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**Paper presented to the Social Change in the 21st
Century Conference**

**Centre for Social Change Research
Queensland University of Technology**

28 October 2005

Xenotourism and Xenotravel: Some notes on global regulation

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A Mexican treatment centre currently offers to transplant insulin-producing (islet) cells into people with Type-1 diabetes. The transplantation material is sourced from 'clean' laboratory pigs in an attempt to enable the human patient to produce insulin internally. Using this example, our paper investigates three issues:-

- 1) The geographical location of this procedure and responses from other parts of world tell us much about technology as a global/local process. We examine to what extent Mexico is understood as an (in)appropriate venue for such a dangerous procedure, and how tropes of global regulation can be used to inhibit or advance technoscientific procedures.
- 2) Patient compliance has long been a difficult issue for the medical profession. Xenotransplantation is particularly problematic in this regard; not only are there risks for the individual patient, but also there are concerns about trans-species retroviruses against which humans have no known protection. Individual patients are required to balance the compulsion that they manage their health as responsible neo-liberal citizens with the necessity to avoid epidemics. We examine responses to this treatment that oscillate between calls for individual freedom and global regulation.
- 3) We examine the extent to which medical treatments are increasingly commodified (or connected to leisure broadly conceived). We analyse Mexican xenotransplantation as an example of 'medical tourism', where explicit links are established between medical procedures, holidays, accommodation and other tourist consumption experiences.

Keywords: xenotransplantation; xenotourism; medical tourism; healthcare; globalisation; regulation

Introduction

Much of the recent sociological attention to globalisation has focused on global *flows*: flows of money, goods, people, wastes, and so forth (for example, see Urry 2000). Globalisation – whether economic, political, or cultural – is dependent upon people, tokens, money, and goods finding reliable methods to get around the globe, and it is these flows that have excited the attention of a number of scholars. In particular, the movement of people around the globe is a much-remarked feature of our global modernity. Usually, this movement is limited to elite groups, as is no doubt the case with business travellers and the majority of tourists; but sometimes, as in case of refugees, this movement can be a condition of life for the disenfranchised and the poor. Our interest in this paper is with tourism, which, as Urry (1990) argues, brings together a number of themes of late-modern society: rich Westerners who are no longer meaningfully tied to economies of production, entertain themselves by consuming experiences of ‘otherness’ – an entertainment which a globalised world, cheap and rapid international travel and international hotels and motels have made possible in a heightened way.

Of course, many scholars have argued for a very long ancestry to globalisation (for example, see Wallerstein 1997), and it is also possible to argue the same in regard to tourism. Theilmann (1987) (unlike Wallerstein, who ties early forms of globalisation to empire and capitalism) suggests that medieval forms of tourism were connected to religion, especially through the practices of pilgrimage. Theilmann (1987) notes how the medieval Catholic Church encouraged this prototypical form of tourism, especially when the pilgrimage might connect to medical treatment. While it might make sense to consult local authorities and turn to local saints in the first instance, travelling in the hope or expectation of medical miracles was *de rigueur*. Furthermore, the medical miracles performed were an important resource in the process of canonisation. According to Kevan (1993), medical tourism and pilgrimage can be further traced back to Ancient Mesopotamia in the third millennium BC, where climatic change and health were intimately connected. Kevan (1993) continues to note that these strong connections between health and climate influenced other ancient civilisations to go to the extreme of uprooting their place of residence.

Medical Tourism¹

What emerges from the above is the close connection between tourism and medicine. While innovators such as Thomas Cook² helped develop the notion of travel as a leisure enterprise (for example, see Smith 1998; Withey 1998), we have seen that travel and treatment have a long joint history. More recently, just as tourism has become an increasingly marked and commonplace feature of our society, so has medical tourism. The term ‘medical tourism’ or ‘healthcare tourism’ needs some clarification, as its treatment in the literature is slightly confusing. Goodrich and Goodrich characterise it as:

the attempt on the part of a tourist facility (e.g. hotel) or destination (e.g. Baden, Switzerland) to attract tourists by *deliberately* promoting its healthcare services and facilities, in addition to its regular tourist amenities (Goodrich and Goodrich 1987: 217, emphasis in original).

This description can also be expanded. Sometimes it refers simply to the phenomenon of patients travelling to receive medical treatment, usually because cost or availability confers

some advantage. For example, it is estimated that bone-marrow transplants that cost US\$250,000 in the USA can be had for as little as US\$25,000 in India (*Medical Tourism* 2005). The term also covers the increasingly common phenomenon of packaging together holidays with medical treatments. In some ways, this is an obvious development, since many of the nations that offer good quality medical services at cheap prices are also adept at offering good quality tourist experiences at good prices. Primarily, India, South America, the East Indies and South-East Asia are such centres of medical tourism. In this latter meaning of the term, the treatments are more likely to be cosmetic rather than life-saving, for the obvious reason that those with chronic and acute illness are unlikely to be well enough to engage in much tourism, especially post-surgery. Elective procedures - especially dental surgery, laser eye surgery, rhinoplasty, liposuction, blepharoplasty, facelifts and breast augmentation - can be purchased at an increasing number of venues around the world. Indeed, as the major shopping malls of these countries begin to see the incursion of day-treatment cosmetic surgery businesses, medical treatment increasingly becomes an unremarkable part of the tourist shopping experience. From these remarks, we suggest there are two ways of defining medical tourism.

Our second definition of medical tourism - the idea of combining medical treatment with a holiday - is one which, we suggest, is becoming increasingly fuzzy around the edges, precisely because medical treatment is merging into the tourist experience, and also because it is sometimes hard to see the boundary between body modification and medical treatment. Tourists might primarily visit Budapest for its architecture and culture, but notice how teeth-whitening is cheaper than in their homeland. People investigating laser eye surgery might opt to pay the same amount as in their industrialised Western nation, but have the procedure in South America with a free holiday thrown in. This highlights a connection to cost and availability, where the procedural costs at home do not include tourist 'retreats' and recovery in luxurious surrounds. As these procedures become increasingly marketed and mundane, they potentially become more an impulse purchase rather than part of planning a holiday (or life). Thus, medical tourism has developed from being an addition to the traditional tourist site-seeing experience (Goodrich and Goodrich 1987) to being a significant motivating factor for travel, in addition to which the traditional tourist experiences may be added. The website <http://www.medicaltourism.com> (accessed 26/08/05) gives some nice examples of the sorts of packages and procedures available, including the rather terrifying-sounding Gamma Knife Clinic (disappointingly located in Florida), which offers:

Non-Invasive, painless and bloodless brain surgery. We treat both cancerous and non-cancerous tumors and Trigeminal Neuralgia. Our services also include 5 Star oceanfront luxury resorts, limo pickup and private jet services (*Medical Tourism* 2005: <http://www.medicaltourism.com> , accessed 26/08/05).

Our first definition of medical tourism - which focuses on travel for more serious treatment, usually primarily on the grounds of cost or availability - is the one we wish to concentrate on. Some of the more serious forms of cosmetic or elective surgery may fall into this category, especially if they are procedures which immobilise the patient for significant periods of time and thus reduce the scope for post-surgical tourist activities. However, transplant and cardiac bypass surgery fall easily into this category³, and are the basis of what is rapidly becoming a multi-billion dollar business⁴. These medical interventions are often available in the patient's home country, but may be hard to access because of waiting times, a lack of resources (such as the shortage of transplantable human organs), and exorbitantly high prices. Consequently, treatment by (frequently Western-trained) doctors in developing nations becomes a much desired solution to a health crisis. While the slogan of this industry might be "first-world treatment at third-world prices", the industry must come to terms with other factors that may negate its pricing advantages, not least

concerns about medical standards. Of course, in the absence of any effective global regulation of the medical industry, these concerns are restricted to the individual patient, who is given the responsibility for estimating the risks involved - a theme to which we shall return below. As a result, it seems likely that assuaging such concerns through marketing campaigns will be a major feature of the medical tourism industry in the immediate future.

Xenotourism⁵

A contemporary development in medical tourism, known as xenotourism, is connected to and derives from medical procedures around xenotransplantation. Xenotransplantation involves the transplantation of living animal cells, tissues or organs into a human recipient. One example of xenotransplantation is the transplantation of porcine insulin-producing cells from the pancreas, known as the islets of Langerhans, into an individual with type-1 diabetes. The aim of such animal transplant therapy is to obtain better metabolic control for the human transplant recipient by reducing insulin dependency, or possibly facilitating insulin independence.

The possibility of xenotransplantation becoming available to international patients has recently raised some concerns. While this 'xenotourism' possesses obvious similarities to transplant tourism, xenotourism raises far more dangers for the international community. One of these dangers is trans-species viral infection. The new intimacies created by xenotransplantation could mean viruses not previously capable of infecting humans would become infectious, and create new diseases capable of generating human epidemics (Gold and Adams 2002; Bloom et al. 1999). Of particular concern are endogenous retroviruses, which are spread to subsequent generations through their germ-line integration. These retroviruses cannot be bred out of the source animals through current techniques. Moreover, xenotransplantation poses the risk of unknown infections crossing the species barrier. As in the case of other human infections of animal origin (for example, severe acute respiratory syndrome (SARS) and human immunodeficiency virus (HIV)), viruses are not constrained by geopolitical borders, meaning xenotransplantation produces local, national and global angst (Gold and Adams 2002). Consequently, this globalisation of infectious risk highlights a need to consider xenotourism in regulatory frameworks, as evidenced in the New Zealand community discussion document (Toi te Taiao: the Bioethics Council 2005).

The infectious risk posed by xenotransplantation is considered by some to be theoretical rather than a pressing real world problem. On the other hand, the increased threat of a global pathogen is perceived to relate to inappropriate national and international regulatory ethical frameworks in order to deal with xenotransplantation (McKenzie et al. 2003). The perception from the developed world is that undeveloped nations lack regulatory oversight, standards and monitoring requirements, and this will amplify global contagious threats (Sykes et al. 2003; Sykes et al. 2004). Consequently, there is much discussion around the need to establish international guidelines and/or collaboration and surveillance strategies (for example, see Buhler 2005; Sykes 2005; Sykes et al. 2004; O'Connell 2004; Sykes et al. 2003). This concern, however, also relates to economic benefit and loss. For example, 'unregulated' countries may use intellectual property rights to prohibit access to knowledge, as highlighted in the cloning and stem cell debates (Cohen 2002). In this light, developing nations would derive economic benefits through xenotourism, while developed nations would not. Critics thus believe the present restrictions on xenotransplantation, including moratoriums (Australia and New Zealand) and stringent regulations (United Kingdom and USA), not only deny individuals hope, choice, and a desired treatment, but

jeopardise investments of time and economic resources and, in turn, potential economic benefits (Barton 2005; Sykes 2005). Type-1 diabetics such as Peter Thompson (in Barton 2005) and Graeme Collinson (in 'Pig-cell transplant treatment denied' 2005) warn they will travel to seek 'cures' despite national bans, and will take advantage of a lack of international and national infrastructure to deal with xenotourists.

An especially good example of these concerns is research being undertaken in Mexico at the Laboratorio de Xenotrasplantes, under the leadership of paediatric surgeon Dr Rafael Valdes. At this research centre, the focus is on using porcine insulin-producing cells to treat type-1 diabetes. To combat the immune system responses that are elicited when a foreign body is detected inside the body, the Laboratorio de Xenotrasplantes (n.d.[b]) has mixed porcine islet cells with porcine Sertoli (testicular) cells. Significantly, Sertoli cells are believed to shield against immunological rejection. Therefore, it has been proposed the co-xenotransplantation of Sertoli cells and islet cells might provide the immunological conditions for the porcine islet cells to function and grow in the foreign human environment. The results are promising. Valdes (in Armstrong 2004; and Secretary's Advisory Committee on Xenotransplantation and L.A.D. Reporting Company 2004) has reported that some patients no longer require insulin injections, while others have a reduced insulin requirement (Barton 2005; Buhler 2005; Check 2002). Valdes' work has been questioned, however, due to a lack of preclinical studies, issues of informed consent amongst the trial participants, a need for more clinical experimental trials, and questions on the control and monitoring of infectious diseases (Buhler 2005; d'Apice in Armstrong 2004; Check 2002). These criticisms have been raised despite Mexico's possessing its own laws, regulations and ethics committees who oversee such trials, including those at the Laboratorio de Xenotrasplantes (Valdes Gonzalez 2002). Furthermore, as some work conducted at the Laboratorio de Xenotrasplantes is protected under patent, it is not published (Valdes Gonzalez 2002), and therefore cannot be transparent.

These concerns have taken on a new urgency as xenotourism has become a reality. In July 2004, Dr Valdes (in Armstrong 2004) indicated that international patients were already undergoing porcine islet and Sertoli cell transplantation. The procedure was approved as therapy in August 2004 by the Department of Health and the National Center for Transplant (Mexico), with the first international patient officially receiving treatment in January 2005. The charge for the xenotransplant is US\$30,000-\$35,000 (Laboratorio de Xenotrasplantes n.d.[a]). As indicated by a prospective patient in contact with Laboratorio de Xenotrasplantes (Mariam 2004), this cost does not include pre-transplant appointments, workups and out-of-hospital expenses, such as airfares, accommodation, food, etc. Furthermore, this xenotransplant involves two operative visits to Mexico. The initial visit to the Laboratorio de Xenotrasplantes (n.d.[b]) involves the implantation of cylinders made of stainless steel and Teflon into which, two months later, porcine Sertoli and islet cells are inserted. Consequently, the xenotourist experience is a multiple rather than singular surgical event.

Despite the connotations of the word 'xenotourism', xenotransplantation and tourism are currently separate, even though travel is involved. For example, while medical tourism involves combining often luxurious accommodation and tourist packages with medical treatment, xenotourism does not yet have the former. As outlined by Urry (1990: 11), "tourism results from a basic binary division between the ordinary/everyday and the extraordinary". Tourist experiences, then, can be understood as containing recreational elements of pleasure that are distinguishable and different from everyday reality. Part of this experience is escapism, by engaging with the culturally exotic and strange. This can be seen in our second definition of medical tourism, where medical procedure(s) is/are just one activity in a larger tourist package. Contrastingly, xenotourism currently does not play

on the associations between medicine and tourism. In particular, xenotourism as currently practised lacks any form of a tourist package, and thereby cannot be conceived of as a tourist experience. Rather, any tourist experience is arranged independently of and experienced separately from the medical institution and the medical procedure. Given the frailty of many potential patients, such tourist 'extras' are unlikely to be valued. Consequently, it makes more sense to call xenotourism 'xenotravel'.

On the other hand, metaphors commonly associated with tourism can be more appropriately linked to xenotransplantation itself. For example, the medical procedure of mixing human and animal is itself exotic, strange and extraordinary; over and beyond - and more intimate - than any cultural or tourist experience. At the same time, the individual's ordinary and everyday reality is at the forefront of the xenotravel experience, being the singular focus and purpose of travel. This is because unlike other forms of medical tourism where pleasurable luxury is part of a medical package, xenotravel simply offers a surgical experience that will possibly provide improved quality of life by alleviating diabetic symptoms and insulin-dependence. In this light, the pleasurable experience of xenotravel is connected to the potential result of an unpleasant xenotravel experience. Thus, the religious pilgrimage of early medical tourism has changed to a commodified pursuit, though both embrace medical healing and cures that are centralised in a 'sacred' site. Furthermore, such movement can be connected to a history of cure-seeking, where 'healthy holidays' and a 'change of climate' have been perceived to provide positive health outcomes (Kevan 1993). Aside from this xenotravel's lineage in pilgrimage and holiday (holy-day), there is, perhaps, another link to a more secular version of holi-/holy-day – the seeking of the sun as a part of tourism which is seen is to afford health (Carter and Michael 2004).

Medical and bodily commodification is evidenced by xenotravel's exclusive relationship between local medicine and the international marketplace, where humans are reduced to commodities (Scheper-Hughes 2002) and medical diagnoses. Thus, at this early stage of xenotravel, it is primarily an economic activity based on the local cost of the medical procedure(s), and the unavailability of this medical intervention in other parts of the world. This allows procedures offered through medical tourism - and in particular xenotravel - to create 'niche' markets, which facilitate and exacerbate divisions between the developed and the developing world, between rich and poor, and between the haves and the have-nots (Scheper-Hughes 2002; Pettman 1997). As reproductive and sex tourism also demonstrates, these disparate communal and individual bodies are intimately mixed through such practices (Pettman 1997). Xenotravel furthers this hybrid process by distinguishing animals from humans (using one to benefit the other), while crossing the species divide to fuse these bodies. The extraordinary becomes transformed into the everyday, mundane reality.

The Neo-Liberal Citizen

Caught up in all of these global/local medical controversies is, of course, the individual patient who has to make sense of it all, and increasingly has to take responsibility for the management of their own health regime. It has become a commonplace in political sociology that neo-liberal political regimes have worked to strip back welfare systems and their associated safety nets, and increasingly to insist that citizens make private arrangements to safeguard their (and, in many instances, their family's) health, education, retirement, and so forth (see, for example, Rose 1996). While the more robust versions of neo-liberalism see little wrong with individuals pursuing their goals, and imagine that an unfettered market can only be a good thing, the xenotravel case provides a stark reminder

of the inescapable problem: the neo-liberal citizen's inalienable right to do what s/he wants may conflict with the interests of other citizens. In this case, chasing personal health – now commodified – may be at the expense of a global epidemic. To what extent is one free to unleash porcine retroviruses on the rest of one's species? Of course, there may be a simple Hobbesian solution to this dilemma: accept the necessary evils of the Leviathan that is state regulation. The problem, however, is in an international context, there really is no effective mechanisms of global regulation that can cope with global threats. Although risks society has 'gone global', there is no 'World Police' that mimics this spread of influence. There are a number of areas of concern.

First, in the context of a global medical market, the marketing of new treatments still needs to draw on some criteria around efficacy, safety etc. Where are these sought by neo-liberal citizens? Where can they go to get reassurance? Who counts as trustworthy? Or does desperation trump any such considerations? The neo-liberal solution to this, one might anticipate, is a series of benchmarking operations: perhaps in time we shall see league tables of international xenotransplantation centres so that the informed consumer can choose with confidence.

Second, and following on from this, attempts to monopolise the setting of standards by certain western actors through such central organizations as UN might seem desirable – but how accessible are these concerns to patients/patient groups?

Third, there is a curious trend in the regulation of medicines, procedures and services. Regulatory authorities are increasingly seeing themselves as having a role in the licensing of private clinical laboratories for quality control (hygiene, cleanliness, data management) rather than being concerned with clinical efficacy. There is, then, increased scope for the privatisation of relationships between healthcare consumers and medical services. Regulation in this sense is downscaling its scope: an example of state-organised irresponsibility. This contributes to the important tension in the xenotravel case between an increasingly privatised set of priorities (personal health) advancing at the expense of public health priorities (disease management).

In short, the globalisation of medicine throws up all kinds of problems for patients who are only really enmeshed in nation-state safety nets, and even these are close to atrophied. One point we might stress here is that neo-liberalism cannot effectively deal with problems which exhibit the following: first, if a problem has a large technical component, it becomes almost impossible for individuals to make informed choices, and this will often be a characteristic of medical procedures; second, when a problem has global ramifications (in this case, epidemic), there are no effective global regulatory mechanisms to temper the rash actions of certain 'dangerous individuals'.

Conclusion

Medical tourism can be analysed as practical examples of the increasing commodification of the body. It seems to us sensible to distinguish two types of medical tourism: travelling to get access to medical treatment, and travelling to get medical treatment as well as engaging in other tourist practices. It may well be that in the development of the latter, the former is a necessary first stage. The example we have discussed in this paper – xenotransplantation – is, so far, an example of a treatment that is becoming available in the first modality of medical tourism but not (yet?) the second. Xenotravel throws up a number of difficult and perhaps insoluble problems. First, the unusual dangers of the medical procedures – and the possibility of porcine retroviruses leading to species-

threatening epidemics – draw our attention to the inadequacies of our existing mechanisms of global regulation; if the market becomes the only arbiter of whether such treatments will be offered, surely no one should be surprised if there are a few nasty surprises in store. Second, the globalisation of the market in medical treatment goes hand in hand with an increasing individualisation of patients; patients now have much more responsibility for researching treatments and deciding how to weigh up expertise, where they can save money, and so forth. Again, no one should be surprised if patients cannot effectively play these roles. What might be at stake here – and this speculation can only be tested by future empirical work on our part – is that we are witnessing a shifting interplay of centre and periphery mediated through patients as consumers/citizens.

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NOTES

¹ In this paper, we focus on medical tourism in relation to patients. However, we note that medical tourism can also refer to healthcare workers and medical students combining travel and work in exotic locations (for example, see Grennan 2003).

² Cook's first group tour - taken in England - was in 1841, from Leicester to Loughborough. By 1855 he was organising trips abroad (to Paris) and by 1866 to other continents (New York).

³ Some potential transplant recipients might be well enough to engage in limited pre-surgical tourist experiences, others will not.

⁴ McKinsey and the Confederation of Indian Industry estimate medical tourism in India alone could be a US\$2.3 billion business by 2012 (Press Trust of India (PTI) 2005).

⁵ While the term 'xenotourism' is problematic, for reasons we go on to outline, it is one we use because of its currency. For example, Dr Daniel Salomon from the Scripps Research Institute at La Jolla, California, was using the term 'xenotourism' in 2002 when warning of cell injections from rabbits, sheep and sharks being offered in Mexico (and especially Tijuana) as rejuvenating treatments (Campaign 2002).