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THE TERRIBLE IMBALANCE: HUMAN ORGANS AND TISSUES FOR THERAPY—A REVIEW OF DEMAND AND SUPPLY

Russell Scott *

I. SHORTAGE AND ALLEVIATION

In June 1977, the Australian Law Reform Commission posed four “fundamental questions”¹ about the use of human tissues for transplantation, one being: “Is there an adequate supply of tissue?”² The Commission’s short answer was that “there is not.”³ Fifteen years later, the answer remains the same, not only in Australia but worldwide. Today, the scarcity of organs and tissues for transplantation is such that one commentator has characterized it as “the terrible imbalance between supply and demand,”⁴ and the World Health Organization has found it necessary to take international action aimed at curbing the rising commercial traffic in human body parts.⁵ In general, Western governments support and assist the quest for increased tissue supply.

The Australian Law Reform Commission’s “fundamental questions,” and its answers were published in its report *Human Tissue Transplants* (the “ALRC Report”).⁶ In this report, the Commission also covered such subjects as the desirability of using human tissues for therapy, the possible means of increasing tissue supply, the establishment of a national tissue reg-

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1. AUSTRALIAN LAW REFORM COMM’N, HUMAN TISSUE TRANSPLANTS 9 (1977) [hereinafter “ALRC REPORT”]. The members of the Division of the Commission which produced the report included the Commission’s chairman at the time, Mr. Justice Michael D. Kirby. The writer was Commissioner-in-Charge of the Project.

2. *Id.* The ALRC’s “fundamental questions” related also to the use of human tissues for education, research, “and other medical therapy” as well as transplantation. *Id.* at 9-10.

3. *Id.* at 9.

4. William E. Braun, *Every Kidney Counts*, 327 NEW ENG. J. MED. 883, 883 (1992).

5. WORLD HEALTH ORG., HUMAN ORGAN TRANSPLANTATION—A REPORT ON DEVELOPMENTS UNDER THE AUSPICES OF WHO (1987-91) (1991) [hereinafter WHO REPORT].

6. ALRC REPORT, *supra* note 1.

ister, and the underlying principles that should characterize the law and regulation of transplant technology.⁷ The report included a model draft of legislation⁸ that, with minor variations from state to state, was subsequently enacted throughout Australia and remains in force today.

Since publication, the ALRC Report has been scrutinized frequently, particularly in Europe and the Americas, including recent examination by the Canadian Law Reform Commission in its significant 1992 Working Paper entitled *Procurement and Transfer of Human Tissues and Organs* (the "CLRC Report").⁹ The CLRC Report is a substantial response to the shortage of therapeutic tissues and the legal and ethical issues "provoked by demand and supply disequilibria."¹⁰ It is also timely because it exhibits a comprehension that there are diverse reasons for the shortage as well as a "necessarily limited role"¹¹ for the law in producing remedies.

Concerns about many aspects of the persistent worldwide scarcity are well reflected in the current medical and bioethical literature, including *The Journal of the American Medical Association*,¹² *The New England Journal of Medicine*,¹³ *The Lancet*,¹⁴ *The British Medical Journal*,¹⁵ *The Medical Journal of Australia*,¹⁶ and *The Hastings Center Report*.¹⁷ Government action in the United States during the 1980s was considerable and included "a wave of tissue transfer and procurement legislation"¹⁸ enacted in over forty-four states, plus federal legislation that led to national computerization of organ exchange data, a national task force to study organ procurement, and a ban

7. *Id.* at 10-13.

8. *Id.* at 135-36.

9. CANADIAN LAW REFORM COMM'N, *PROCUREMENT AND TRANSFER OF HUMAN TISSUES AND ORGANS*, chs. 3, 4 & app. B (1992) [hereinafter CLRC REPORT].

10. *Id.* at 4.

11. *Id.* at 170.

12. Roger W. Evans et al., *The Potential Supply of Organ Donors*, 267 JAMA 239, 240 (1992); Antonia C. Novello, *Increasing Organ Donation—A Report from the Surgeon General's Workshop*, 267 JAMA 213, 213 (1992).

13. Braun, *supra* note 4, at 885; *Correspondence: The Shortage of Organs for Transplantation*, 326 NEW ENG. J. MED. 1024, 1024-27 (1992).

14. *Organ Donation in the U.K.*, 340 LANCET 785, 785 (1992); *Organ Transplantation*, 340 LANCET 300, 300 (1992); Jean-Michael Bader, *France: Transnational Transplants* 340 LANCET 108, 108 (1992); Dilip S. Kittur et al., *Incentives for Organ Donation?*, 338 LANCET 1441, 1141 (1991).

15. Adrian D. Hibberd et al., *Potential for Cadaveric Organ Retrieval in New South Wales*, 304 BRIT. MED. J. 1339, 1339 (1992).

16. Jeremy R. Chapman, *Transplantation in Australia—50 Years of Progress*, MED. J. AUSTL., July 6, 1992, at 46, 46; Tom E. Mandel, *Organ and Tissue Transplantation 1992*, MED. J. AUSTL., July 6, 1992, at 3, 3.

17. James L. Nelson, *Transplantation Through a Glass Darkly*, HASTINGS CTR. REP., Sept.-Oct. 1992, at 6, 6.

18. CLRC REPORT, *supra* note 9, at 153.

on commerce in human organs.¹⁹ Federal administrative action similar to some of these initiatives has also been taken in Australia.²⁰

In Europe, the Strasbourg-based Council of Europe, representing some twenty-five nations, has played a harmonizing role in an effort to encourage uniform European regulation. It commenced this effort with its model codes of 1978²¹ and 1979²² and has continued in this endeavor with its report on the Third Conference of European Health Ministers of November 1987²³ and with the regular publication of statistical information.

It would not be an exaggeration to say that tissue and organ supply has become a preoccupation of the transplant community which, for present purposes, includes interested patients, families, surgeons, physicians, other health professionals, patient support groups, legislators, and ethicists. In the United States, the preoccupation is no doubt a function of greater surgical success not yet accompanied by greater supply, despite the government actions of the 1980s. One commentator has summarized the American situation as follows: "With advances in organ transplantation technology, fewer restrictions on patient selection, and improved outcomes, an ever-increasing number of persons are likely to become candidates for transplantation. Despite major initiatives to increase the supply, from 1986 through 1989, the number of donors available annually remained virtually unchanged"²⁴

It is becoming increasingly apparent that in the absence of authoritarian measures, which in principle are not feasible in Western democracies, satisfaction of the demand for organs and tissues will not be achieved by legislation alone, no matter how innovative; nor will it be achieved by a brisk, linear, problem-solving approach on the part of lawmakers, task forces, or public support groups, no matter how well-intentioned or compassionate. Single solutions, such as the introduction of an "opting out" law, are unlikely to achieve their purposes without a great deal more.

The more the causes of organ shortage are studied, the more difficult

19. *Id.* at 156.

20. The Australian Coordinating Committee on Organ Registries and Donation was created by the Australian Health Ministers Advisory Council, North Sydney, New South Wales, Australia.

21. Committee of Ministers, Council of Europe, *Resolution (78) 29 On Harmonisation of Legislations of Member States Relating to Removal, Grafting and Transplantation of Human Substances* (adopted May 11, 1978).

22. Committee of Ministers, Council of Europe, *Recommendation No. R (79) 5 of the Committee of Ministers to the Member States Concerning International Exchange and Transportation of Human Substances* (adopted Mar. 14, 1979).

23. Conference of Health Ministers, Council of Europe, *Organ Transplantation: Third Report, Legislative Measures in Relation to Organ Transplantation and to European Co-Operation* (1987).

24. Evans, *supra* note 12, at 239 (footnotes omitted).

seems the task of alleviation. One of the many reasons for this difficulty is the paucity of empirical research and information on the reasons for the gap between the numbers of actual and potential donors. One careful study published in the United States in 1992 found that “[d]epending on the class of donor considered, organ procurement efforts are between 37% and 59% efficient.”²⁵ The report concluded: “Realistically, it may be possible to increase by 80% the number of donors available in the United States. . . . It is conceivable, although unlikely, that the supply of donor organs could achieve a level to meet demand.”²⁶

Similarly, in the CLRC Report, the Canadian Law Reform Commission said, “Only 10 to 20 per cent of potential organ donors currently become actual donors. Yet the federal-provincial transplant taskforce has concluded that a sufficient supply of organs is ‘potentially available.’”²⁷

The translation of tissue shortage into tissue adequacy is, according to these authorities, a possibility in North America. Why, then, has it not been achieved there or on any continent, given the efforts devoted to this end in North America, Europe (numerous European nations have enacted “opting out” legislation), and elsewhere? Indeed, information from the Swisstransplant Foundation in the 1992 Council of Europe publication *Transplant* suggests a continuous decline since 1987 in the total number of donors in Switzerland, other European countries, and the United States: “[T]he total number of donors available for organ transplantation [in Switzerland] has regularly decreased since 1987. This phenomenon also observed in other European countries, as well as in the United States becomes worrismatic [sic] for the future of transplantation.”²⁸

Whatever may be the reasons for the shortage, no real improvement is likely to be produced by regulators, health professionals, or others without intelligent exploration of the contours and terrain of the entire field of human tissue transplantation, including:

- (1) individual and community sensitivities about the procedures that must be carried out on the body of a living person and on a dead body in order to obtain body parts for transplant or other therapy;
- (2) the physical risks for a living donor;
- (3) the risks and consequences of failure for a recipient;
- (4) the significance of taking from living donors tissues or body

25. *Id.*

26. *Id.*

27. CLRC REPORT, *supra* note 9, at 35-36.

28. COUNCIL OF EUROPE, *TRANSPLANT* 49 (1992).

- parts that may be classified as single and vital, paired and vital, regenerative, non-regenerative and reproductive;
- (5) the social significance of taking tissue or a body part from a living donor when:
 - (a) the donor has the capacity to give free and comprehending consent;
 - (b) the donor lacks that capacity;
 - (c) the donor is related to the patient;
 - (d) the donor is not so related;
 - (e) the tissue is the subject of payment or commerce.
 - (6) the social significance of taking tissue or a body part from a dead body (cadaver) when:
 - (a) the deceased while alive expressed a wish to donate tissue after death;
 - (b) the deceased did not express any wish;
 - (c) in any such case the deceased's family is available and agrees (or disagrees) with such taking.

Considering for a moment the classification of tissues as regenerative and non-regenerative, significant differences between regenerative tissues themselves should be noted. For example, blood and bone marrow are live-saving, vital regenerative tissues, the supply of which is well organized and, in the case of blood, usually adequate in Western communities. Livers are also regenerative but, being vital organs, are of a different order. Other regenerative tissues are non-vital, such as pieces of skin, hair, and waste body products. The characteristics and differences can be important in considering attitudes to donation, reasons for shortage, and legal regulation. Living persons are usually the source of such tissues.

A. Tissues from Living Donors

Procurement of tissues from living donors can raise issues concerning human dignity, undue influence, family pressure upon a member to donate, the morality of depleting a person's body, and the morality of removing tissues from children or others who lack capacity or whose consent is not free. Although sophisticated principles have been developed from the doctrine of substituted consent, for the ostensible protection of minors and other incompetents (particularly in the United States), some people have difficulty in accepting this concept under any circumstances.²⁹ An extreme example that caused global public debate was the action taken by a married couple in the United States who conceived a baby for the purpose of providing bone marrow (which was taken in 1991 when the child was in her second year) to

29. RUSSELL SCOTT, *THE BODY AS PROPERTY* 111-14 (1981).

another of their children who had fatal leukemia.³⁰

The debate over tissue donation by living persons for transplantation and therapy has not been resolved internationally. For example, Australian transplant legislation specifically allows live donation by adults, with separate rules for regenerative and non-regenerative tissues. As for living minors, the Australian states have split, most effectively prohibiting donations of non-regenerative tissues³¹ despite the Australian Law Reform Commission's model legislation (adopted in the Australian Capital Territory) that would permit donation of non-regenerative tissue by mature minors in life-and-death cases within a family, with supporting medical advice and the supervision of an *ad hoc* government committee convened by a judge.³²

Internationally, opinion has hardened in recent years against live donations, at least non-family live donations, as shown by the World Health Organization's 1991 report *Human Organ Transplantation* (the WHO Report).³³ The WHO Report presents a code of "Guiding Principles" on human organ transplantation to all nations as the framework or model for regulation or legislation. Guiding Principle Three begins: "Organs for transplantation should be removed preferably from the bodies of deceased persons. However, adult living persons may donate organs, but in general such donors should be genetically related to the recipients."³⁴

The WHO Report was the result of long-standing concerns of the World Health Assembly about "trade for profit in human organs among living human beings."³⁵ In 1989, the Organization formed an international group of advisors whose task was to prepare the code, giving special consideration to this trade. The task was not easy, one reason being that notions of morality differ widely. Such familiar Western precepts as the necessity to facilitate personal autonomy and to obtain personal consent for the removal of organs (and for medical treatment) are neither accepted nor understood by some societies, in which the individual "belongs" to the community, as the group was reminded by an African delegate.

Nevertheless, the group identified two ethical principles as a desirable basis for all national regulation, the first being distributive justice and equity, requiring that donated organs be made available to sick patients on the basis of medical need and not on the basis of financial or comparable considera-

30. Lance Morrow, *When One Body Can Save Another*, TIME, June 17, 1991, at 54, 54.

31. See, e.g., Human Tissue Act, 1983, N.S.W. Inc. Acts No. 164, §§ 8, 10, 11 (1983) (Austl.).

32. ALRC REPORT, *supra* note 1, at 124.

33. WHO REPORT, *supra* note 5.

34. *Id.*

35. *Id.* at 5.

tions. The second was the principle of personal autonomy, seen by the group as widely contravened in those parts of the world where commerce in human body parts is, or has, flourished.³⁶ There was no lack of evidence that living vendors of human tissues in India and other parts of Asia tend to be the poorest and weakest members of society, including those without capacity and those in dependent relationships such as prisoners. Far from selling their organs pursuant to genuine autonomous decisionmaking, these vendors have been seen typically as responding to influences that negated autonomy and contradicted the suggestion that their "consents" were free and comprehending.

The WHO group considered arguments from transplant literature to the effect that, in principle, official regulation or prohibition of a person's decision to sell his or her own body parts is paternalistic and an unacceptable interference with autonomy, liberty, and freedom of contract.³⁷ However, evidence of the nature and consequences of some of the well-known commerce in organs that has taken place in India, Asia, and the United Kingdom led to a rejection of those arguments. Additionally, many nations in the Americas, Europe, Africa, and the Pacific region have classified commerce in human organs and other tissues, either generally or on a selective basis, as unacceptable, illegal, or criminal.³⁸ Such initiatives, and WHO Guiding Principle Three, are arguably evidence of growing aversion to organ transfer between living non-related persons.

Disapproval of live organ donation also has been expressed on quite different grounds. For example, the American transplant surgeon Thomas Starzl, pioneer of liver transplants, has been reported as refusing to accept living donors as early as 1972. On this point, Dr. Starzl has stated, "The most compelling argument against living donation is that it is not completely safe for the donor."³⁹

On the other hand, some see a place for live donation in transplantation

36. See G. M. Abouna et al., *Commercialization in Human Organs: A Middle Eastern Perspective*, 22 *TRANSPLANTATION PROCEEDINGS* 918, 918 (1990) (detailing the Middle Eastern practice of trading in human organs by using the poor and needy as victim donors); A. K. Salahudeen et al., *High Mortality Among Recipients of Bought Living-Unrelated Donor Kidneys* 336 *LANCET* 725, 726-27 (1990) (describing Bombay's practice of "rampant commercialism" in the buying and selling of organs through "kidney brokers" where the "whole enterprise is predicated on profit for the transplanters and brokers").

37. CLRC REPORT, *supra* note 9, at 79-80.

38. See ALRC REPORT, *supra* note 1, at 135-36 (model legislation imposing criminal penalties for such commerce). This model has been followed by all Australian states. Criminal penalties also apply in the United States and the United Kingdom. In the Middle East, Kuwait has enacted a transplantation law providing for criminal penalties for the buying and selling of organs. Abouna, *supra* note 36, at 920.

39. Morrow, *supra* note 30.

and are not averse to encouraging its growth. The authors of a recent study of organ procurement in the United States made the following closing comments:

[I]f living-related and living-unrelated kidney donations were more aggressively pursued, the demand for kidney transplantation could conceivably be met Of the 9560 kidney transplantations performed in 1990, 18.5% involved living donors. In 1982, 31.3% of kidney transplantations involved living donors. Based on current demand (ie, [sic] 18,592), it would clearly be *undesirable* if the ratio of living to cadaveric donor transplantations decreased further.⁴⁰

B. Cadaver Tissue Procurement

The 1992 Council of Europe publication *Transplant* provides a summary of organ procurement for 1989, 1990, and 1991 in fifteen European countries as well as the United Kingdom and the United States. It deals substantially with cadaver donation and provides donor rates per million of population (p.m.p.). In most countries, the donor rate was virtually static over the three years, typical rates being between fifteen and twenty p.m.p.⁴¹ As noted earlier, the Swisstransplant Foundation expressed concern over declining donor rates in Switzerland and some other countries.⁴²

Since the publication of *Transplant*, events in France have attracted attention. In July 1992, *The Lancet* carried a report on transplantation in France, stating that because of its opting-out system, it was "not surprising that France does more transplantations per million inhabitants than any other European country."⁴³ However, three months later, *The British Medical Journal* reported a sudden massive decline in French organ procurement—a thirty percent increase in refusals "in recent months."⁴⁴

According to *The British Medical Journal*, the refusals followed "controversy over the removal of organs from dead people without proper authorisation and accusations that too many organs have been given to visiting foreign patients."⁴⁵ Despite the pioneering French *Caillavet* law which, as early as 1976, decreed that the cadavers of all competent adult citizens were to be available for organ removal, unless they had expressly objected or

40. Evans, *supra* note 12, at 245.

41. COUNCIL OF EUROPE, *supra* note 28.

42. See *supra* note 28 and accompanying text.

43. Bader, *supra* note 14, at 108.

44. Alexander Dorozynski, *Organ Shortage Threatens French Transplant System*, 305 BRIT. MED. J. 852, 852 (1992).

45. *Id.*

opted out while alive (meaning obviously that specific authorization of removal was not legally required),⁴⁶ the French Health Minister, in the summer of 1992, issued an instruction that medical personnel should ask close relatives whether dead potential donors had had any objection to donation.⁴⁷ The report stated that this procedural change followed a public complaint by a couple that their dead son's eyes had been removed for transplantation purposes "without authorisation."⁴⁸ The Health Minister had also proposed a reorganization of the French system of donation so that agreement or refusal could be recorded by computer.⁴⁹

The British Medical Journal report is puzzling because the French law of 1976 clearly states that cadaver organ retrieval is lawful except in two circumstances: the first being the case in which the dead person "made known" an objection to removal while alive; the second being the case in which the person was a minor or "of diminished mental capacity."⁵⁰ As for cases in which the deceased's objection is not formally recorded, the 1976 law contains detailed rules for making inquiries of the deceased's family and close relations to learn whether the deceased in fact objected to organ removal. These inquiries are directed to ascertain whether the deceased objected, not whether the family objects.

The case that apparently contributed to the sudden reduction in French organ procurement involved removal of the complaining couple's "dead son's eyes . . . without authorisation,"⁵¹ but the report does not indicate whether the deceased was a minor or an incompetent, which appear to be the only circumstances (unless eyes are not to be regarded as organs) which would necessitate "authorisation" by the family. As for the Health Minister's instruction that surviving family members must be asked whether dead persons "had objections to donating"⁵² their eyes, the 1976 French law on organ donation has always contained this requirement.⁵³ Ignoring possible complexities of legal interpretation, the fact appears to be that French organ procurement suffered a major decline in 1992.

The administrative and legal contradictions implicit in these reports are consistent with other findings of research and official inquiries in recent years on the status of transplant laws, systems, and practices in various parts

46. Law No. 76-1181 (Concerning the Removal of Organs), art. 2 (Dec. 22, 1976) (Fr.).

47. Dorozynski, *supra* note 44, at 852.

48. *Id.*

49. *Id.*

50. Law No. 76-1181, art. 2 (Dec. 22, 1976) (Fr.).

51. Dorozynski, *supra* note 44, at 852.

52. *Id.*

53. See Law No. 76-1181, art. 2 (Dec. 22, 1976) (Fr.); see also ALRC REPORT, *supra* note 1, at 10 n.49 (describing the provisions of the French legislation).

of the world. In the CLRC Report, the Canadian Law Reform Commission examined the French procurement system under the rubric "Presumed Consent—Opting Out" and found that "[i]n practice, French medical teams continue to solicit the consent of the families and deceased potential donors"⁵⁴ despite the fact that, strictly, relatives have no legal right to refuse organ removal based on their own objections.⁵⁵

After examining procurement practices in European nations, including a number with opting-out legislation, the Council of Europe in 1988 stated that "the practice in most countries shows that the relatives are consulted and though in most cases its opinion is not legally overriding, none would go against the expressed refusal of the family."⁵⁶ In Australia, a similar procedure of seeking and acting only with family consent has evolved with government approval despite the fact that Australian legislation allows, in a number of circumstances, a hospital to remove cadaver tissue without consent either of the deceased or the family.⁵⁷

These practices suggest the possibility of ignorance or insensitivity on the part of lawmakers, regulators, and expert advisers concerning adverse social reaction to opting-out laws and preemptive legal powers that facilitate the acquisition of human tissues for therapy when the source is the body of a recently deceased person. Moreover, these practices suggest a failure to explore the contours of transplantation as suggested earlier.

Received wisdom for lawmaking and regulation has long been that a primary choice must be made between two opposed principles as the basis for obtaining cadaver tissues for transplantation and other therapeutic purposes.⁵⁸ "Opting in" or "contracting in" requires an express consent by the deceased or the surviving family for the removal of tissue, as seen in the United Kingdom legislation. "Opting out," "contracting out," "routine procurement," or "presumed consent" (as in France, Belgium, and Austria), presumes the deceased to have consented to tissue removal in the absence of express objection. Between the two extremes are "required request" and "routine inquiry" (the United States) and "presumed consent following required inquiry" (Australia). All of these classifications of procurement systems are familiar in medical and bioethical literature and discourse and are reflected in current national legislation. However, the reality of persistent

54. CLRC REPORT, *supra* note 9, at 149.

55. *Id.*

56. *Id.* at 153.

57. ALRC REPORT, *supra* note 1, at 127-28 (presenting draft of legislation entitled "Transplantation and Anatomy Ordinance 1977").

58. *Id.* at 10-13; *see also* CLRC REPORT, *supra* note 9, at ch. 4.

scarcity suggests that none of them generates enough tissues to satisfy demand.

Altruism, "the unselfish concern for the welfare of others,"⁵⁹ has remained the moral foundation of a great deal of western transplant regulation. The gift ethic (giving is better than taking) has underpinned much of the thinking of ethicists and lawmakers since Titmuss's book on blood donation in 1970.⁶⁰ So strongly entrenched are the words "donor" and "donation" in relation to the sources of transplant tissues that, despite the semantic restriction to "gift" imposed by their Latin origins, they are typically used to describe respectively all persons from whom tissues are taken whether dead or alive, and all tissues taken whether purchased or not. Familiar, if inconsistent, derivative expressions are "cadaver donor," "cadaver donation," "live donor" (for a person who has sold his or her tissue), and "rewarded donation" (or "rewarded gift"). There are currently signs of renewed scholarly examination of the relevance and effectiveness of altruism in relation to tissue procurement.

As a principle to govern tissue procurement from the dead, altruism is to be contrasted with "routine procurement" (removal without express gift). Routine procurement and opting out (taking is better than giving) propose that the saving of human life should be given priority over all emotional attachment to the newly dead cadaver. It is at this chronological point that formidable obstacles to the acquisition of tissues are likely to be encountered, arising from deeply entrenched social values and beliefs. These obstacles include atavistic moral, ethical, and religious rules about treatment of the dead human body; concern for the dying and the newly dead; issues relating to human dignity, privacy, autonomy, and the role of the family; difficulties in accepting the fact that death occurs with cessation of brain function or even the fact of death itself; and practices relating to burial, funerals, and grieving. All may be encountered by those who seek to procure organs and tissues from a brain-dead cadaver. It is not surprising that some health care professionals deliberately avoid this whirlpool of human emotions despite the life-saving potential of the organs and tissues that could be obtained.

The concept of brain death can be very difficult for some people to accept in the presence of a dead body that has technologically induced blood circulation, respiration, and the appearance of a sleeping, living person. Other obstacles have been constructed by the news media that, from time to time, have cast doubts on the certainty or accuracy of the brain death concept by

59. CLRC REPORT, *supra* note 9, at 39.

60. RICHARD M. TITMUSS, *THE GIFT RELATIONSHIP: FROM HUMAN BLOOD TO SOCIAL POLICY* (1970).

publicizing instances of so-called "recovery" by apparently dead patients and, in one celebrated television program in the United Kingdom in 1980, by suggesting that organ donors were not dead when organs were removed for transplantation.⁶¹ This was followed, in succeeding months, by a catastrophic decline in organ donation in that country.⁶²

Public confidence in the medical profession on this topic is essential. It is important that intensive care experts and the medical profession speak with one voice on the validity of the determination of death by reference to cessation of brain function and the criteria and procedures for its determination.

II. PERSISTENT TISSUE SHORTAGE: WHY?

There is ample evidence to support propositions that transplant technology and surgical skills continually improve; that they have saved many thousands of lives (and are often the only practicable treatment for dying patients); and that there are enough organs and tissues potentially available to satisfy demand. Nevertheless, organ shortage is ubiquitous and has persisted since modern organ transplantation began, despite continuous expenditure of energy and resources by governments, health professionals, and others aimed at increasing supply. These circumstances can suggest self-contradiction and raise the question whether this apparent inconsistency provides a feasible argument that society has been unable to come to grips with the harsh realities of organ transplantation. Are we witnesses to two streams of opinion that flow separately?

One stream may comprise the approval that comes from cured recipients of transplanted tissues and their families, from medical experts and health professionals who practice or support transplantation, and from community satisfaction with the conquest of high-technology medicine over much sickness and death. The other stream of opinion may contain negative concerns about the cost of high-tech medicine and its effect on the provision of alternative means of health care, about the failure rates of organ transplants, and about the possibility of loss of traditional human values and their replacement with a "meat market" view of the newly dead human body through which living human beings are seen as "pre-cadavers" or "bags of parts" for the therapy of others. United States public opinion on organ donation is consistent with this negative stream of opinion, and its measure was recently summarized as follows: "Public opinion is a major consideration in organ donation, and studies consistently have shown that people are not necessar-

61. SCOTT, *supra* note 29, at 162-63.

62. *Id.* at 163.

ily supportive of it."⁶³

The diversity both of the tissues and of community attitudes to tissue donation is illustrated by three recent papers. The first discusses animals (primates and other species) as a potentially substantial supply of transplantable tissues for humans.⁶⁴ The second is a powerful, personal account of the reasons for which two prominent experts in the sociology and ethics of organ transplantation have decided to withdraw from further involvement in the field.⁶⁵ The third, which was precipitated by the murder of a prominent Australian heart transplant surgeon, is an exploration of the relationship between the community and the technology of vital organ transplantation.⁶⁶

A. *Animals and Xenotransplantation*

In opening his discussion of the first transplant of a baboon's liver to a human,⁶⁷ James L. Nelson draws attention to the divided community views on xenotransplantation by referring to a protest demonstration against the transplant at the University of Pittsburgh.⁶⁸ Nelson notes the advocacy by transplant experts of the creation of colonies of primates whose organs could be harvested as "a solution to the endemic lack of transplantable organs."⁶⁹ In fact, the baboon in question came from a federal government-approved foundation in Texas where primates are bred specifically for use in research.⁷⁰ Referring to the moral issues, Nelson considers baboons on the one hand, and on the other incapacitated humans who are permanently comatose, or those, such as anencephalic newborns, who are in "a condition incompatible with either sensation or life."⁷¹ He argues that, at the very least, human beings must answer the question, "What's so different about the two kinds of creature?"⁷² Nelson also argues that if we feel morally constrained to continue organ transplantation for human therapy, we should try to increase donation rates by improving our appeal to human altruism.⁷³

63. Evans, *supra* note 12, at 244.

64. Nelson, *supra* note 17.

65. Renee C. Fox & Judith P. Swazey, *Leaving the Field*, HASTINGS CTR. REP., Sept.-Oct. 1992, at 9.

66. Lupton & Chapman, *Death of a Heart Surgeon: Reflection on Press Accounts of the Murder of Victor Chang*, 303 BRIT. MED. J. 1583 (1991).

67. The transplant occurred in Pennsylvania in June 1992, to a thirty-five year-old father of two whose liver had been destroyed by hepatitis. The patient died seventy-one days after the surgery. Nelson, *supra* note 17, at 6.

68. *Id.*

69. *Id.* at 7.

70. *Xenograft Recipient Dies*, UNOS UPDATE 8:9, Sept. 1992, at 1.

71. Nelson, *supra* note 17, at 7.

72. *Id.*

73. *Id.* at 8.

Professor Peter Singer of the Centre for Human Bioethics at Monash University, Australia, a well-known commentator on human attitudes to animals, bluntly describes the use of primates as organ donors as “speciesism . . . logically parallel to racism and sexism.”⁷⁴

Xenografts have been attempted since 1905,⁷⁵ and modern organ transplantation has been characterized by the use of animal organs over a lengthy period. The first heart transplanted to a human being—in 1964 at the University of Mississippi—belonged to an adult chimpanzee.⁷⁶ Baboon and chimpanzee hearts were transplanted by Dr. Christiaan Barnard in the 1970s, and animal-to-human kidney transplants took place in 1963 and 1964 in the United States with kidneys from chimpanzees, baboons, and monkeys.⁷⁷ Ox bone and pig and ape heart valves also have been successfully transplanted to humans.⁷⁸ Despite this progress, reservations and objections about such transplants persist. They have been expressed by members of the medical community, by those who believe on moral grounds that animal organs should not be implanted in the human body regardless of scientific justification, and, of course, by animal rights advocates.⁷⁹

The future course of xenotransplantation is impossible to predict for at least two reasons. The first is the acceptance in recent years of the entitlement of animals to increased official protection and the widespread advocacy for changes to animal status, particularly when the animal is the subject of scientific and medical research.⁸⁰ The second reason is the unknown future response of the community in the event of increased implantation of animal tissues in humans. Confusion may be augmented by a British plan to insert human genes into fertilized pigs’ ova so that the resulting transgenic pigs may produce progeny with “human-ready” organs.⁸¹

If baboons’ hearts and pigs’ vital organs were routinely used for placement in the bodies of human beings, would we see a decline in the rate of human tissue donation and a change in the perceptions of human beings concerning themselves (and the animal species in question)? We should also consider what effect xenotransplantation may have had already upon human organ procurement and shortage.

74. Peter Singer, *Xenotransplantation and Speciesism*, 24 *TRANSPLANTATION PROCEEDINGS* 728, 730 (1992).

75. Mark J. Hanson, *A Pig in a Poke*, *HASTINGS CTR. REP.*, Nov.-Dec. 1992, at 2, 2.

76. SCOTT, *supra* note 29, at 39.

77. *Id.*

78. *Id.*

79. *Id.* at 40.

80. See, e.g., *AUSTRALIAN NAT’L HEALTH & MED. RESEARCH COUNCIL ET AL., AUSTRALIAN CODE OF PRACTICE FOR THE CARE AND USE OF ANIMALS FOR SCIENTIFIC PURPOSES* (1990).

81. Hanson, *supra* note 75, at 2.

B. Rejecting Transplantation

In their article *Leaving the Field*,⁸² Renee C. Fox and Judith P. Swazey, “the two sociologists most clearly identified with organ transplantation,”⁸³ discuss their reasons for departure from the field of transplantation after some forty years and twenty-five years, respectively, of close involvement and observation “coast to coast in this country (the United States) and [in] Europe, Hawaii, Majuro and China.”⁸⁴ They describe their experiences with transplant teams, donors, recipients in operating rooms, other health professionals, patients, families, grave illnesses, frequent deaths, breakthroughs, despair, and disappointments: “It is sometimes hard to meet the eyes of patients who have improved enough . . . to communicate their despair and disappointment . . . [and who later say] ‘no one ever told me it could be like this.’”⁸⁵

Identifying a recent American resistance to accepting “the limits to the biological and human condition imposed by the aging process and our ultimate mortality,”⁸⁶ Fox and Swazey agree with Paul Ramsey’s observation twenty years earlier that “[o]ur culture is already prepared for technocratizing the bodily life into collections of parts in which consciousness somehow has residence for a time.”⁸⁷ They express the opinion that the “missionary-like ardor about organ replacement that now exists”⁸⁸ is out of hand, and they deplore the current description of human tissues and organs by members of the transplant community as “HBP’s” (human body parts).⁸⁹ This leads them to suggest that the role of altruism and the value of gift in transplantation are being discounted deliberately in favor of a commodity or market approach to human organs. Even though commerce in organs has been outlawed by federal legislation in the United States, the authors believe that the terminology “HBP’s” has already led to a state of mind in some people that has encouraged “the plundering of the newly deceased person’s body.”⁹⁰ By way of example, they refer to a 1991 organ donor from whose body some fifty-six parts “went to people in different regions of the country.”⁹¹ Referring to the shortage of organs for transplant and the mounting

82. Fox & Swazey, *supra* note 65.

83. *Id.* at 9 (quoting editorial introduction).

84. *Id.*

85. *Id.* at 10.

86. *Id.* at 12.

87. *Id.* at 13 (quoting PAUL RAMSEY, *THE PATIENT AS PERSON: EXPLORATIONS IN MEDICAL ETHICS* 193 (1970)).

88. *Id.* at 12.

89. *Id.* at 13.

90. *Id.* at 13-14.

91. *Id.* at 14.

crisis in resource allocation in health care, the authors caution against excess zeal in United States health expenditure on organ procurement while “millions of people do not have adequate or even minimally decent [health] care.”⁹²

Fox and Swazey conclude by describing their “leave taking” as a deliberate separation “from what we believe has become an overly zealous medical and societal commitment to the endless perpetuation of life and to repairing and rebuilding people through organ replacement—and from the human suffering, and . . . spiritual harm we believe such unexamined excess can, and already has, brought in its wake.”⁹³

Such a powerful caution could be seen as surprising in a society that has had a persistent shortage of human tissues for therapy. On the other hand, some may think that rising demand is a factor causing the shortage. Again, it may be that, from experience, these experts have identified developments in health care that result from changed attitudes to the human body, namely, a lessening interest in the classical propositions of the body’s inviolability and inalienability, and a diminution in the overriding value of altruism. The more efficient and successful “spare parts” surgery becomes, the less mysterious the body will seem. The remarkable rapidity of accumulation of knowledge of the human genome through the current international genome “mapping” project will accelerate this process.

C. Obsession with High Technology Medicine

In December 1992, *The British Medical Journal* published an article that discussed “evidence of the exalted status of heart surgery in modern western society.”⁹⁴ The article concerned public reaction to the murder of Australia’s best-known heart transplant surgeon, Dr. Victor Chang, by gunmen (later arrested and convicted) attempting extortion on a Sydney street. The two authors, respectively from the Department of Community Medicine at the University of Sydney and the Centre for Applied Social Research at Macquarie University in New South Wales, examined the “massive news coverage, far in excess of that accorded to any ordinary murder” generated by this event. Lupton and Chapman argue that the reporting of Dr. Chang’s murder revealed a great deal about social attitudes towards “medical technology (especially transplantation and artificial organs), the body as machine, and the heart as an elite and highly symbolic organ.”⁹⁵ The press

92. *Id.*

93. *Id.* at 15.

94. Lupton & Chapman, *supra* note 66, at 1584.

95. *Id.* at 1583.

reports portrayed the murdered doctor “as a hero, saviour, saint, lifesaver, able to bring people back to life from death.”⁹⁶ In a manner “reminiscent of Biblical parables of the miracles performed by Christ,”⁹⁷ they recounted Dr. Chang’s successful heart transplants to prominent people, young and old, still alive who otherwise would have died long since.

Lupton and Chapman propose that two ideologies relate to modern heart surgery, the first being public veneration of high technology itself and the second involving the historic symbolism of the human heart as the seat of the emotions. They suggest that heart transplant technology is seen by society as an unprecedented demonstration of man’s power over mortality. Their approach is not without support. Indeed, it is not difficult to find recurrent reference in the literature of the Industrial Revolution to man’s urge to master nature, said by some to have been articulated first by Seventeenth Century philosophers and scientists such as Bacon and Descartes, who envisaged a convergence of science and technology as the means by which that mastery would be achieved.

The symbolic nature of the heart, according to the authors, has given it an importance that sets it apart from other organs. The result is that its treatment by heart surgeons as no more than a pump which, like a machine part, can become defective and then be replaced with a new one, sets them apart too, as “medical alchemists, offering the ultimate medical cure.”⁹⁸

Lupton and Chapman propose that the media reaction and public mourning which followed Dr. Chang’s death would have been unlikely if the murder had been that of a prominent preventive health practitioner, a pioneer of car-safety engineering, or an expert responsible for tobacco control legislation. They suggest that community values elevate high technology surgery as a “cure” for heart disease above preventive medicine and public health education of the kind that saw a dramatic decline in the United States deaths from coronary heart disease between 1968 and 1976, fifty-four percent of which was attributed “to lifestyle changes (principally reduction in smoking and blood cholesterol levels) and only 3.5% to coronary artery bypass surgery.”⁹⁹

Whatever may be the comparative merits of heart transplantation and preventive medicine, there is no gainsaying the enormous public and news media response in Australia to the murder of Dr. Chang and its apparent relationship to his reputation as a transplant surgeon. For different reasons,

96. *Id.* at 1584.

97. *Id.*

98. *Id.* at 1585.

99. *Id.*

other transplant surgeons, including pioneers such as Dr. Thomas Starzl and Dr. Norman Shumway of the United States and Sir Roy Calne of the United Kingdom, also have been given great public prominence in recent decades in many parts of the world.¹⁰⁰

III. COMMENT

Many questions concerning tissue shortage and procurement spring to mind, even if answers do not. If xenotransplants of vital organs could be readily organized and eradicate disease and save human lives as well, why should there not be strong public support for them arising from the same attitudes that support human consumption of meat from animals and birds? If the organs of dead human beings can eradicate disease and save human lives, why is there not strong public support for their routine removal for transplantation because everybody knows that they can never again be of use to the deceased and will decay within a very short time? Again, if the public truly admires high technology medicine and puts the transplant surgeon on a pedestal, why is there not strong public support for therapeutic transplantation of routinely-removed transplantable body parts? Another question, asked above, is whether society has been unable to come to grips with the harsh reality of organ transplantation.

One response may be that such questions are simplistic and that there already exists a great deal of public support for therapeutic tissue transplantation. An example that is often overlooked is blood donation and transfusion which are taken for granted and are so widely practiced that many have forgotten that blood transfusion is the transplantation of a vital human tissue.

It is possible that leaders of public discussion in this field—philosophers, moralists, and lawmakers—have been too occupied with their own disciplines and with telling the community how to respond to transplantation when they should have spent more time learning from the community? Instead of devising general legal formulae for the acquisition and use of all human tissues, should we not first identify those tissues, the removal of which gives the community no qualms—for example, regenerative material such as blood, skin, and body products that can be safely taken from living donors? Next, should we not separately deal with unusual regenerative tissues such as bone marrow and that single, vital organ, the liver? (Part of a living person's liver can be transplanted and will grow in the recipient's body while the remainder will generate to normal size in the donor's body.)

100. See, e.g., *Starzl, Shumway and Calne Awarded Medawar Prize*, UNOS UPDATE 8:9, Sept. 1992, at 1.

The growing official disapproval of body-part donation by living persons does not relate to all tissues but to certain non-regenerative tissues, the removal of which is not fatal, but is seen as mutilating or is otherwise unacceptable (for example, kidneys and eyes). Donation by a living person of a single, vital organ such as the heart, appears to be beyond discussion because of the laws of murder and suicide. However, it is not difficult to envisage circumstances in which a parent or child would be willing to give up his or her life to save that of another family member. Such classifications of tissue are relevant to living donors rather than cadavers because, with the dead body, differences between regenerative and non-regenerative tissues, and paired, single, vital, and non-vital organs are of less importance than social attitudes about death, grieving, burial, and treatment of the corpse.

Obviously, the culture of a community will govern the amount of discussion, education, consultation, and time that is needed for the public, and bereaved families in particular, to tolerate willingly the removal of the organs and tissues of the dead for the therapy of the sick. For example, a Japanese author has recently confirmed that "[i]n Japan neither the concept of brain death nor the practice of organ transplantation are accepted."¹⁰¹ The author supports this statement by reference to traditional Japanese beliefs that "personhood is a collective reality,"¹⁰² not a concept that relates solely to one individual. Traditionally, a newborn child is not seen as a person, nor is the death of a person recognized, until completion of family and community rituals.¹⁰³ However, the author suggests that the modernization of Japanese society since the 1960's has caused measurable change in acceptance of the therapeutic use of human tissues and even in the removal of organs for transplantation from brain-dead cadavers.¹⁰⁴

By way of contrast, at the time of an Informal Consultation called in 1990 in Geneva by the World Health Organization for the preparation of Guiding Principles on organ transplantation, the Belgian Delegate,¹⁰⁵ an eminent renal physician, orally expressed the opinion that organ donation in Belgium had greatly increased following the 1986 Belgian opting-out legislation. In his opinion, the increase was assisted by a comprehensive program of public information, education, and consultation underwritten by the Belgian Gov-

101. Jiro Nudeshima, *Obstacles to Brain Death and Organ Transplantation in Japan*, 338 LANCET 1063, 1063 (1991).

102. *Id.*

103. *Id.*

104. *Id.* at 1063-64.

105. The delegate was Professor P. Micheilsen of the Nephrology Department, U.Z. Gasthuisberg, Leuven, Belgium.

ernment with the support of the health care professions and community organizations.

IV. CONCLUSION

Generation of supplies of human organs and tissues for therapeutic use in quantities that might satisfy demand will require a real understanding of the sensitivities of the community in question; efficient organization; the best expertise of a number of disciplines such as ethics, resource allocation, philosophy, and social science; public education; innovative regulation or legislation; and confidence and trust on the part of the community in its health professions and lawmakers. There is as yet little evidence of a successful result in any community despite continuous improvement in medical technology and support from national and provincial governments. Even so, it is submitted that the benefits offered to the sick and the dying by the therapeutic use of human tissues justify continuing efforts to increase supply and to control abuses, particularly abuses associated with living persons, such as traffic and commerce in human tissues and human beings. As suggested by the Canadian Law Reform Commission, a common goal of law and public policy should be the creation of "a safe and adequate, just and efficient, tissue transfer and supply system."¹⁰⁶

106. CLRC REPORT, *supra* note 9, at 193.