 88, 3 (2014), 493–525: 495; MacDonald, *op. cit.* (note 11), 10–16.

<sup>43</sup> Dr James Mowbray, quoted in MacDonald *op. cit.*, (note 42), 513. On the involvement of the London transplant team with heart donors see MacDonald, *ibid.* and Nathoo, *op. cit.* (note 15).



to procure the best possible organs to transplant together with the protective mechanism of separating transplanters from the decision that the envisaged donor had died.

### The Declaration of Sydney

How and by whom patients' deaths should be assessed was thus the subject of considerable international debate during 1968. The tensions this caused in the medical profession were evident at the Twenty-Second Meeting of the World Medical Association held in Sydney, Australia that August and attended by more than 200 doctors from 28 countries.<sup>44</sup> The debate took place with journalists present, in contrast to both the Harvard committee and the MacLennan conference which had been private meetings held behind closed doors. Mita Giacomini argues for the Harvard committee that this had the effect of hiding from public view professional uncertainty on the question of death and transplant surgery.<sup>45</sup>

The World Medical Association, which had first met in 1947, was a policy-oriented organisation established to maintain the honour and protect the interests of the profession; assist people around the world to attain the highest possible level of health; and promote world peace. In addition from its earliest days the Association had taken an active interest in medical ethics.<sup>46</sup> Until 1967 the Association's ethics committee had not considered the problem of defining death and in that year appears to have been prompted to do so by the previously mentioned Ciba symposium on ethics in organ transplantation, held in London a year earlier. Until then, the committee had instead focused on other modern medical dilemmas, such as the ethical implications of the world population explosion, of professional secrecy, of legal abortion and the contraceptive pill.<sup>47</sup> Early in 1967 the committee recorded its regret at being 'bogged down' in such matters when its 'enterprising' members wanted to move on to other themes including the ethics of the prolongation of life, artificial insemination, and organ grafting.<sup>48</sup> Later that year the Association devoted an issue of its *World Medical Journal* to definitions of death, and in doing so the editorial placed transplantation as the primary reason requiring a new one.<sup>49</sup> The articles that followed canvassed some of the problems then being experienced, including pending legal action in Sweden against a surgeon who had removed a woman's kidney thirty-six hours prior to her heart ceasing to beat;<sup>50</sup> and a Danish suggestion that it might be justified to continue or even to institute artificial ventilation for the purpose of maintaining circulation through a desired organ.<sup>51</sup> Early in 1968 the ethics committee devised a 'Proposed Statement on Death'. It had been drafted by committee chairman Dr Charles Hudson (a member of the American Medical Association) and Dr S. S. B. Gilder (editor of the *British Medical Journal*) at the WMA Council's New York meeting

<sup>44</sup> Anon., 'Transplant Safeguard', *Canberra Times*, 7 August 1968, 3. On the Association see C. Machado, J. Korein, Y. Ferrer, L. Portela, M. de la C. Garcia, M. Chinchilla, Y. Machado, and J. M. Manero, 'The Declaration of Sydney on Human Death', *Journal of Medical Ethics*, 33 (2007): 699–703: 699.

<sup>45</sup> Giacomini, *op. cit.* (note 20), 1466.

<sup>46</sup> Susan Lederer, 'Research without borders: The origins of the declaration of Helsinki', in Ulf Schmidt and Andreas Frewer (eds), *History and Theory of Human Experimentation: The Declaration of Helsinki and Modern Medical Ethics* (Stuttgart: Steiner, 2007), 199–215.

<sup>47</sup> *World Medical Journal*, 12, 6 (1965), 170–1; editorial, *World Medical Journal*, 13, 5 (1966), 141.

<sup>48</sup> *World Medical Journal*, 14, 1 (1967), 6.

<sup>49</sup> Editorial, *World Medical Journal*, 14, 5 (1967), 133–4: 133.

<sup>50</sup> Bjørck, *op. cit.*, (note 33), 137–8.

<sup>51</sup> Jørgen Voigt, 'The Criteria of Death Particularly in Relation to Transplantation Surgery', *World Medical Journal*, 14, 5 (1967), 143–6: 145.

in March 1968 to be taken to the Australian meeting. In Sydney, international delegates considered much of the proposal to be uncontentious, but as I discuss below they took issue with its recommendations in regard to how death should be declared in circumstances where the patient's body was envisaged as containing material to transplant.<sup>52</sup>

Like the Harvard report, the WMA proposal asserted that two modern practices drove the need to revisit the matter of death: the ability to maintain circulation by artificial means through a body that may have been 'irreversibly injured', and the use of 'cadaver' organs in transplantation.<sup>53</sup> Unlike the Harvard report the WMA proposal acknowledged that death was a gradual process with some parts of a body dying before others, and stated that in the face of this fact clinical interest lay in 'the fate of a person' rather than the state of particular cells.<sup>54</sup> The proposal stated that a physician, acting alone or consulting with colleagues, was legally responsible for assessing his patient's state and in doing so would usually employ the 'classical criteria' all physicians knew (that is, whether the person's heart was beating and they were breathing). However, diagnostic aids might assist, of which the electroencephalogram [EEG] for measuring brainwaves was thought to be the most helpful. Once the physician/s had assessed that death had occurred it was 'ethically permissible' to cease attempts at resuscitation and remove organs from the 'cadaver' in countries where the law permitted this and providing prevailing legal requirements of consent had been fulfilled.<sup>55</sup>

Sydney delegates disagreed with two aspects of this proposal. They were uncertain how a patient's state could be definitively known to be irreversible, and argued that any doctor or surgeon who had an interest in obtaining the patient's organs to transplant should be excluded from making this assessment. English delegates were particularly vocal on these matters and, in mounting their arguments, drew upon the deliberations of the British government's MacLennan conference whose formula for assessing death had been sent to every British hospital in which transplants were performed. In Sydney, WMA delegates recognised that the Association's proposal did not contain the protections in the MacLennan statement, which had recommended that two doctors, one of them senior, should assess a donor's condition, neither of them being a member of the transplant team.

At this time there was no broad agreement within the medical profession that someone whose condition was thought to be irreversible could be assessed as dead and their organs removed and a spectrum of opinion was illustrated at the WMA meeting. The Association's outgoing president Dr Alfonso de la Fuente (Spain) argued that the time when a person's state was assessed as irreversible had become the moment of death.<sup>56</sup> But others pondered how a doctor could be certain of his prognosis, and at what point along the dying process hopelessness could be said, with confidence, to have occurred. The EEG did not seem to be a particularly helpful diagnostic tool, despite it having become the 'acid test of death in all heart transplants'.<sup>57</sup> The WMA chairman Dr G. Dekker (Netherlands) cited the case of a patient who had recovered after four days during which no brain action had been recorded.<sup>58</sup> Other delegates spoke of recent research at Edinburgh's Royal Infirmary where

<sup>52</sup> Machado *et al.*, *op. cit.* (note 44).

<sup>53</sup> Robert Johnston, 'A Matter of Life – and of Death', *Sun*, 7 August 1968, 8.

<sup>54</sup> Machado *et al.*, *op. cit.* (note 44), 701.

<sup>55</sup> *Ibid.*, 8; Anon., 'The Ethics of Transplants: Defining Death Divides Doctors', *Sydney Morning Herald*, 6 August 1968, 5.

<sup>56</sup> Anon., 'Priest had his Say to Doctors', *Sun*, 7 August 1968, 3.

<sup>57</sup> Anon., 'Electric Test Found Faulty', *Sydney Morning Herald*, 6 August 1968, 5.

<sup>58</sup> Anon., *op. cit.* (note 56), 3.

four of five patients diagnosed as dead via an EEG had later recovered.<sup>59</sup> Everyone present knew no such period of grace might have followed had these patients been viewed as organ sources. Besides, it was asked, even if a flat EEG was thought to be a 'fatal symptom', how long should the tracings remain flat before the brain could reliably be assessed as dead?<sup>60</sup> The Harvard report recommended twenty-four hours between the tests it advocated, but at the WMA meeting some delegates thought only a few minutes would be necessary. However, Dekker knew of cases of 'reanimation' after many hours.<sup>61</sup> Incoming WMA president Sir Leonard Mallen (Australia) warned that the medical profession must never be placed in the position where it might be said murder had been committed to obtain an organ.<sup>62</sup> Another delegate stated that the only time a person had absolutely no hope of recovering was when their body began to decay, over two or three days.<sup>63</sup> That would make the organs useless for transplanting.

Given these concerns about diagnostic reliability, delegates sought to exclude anyone interested in acquiring organs from involvement in making such an assessment. That the WMA proposal had failed to provide any such protections was noticed: it would allow one doctor acting alone, and who might have an interest in the transplant, to authorise organ removal. Delegates argued that more than one physician should pronounce the donor dead, and that he or she should not be involved in any prospective transplant operation.<sup>64</sup> English physicians Dr R. Gibson and Dr Derek Stevenson (the latter being the Secretary of the British Medical Association) went further, asserting that the doctors who certified death should be 'completely independent of the operation and those performing it'.<sup>65</sup> Gibson considered the two teams should not even be in touch with each other over the telephone. Had his view prevailed it would have made acquiring organs virtually impossible, for surgeons needed to be primed to act the moment a death had been declared and this required advance knowledge of the potential donor's clinical state. As WMA treasurer Dr E. Fromm argued, it was unreasonable that those certifying a death must not even *know* the transplant surgeons.<sup>66</sup>

The discussion of the WMA proposal on death was assessed as being 'the liveliest debate in an otherwise rather docile Assembly'.<sup>67</sup> On the meeting's final day the Association's ethics committee issued an agreed version of the document, which was adopted unanimously on 9 August and came to be called the Declaration of Sydney.<sup>68</sup> The declaration was deemed to be a statement on the diagnosis of death, though it failed to define death and, unlike the Harvard report, recommended no tests to determine the existence of this state. A lead article in the *British Medical Journal* noted that while the declaration would not satisfy everyone, 'especially doctors, who want an exact assessment of the signs of death', it probably went as far as could be expected of a world body at

<sup>59</sup> Anon., *op. cit.* (note 57), 5. However, this study had been of EEGs performed on patients suffering from poisoning, whose brainwaves would have been affected by the barbiturates involved.

<sup>60</sup> Anon., 'Definition of Death Postponed', *Sydney Morning Herald*, 8 August 1968, 1.

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

<sup>62</sup> Johnston, *op. cit.* (note 53), 8.

<sup>63</sup> Anon., 'What W.M.A. Talked about Yesterday: Death Definition Unlikely – Doctor', *Sydney Morning Herald*, 9 August 1968, 9.

<sup>64</sup> Johnston, *op. cit.* (note 53), 8; Anon., *op. cit.* (note 63), 9. This part of the proposed statement would not be included in the Declaration of Sydney.

<sup>65</sup> Anon., 'Doctors Adopt "Statement on Death": Definition of Death will not be Used', *Age*, 10 August 1968, 5.

<sup>66</sup> *Ibid.*, 5.

<sup>67</sup> Editorial, *World Medical Journal*, 15, 6 (1968), 129.

<sup>68</sup> Anon., 'Machine to be Guide to Death', *Herald*, 9 August 1968, 3.

this time.<sup>69</sup> The *Journal* hoped that the declaration would dispel ‘any remaining fears’ the public held about ‘possible collusion between doctors making these difficult and delicate decisions’.<sup>70</sup> The Declaration of Sydney was also communicated to a non-medical readership. The *New York Times* focused on the fact that it should safeguard donors, noting how ‘the question of when an individual can be judged to have died became a pressing consideration’ at the WMA meeting.<sup>71</sup> In Australia an article by Robert Raymond in *The Bulletin* news magazine was less certain, noting that doctors there had been unable to agree where to ‘rule the cut-off line’ on the ‘fluctuating but generally down-curving index’ of the death process, with cerebral death appearing to refer to total and permanent cessation of brain activity – with the meaning of ‘total’, ‘permanent’ and ‘cessation’ remaining in dispute. However, the WMA intended that no potential donor’s therapy was to be interfered with in any way by the fact they were ‘in danger of death’. ‘The world’, Raymond noted, ‘seems to be doing its best to help the transplant doctors’ and official opposition to heart transplants in Australia had ‘crumbled’.<sup>72</sup>

In New South Wales the minister of health, Arnold Henry Jago, was certainly a transplant enthusiast. In 1966 he had participated in that state’s parliamentary debate on the Tissue Grafting and Processing (Amendment) Act under which Australia’s first heart transplant would soon be performed. That debate had been notable for its jingoism, with parliamentarians enthusiastically promoting Sydney doctors and surgeons in the transplant field, arguing that the new statute would enable them to showcase their skills and inventiveness to the world, these being equivalent to, if not better than, others internationally. Parliamentarians therefore considered it fitting that in Australia, Sydney’s surgeons should be at the forefront in ‘passing on these advantages to humanity’ and contribute to a story of progress that was ‘one of the greatest romances of the century’.<sup>73</sup>

### A Sydney Heart

This was the international and local context in which Sydney cardiac surgeon Harry Windsor, who had earlier cautioned against heart transplants, performed Australia’s first such operation in October 1968. Here I analyse Windsor’s interpretation of this endeavour to understand how this matched the moral perspective he had earlier laid out: that heart transplants were experimental procedures which could ethically be performed so long as a surgeon could offer the recipient a reasonable chance of an indefinite period of comfortable existence despite the risks, and was not motivated by ‘the flame of ambition and possibility of renown’; and with the proviso that great caution must be taken in deciding the donor’s state given the fallibility of prognosis.<sup>74</sup>

The sea change in Windsor’s thinking arose from the extraordinary survival of Christiaan Barnard’s second heart recipient, Philip Blaiberg, who had received a recycled heart in January 1968 and remained alive throughout that year;<sup>75</sup> and from overseas heart

<sup>69</sup> Stanley S.B. Gilder, ‘Twenty-Second World Medical Assembly’, *British Medical Journal*, 3, 5616 (1968), 493.

<sup>70</sup> Anon., ‘Declaration of Sydney’, *British Medical Journal*, 3, 5616 (1968), 449.

<sup>71</sup> Tillman Durdin, ‘Physicians Adopt a Code on Death’, *New York Times*, 10 August 1968, 25.

<sup>72</sup> Robert Raymond, ‘When are you Dead?’, *The Bulletin*, 17 August 1968, 31–5.

<sup>73</sup> Mr Hunter, ‘Tissue Grafting and Processing Bill’, New South Wales Parliamentary Debates, Session 1965–6, 3<sup>rd</sup> series, Vol. 61, Legislative Council, 17 March 1966, 4331; Mr Crabtree, *ibid.*, 4331–2.

<sup>74</sup> Windsor, *op. cit.* (note 11), 869–70.

<sup>75</sup> Harry Windsor, *The Heart of a Surgeon: The Memoirs of Harry Windsor* (Kensington, NSW: New South Wales University Press, 1988), 73.

transplant surgeons' boosting of the procedure. Windsor had arranged for American heart transplant surgeon Norman Shumway of Stanford University to visit Australia in May that year, accompanied by other leading experts. During his visit Shumway took the opportunity to advocate that local cardiac surgeons venture into transplantation, arguing that they had no need to await the perfection of its techniques elsewhere.<sup>76</sup> He defended heart transplants from those cardiac surgeons who considered these operations bristled with 'immense problems, surgical and immunological as well as legal, moral, ethical and philosophical'.<sup>77</sup> Shumway asserted that 'the public' considered it to be 'their right to be saved by the heart of another' and accepted that death could result from 'brain disease and not heart failure'. Besides, he stated, any moral concerns were allayed by the fact that heart transplant surgeons did not pronounce the donor dead. Neurologists and neurosurgeons did this, and only following their expert assessment was a donor's heart 'kept alive' to transplant.<sup>78</sup>

On 23 October, two months after the publication of both the Declaration of Sydney and the Harvard report, Windsor performed the world's sixty-fourth heart transplant, operating at St Vincent's Hospital in the thoracic building known as 'Windsor's Castle'.<sup>79</sup> He removed the heart from 29-year-old Brian Sly who had been admitted to the hospital three days earlier having suffered a brain haemorrhage, and sewed it into his own patient Richard Pye. This operation became front-page news throughout Australia and was reported elsewhere more succinctly, as were most of the 1968 spate of heart transplants.

By October 1968 there was increasing awareness that the prospect of heart recipients surviving for long, let alone experiencing comfortable lives as Windsor had hoped, was bleak. As summarised by the National Heart Institute in the US in September 1970, of the one hundred and sixty five transplants by then performed, one hundred and forty recipients were dead and only two of those who remained alive had survived for more than two years.<sup>80</sup> Given these dire statistics, cardiac specialists and other doctors were cautioning against heart transplants, and recommending that the decision to endorse such an operation to a patient should be made by more than one doctor, who must take 'particular care' in explaining the risks involved.<sup>81</sup> This Harry Windsor was at pains to assert he had done with Richard Pye, a 57-year-old man suffering from heart failure. Windsor fits the model of transplant surgeons Renée Fox and Judith Swazey have identified, who cast their patients as 'esteemed and heroic companions' in a perilous but promising group endeavour.<sup>82</sup> Following the operation, Windsor asserted that Pye had driven the decision to perform the Sydney transplant in the face of Windsor's own reluctance to do so. In an interview titled 'Heart Swap Surgeon Tells His Own Story' Windsor stated that he had spent hours trying to talk Pye out of the operation and warning him of the dangers

<sup>76</sup> Anon., 'Sydney Team Makes First Heart Switch', *Sydney Morning Herald*, 24 October 1968, 1; Anon., 'Heart Transplants are Ethical: Surgeon', *Canberra Times*, 23 May 1968, 4.

<sup>77</sup> Bauer, *op. cit.* (note 14), 916.

<sup>78</sup> Anon., 'Heart Transplants are Ethical', *op. cit.* (note 76), 4.

<sup>79</sup> Anon., 'The Man in "Windsor Castle"', *Sun*, 24 October 1968, 2. According to the nuns who staffed this hospital Windsor reigned there as a 'king'. An 'anticipatory tremor' ran through the thoracic section when he walked through the wards. 'The patients sort of lie down to attention', one nun stated. 'He has that effect on you'. See Robert Drewe, 'Transplant Was "Terrible Job"', *Age*, 25 October 1968, 1.

<sup>80</sup> Quoted in Fox and Swazey, *op. cit.* (note 19), 77.

<sup>81</sup> Somerville, *op. cit.* (note 31), 175–6.

<sup>82</sup> Fox and Swazey, *op. cit.* (note 19), 105.

involved.<sup>83</sup> However, Pye was an ‘iron-willed’ man who could not be dissuaded from the operation, for which he was ‘perfectly physically and mentally adjusted’.<sup>84</sup> Indeed, the entire Pye family comprised ‘the sort of people you needed to deal with in such a crucial procedure’, ‘people of the phlegmatic, stoical stamp, able to face the most testing situation without showing emotion’. While Windsor acknowledged the high mortality rate of heart transplants, he informed journalists that he and his team hoped Pye would ‘recover completely’.<sup>85</sup>

On the day following the transplant a *Sydney Morning Herald* editorial argued: ‘We can be grateful that this incredible operation, with all its power to attract publicity and arouse both hope and revulsion, has been performed in an atmosphere of restraint and caution, with no sense of rivalry or self-dramatisation’.<sup>86</sup> That soon proved not to be the case. The hospital was certainly circumspect, denying that a heart transplant was taking place (notwithstanding a ‘siege’ of reporters appearing there during the operation) and seeking to ensure no publication of the patients’ names.<sup>87</sup> However, Windsor’s own interactions with the media appeared to ignore his earlier cautions. Speaking to journalists he cast himself as an anguished actor in a transplant performance, comparing himself to God and to astronaut Walter Schirra, recently returned to earth on Apollo 7. Windsor had felt ‘a little closer to the Almighty’ when he had restarted Sly’s heart inside Pye, he knew how ‘Chris’ Barnard felt.<sup>88</sup> Windsor further asserted that he had not rushed to carry out Australia’s first heart transplant, his team having been ready to do so ‘any time over the past 10 months’ only awaiting an opportunity when everything came together at the right time. ‘There was no race to be first’, he stated. ‘It just happened that way.’<sup>89</sup> Yet Windsor knew that cardiac surgeons in two other Sydney hospitals – the Royal Prince Alfred and the Prince Henry – were also preparing to transplant a heart.<sup>90</sup> Indeed prior to the operation his hospital, St Vincent’s, had been considered the least likely of the three to do so.<sup>91</sup>

Windsor also spoke publicly about the man from whom he had procured the heart he had used for this pioneering operation. He never referred to Brian Sly by name, though this was in the public realm, but in his interactions with journalists Sly became public property in the way Ayesha Nathoo found to be the case for the early British heart transplants. Windsor asserted that there had been no moral concerns about his dealings with Sly, but spoke of this patient in a way that appears to show he was uneasy about the circumstances of the man’s death.<sup>92</sup> In these accounts the manner of Sly’s dying differs. As per the declaration of Sydney, Windsor claimed to have had no involvement with the donor, stating ‘I do not know who he was and I really never want to be told’, informing journalists that he had even instructed nurses to cover Sly’s face before he entered the room where the man lay. ‘The last thing I wanted to do was look down on the face of that young man. I didn’t

<sup>83</sup> John Sorell, ‘Heart Swap Surgeon Tells his Own Story’, *Herald* 24 October 1968, 1. John Carmody notes that Pye, a war veteran, had also been assessed on 29 August by a committee appointed by the Repatriation Commission which would pay for this operation (Carmody, *op. cit.*, (note 23), 94–5).

<sup>84</sup> Sorell, *op. cit.* (note 83), 1.

<sup>85</sup> Shaun McLlraith, ‘I Know how Barnard Felt’, *Sydney Morning Herald*, 25 October 1968, 10.

<sup>86</sup> Editorial, ‘The Soft Machine?’, *Sydney Morning Herald*, 25 October 1968, 1.

<sup>87</sup> Carmody, *op. cit.* (note 23), 90, 96.

<sup>88</sup> McLlraith, *op. cit.* (note 85), 10.

<sup>89</sup> Sorell, *op. cit.* (note 83), 1; 3.

<sup>90</sup> Anon., ‘The Man in “Windsor Castle”’, *Sun*, 24 October 1968, 2. On inter-hospital rivalry in Sydney see Carmody, *op. cit.* (note 23), 92–3.

<sup>91</sup> Michael Symons, ‘Two More Teams Get Set’, *Sydney Morning Herald*, 25 October 1968, 11.

<sup>92</sup> McLlraith, *op. cit.* (note 85), 10.



want to know how old he was, what family background he had, or anything about him ... It was nightmarish'.<sup>93</sup>

This theatrical language was not the way transplant surgeons usually spoke about those from whom they acquired hearts. Further, Windsor gave journalists details about Sly and his family's medical background that would have distressed the man's pregnant widow and wider family. He informed the media that Sly's death had been certified, by a separate medical team, 'following cessation of cardiac activity', that is in the conventional way rather than that enabled by the Declaration of Sydney. Windsor had not experienced any 'moral problem' in regard to the donor because he had not been involved in managing him or deciding that he was dead: not until the death had been certified had he begun to operate to remove the heart, and he was 'quite certain the patient was clinically dead' for the man was 'black all over'.<sup>94</sup> This created the public impression that Windsor had been completely separated from Sly, but as Michael Woodruff and delegates to the Sydney WMA meeting had discussed, in practice such a degree of separation was difficult to achieve. Windsor knew that the best prospect for a heart transplant recipient at this time followed when the operations on donor and recipient were synchronised. This the Declaration of Sydney allowed, by making the diagnosis of hopelessness the moment when a donor passed into the hands of a transplant team. Windsor himself now believed that this Rubicon moment was the time when 'responsibility to the donor is superceded [*sic*] by responsibility to the recipient' but St Vincent's Hospital had decreed that the donor's chest could not be opened until his heart had stopped beating.<sup>95</sup> That required Windsor to wait until Sly had died in the conventional way.

Following the operation Windsor had stated to some journalists that he had had nothing to do with the donor, but to others he disclosed that he had been engaged with Sly. The operation's timing is revealing in evaluating which account is more accurate. At noon Sly was assessed as 'hopeless' at which time all active treatment, other than the respirator, was suspended.<sup>96</sup> However, as the respirator was still being triggered by Sly's own, albeit shallow, breathing at this time of prognosis he would not count as dead under either the Sydney or Harvard formulations. Nevertheless he now passed into Windsor's hands. At 1.30 pm. Sly was wheeled into the operating theatre where, two hours later, his heart unexpectedly stopped while Windsor was also in the room. In one account the surgeon was preparing to attach Sly to a heart-lung bypass machine primed ready for use ('as I bent over the donor his pulse stopped and heart activity ceased').<sup>97</sup> In another account Windsor had been leaving Sly's room but was called back by a frantic yell.<sup>98</sup> He now found himself engaged in a 'race against time' to revive Sly's heart for Richard Pye, who was lying in an adjoining operating theatre but had not yet been anaesthetised for the operation to remove his own diseased heart.<sup>99</sup> For three or four minutes Windsor worked

<sup>93</sup> Anon., 'The Point of No Return', *Sydney Morning Herald*, 25 October 1968, 10; Anon., 'Problem Overcome', *Canberra Times*, 25 October 1968, 3; Windsor quoted in David Aldridge, 'The Agony of a Surgeon', *Sun*, 25 October 1968, 8.

<sup>94</sup> Sorell, *op. cit.* (note 83), 1; McIlraith, *op. cit.* (note 85), 10.

<sup>95</sup> Harry M. Windsor, 'Cardiac Transplantation', *Postgraduate Medical Journal*, 46 (April 1970), 237–242, 239; Harry Windsor, 'A Heart Transplantation: 3. Surgical and Postoperative Surgical Aspects', *Medical Journal of Australia*, 1, 13 (1969), 667–9.

<sup>96</sup> Kevin Bleasel, R. J. Bailey, Warren Gunner and John Dwyer, 'A Heart Transplantation: 2. The Donor', *Medical Journal of Australia*, 1, 13 (1969), 665–6.

<sup>97</sup> Sorell, *op. cit.* (note 83), 1.

<sup>98</sup> Shaun McIlraith, 'Eleven Hours of Drama at St Vincent's', *Sydney Morning Herald*, 25 October 1968, 2.

<sup>99</sup> *Ibid.*

frantically, cutting open Sly's chest, taking his heart in hand and giving it a 'solid whack', all while a separate team certified the man dead.<sup>100</sup> Then Windsor connected Sly to the prepared bypass machine and fed heparin into his blood to prevent it from clotting.<sup>101</sup> Windsor variously stated to journalists 'His heart was alive again and yet he was totally *beyond recovery*';<sup>102</sup> that Sly's heart was alive 'but he was *dead*'.<sup>103</sup>

It seems likely that Windsor's use of the media following the operation to ponder ethical matters reveals his awareness that most people at the time did not share his view that someone whose condition had been deemed hopeless was, effectively, dead. Soon after the operation Windsor began to receive threatening telephone calls and letters accusing him of being an accomplice to murder. Undaunted, he informed the press that he was ready to do another transplant 'at any hour'.<sup>104</sup>

### The Melbourne Heart

News of Windsor's historic operation was reported extensively in the southern state of Victoria, where journalists wondered why Australia's first heart transplant had not instead been performed in Melbourne. A spokesman for that city's Alfred Hospital stated that a team had been ready to carry out such a transplant long before the Sydney operation but had experienced several 'false starts', not being able to locate a suitable donor.<sup>105</sup> At St Vincent's Hospital anaesthetist Dr Harry Bray also declared his hospital to be ready. Two suitable recipients had died there for want of a heart, it being difficult to obtain a suitable donor and recipient at the same time.<sup>106</sup>

These comments made it sound as if only practical matters had deterred Melbourne's surgeons, but journalists also noted the existence of 'peculiar' legal obstacles to transplants in Victoria.<sup>107</sup> Unlike the situation in NSW, no legislation authorised the removal for therapeutic use of any organs other than eyes.<sup>108</sup> In addition, unlike NSW's enthusiastic health minister, Victoria's minister of health Vance Dickie was cautious about heart transplants. Over several months in 1968 he expressed ethical concerns about whether they should be performed, decrying the international enthusiasm for these operations. In August the Victorian branch of the Australian Medical Association had accused Dickie of unjustifiably intruding into 'the rights of members of a responsible profession to decide what was best in the interests of their patients', sending a deputation to the minister's office.<sup>109</sup> On 29 October, six days after the Sydney heart graft, Dickie introduced a bill into parliament that would place transplants on a legal footing in the state.

The Medical (Organ Transplants) Bill followed earlier human tissue legislation in Britain and New South Wales in decreeing that prior to organ removal a medical practitioner who had personally examined the person's body should pronounce life

<sup>100</sup> Sorell, *op. cit.* (note 83), 1.

<sup>101</sup> McIlraith, *op. cit.* (note 98), 2.

<sup>102</sup> Sorell, *op. cit.* (note 83), 1, my emphasis.

<sup>103</sup> *Ibid.*

<sup>104</sup> Anon., 'Transplant Man Gives a Smile', *Canberra Times*, 26 October 1968, 3; Windsor, *op. cit.* (note 75), 75.

<sup>105</sup> Goreham quoted in Anon., 'Heart Swap at the Alfred', *Sun*, 13 November 1968, 1–2: 2.

<sup>106</sup> Anon., 'First Heart Switch Here Under Way', *Age*, 24 October 1968, 1–2; Anon., 'Heart Transplant', *Sun*, 24 October 1968, 2.

<sup>107</sup> Leonard Radic, 'Law and Transplants', *Age*, 25 October 1968, 5.

<sup>108</sup> Corneal Grafting Act, 1954 (State of Victoria, *The Acts of Parliament Passed During the Year 1954, in the Second Session of the Thirty-Ninth Parliament of the State of Victoria* (Melbourne: Government Printer), 1955).

<sup>109</sup> Anon., 'Victorian Newsletter', *Medical Journal of Australia*, 2, 9 (1968), 416.

'extinct'. Thus one doctor alone could do so. However, the bill took cognisance of the Declaration of Sydney's prohibition on the certifying doctor participating in a subsequent transplant. It stated that to avoid 'the possibility of conflict of professional interests' the doctor was not to be involved in 'the procedures for removing or transplanting' material from the extinct person's body. Further, the Victorian bill differed from earlier legislation elsewhere by including a hefty penalty clause. Anyone who breached this statute could be deemed to have committed 'infamous conduct in a professional respect' which, Dickie pointed out, would automatically invoke further serious consequences under the registration provisions of the Medical Act.<sup>110</sup>

On 12 November, before this bill had progressed in Parliament, a team of Melbourne surgeons carried out Victoria's first heart transplant. They thus did so in the absence of enabling legislation, joining Victorian kidney transplant surgeons who had been performing their operations for years.<sup>111</sup> The team, led by the Alfred Hospital's chief cardiac surgeon Kenneth Morris who had in 1957 performed Australia's first open heart surgery, transplanted a heart into George Wippler who had arrived in the hospital three days earlier in a critical condition following a heart attack. The night before the operation it had been decided that only a transplant might save him.<sup>112</sup> Tissue and blood samples were therefore taken in readiness to compare against those of a suitable donor, should one arrive in the hospital.<sup>113</sup> It was reasonable to hope that one would, as the Alfred had one of the busiest casualty departments in Australia. At 5 pm the following day 40-year-old Michael Healy was admitted, deeply unconscious from a self-inflicted gunshot wound to the head. Tissue and blood samples were taken from him to match against Wippler's, it being decided to 'go ahead with the operation when he died.'<sup>114</sup> Members of the transplant team watched as Healy's condition deteriorated.<sup>115</sup> At 6.30 pm he again began to breathe of his own accord, but stopped doing so five minutes later.<sup>116</sup> At 7.30 both Healy and Wippler were wheeled into the operating theatre, Healy's heart still beating because it was being artificially 'nourished'.<sup>117</sup> An hour later his stilled heart was cut out and the transplant effected.

This operation failed, Wippler surviving it for a mere eight and a half hours during which he never left the operating theatre. His plight would subsequently become the subject of criticism, but in choosing to operate on such a critically ill man the Melbourne surgeons were not unusual at this time. A heart transplant was an operation of last resort, and only such patients were considered suitable recipients for a procedure that was still experimental but just might offer a dying person hope of a longer life. Nevertheless, in selecting a recipient surgeons were meant to ensure that he or she was not suffering from another condition that a transplanted heart could not correct. An autopsy would reveal that

<sup>110</sup> 'Medical (Organ Transplants) Bill', Victorian Parliamentary Debates (Legislative Council), Session 1968–69, vol. 292, 30 October 1968, 1342.

<sup>111</sup> Of this the government was aware, but took no action. Dickie himself referred to the successful kidney transplant programme at the Royal Melbourne Hospital where, since 1963, results had been achieved that were equal to or excelled the best in the world (*ibid.*, 1339).

<sup>112</sup> Jeff Wells, 'Heart Man Said . . . "Last Hope"', *Sun* 14 November 1968, 2.

<sup>113</sup> Anon., 'Victorian Heart Transplant "Smooth"', *Canberra Times*, 13 November 1968, 1.

<sup>114</sup> *Ibid.*

<sup>115</sup> Anon., *op. cit.* (note 105), 1.

<sup>116</sup> Deposition of Irwin Bruce Faris, Medical Practitioner, Alfred Hospital. Inquisition before Coroner H.W. Pascoe, 23 January 1969, Public Records Office of Victoria, V/AC/012/05/07.

<sup>117</sup> Peter McLaughlin and Jack Carmody, 'New Heart Could Not Pump', *Age* 14 November 1968, 3.

the arteries leading to Wippler's lungs were so diseased that Healy's heart had been unable to pump blood through them.<sup>118</sup>

The surgeons who performed this operation differed markedly from Windsor in their interactions with the media, providing little information about it. That may have been because it was an unmitigated failure though they gave another reason for being circumspect, asking not to be named as they did not wish to contravene Australian Medical Association ethical rulings on such matters.<sup>119</sup> In contrast, while the operation was proceeding the Alfred Hospital public relations officer had been garrulous, stating that all was going so well that the operation could be completed in five or so hours and noting this was three hours less time than had been taken by the Sydney surgeons.<sup>120</sup> Following the autopsy on Wippler's corpse the spokesman declared that the operation had been 'doomed' from the beginning;<sup>121</sup> Wippler had been 'a condemned man anyway'.<sup>122</sup> John Carmody points out that this was more a criticism of the clinicians involved than of the patient who, like the donor, had not been adequately assessed.<sup>123</sup> However, the hospital's medical superintendent Dr G. I. Howard defended the surgeons for not having inspected Wippler's lungs 'radiologically' before proceeding, on the grounds that they had feared Wippler would not survive such a 'strenuous' examination.<sup>124</sup> This, Howard asserted, had been a case of 'bad luck' and the old adage applied: 'the operation was a success but the patient died'.<sup>125</sup>

As for whether the Melbourne surgeons had followed the Declaration of Sydney's recommendations, this is difficult to ascertain. Despite Healy breathing of his own accord, albeit briefly, at 6.30 p.m., an unnamed member of the surgical team stated that the man had died 'several hours' before his heart was removed, after which it had been kept beating by a respirating machine.<sup>126</sup> The heart had only 'failed' minutes before the surgeons were ready to operate, at which time Healy was pronounced dead.<sup>127</sup> That latter statement indicates use of a conventional assessment of death upon heart failure. Yet Healy had been in the hands of the transplant team for hours prior to this event, indicating that in practice the Rubicon moment, Windsor's term for death having occurred when the patient's condition was assessed as hopeless, had been deployed. We do not know whether a separate team had made either the prognosis of hopelessness or, later, pronounced Healy dead.

### Critics Respond to the Australian Heart Transplants

In Sydney a few days later, on 18 November, an apparently hale Richard Pye appeared on television eating fish and chips and drinking beer while telling journalists he had no curiosity about his new heart. On the same programme Pye's surgeon Harry Windsor reiterated his earlier assertion about a lack of moral contention regarding the operation he had performed.

<sup>118</sup> Anon., 'Surgery "Doomed" from Beginning', *Canberra Times*, 15 November 1968, 3.

<sup>119</sup> McLaughlin and Carmody, *op. cit.* (note 117), 3.

<sup>120</sup> Anon., *op. cit.* (note 113), 1.

<sup>121</sup> Peter McLaughlin, 'Heart Swap "Doomed"', *Age*, 14 November 1968, 3.

<sup>122</sup> McLaughlin and Carmody, *op. cit.* (note 117), 3.

<sup>123</sup> Carmody, *op. cit.*, (note 23), 102.

<sup>124</sup> Anon., *op. cit.* (note 118), 3.

<sup>125</sup> Anon., 'Heart Team to Try Again', *Sydney Morning Herald*, 14 November 1968, 1.

<sup>126</sup> McLaughlin and Carmody, *op. cit.* (note 117), 3.

<sup>127</sup> Anon., *op. cit.* (note 112), 2; McLaughlin and Carmody, *op. cit.* (note 117), 3.

Meanwhile in Melbourne the failed heart transplant became the focus of immediate critical attention during the Second Reading of the Medical (Organ Transplants) Bill. Parliamentarians questioned whether a recipient's interests were served when a 'new' organ was inserted into a body 'so diseased . . . that it can have no comfortable existence afterwards' and argued for caution in passing legislation that would give surgeons 'a free hand' in regard to transplant operations'.<sup>128</sup> On the matter of donor deaths, unease crossed political party allegiances. A Country Party member, the barrister and farmer M.A. Clarke referred to 'alarming' newspaper cuttings in his possession that alleged heart donors were being kept 'artificially alive' in the interests of transplant surgery with 'life support' only being removed at the surgeons' convenience. He considered it arguable that in such circumstances 'the donor has been killed'.<sup>129</sup> A member of the Australian Labour Party (ALP), Douglas George Elliot, also thought the Melbourne donor's death had been 'questionable'.<sup>130</sup> Another ALP member, the solicitor and barrister John William Galbally, asked when in this case death had actually 'intervened'.<sup>131</sup> Health minister Dickie (Liberal Party) assured his colleagues that on the matter of death he had consulted 'the best brains in the medical fields' only to learn that they held no uniform opinion. However, he hoped his bill would protect donors by excluding transplanters from deciding their status.<sup>132</sup> Other parliamentarians were unconvinced, including a medical member, Dr Jenkins, who stated that he found it hard to imagine how anyone involved in the transplant procedure could be divorced from the realm of the donor's death. Jenkins considered that 'once one has to make a decision that there is a time to take material from one body and transplant it into another . . . one could become callous to the conditions which could occur' and infringe upon 'the rights of human beings to survive'.<sup>133</sup> Another parliamentarian, Mr Mitchell, feared that the bill might give a 'green light to murder'. He cited the recent case of a young girl who had died twice but been saved and wondered what might have become of her if there had been 'a terrible rush to get her spare parts'.<sup>134</sup> Victorian parliamentarians were scathing about how medical professionals engaged in heart transplantation were interacting with the media, overturning their profession's traditional reticence in regard to patient care in favour of an international contest to perform major transplants. In the Melbourne case reporting had traduced the donor's right to privacy in a particularly tragic death that had left children orphaned. They should not have found themselves 'flung on to the public stage'.<sup>135</sup>

In Sydney, Richard Pye died on 7 December, following which Windsor's professional colleagues criticised the transplant he had performed in the pages of the *Medical Journal of Australia*. That professional forum, argued John Wright (Chairman of the Division of Cardio-Pulmonary Surgery at Prince Henry Hospital) was the proper place for such debate in an approaching era of 'deep uncertainty which classically follows an initial

<sup>128</sup> Carmody notes that the Melbourne surgeons operated knowing nothing of the donor's general health and with very little time for tissue matching. Further, prior to his death Healy had been taking drugs that would have harmed his heart (Carmody, *op. cit.* (note 23), 101.

<sup>129</sup> 'Medical (Organ Transplants) Bill', *op. cit.* (note 110), 20 November 1968, 1865.

<sup>130</sup> *Ibid.*, 21 November 1968, 1973.

<sup>131</sup> *Ibid.*, 20 November 1968, 1870.

<sup>132</sup> *Ibid.*, 1867.

<sup>133</sup> Jenkins referred to a medical practitioner who had been an early critic of transplant surgery, questioning whether 'some mental institutions are being used as organ farms' ('Medical (Organ Transplants) Bill', Victorian Parliamentary Debates (Legislative Assembly), 4 December 1968, 2647).

<sup>134</sup> *Ibid.*, 2650.

<sup>135</sup> 'Medical (Organ Transplants) Bill', *op. cit.* (note 110), 1870.

phase of unqualified enthusiasm for most new procedures'. In contrast, the public press had turned cardiac transplantation into 'an issue which threatens the foundations of our professional principles.'<sup>136</sup> Windsor's critics portrayed heart transplants as experiments that ignored ethical concerns. Like Victoria's parliamentarians they decried the 'emotional fever' surrounding these operations;<sup>137</sup> and the competitive pursuit in which surgeons appeared to be engaged.<sup>138</sup> H.P.B. Harvey asked why 'two of our finest surgical teams' had joined others around the world in performing this costly procedure, when most of those teams were no more than 'dabblers'.<sup>139</sup> Victor H. Wallace charged that surgical prestige was interfering with clinical judgement.<sup>140</sup>

These writers focused on the plight of heart recipients, pointing out that ninety-seven per cent of such patients had died within six months of the operation while the few who survived longer had a poor quality of life.<sup>141</sup> In the face of such statistics some international teams like the Montreal Heart Institute in Quebec had halted their heart transplant programmes.<sup>142</sup> Proper trials were needed, ones in which recipient selection was carefully undertaken by a team. The knowledge that could thus be gained was more urgently required than were 'the details of a few more short survivals or interesting post-mortems'.<sup>143</sup> Windsor's critics further charged that Australian surgeons should await the results of overseas developments before proceeding. They thus disagreed with Norman Shumway's earlier encouragement of local teams venturing into heart transplantation. Sir Kempson Maddox (cardiac specialist and honorary physician at Prince Alfred Hospital) argued that while Australia's surgeons were 'technically competent' to perform such operations they should have delayed doing so until they had learned 'the true value of these experiments' from the experience of overseas centres.<sup>144</sup> P. H. B. Harvey pointed out that Australia had not invested in 'the research, manpower, the equipment or the money' to justify 'the occasional experiment on human volunteers', any more than it had in launching astronauts 'in a hastily constructed, locally made moon rocket'.<sup>145</sup> Harvey would refuse to be 'stampeded by enthusiastic surgeons, be they honest believers or subconscious limelight seekers' into accepting heart grafting was an established procedure or that further such experiments should at this stage be undertaken.<sup>146</sup> In a direct challenge to Windsor, who had declared himself ready to perform another transplant, Harvey constructed a scathing list of what another such graft could, and could not, presently offer.

A tricky technical problem to fascinate the dexterous surgeon, yes; a challenge to our internationally acclaimed immunologists, yes; exquisite suspense and agonising decisions for the relatives of donor and patient alike, yes; for the courageous patient a wonderful opportunity to show his faith in the medical profession, yes; and magnificent copy for the Press and mass media ghoulishly waiting on the sidelines to report, photograph, televise, interview and generally bare for all to behold, the unfortunate patient and his relatives, the daring surgeon and his team members, and particularly to record their every emotional reaction and comment, certainly yes; but a really significant chance of further worthwhile life for any of your relatives or mine, no.<sup>147</sup>

<sup>136</sup> John Wright, letter to the editor, *Medical Journal of Australia*, 1, 4 (1969), 197.

<sup>137</sup> Ian Monk, letter to the editor, *ibid.*, 197–8.

<sup>138</sup> Victor H. Wallace, letter to the editor, *Medical Journal of Australia*, 1, 7 (1969), 360.

<sup>139</sup> H.P.B. Harvey, letter to editor, *Medical Journal of Australia*, 1, 8, (1969), 425–6.

<sup>140</sup> Wallace, *op. cit.* (note 138), 360.

<sup>141</sup> Harvey, *op. cit.* (note 139), 425–6.

<sup>142</sup> Wallace, *op. cit.* (note 138), 360.

<sup>143</sup> Harvey, *op. cit.* (note 139), 425–6.

<sup>144</sup> Kempson Maddox, letter to the editor, *Medical Journal of Australia*, 1, 1 (1969), 34.

<sup>145</sup> Harvey, *op. cit.* (note 139), 425–6.

<sup>146</sup> *Ibid.*

<sup>147</sup> *Ibid.*



Windsor responded to these criticisms in a markedly different way to his May 1968 letter to the *Medical Journal of Australia* which had focused on the ethics of heart transplants. Taking up the charge that Australian surgeons were indulging in an unseemly competition to transplant hearts, he deployed patriotism to declare 'this country – allegedly affluent, proud of its medical standards, proud that it can keep pace, proud, too, that it can sometimes deliver a little knowledge to overseas centres – had a duty to play its part'. In defending his choice of recipient, Windsor now put the words of novelist Victor Hugo into Pye's mouth. 'When a Richard Pye states "it is nothing to die, it is dreadful not to live"' surgeons would not take the easy way out and say that nothing could be done.<sup>148</sup>

### Conclusion

In the aftermath of the 1968 international heart transplant epidemic, the number of such grafts diminished. Some teams voluntarily left the field and several countries placed formal or informal moratoria on these operations although some surgeons, notably Norman Shumway in the US, continued to perform them. In Australia only one further heart transplant was carried out between 1968 and the mid-1980s, when surgeons there once more joined others around the world in taking up the procedure. By then, the chance of success had improved due to effective immune-suppressing drugs, and what had come to be known as 'brain death' was more acceptable to most, although not all, members of the medical profession.

In this essay I have examined an earlier era when heart transplants were experimental operations performed at a time when a brain-based way of assessing death was a matter of debate within and outside the profession about how the plight of a deeply comatose patient could be reliably ascertained. It was one thing to remove supportive measures to allow such a person to die and then be buried or cremated in the ordinary way; but another thing to decide their condition was hopeless and, while their hearts continued to beat, pass them to a transplant team. I have argued that the two reasons given in 1968 for a need to recast death – to allow the patient to die rather than fruitlessly extend that process, and to facilitate transplant surgery – were inextricably linked, for which reason the authoritative statements scripted in that year recommended that transplant surgeons be excluded from deciding such a person's status.

The international spate of heart transplants were further performed at a time of intense competitiveness which Susan Lederer has described as a 'raucous race' to carry out these operations, one in which Australian surgeons participated and for which they were criticised.<sup>149</sup> In such an environment scant attention could be paid to ethical considerations and the recommendations contained in watershed statements on death such as the Declaration of Sydney and the Harvard report. During the 'Year of the Transplant' one hundred and five heart graft operations were performed in a climate of rivalry between hospitals, states and nations, making use of hearts that had been procured in questionable circumstances to sew into recipients whose lives, in the main, they markedly failed to extend.

<sup>148</sup> Harry Windsor, letter to the editor *Medical Journal of Australia*, 1, 4 (1969), 197.

<sup>149</sup> Lederer, *op. cit.* (note 1), 170.