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# A Market for Human Cadavers in All but Name?

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Anyone who has been trained as a physician – or is close to someone who has been – is aware that the dissection of a cadaver is an integral part of the physician's learning and socialization. The first incision is something few physicians forget. That procedure is reproduced time after time, in country after country, and provides a seminal building block of medical education (Boulware et al. 2004). As a physician recalling that precise moment explains: "It is at times awe-inspiring and at other times profoundly upsetting" (Montross 2009). Dissecting a cadaver, she adds, also gives young doctors "an appreciation for the wonders of the human body". Students often give their first "patient" affectionate names; however, much less attention is paid to where the cadaver came from.

## Tensions around the Supply and Demand of Cadavers

Supplying human cadavers is left to the responsibility of others, most notably the anatomy course instructors or school administrators. These individuals are not alone in trying to secure specimens. Alongside primary medical education providers, a large number and wide range of other users are also trying to secure cadavers for their own needs. The continuing training of medical doctors, for instance, relies on cadavers. In addition, allied health professionals, emergency medical workers, and medical researchers all demand cadavers or cadaver parts. As an illustration, orthopedic surgeons use human joints to fine-tune their skills to learn new procedures. Similarly, some researchers studying Alzheimer's disease might require human brains. Also, government agencies and automotive manufacturers that try to improve automotive safety benefit from research using cadavers.

It does not help that many users seek the same "good" type of cadavers. A good specimen, in this context, means a young cadaver, one not overly obese or too evidently diseased. Such a description is generally the antithesis of

cadavers made typically available through donations, so the supply is further strained. Not surprisingly, both in the United States and other countries, those who require cadavers often question the adequacy of the supply and regularly voice their fear of shortages of cadavers (Agthong and Wiwanitkit 2002; Assemblée Nationale du Québec 2004; U.K. Department of Health 2005).

However, trying to address the question of a shortage of cadavers often means facing the taboo on trading human anatomical goods (Delmonico et al. 2002; Scheper-Hughes 2000; Steiner 2006; Titmuss 1971). Blood, organs, and cadavers are generally thought to be better left untouched by market dynamics. Their sacredness sets them apart from other traded goods. As Philippe Steiner recently reminded us in this newsletter, he began researching organ donation because of the stringency of the ban on market transactions for organs (Steiner 2009). In essence, many would argue that blood, organs, and cadavers should not be considered goods.

That said, the demand for cadavers remains strong, and numerous ideas have been voiced to augment the supply. As an illustration, there is an ongoing debate about the impact of using financial incentives for donors or their families to encourage anatomical donations (Clay and Block 2002; Delmonico et al. 2002; Harrington and Sayre 2006; Obermann 1998). Similarly, surveys of potential whole-body donors seek to gain insight into the reluctance to donate and how better to educate potential donors (Boulware et al. 2004; Richardson and Hurwitz 1995; Santer 1994). By understanding the reluctance to donate, the hope is that the root causes of such reluctance might be addressed.

Another novel solution to the cadaver shortage lies in securing specimens from a new set of actors in the commerce in cadavers. These actors are legal entrepreneurial ventures that have been operating for more than a decade in the United States; they cater to domestic users and international ones alike. (The procurement of cadavers is regulated, but the export of cadavers much less so.) For medical schools in countries with strong societal norms against donating one's body to science, such a supply route can prove quite practical. In those and other instances, medical schools can purchase for a fee the entrepre-

neurial ventures' services and help medical students learn their craft. Like corn, wheat, and civilian aircrafts, cadavers sent abroad can be seen as another U.S. export product, although one dwarfed by these other export categories. The notion of human cadavers as a thriving export industry is obviously far away; however, I want to suggest that its legality and limited occurrence underline crucial new developments in markets for anatomical goods. While the international organ trade is almost unanimously condemned, human cadavers can legally freely flow across the globe.

## The Legal U.S. Framework for Trading Human Cadavers

To my knowledge, the United States is the only country that has seen the development of legal entrepreneurial ventures supplying cadavers for medical education and research. The ventures are small operations (as opposed to individual brokers) and engage in the legal commerce in cadavers. In the U.S. entrepreneurial spirit, these ventures serve this atypical demand by acting as matchmakers between donors and healthcare areas. Such a development makes many observers pause since there is a strong taboo in many countries – including the United States – against trading human cadavers. However, the technicalities of the cadaver trade somewhat skirt this taboo.

Indeed, the law basically says cadavers cannot be bought and sold; however, the services surrounding their procurement can be reimbursed. More precisely, the 1987 Uniform Anatomical Gift Act that governs U.S. anatomical donations makes it a felony to “knowingly, for valuable consideration, purchase or sell a [body] part for transplantation or therapy, if removal of the part is intended to occur after the death of the decedent.” However, the Act excludes from this consideration “the reasonable payment [by healthcare areas] for the removal, processing, disposal, preservation, quality control, storage, transportation, or implantation of a part,” thus allowing operators to procure and supply body parts (National Conference of Commissioners on Uniform State Laws 1987). (A 2006 revision to the Act reiterated this framework.) The window of opportunity, if you wish, is even larger than it might appear. More specifically, the purchase or sale of whole bodies – not parts – is absent from the Act's provision. Second, the purchase and sale of body parts for purposes *other than* transplantation or therapy are also absent from the Act's provision. Thus, many opportunities open up for entrepreneurial pursuits.

In this context, mom-and-pop shops have emerged alongside more traditional academic-housed programs to procure whole-body donations. As an illustration, a potential donor in Arizona could decide to sign consent forms to donate his or her body to Science Care (a for-profit entrepreneurial venture located in Arizona) or to the University of Arizona's College of Medicine. Why the donor might chose to select one program over another is an empirical question, but the main point is that donors and their families have a choice of program recipient, and that some kind of trade occurs. Financial trades are not between the donors and the programs since donors and their families cannot receive financial compensation for donations but rather between the procuring programs and end users. Put otherwise, this framework allows programs to compete for donations and sell their services to specimen users.

In the past decade, legal for-profit or non-profit entrepreneurial ventures alongside traditional procuring programs in medical schools have started supplying users. In the United States, there are currently more than 100 academic-housed whole-body donation programs (University of Florida State Anatomical Board 2004) and a dozen for-profit or non-profit entrepreneurial ventures. Though welcomed by some specimen users, entrepreneurial ventures often conjure concern about the creation of a market for human cadavers. Such concern is also probably heightened by U.S. historical accounts of grave robbing (Goodwin 2006; Sappol 2002; Shultz 1991). Together these elements contribute to fears of “body-snatching.”

## A Market in All but Name

Arguably, our grandparents, parents, and friends are not being traded on an open market. Quite the contrary, U.S. law ensures that sufficient protection is in place so that this could never happen. However, the ability to legally acquire a cadaver and reimburse a supplier for procuring costs is an important step in creating a market infrastructure. It is a market where the goods are not priced but the services are. This is not to say that in the past, medical schools could not legally acquire cadavers from another program. A school could, for instance, call another school, even one out of state, to inquire if surplus cadavers were available for the upcoming academic year. If cadavers were available and the schools agreed to cooperate, the transportation and embalming costs could be reimbursed by the end user. In practice, however, school administrators did not consider this competing for specimens; instead, they felt they

were helping each other out – perhaps even reciprocating the exchange in another academic year.

With the advent of entrepreneurial ventures, nothing in a way has changed; only new suppliers have come onboard in this commerce. However, the number of cadavers acquired by entrepreneurial ventures in recent years leaves little doubt that the ventures are a growing presence in the U.S. commerce for cadavers. There is no federal monitoring of whole body donations in the United States, but estimates suggest that the total number of whole-body donations might be about 20,000 annually (Becker and Elías 2007). Already, the two largest entrepreneurial ventures handle more than 2,000 donations per year or 10% of the yearly volume of donations.

## A Glimpse into the Future?

The competitive forces that may appear in this new “market” are poorly understood. To assess the potential impact of entrepreneurial ventures on procurement of cadavers, Anteby and Hyman (2008) conducted an archival survey of voluntary in-state whole-body donors to two programs operating in the same U.S. state, namely the State of Maryland. Importantly, one program was a traditional academic-housed program and the other was an entrepreneurial venture. Both programs offered equal levels of financial reimbursement for transportation and cremation costs.

The study shows that although the programs procured from a somewhat similar pool of donors, they also complemented one another. Donations to the two programs did not significantly differ in terms of donors’ sex, marital status, maximum educational level, or estimated hourly wage. However, the entrepreneurial venture’s donors were significantly younger, more likely to be from a minority group, and more likely to have died from cancer. Thus, each program seemed to target a somewhat distinct population. The study also analyzed the programs’ specimen recipients or end users. The most likely recipients of the entrepreneurial venture’s specimens were for-profit organizations, continuing medical training organizations, and medical device companies. Non-profit and academic organizations were more likely recipients of the academic-housed program’s specimens.

If the State of Maryland is representative of the broader U.S. cadaver commerce, some lessons can be learned from the

analysis. Most notably, it seems that the programs do not yet fully compete; instead, they tend to specialize in their respective niches – politely eying each other and making sure not to overlap too directly. Such niche specialization is a fixture of many other nascent markets. It remains to be seen whether more head-on competition will occur later; however, if the history of other markets is any guide, such competition is to be expected in more mature markets.

Greater availability of cadavers for medical science could accelerate the quality of medical training and procedures – a fact most users recognize. Nonetheless, how much trust can be put in markets to ensure these outcomes? How should a donor decide between two donation options? What are the logics of such a decision? What does competition for whole-body donations look like? How might this impact other donations? More importantly, perhaps, should programs compete for donations? All these questions require empirical examination.

Much of the debate on human anatomical goods has focused on limiting the market’s reach. The U.S. legal commerce in cadavers proves an anomaly in the broader debate on morals and markets (Fourcade-Gourinchas and Healy 2007; Zelizer 1979), particularly when compared to the commerce in blood and organs. Slowly and within limits, a legal, fairly unregulated U.S. commerce in cadavers is taking shape. The growth of entrepreneurial ventures suggests that the question of whether such commerce can exist has *de facto* been answered. Cadavers are being donated every day to a variety of programs, both to traditional medical schools and to entrepreneurial ventures located in and out-of-state. The few states that have tried to limit the reach of such ventures have mostly been prevented from interfering on the basis of freedom of interstate commerce.

Irrespective of whether a legal market for cadavers might be considered a reason for sorrow or joy, market dynamics around whole-body donations operate in the United States. It remains crucial to understand how and why these dynamics develop. Scholars, particularly economic sociologists engaging in the sociological analysis of economic phenomena, are ideally suited to analyze these developments and initiate a discussion. As Michael Sandel recently remarked, the decision when to use markets is “a political question” that requires debate (Sandel 2009). He added, “The hope for moral and civic renewal depends on having that debate now,” but warned that such a debate is “not

likely to produce quick or easy agreement." The commerce in cadavers begs for such a debate.

The commerce in cadavers in the United States rests on many key principles, including the need for explicit donor consent, the respect of the donor or the family's wishes, and the need to balance users' needs with donors' wishes. Another key principle governing this commerce, however, seems to be the freedom of interstate commerce that permits entrepreneurial ventures to grow and operate on a national scale. That same principle is often used to justify the free international flow of goods and is core to many international trade agreements. The day medical schools, medical-device companies, and continuing medical education facilities located abroad might routinely call a U.S. entrepreneurial venture to legally procure human cadavers is not far away. The debate on the legitimacy of fulfilling such a request might not produce a "quick and easy agreement" but is worth starting now. Purchasing the services of an entrepreneurial venture to send a cadaver (domestically or overseas) is no longer an empirical question; this does not mean, however, that it should not be a political one. The role of scholars is to provide the empirical input to inform the political debate.

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