

ORGAN AND TISSUE TRANSPLANTATION, ETHICAL AND PRACTICAL ISSUES

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Introduction

That transplantation of human organs and tissues is a desirable activity is no longer seriously debated, if ever it was. Furthermore, given the availability of a sufficient number of organs and tissues, there seem to be no moral reasons why the practice of transplantation should not increase, although there may well be discussion about the ethics of some forms of transplants; for example, the recently reported possibility of face transplants for cosmetic purposes. This increase, however, has been slower than it might have been because of a shortage of organs and, to a lesser extent, tissues. For example, in the late 1990s in the USA, “only about 5500 deaths of an estimated 8000–15 000 deaths of suitable donor candidates each year led to organ donation.” At the same time, the number waiting for organs was estimated to be over 63 000, with 4000 dying annually while they wait. Thus, it is issues of procurement that have preoccupied the minds of policy-makers more than other aspects of transplantation. It is in this realm that current debates also take place – for example, debates about xenotransplantation, living donors, and commerce are all issues related to increasing the supply of organs or tissues.

The important distinctions that encompass the critical issues in human tissue or organ supply and usage relate to:

1. the provider; whether:
 - a. a living human being
 - b. a beating heart (systolic, brain-dead) cadaver
 - c. a nonbeating heart (asystolic) cadaver or
 - d. a fetus or embryo
 2. the nature of the tissue or organ; whether:
 - a. regenerative or nonregenerative
 - b. single or paired
 - c. if single, whether vital
 - d. used immediately, or stored
 - e. gametes
 - f. excretions, byproducts, or wastes (e.g., urine, feces, tears)
 - g. sui generis (e.g., hair, teeth, fingernails) or
 - h. altered or developed by human agency
 3. the use to which the tissue or organ will be put; whether:
 - a. diagnosis
 - b. transplantation (with or without banking)
 - c. research, e.g., epidemiological nonidentifying use; results of possible consequence to the provider
 - d. education
 - e. commercial development and exploitation (e.g., cell lines) or
 - f. other uses such as public display, cannibalism, cosmetics, information-gathering (e.g., DNA from hair roots).
- A large range of issues arises from these distinctions and it is difficult to imagine a comprehensive regulatory or ethical schema that would deal comprehensively with them, let alone cope with the dynamic nature of the issues around their supply and demand. Such a task is beyond the scope of this article, which will focus on ethical and practical issues relevant to transplantation of organs and tissues from the systolic or asystolic cadaver into another human being. These are:
1. organs
 - a. heart, lung, liver, kidneys, pancreas, and others
 2. other transplantable tissues
 - a. cardiovascular tissue (heart valves, blood vessels)

- b. ocular tissue (corneas, sclera)
- c. skeletal and related tissue (bone, ligaments, tendons, cartilage, fascia)
- d. skin.

The article is therefore not concerned with xeno-transplantation, living donors, or with fetal or embryonic donors/sources of tissue, as clearly they invoke quite distinct considerations. Neither are issues related to the banking of blood, gametes, or bone marrow canvassed, nor are those related to manipulating or propagating tissues. Other usage of organs and tissues, such as research, education, diagnosis, commercial development, and exploitation, are not considered. (Listing these exclusions serves to remind one of the contextual ranges, or depending upon one's point of view, complexity, of practical and ethical considerations in this and related areas of medicine and science.)

Organs and Tissues

Much effort has been expended trying to demarcate precisely the boundary between organs and tissues. An organ can be defined as "a distinct part of an animal or plant adapted for a particular function." In the same *Oxford Dictionary*, tissue is "any of the distinct types of material of which animal or plants are made, consisting of specialized cells and their products." On this basis, a heart valve is probably better regarded as an organ, although it is retrieved, prepared, and stored in "tissue banks" worldwide. Ultimately, laboring over the boundary between organs and tissues is a futile exercise, because it is only one of a number of distinctions that can be made that are important for ethical, policy, and regulatory purposes.

Developments in tissue banking and transplantation have generally paralleled but been overshadowed by those in organ transplantation. Organ donation has a close association with changing notions of death, and solid organ transplantation the mystique of a highly developed and complex medical science that saves lives. One effect of this has been that the separate and distinct issues associated with the removal, processing, storage, and transplantation of tissues removed from asystolic (nonbeating) heart donors have received less attention. This is despite the number of people whose health and quality of life are improved by tissue transplantation far outnumbering those who receive organ transplants. For example, in recent years in Australia, with a population of around 19.7 million, approximately 200 organs per year were transplanted, compared with over 5000 allografts per year (including heart valves,

bone, skin, and corneas). Whatever the difference in numbers and public profile of organ and tissue transplantation, they share the characteristic of being procedures for which there is an ongoing demand that exceeds supply.

Developing an Understanding of the Body

Such perceptions are highly culturally dependent. This discussion will be limited to mainstream western perceptions, whilst acknowledging the range of philosophical and religious positions informing perceptions of the body around the world. Given the increasingly multicultural nature of the societies one lives in, there is a growing need for greater cross-cultural knowledge of these matters, to ensure all beliefs are respected, especially in the context of procuring organs and tissue for transplantation. Unfortunately, it is beyond the scope of this article to explore them all here.

The scarcity of human tissue to meet medical demand has precedence, starting with early anatomical investigation of human corpses. In 1504, the town council of Edinburgh granted a charter to the Guild of Surgeons and Barbers allowing them to claim the body of one executed criminal a year for dissection. Similarly, in England in 1540, Henry VIII granted to the United Company of Barbers and Surgeons the corpses of four executed felons "yearly for anatomies." Elizabeth I gave an equivalent grant to the College of Physicians in 1564, leading occasionally to unseemly squabbles between the physicians and barber surgeons over possession of the body. The activities of resurrectionists (or grave-robbers) were well known in the eighteenth century to meet the needs of the medical schools for bodies for anatomy classes. The tale of Burke and Hare is now infamous: they became multiple murderers in order to supply corpses for a fee.

These investigative activities added tangible knowledge to the development of medical practice and to the modern western medical model of the body. Various philosophical traditions also contributed to understandings of the human body and the emergence of scientific thought and method. For example, the ancient Greeks developed a dualistic view of the spirit as separate from the body. In the seventeenth century, Francis Bacon argued the notion of the body as morally neutral ground, related to the idea of nature being secular and separate from the spiritual realm – the body and nature therefore being subject to study and control. René Descartes saw the body as a machine and disease as an attempt to repair the parts of the machine. The mind/spirit he saw as morally superior to, and distinct from, the body. John Locke was also

influential. He wrote about property rights, and argued that if any individual “invests labour in raw material to produce a product” he acquires property rights over the product. Locke did not discuss the body as such, but his views on property and ownership have influenced expectations of modern medical research.

The western medical view emerging from these major philosophical positions is of human beings as fragmented – mind and spirit separate from mechanistic bodies, requiring outside intervention for repair and healing. This model of the body has been dominant, as modern medicine and biotechnology have developed, although since the 1980s there has been a recovery of the Judeo-Christian holistic understanding of the mind/body/spirit. In this tradition the physical body is seen as integrated with mind and spirit, a vehicle through which they find expression. Contemporaneously, there has been an exponential increase of interest in alternative, holistic healthcare models and spiritual practices such as prayer and meditation, in which the link between body, mind, and spirit is seen as central to healing and personal growth. These understandings place emphasis on the power of the individual’s role in healing and healthcare, undermining the position occupied by western healthcare with its reliance on professional disease cure.

This holistic view of the human person also undermines claims that body parts after death are merely matter, with their only real value being linked to medical scientific uses. The significance accorded to the body and its parts by many, whether symbolic, moral, or spiritual, can be difficult to articulate, compared with the “factual” language and demonstrable benefits arising from medical science’s use of human tissue. However, in recent years this difficulty was overcome with a significant outpouring of feeling and public outcry when it was revealed that public institutions in the UK (and elsewhere) had retained organs and other body parts from autopsies without the knowledge or consent of parents and family members. (The fact that in Australia the retention was, broadly speaking, lawful offered no protection to the pathologists involved in the court of public opinion.) This situation clearly demonstrated a gap between the general community’s expectations of respectful treatment of human body parts and the approach of the medical community to human tissue as a (disembodied) resource. It may be that the response was partly a reaction – fueled by the influence of the consumer movement of the last few decades – against the paternalism inherent in taking without asking. Many of the family members indicated that it was the fact that they had not been consulted that concerned them

the most. The distress of others was clearly linked with their views about the moral and spiritual significance of their children’s bodies being disposed of “whole.” In general, the experience of the “organ retention scandal” highlighted a tension between the western medical model and other more holistic understandings of human beings and the significance of bodies and their parts.

This tension creates a difficult position for organ and tissue transplantation. As stated at the outset, the desirability of transplantation as an activity is not seriously debated. But thinking about the symbolic, moral, spiritual, and physical reality of making one’s own or a loved one’s organs and tissue available for this purpose is a more daunting proposition for many, as it involves contemplation of one’s own mortality. Arguably, the reluctance to confront these issues is in part a consequence of the success of medical technologies such as those that make transplantation possible. Whatever ambiguity exists around attitudes to bodies and their parts, there is a generalized expectation of the medical profession (often unarticulated until personally relevant and urgent) to provide ways of prolonging life in circumstances where, before the advent of the relevant medical technologies, suffering and death were more easily accepted as “normal outcomes.” This expectation of longevity (and fear of confronting death) has evolved alongside advancements in medicine, untempered by the reality of limited resources – in this particular context, the disparity between available organs for transplantation and those in need of them. It will be interesting to see what, if any, influence the emerging interest in holistic healing and spirituality has on this pressurized situation. Perhaps we will see more acceptance and less desperation around prolonging life by means of major medical intervention such as organ transplantation, which after all is not always successful – a point which is often lost in what has become an increasingly politicized debate about boosting organ donation rates. It may also be that the medical community will play a part in modifying unrealistic expectations: Richard Smith, former editor of the *British Medical Journal*, has suggested a new covenant for the twenty-first century between the public, the profession, and politicians, one which would include recognition that “death, sickness, and pain are part of life; medicine has limited power particularly to solve social problems and is risky; patients cannot leave [all] problems to doctors; doctors should be open about their limitations and politicians should refrain from making extravagant promises and concentrate on reality.”

Brain Death

Brain death is another concept relevant to organ transplantation that is well accepted amongst the medical and related professions, but which may not be well understood or accepted by the lay community. Traditionally, the physical death of an individual equated with the cessation of heartbeat and the absence of respiration. However, technologies developed during the twentieth century for resuscitating patients whose heartbeat and respiration have stopped made the traditional criterion indeterminate in many cases. A person whose heart had stopped beating could be restored to life by means of medical intervention. The concept of brain death was based on international acceptance that a patient cannot recover once there has been irreversible cessation of all brain functions.

The other practical reason to define death by reference to brain function was to provide certainty in the context of medical procedures around the removal of organs and tissues for transplantation. The diagnosis of brain death in many, if not most, countries of the world means that the patient is dead, just as if the patient had died because of irreversible cessation of his/her circulation. When the clinical and legal criteria for the diagnosis of brain death have been satisfied, the patient is dead, even if the cardiovascular and respiratory systems are functioning with artificial support – circumstances which provide the optimum conditions for “harvesting” organs for transplantation use.

However, there is evidence that as many as 20% of families in some settings retain doubts that their family member was indeed dead at the time their organs were removed. Although called brain death, the diagnostic criteria are essentially assessments of brainstem death. It is well recognized that brainstem death is compatible with aspects of “brain life.” For example, neurological regulation of hormonal secretion and electroencephalographic (EEG) activity possibly representing cortical function commonly exist even when the formal criteria for diagnosing brain death are satisfied. This discordance, while neither understood nor articulated well in the public mind, may contribute to some of the disinclination in some communities to donate organs and tissues for transplantation.

Measures Taken to Improve the Supply of Organs and Tissues

With an ever-increasing number of people around the world needing organ or tissue transplants to save, or vastly improve the quality of, their lives, the issue of

improving the supply of available organs and tissues is one that continues to occupy governments, and policy-makers, and those who would seek to profit from this situation. Many of the measures that can be considered to improve the supply of human tissues for transplantation, within the constraints of this article, fall under three headings:

1. presuming consent/opting out
2. improving the efficiency of the existing system
3. commercialization.

Presuming Consent or “Opt-Out” Systems

Presuming consent or opting out are terms used to describe a system where all body parts of a deceased person are available for use, unless the person has registered an objection in his/her lifetime. If no objection is registered, a person is presumed to consent to his/her organs and other tissues being donated on death. This system places the onus on individuals to be proactive and think about the issue of organ donation and to act to register their objection. Assuming there are the personnel and facilities available, it can have the effect of making organ donation a more “routine” event, and eliminates the necessity for next of kin to make decisions at a difficult time.

Opt-out systems are operating in several European countries following the 1978 adoption by the Committee of Ministers of the Council of Europe of Resolution 78(29), a model legal code concerning the removal, grafting, and transplantation of human organs and tissues. The code, as well as prohibiting commerce in body materials, allowed “presumed consent” (for the procurement of cadaveric organs and tissues) provided there was no recorded objection by the deceased (so-called “opting out”). No inquiry of the relatives was needed.

The Council was persuaded in coming to a conclusion favoring “presumed consent” by:

- the invaluable importance of organs and tissues for transplantation
- their shortage
- the interests of sick people.

The Council of Europe affirmed its position in 1987, but noted: “The practice in most countries shows that relatives are consulted and though in most cases its opinion is not overriding, none would go against the expressed refusal of the family.” Quite apart from anything else, pragmatic concerns mean that the families have to be consulted. They are the repository of vital information about the deceased’s lifestyle, and such information is critical to decisions about the transplantability of the organs and tissues.

If during this consultation families disagree with the decision to donate, it is difficult to see how the donation can proceed. Consequences associated with bad publicity initiated by the family could affect the whole organ donation program and the attitude of the family may affect the confidence one could have in the lifestyle information provided. If families are heeded at this stage, then essentially the presumed consent regime has been defeated. At this stage, the only remaining value attaching to a presumed consent regime for organ and tissue donation would be as a statement of the importance attached to the value of organs and tissues and their availability for sick people.

Underpinning arguments about presumed consent is that it actually works to increase the availability of organs and tissues for transplantation. The answer is not as clear-cut as might be supposed, especially in relation to organs. For example, some countries with a high organ donation rate together with a presumed consent regime also have high road death rates. It is not simply a matter of comparing rates of donations in countries with and without presumed consent laws. Simply the awareness generated by public debate prior to the introduction of presumed consent laws may be responsible for some of the increase that might be claimed to be due to the new laws. There is, however, evidence in the USA about the positive effect of presumed consent laws in relation to the availability of corneas. States such as Florida, Michigan, Texas, and Ohio followed the 1975 lead of Maryland in authorizing procurement of eye tissue when:

- a body is in the jurisdiction of a coroner or medical examiner for forensic autopsy purposes;
- there is no known objection to corneal tissue procurement; and
- procurement would result in neither disfigurement of the body nor interference with the autopsy.

Such laws (Law Reform Commission of Canada, Procurement and Transfer of Human Tissues 1992) led to increases in corneal transplantation in Florida from 500 to 3000. The desirability of this, however, is still subject to some of the concerns expressed above, in particular, notwithstanding the availability of testing, the need to obtain reliable information about lifestyle from the family.

Some commentators regard presumed consent as a contradiction in terms, or a fiction. Consent is the active exercise by a person of an aspect of his/her autonomy. It can never be presumed. One might develop criteria for when consent is not necessary because of some overriding consideration (e.g., the desperate shortage of organs and tissues), but this is not presuming consent. Rather, it is not being

concerned with the wishes of the deceased or his/her family (unless the deceased took steps in life to register his/her objection to donation) to meet what society has determined is an overriding need. In using the language of consent, one might be accused of disguising what one is actually doing, however well motivated that might be, by appealing to our respect for individual autonomy. The option of registering an objection during life, of course, does not mitigate this; the realities of civic life are such that a very small proportion of the population will engage with the issue, and even smaller numbers will take the option even if it represented their wish. As with brain death, at some level this type of labeling of public policy probably contributes to the disinclination of some communities to respond to pleas to support organ and tissue donation.

Improving the Efficiency of Existing Systems

Other measures taken to increase supply of organs and tissues do not rely on altering the principle of positive consent to donation on which many countries' systems are based. In the USA, an attempt has been made to enhance the effectiveness of the system by introducing "required request." This policy presumes that the problem lies not with engendering altruism but with helping people to act on their good intentions and overcoming any reluctance of health professionals to approach families. Although there are some variations from state to state, generally the system requires hospital staff to assess and document the suitability for organ and tissue donation of every patient who dies in hospital. This information is passed to designated organ procurement organizations (OPOs) who are responsible for ensuring that approaches are made to the deceased's family. In general, exceptions are made where:

- the wishes of the deceased were already known
- healthcare staff could not locate the family in time
- it seemed that the inquiry or request would add to the relatives' mental distress.

There is evidence to suggest that this approach has generally failed to increase the rate of organ donation, primarily because of continued objections by next of kin. By contrast, the rate of tissue donation has risen. This may be because the circumstances in which solid organ donation can occur are very limited, but many more of the notifications to the OPOs would have potential for tissue donation. The required request system has increased awareness of the possibility of tissue donation and the rate at which families are approached. It could also be that family members are more comfortable with the idea of donating

musculoskeletal tissue rather than whole organs for reasons relating to their beliefs about the human body, as canvassed above.

A further way of promoting donations of organs and tissue is known as “mandated choice.” This entails indicating willingness or refusal to donate (in the event of the required circumstances arising at the time of demise) when performing some task mandated by the state, e.g., obtaining a driver’s license or filling in a tax return. Some see this as having an ethical advantage over opt-out systems, as it encourages individual autonomy. It also provides family members with an expression of the deceased’s choice, making it easier for them to agree to retrieval of organs or tissue at a very stressful time. However, there are some major limitations on the effectiveness of this system:

- Not everyone obtains a driver’s license or files a tax return.
- Coordination of an electronic register of individuals’ choices is necessary to allow access at the time of a potential donation. This is not easy to achieve, especially on a national or regional basis.
- If the mandated choice is not backed by legislation allowing hospitals to act on the choice registered, the choice may be vetoed by family members. Also individuals may have changed their minds about donation since the time of registering their choice. Reliance is therefore placed on family members to confirm the choice, in any event.

Further initiatives for improving donation rates focus on coordination of relevant services and active education of health professionals and the community. Reviews of donation systems have identified as critical the attitudes of clinicians at the donating end: emergency and intensive care physicians, and, for tissue, hospital staff responsible for care before death and pathologists undertaking autopsies. Education programs have been implemented for medical practitioners to cultivate a positive outlook about donation, and promote awareness of the requirements for organ and tissue donation, including how families should be approached with information and support. However (and this may also be true of what has occurred in the USA with the required request system), these have a limited effect on actual donation rates where they are not backed with the necessary resources. For example, having sufficient intensive care beds to accommodate a brain-dead patient and sustain respiration and circulation while the necessary tests are performed can be a major issue. Having transplant coordinators who can work with clinicians and who are trained and experienced in approaching

families is also important. Similarly, staff and resources are required for emergency room doctors to have the time to identify and deal with potential donors and liaise with intensive care units and transplant coordinators, otherwise their primary role – saving lives in the emergency room – will always come first.

Commercialization as an Alternative or Additional Means of Supplying Organs or Tissue

There are already significant elements of commercialization in organ and tissue transplantation wherever it exists. Surgeons, operating theater staff, and the staff of tissue banks earn their livelihood; goods and services at commercial rates are consumed in obtaining, processing, storing, and distributing organs and tissues which contribute to the profits of those providing them. Therefore, not only commercialization, but profit-making by some is inherent in organ and tissue transplantation. However, amidst all of this, most regard the tissue itself as privileged and to be protected at all costs from the mammon-virus. The organ or tissue is not to be thought of as a commodity; it is a priceless gift of life or health which cannot be bought or sold but only donated.

As a matter of ethics, how are we to regard a donor (now a provider) receiving valuable consideration in return for tissue to be used for transplantation? This is more than a theoretical problem. Liver4you.org makes the claim that for specified fees it will arrange transplant surgery with either cadaver or live organs in the Philippines. Kidney transplants cost from \$US35 000 to \$US85 000 and liver transplants from \$US150 000 to \$US250 000. That arrangements associated with this service may be ethically dubious is obviously something to be considered.

For the purpose of understanding something of the ethics, it is easiest to consider a live kidney donor. The following arguments are usually advanced against paying a person to provide a kidney:

1. The whole idea is abhorrent and unthinkable. Some things are so obvious that there is no need to contemplate otherwise. For example, so the argument goes, views purporting to show that the Holocaust did not happen are so offensive and patently wrong that the principles of free speech do not apply. Human tissue is so linked with personhood that to allow it to be equated with money is to undermine that for which our respect (save in exceptional circumstances) should be absolute and unconditional: the human person.
2. The ability of poor people to sell one of their kidneys will lead to exploitation of the poor. The

poor and indigent have yet another indignity heaped on top of a pile of misfortune: undergoing an operation (with associated risks) which, by force of circumstances of hunger and deprivation, they have no real choice to refuse. Such exploitation should not be allowed.

3. The voluntary donation of a kidney is a noble act, and altruism is a community good which should be encouraged and supported. Paying for kidneys will undermine this because:
 - a. Potential donors may now not donate. They might dislike the commercialized environment. If the going rate for a person selling a kidney was \$1000, a potential donor might well think s/he is giving \$1000, not life, and hence not donate.
 - b. Many or most volunteers might now sell.

In the first case, the actual number of kidneys from the living for donation may actually decrease (leaving aside drives for organs from the developing world). In the second case, the community may not lose supply but would have lost the altruism surrounding it.

Consequentialist arguments against allowing the purchase of kidneys from living providers can also be made. These are based on conclusions reached by Titmuss in relation to a private market in blood. Kidneys purchased as opposed to donated:

- entail much greater risks to the recipient of disease, chronic disability, and death because the providers, keen to obtain the money, will lie about their health
- are potentially more dangerous to the health of the suppliers who will be induced to take greater than acceptable risks
- may, in the long run, because of the above two factors produce greater shortages of kidneys.

The level of abuse of commercialization has proved difficult to quantify, although the number of horror stories is accumulating.

The website for Organ Watch: Social Justice, Human Rights, and Organ Transplantation is <http://sunsite.berkeley.edu/biotech/organswatch/index.html>. This is a small university-based attempt to monitor organ trafficking globally. The website includes a compilation of news and journal articles about a range of abuses that have occurred in recent years around the world, many involving the active participation of members of the medical profession.

Let us move to the argument in favor of paying providers. Kidney donation is a laudable practice but there is a great shortage of organs. Paying people for kidneys will not stop altruistic donation; in any event we pay for many other things and services

which could otherwise be regarded as altruistic, e.g., medical care itself, foster care, and care for the elderly. Individuals can voluntarily sell their labor and be paid to take risks (e.g., professional boxing, being an airforce pilot) without it necessarily being said that they are being used as a means, so why should people not be able to sell a kidney? If, in my informed judgment, I will be better off for having done so, not to allow this infringes my personal autonomy, a right that extends to the taking of risks and which underscores human dignity and the respect owed to me by others. It is acceptable that there is the potential to exploit the poor, but regulation will prevent abuses. Furthermore, regulation will extend to the distribution of kidneys, which will be governed by need and medical efficacy and not by purchasing power.

The European Parliament is in no doubt about its position. It has recently strengthened its position against the purchasing of organs. The measures proposed will render patients liable for criminal penalties if they go abroad and pay for organs. These will be extremely difficult offenses to prove, so it is questionable whether this will have any impact on trafficking in relation to European patients. That is not to be critical of the proposals, which embody important values, but they bring to mind the difficulties of dealing with trafficking whatever position one adopts on commercialization.

Some jurisdictions have moved to an intermediate position in relation to commercialization. In 1999, the US state of Pennsylvania, having already improved its donation rate by introducing various measures, proposed the payment of \$US300 of funeral expenses to donor families. This was not regarded in any way as a payment for the tissues, but was a recognition of society's appreciation for the donor family. The initiative was never implemented because of a conflict with federal law. It did however stimulate heated debate, with many ethicists viewing it as an incentive to donate that should properly be characterized as providing a monetary benefit to donor families and, therefore, a step down the path to paying for organs.

Conclusion

There are many issues not covered here, even in this narrow field of cadaveric organ and tissue donation and transplantation. For example, confidentiality issues (e.g., test results with consequences for donor families; confidentiality as between donor and recipient) have not been dealt with; the safety and quality of the organs and tissues including the potential for disease transmission (e.g., human immunodeficiency virus (HIV), hepatitis B and C, rabies, bacteria, fungi,

malignant disease); the particular issue of the use of organs and tissues provided from executed prisoners; whether or not there is any commercial element associated. Neither has the fascinating issue of property rights in human tissues been explored. Finally, nothing has been said about the allocation of organs and tissues, the paradigm of a scarce resource.

In conclusion, a note of caution is appropriate. Enthusiasm for tissue transplantation must be tempered by knowledge of the known and respect for the unknown. Scott waxes lyrical about the success of the Australian National Pituitary program which prevented over 600 children who would otherwise have been dwarfs from being so and which enabled over 1400 previously infertile women to have children. As with similar programs around the world, a number of these patients subsequently developed Creutzfeldt–Jakob disease, and more will probably do so as time passes. As with the disastrous infiltration of hepatitis C and HIV into the blood supply everywhere in the 1980s and 1990s, this serves as a warning, if one was needed, about the caution and humility with which tissue banking and transplantation should proceed. The situation is different for organ transplantation. Unless serious international action is developed to arrest and stop organ trafficking, public revulsion at

the practice may well impact upon domestic attitudes to organ donation.

See Also

Consent: Treatment Without Consent; Confidentiality and Disclosure; **Religious Attitudes to Death**

Further Reading

- Erin CA, Harris J (1999) Presumed consent or contracting out. *Journal of Medical Ethics* 25: 365–366.
- Hakim NS, Papalois VE (eds.) (2003) *History of Organ and Cell Transplantation*. London: Imperial College Press.
- Kerridge IH (1999) *Death, Dying and Donation: Organ Transplantation and the Diagnosis of Death*. Victoria, Australia: Australian Institute of Health, Law and Ethics.
- Price D (2000) *Legal and Ethical Aspects of Organ Transplantation*. Cambridge, UK: Cambridge University Press.
- Shelton W (2001) *The Ethics of Organ Transplantation*. Amsterdam, Netherlands: Jai Press/Elsevier Science.
- ten Have HAMJ, Welie JVM (eds.) (1998) *Ownership of the Human Body: Philosophical Considerations on the Use of the Human Body and its Parts in Healthcare*. Dordrecht: Kluwer Academic.
- Titmuss RM (1970) *The Gift Relationship: From Human Blood to Social Policy*, p. 157. London, UK: George Allen and Unwin.