



# General Anthropology

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## Genetic Property

### The Gene Business: The Body as Property in the Biotech Century

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**A**nthropologists tell us that commodities are not just things; they are also cultural and historical processes (Appadurai 1986). What counts as a commodity in one context may be excluded from the market in another. The body has proven particularly resistant to commodification, even in the West where slavery, prostitution, and the sale of corpses attest to a long history of

(See *Gene* on page 2)

## Seeing Film

### Stuck in Nacirema: How Students and Professors Interpret Ethnographic Film

By Eric Karl Chambers and  
Reed Stevens  
University of Washington

**I**n 1956, Horace Miner published the essay, *Body ritual among the Nacirema*, in the AAA's flagship publication, *American Anthropologist*. Since this publication appeared, the Nacirema have held a ubiquitous presence in introductory anthropology courses. The story of the Nacirema is meant to demonstrate that our culture is inculcated with the same level of myth, ritual, magic, and superstition as the "exotic other" that anthropologists have traditionally studied (Spradley and Rynkiewicz, 1975). As a pedagogical strategy, the Nacirema have helped teachers encourage students to see that all cultures can be made strange, that "exotic" is a perceptual state, and that we can turn our ethnographic lens inward and see our culture just as clearly as we viewed others.

But does it work? In this paper we argue that undergraduate students

(*Film* continued on page 6)

## Teaching Four Fields

### Gene Therapy for General Anthropology?

By Rayna Rapp and  
Todd Disotell  
New York University

**R**eaders of *General Anthropology* are acutely aware of the multiple/premature death notices of general, four-field integrated American anthropology that regularly accompany the increasing specialization of the field. Despite commitments to a shared historical and theoretical tradition, current graduate students are stretched in too many specialized directions. On the one hand, without highly technical training in PCR, C-14 analysis, bone densitometry, and ground penetrating radar our students cannot keep up with developments in biological or archaeological anthropology; without an understanding of globalizing political economy, the semiotics of ritual, and dialogical language analysis, our students will barely decipher the pages of leading cultural anthropology journals. The increasing velocity of the production of specialized knowledge makes four-field training a potentially empty ritual. On the other hand, to

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treating the body as property. More recently, new biotechnologies – including everything from organ transplants to recombinant DNA – challenge and expand the ways we value the body. Anthropologists, however, have also shown the deep cultural ambivalence we feel toward the commodification of the body and its parts. This paper considers the status of the body as property in light of new technologies, especially those associated with the “new genetics,” and what anthropology can contribute to a better understanding of the social, cultural, and political implications of the body business.

The way in which we view the body reflects the particular historical and cultural setting, and is therefore

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highly variable. Early Christian writings, for example, define the body as a “temple,” a sacred space worthy of “awe” and “respect.” While not entirely supplanting that view, the industrial revolution brought a new metaphor – the body as machine. In the biotech age, the dominant metaphor for the body may be the computer, with the gene as its key symbol. Popular and scientific literature routinely refer to genes as “codes” and to the genome as a blueprint, a “hard disk,” and an instruction manual for the body. We are told that we are “hard wired,” predisposed to certain fates of disease, disposition, or appearance. As James Watson, co-discoverer of the structure of DNA, once stated, “We used to think our fate is in the stars. Now we know, in large measure, our fate is in our genes.”

But just as the gene, now a kind of cultural icon, has become increasingly central to our identity or sense of self, and a symbol of our uniqueness, it has at the same time become a valuable commodity. Medical anthropology has quite effectively demonstrated the tension between the biomedical and social meanings of the body. As biotechnology expands the ways we value and exploit the body and its parts, that tension becomes more acute. In particular, we see an explosion of property disputes over human tissue coupled with anxieties over bodily commodification and loss of privacy.

### The Body as Property

Historically, we can point to many instances when the body has been treated as property or “quasi-property.” Foucault notes the importance of the Renaissance art of dissection as a critical step in the objectification and commodification of the body. Blood transfusions date back to the 17<sup>th</sup> century. Other instrumental uses of the body, such as

bone transplants and corneal grafting date to the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. The first kidney transplant took place in 1954. In the post-World War II period, new technologies such as X-rays, sonography, magnetic resonance imaging, immunosuppressants, and dialysis blurred the boundaries between self and other, human and machine, and multiplied the instrumental uses of the body and its parts (Sharp 2000).

Today, evidence of the commercialization of human tissue abounds. The catalog of the American Type Culture Collection lists thousands of cell lines available for sale. Fertility clinics sell human embryos, sperm, and ova to prospective parents. Companies manufacture an array of commercial products from the bones of corpses. Human blood, especially umbilical cord blood and blood containing unusual properties, is particularly valuable. While human organs are “donated” by their source, or by the next of kin, hospitals charge organ recipients not only for the transplant procedure, but also for the organ itself (Andrews and Nelkin 2001). Human tissue is also used in the manufacturing of pharmaceuticals. A particularly heated controversy arose when accusations surfaced that Abbokinase, a clot-busting drug, was manufactured using kidney tissue from deceased newborns without parental consent. The American pharmaceutical company apparently acquired the kidney tissue from a hospital in Cali, Colombia, heightening accusations of biopiracy. Cases where individuals have sought to profit from their own body parts have also been controversial. Once entrepreuneuring spirit with a rare antibody was able to secure stock options, a fee for each blood drawn, a weekly salary, and a Lincoln Continental by signing an agreement with a biotech company.

So when does the law recognize

property rights to the body or its parts? Some examples have already been mentioned, such as the sale of blood, sperm, and ova, which are clearly treated as property in many contexts. Other body parts, notably organs, exist in a kind of "legal limbo" where some aspects of property apply while others do not. The Uniform Anatomical Gift Act (1968) declares that individuals have the right to donate their bodies and body parts after death for transplant, therapy, research, or education, and recognizes the same rights in the next of kin where there is an absence of documentation of intent. This reflects some aspects of property (the right to transfer by gift, the right to exclude, the right to dispose of the body after death), but not others (the right to transfer by sale, the right to compensation from the government.)

Whether and how property law applies to the body and its parts depends on a number of variables, especially whether the body is alive or dead, and whether it is a question of the whole body or body parts. The bodies of the living are generally protected from invasion by the laws of privacy. This is the paradigm that guided the Supreme Court in the landmark *Roe v. Wade* decision, just as it is the guiding principle in the requirement of informed consent for the performance of medical procedures or the use of human subjects in biomedical research. But privacy protections have certain limitations. Under the law, dead bodies are considered separate from the person and therefore are not protected by the privacy paradigm. Furthermore, once removed from the body, human tissue may be treated as property (see Rao 2000). A review of case law and public policy, however, demonstrates that courts recognize property rights primarily to those who value the body parts in economic ways, and in particular to those who "mix their labor" with raw biological materials,

while at the same time denying property rights to individual who claim to "own" their body parts, even once removed.

### How Can You Patent Genes?

The controversy over gene patenting aptly demonstrates the above point. A patent grants exclusive rights to inventors for a fixed period of time. In order for an invention to be patented, the U.S. Patent and Trademark Office (PTO) must deem an invention "novel, useful, and non-obvious." Inventors can seek patent protection for a process, a machine, an article of manufacture, or a composition of matter. In genetics, patents are usually granted for either a process (such as a new test for a genetic disorder) or for a composition of matter (such as an isolated gene or gene fragment). In a landmark biotechnology case in 1980 (*Diamond v. Chakrabarty*), the U.S. Supreme Court ruled that "anything under the sun that is made by man" could be patented. With that broad interpretation, the only major exclusion from patent protection is for "products of nature." This would appear to rule out patents on human, animal, or plant genes or other biological material. However, in the past 20 years, thousands of patents have been granted for such materials, including genes, and many thousand more are pending with the PTO.

Those seeking to patent genes and gene fragments argue that because those sequences have been isolated and "purified" in a lab, they exist in a form not found in nature. By and large, the PTO has treated these isolated gene sequences like any other chemical compound. While many argue that such sequences are better characterized as "discoveries" rather than "inventions," the PTO has accepted the argument that the work of researchers in isolating sequences from the genome and reproducing

them at greater purity constitutes an "inventive step." Courts have largely supported PTO decisions on gene patents, and congress has declined to set down new legislation that would alter existing patent statutes.

Although now well established in the courts and patent system, gene patents remain controversial. Much of the outcry has come from academic researchers and scientific organizations. While proponents of gene patents regularly argue that patents are good for business and necessary to spur socially beneficial medical research and development, many scientists and bioethicists worry that patents will have the opposite effect on research. With increasing privatization of research, they argue, new discoveries are held up by a confusing web of overlapping patent claims. Organizations like the American College of Medical Genetics insist "genes and their mutations are naturally occurring substances that should not be patented." The organization further worries that patents could limit the availability of genetic tests for clinical care.

One noteworthy patent controversy swirled around a gene that may point to new treatments for HIV/AIDS. When Human Genome Sciences identified and patented the gene, they merely guessed at its function as a viral receptor but made no mention in the application to HIV/AIDS. When other researchers later discovered the gene's role in blocking HIV infection, HGS maintained that they retained the right to royalties from any treatments derived from the discovery. Although critics say HGS is undeserving of such royalties because they merely discovered the sequence with high-speed automated machines and guessed at its function, the company's CEO, William Haseltine, replied in the press "The patent office does not reward perspiration ... They reward

priority. They don't care if someone spent 20 years to find an invention or 20 minutes." Perhaps the greatest irony is that carriers of the gene, who noted that they had not contracted HIV despite repeated exposure to the virus, may have first discovered the link between the mutation and HIV. They brought this paradox to the attention of researchers, and even helped raise money for research, and they too have demanded a share of the profits. And in one more wrinkle, shortly after the link between the gene and HIV became public in 2000, scientists discovered what they called significant errors in Human Genome Science's patent application, particularly in the company's description of the chemical makeup of the sequence, raising new questions about the legitimacy of the patent. With yet another claim for a piece of the pie, well in advance of the development of any useful treatment or product, few cases better exemplify the frenzied pace of the gene rush.

### The Case of the Stolen Spleen

Another case demonstrates the court's preference for recognizing property rights in those who "mix their labor" with DNA – the scientists and companies who value genes as research tools and commodities – rather than the individuals from whom such genes are mined. In the late 1970s, John Moore was treated at UCLA Medical Center for hairy-cell leukemia. Moore agreed to have his spleen removed on the recommendation of his doctor, David Golde. After his treatment, Moore returned to UCLA from his home in Seattle several more times for follow-up visits, also at his doctor's suggestion, where blood, skin, bone marrow, and sperm were taken for analysis. Moore was apparently advised that the procedures could only be performed at UCLA and only under the supervision of Dr. Golde.

Unbeknownst to Moore, Golde and other defendants in the case had been using these tissues in research, including a cell line cultured from his diseased spleen. In 1983, the University of California filed a patent claim for the cell line, which was potentially worth billions in licensing fees because it produced a rare antibody. In 1984, the PTO granted the patent, and Moore's spleen cells, which researchers named the MOP cell line, became the subject of U.S. patent number 4,438,032.

When Moore discovered that his removed spleen had been used in research without his consent, and that a valuable cell line taken from that spleen had been patented by his doctor without his knowledge, he sued based on a violation of his "privacy" right of informed consent, as well as on a claim of conversion, or theft. Not only did Moore contend that doctors owed him damages based on their failure to obtain his informed consent and their failed obligation to reveal their financial interest in this case, but that their unauthorized use of his tissue constituted a theft, which entitled him to a share of the profits from his cell line. When the case reached the California Supreme Court in 1990, the majority opinion of the court found in favor of Moore's claim of a violation of informed consent, but against his claim of conversion: once removed from the body, Moore did not retain an ownership interest in his spleen. Moreover, what Moore claimed as his unique property was not unique at all, but rather just cells, common to all humanity. In finding for the defendant on the claim of conversion, the justices expressed particular concern about the effect such an extension of property law to human tissue would have on research and the development of the biotechnology industry. One of the justices, in rejecting Moore's claim that his spleen should be considered stolen

property, expressed outrage that Moore would seek to treat his own body as "the basest commercial commodity." The same judge expressed no objection to the patenting of Moore's cells by others. In fact, the majority opinion defended the patent on the grounds that the scientists mixed their labor (through the "art" of culturing cells in the lab) with the raw material of Moore's tissue. Through their "human ingenuity," the cell line becomes "both factually and legally distinct from the cells taken from Moore's body."

While much of the debate over gene patents, and over the much-discussed Moore case itself, tends to focus on the effect such politics will have on research and clinical care, Moore himself seems to be expressing something else: a deep sense of personal violation and exploitation. In interviews, Moore describes the unauthorized use of his tissue as a "betrayal," even likening it to a "rape." His reaction to the patent was that "they owned a part of me that I could not recover." The California Supreme Court justices were apparently unmoved by Moore's sentimental attachment to his removed spleen, which they deemed unremarkable and useless without the scientists' labor. But, anthropologists have long noted that the respect and ceremony for the dead body is common across cultures, as is the belief that some aspect of the person remains in the body after death (Jorolemon 1995). Anthropologists studying organ transplantation have also noted the way organs, once removed from the body, still seem to carry some aspect of the donor, causing difficulties for donors, their families, and recipients alike (Sharp 1995). We should not be surprised, then, that Moore and others express some "attachment" to their removed tissues.

## A Role for Anthropology

The heated nature of the debate over the body in the biotechnology age seems to indicate not only the enormous amount of money at stake, but also the deep cultural ambivalence about the commodification of the body and its parts. And here may be the most significant role for anthropology: legal scholars argue for or against property rights to the body, for or against gene patenting, but rarely argue against *ever* treating the body or its parts as property. Medical ethicists tend to privilege individual autonomy, some suggesting that individuals should have the autonomy to sell their parts, including their DNA. But anthropologists have shown that individual autonomy and universal principles may not be easily or appropriately applied, especially in the case of genetics, which typically implicates families, and sometimes cultural groups, rather than individuals alone. And just as views of the body vary considerably across cultures, we should also expect that concerns and anxieties about new technologies would also vary. Moreover, while trapped in a debate over ownership claims, we fail to question the too-often-taken-for-granted benefits of new biotechnologies or the way in which property claims negate other social meanings of the body. As Sharp notes, "Once issues of property ownership and autonomy take center stage, they displace competing cultural constructions of the body, other possible reactions to the dilemmas of biotechnologies, and finally, the shaping of alternative ethical responses" (2000:299).

This is precisely where medical anthropology, particularly the theoretical perspective of "Critical Medical Anthropology" (CMA) offers a unique viewpoint. Critical Medical Anthropology views biomedicine and biotechnology as part of the larger

world political economy. Unlike other approaches, CMA specifically questions the promised benefits of such technologies, asking "who is to gain?" and "how will the benefits be distributed?" (See especially Baer, Singer, Susser 1997). CMA is especially concerned with the way biomedicine tends to objectify and de-personalize patients, and commodify the body. Perhaps most importantly, CMA advances the concept of "embodiment." When CMA speaks of "the body," it does not refer to a mere physical entity, the circumscribed biological body of western medicine. Rather, it refers to the body as socially constructed, embedded in historical and cultural context. The task for CMA, then, is to identify how the body is constructed, and how biomedicine acts as a powerful force reshaping our experience with our bodies. Embodiment refers to the notion of the body-as-self and to the rejection of the separation of body and self in medical practice (Csordas 1994; Lock and Scheper-Hughes 1987).

This reconceptualizing of the body raises questions central to understanding the social implications of the New Genetics, and biotechnology in general. Where does the body begin and end, for example? Where does the self reside (In the genes? In the heart? In the blood? In the brain?). These are questions of social construction, grounded in culture and history, not matters of biological fact. These theories also point to a way for anthropology to contribute to the study of the New Genetics, and the privacy and property battles it has spawned. We can look at the forces of commodification and objectification so evident in the New Genetics, but we should never lose sight of the fact that these forces are resisted, in part because they do not jibe with our own lived experiences as embodied selves. The body is too immediate, too personal, too "sacred" even, to be

comfortably made into a commodity in such a way. Not at least, without a great deal of effort, contestation, and debate.

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