

September 1997

Time Enough - Consequences of Human Microchip Implantation

Elaine M. Ramesh

Follow this and additional works at: <https://scholars.unh.edu/risk>

 Part of the [Biomedical Commons](#), [Privacy Law Commons](#), and the [Science and Technology Law Commons](#)

Repository Citation

Elaine M. Ramesh, *Time Enough - Consequences of Human Microchip Implantation*, 8 RISK 373 (1997).

This Article is brought to you for free and open access by the University of New Hampshire – School of Law at University of New Hampshire Scholars' Repository. It has been accepted for inclusion in RISK: Health, Safety & Environment (1990-2002) by an authorized editor of University of New Hampshire Scholars' Repository. For more information, please contact ellen.phillips@law.unh.edu.

Time Enough? Consequences of Human Microchip Implantation

Elaine M. Ramesh*

Introduction

Sophisticated microchip devices are available for identifying stray animals. Implants about the size of a grain of rice have been a great boon for owners with lost or stolen pets. One distributor of chips has reported that it has already implanted over six million.¹ A pet owner can be assured that the chances of recovering a lost animal are greatly increased. At the pound, a stray can quickly be scanned, and, if it has a microchip, the animal's owner can be identified.

Is it not then conceivable that this technology might be applied to humans? Indeed, such predictions have already been made. For example, Alan Westin discussed the possibility of "permanent implacements of 'tagging' devices on or in the body" as early as 1967.² If the technology were extended to humans, a myriad of identification-related applications could be envisaged such as the capability to find lost children or confused Alzheimer's patients, or to

* Dr. Ramesh is an attorney in the Patent and Licensing Department of Nalco Chemical Co., Naperville, IL. She holds a B.S. in Chemistry, State University of NY-Buffalo; a Ph.D. in Chemistry, Texas A&M University and a J.D., Chicago-Kent College of Law. She thanks Professor Lori Andrews for assistance.

¹ The device is easily implanted by means of injection through a needle, into the shoulder of the animal. A hand-held or pass-by scanner is used to check the animal for the presence of the microchip. Richard Louv, *Walking Around With A Chip in its Shoulder*, The San Diego Union-Trib., June 15, 1994, at A-2.

² The author also stated that "[e]xisting microminiaturized transmitters the size of a pinhead might be coded with an identification number, enclosed in a permanent capsule, and implanted under the skin by a simple and painless surgical operation. Once in place, this tag would do no damage to the body, but when 'interrogated' electronically by an outside beam, it would emit an identifying number." Alan F. Westin, *Privacy and Freedom* 86 (1967). However, proving that old adage that there is nothing new under the sun, the concept may be attributed to far earlier authors. The Book of Revelation of the Bible contains the following statement: "He also forced everyone, small and great, to receive a mark on his right hand or on his forehead, so that no one could buy or sell unless he had the mark, which is the name of the beast or the number of his name." Revelation 13:16-17. That mark could well be the microchip implant.

determine if job applicants are illegal immigrants or criminals. By encoding the microchip only with a single number, it might also carry, e.g., medical or criminal history. Also, devices can be used for tracking.

Although each such application has utility, privacy implications are ominous. The level of intrusion³ necessitated by implantation may be objectionable, for there are many legal rights which would be impinged upon. It is plausible that, since the technology has not yet been perfected, there is no need to address the incipient legal problems until devices are used.⁴ However, because of the very drastic reductions in personal liberty and privacy that such implantation represents, the legal ramifications need to be explored now. The reasons that a mandatory program of implantation for all citizens must be necessary for an identification program to be effective will be explored.⁵ A system using the technology, once in place, may be difficult to dislodge despite limitations of individual freedoms because its advantages will be extremely attractive. The positive applications may be said to outweigh the detrimental legal consequences at that time. Therefore it is not too soon to consider the repercussions that mandatory microchip implantation would have, as a pre-emptive measure.⁶

The first part will explore the technology and discuss possible applications for microchip implantation into humans. The second will discuss common law, constitutional, and property rights affected by mandatory implantation. Last, we consider protections that can be effectuated if the technology is used.

³ Intrusion does not refer to the physical act of implantation but rather the effect that the implantation will have on the individual's control over his body and on his privacy rights.

⁴ This view was adopted by Justice Rehnquist in a Supreme Court decision concerning beeper surveillance where the respondent had indicated that if beeper surveillance were constitutional, "twenty-four hour surveillance of any citizen of this country will be possible, without judicial knowledge or supervision." The opinion stated "if such dragnet-type law enforcement practices as respondent envisions should eventually occur, there will be time enough then to determine whether different constitutional principles may be applicable." *U.S. v. Knotts*, 460 U.S. 276, 283 (1983).

⁵ It has been recognized that "[a] true national identity document would be mandatory". Robert Ellis Smith, *The True Terror is in the Card*, *The New York Times*, Sept. 8, 1996 at 58.

⁶ The statement by Justice Rehnquist that there will be time enough to consider legal ramifications of incipient technologies as they arise is inapplicable in this case because of the dire consequences to humans involved.

The Microchip Implant

The Animal Model

Microchips are about the size of a grain of rice and coated with biocompatible glass. Upon implantation by syringe, connective tissue should form to prevent migration.⁷ The procedure is very low-cost and simple.⁸ All chips are implanted in the same place (between the shoulder blades) so that they will be easy to find and read. To identify a pet, a scanner passed over the animal reads a twelve character identifier from the implanted transponder microchip and displays it on a screen.⁹ The owner's name and address can be obtained from a registry with a toll-free phone call. The current market for these devices includes pet, livestock and laboratory animal industries.¹⁰

Though the technology is quite useful, some problems have already surfaced. The first arises because of a multiplicity of manufacturers.¹¹ Each makes his own scanner to read his particular chips, not those of competitors.¹² The second is that because of their novelty, their longevity is uncertain.

Emerging Human Technology

There are indications that science is moving inexorably closer to the use of microchips in humans. In fact, some have described human implantation as inevitable.¹³ For example, a U.S. patent discloses microchips implanted in teeth.¹⁴ Carrying information on a microchip

⁷ Betsy Siino, *Where Will the Chips Fall? Innovations in Pet Identification Systems*, 47 *Pet Product News* 24 (1993).

⁸ The procedure costs \$30 and there is a \$15 fee for listing in the registry. The scanner costs more than \$400. Mary Stephens, *Chip Implant Eases Lost Pet's Identification*, *The Columbus Dispatch*, Aug. 13, 1994, at 1C.

⁹ *Id.*

¹⁰ Large corporations such as Schering-Plough have become involved with the sales and marketing of these devices. Destron/IDI Has Distribution Agreement with Schering-Plough, PR Newswire, June 16, 1994, available in Lexis-Nexis Library, News File. Interestingly, it has been predicted that "companies making electronic detection devices will move quickly 'into the human market, because there's not enough money in pets and livestock.'" Louv, *supra* note 1, at A2.

¹¹ Avid, Trovan, and Destron are the three competing manufacturers. The questions of which scanners are able to accurately read which chips is disputed. Siino, *supra* note 6, at 24.

¹² *Id.*

¹³ Jon Van, *In Future, Tiny Chip May Get Under Skin*, *Chicago Tribune*, May 7, 1996, at 1.

¹⁴ Medical researchers are also currently "developing a system in which a microchip

for identification has already been developed for use, e.g., on a tag outside the body.¹⁵ Dallas Semiconductor is marketing a Touch Memory Button microchip with information to be read by a scanner.¹⁶ Potential uses include employee identification.¹⁷

Also, SmartDevice, a microchip manufactured by a subsidiary of Hughes Aircraft Co.,¹⁸ has been described as follows:¹⁹

The chip is a passive transponder, without any power source, which has meant it can be kept very small. The information is non volatile and can be activated by low frequency radio waves and so read in a manner not unlike the reading of bar coded items. It... is an application-specific integrated circuit. The code is burned in a [sic] the time of manufacture. It has a non-magnetic, ferrite core and a copper antenna and is encased in biocompatible glass and as it is so small it can pass through the bore of a needle to be inserted.

The SmartDevice is being placed within the Trilucent Adjustable Breast Implant, by LipoMatrix, Inc.²⁰ to “include device manufacturing data, device performance data and to facilitate periodic information updates regarding device status, adverse event reporting and post-market

implanted on the retina feeds visual information through to the brain.” For those blinded due to retinal deficiencies, the chips will aid vision by passing signals received in response to light to human nerve cells. Carl Franklin, *Chip Gives Sight To The Blind*, Sunday Times, Feb. 26, 1995.

¹⁵ Information has been released on an externally applied suitable device for employee identification. Scott Liebs, *Data? Look for The Button — Dallas Semiconductor’s miniature device finds a range of applications*, Information Week, Aug. 1, 1994, available in Lexis–Nexis Library, News File.

¹⁶ The new device has already been sold to the U.S Postal Service for attachment on mailboxes to improve collection schedules and to Ryder Systems Inc. to gauge mileage on trucks. *Id.*

¹⁷ *Id.*

¹⁸ Kathleen Wiegner, *In Development: The Cutting Edge: Computing/Technology/Innovation; Giving Surgical Implants IDs*, Los Angeles Times, Aug. 17, 1994, at 5.

¹⁹ The microchip is encased in a very strong glass. A force strong enough to shatter the casing, the blow would kill the person. *Chips With Everything! LipoMatrix’s Processor in Breast Implants to LipoMatrix’s Patient-Tracking*, Computergram International, Sept. 9, 1994, available in Lexis–Nexis Library, News File [hereinafter *Chips With Everything!*].

²⁰ The breast implant is made out of a soybean oil derivative. Because saline and silicon gel filled implants interfere with mammography, this new filler was LipoMatrix’s solution to interference. *Clinical Trials of Triglyceride-Filled Breast Implant To Be Conducted; Device May Improve Mammography*, Pr Newswire, Aug. 1, 1994, available in Lexis–Nexis Library, News File [hereinafter *Clinical Trials*].

surveillance.”²¹ Clinical trials have already begun in Europe²² and are about to begin in the U.S.²³ An investigational device exemption has been granted by the Food and Drug Administration (FDA).²⁴ If the device is approved, it would not be difficult to envisage a facile transition to SmartDevice or a similar microchip being implanted into humans alone.

In fact, steps in that direction have already been made. According to one source, Hughes Aircraft has submitted a read-write device for carrying a person’s medical history for FDA approval.²⁵ Although the device can be read from only about a foot away, with the addition of a battery, it could be read at greater distances.²⁶

As mentioned, a patent discloses a microchip applied to the tooth of a human or animal.²⁷ Identification is accomplished by scanning the teeth.²⁸ Thus, an internal, implanted microchip for identification of humans is already a reality.

Also, IBM researchers are reportedly working on personal area network technology (PAN) to transfer data stored in a human implant.²⁹ Apparently, they are exploiting the salinity of the body to create an electric field, by which data could be read. In this manner, data could be exchanged between people, or verified by an external mechanical system as a method of securing identification.

²¹ *Id.*

²² The following countries are conducting trials which begun in October 1993: Germany, Italy and the United Kingdom. *Id.* Additionally, Spain and France will soon also be testing the device. *Chips With Everything!*, *supra* note 17.

²³ Approximately 50 American women will participate in the study to be held at such prestigious institutes as Johns Hopkins University Hospital in Baltimore, Md. *Clinical Trials*, *supra* note 18.

²⁴ *Id.*

²⁵ Robert Ellis Smith, *Implanting ID Microchips in Humans No Longer Far Fetched*, 20 *Privacy J.* 1 (1994). Currently, according to a former Hughes employee, “two doctors at Hughes Aircraft are now wearing the internal tags as a trial.” *Id.* at 1.

²⁶ *Id.*

²⁷ U.S. Patent No. 5,037,301.

²⁸ *Id.* Identification of missing children and criminals are envisaged uses of this invention. Health information and other identifying information may also be inscribed on the microchip according to the inventors.

²⁹ *Personal touch at your fingertips*, *The Sunday Star-Times*, Dec. 8, 1996, at 5. Such a device would allow a transfer of information between humans during a handshake.

Proposed Embodiments of the Implantable Microchip

Microchip devices might have three embodiments: read only, read-write and read-write with tracking capabilities.³⁰

1. Read-Only

The simplest form of the device would have a read-only character, similar to that now used in animals. Even this most basic form would have numerous applications, for example, to identify Alzheimer's patients, children and the unconscious. A broader use would be as a sort of national identification card, based upon the identifying number carried on the microchip.

However, there are objections to the use of any numbering system for nationwide identification. The debate over the legality of national identification cards is not new.³¹ A system of national identification would entail a specific number for each person, a means for indicating or recording the number, and a registry. The Social Security number (SSN) is thought of as such an identifier. Technically it is not because people may have more than one number or more than one person may have the same number.³² Also, cards issued prior to 1971 were based on information provided by individuals and not independently

³⁰ A fourth embodiment is conceivable, though technologically somewhat far from implementation. The possibility of using a microchip implant inserted into the brain to control a human's thoughts and/or actions has been discussed by scientists. One scientist "believes it is realistic to envisage a time when microchips can be attached to the living circuits of the brain to augment memory and intellectual prowess." Simon Davies, *Bionic Man Comes of Age*, *The Times*, Oct. 17, 1994. Another scientist speaking on the ethical implications of such a device said "[t]here is a risk that the mind could be controlled externally." *Id.* The British Medical Association has recently begun to examine the ethical implications of intelligent implants. *Id.* Active implants which have their own internal electronics which can respond directly to neural interconnectivity have also been envisaged by others. Geoff Metcalf, *Midnight Radio: Geoff Metcalf interviews Charles Ostman*, *Mondo 2000*, Indian Summer 1996, at 14, 17. This technology is currently undeveloped and will not be treated.

³¹ Eric Grossman, Comment, *Conceptualizing National Identification: Information Privacy Rights Protected*, 19 *J. Marshall L. Rev.* 1007 (1986). The impact of a national identification card on an individual's right of informational privacy has been described in terms of a balancing act between public interest and probability of harm to the individual. However, in this Comment the author concluded that "[a] national identifier does not infringe informational privacy per se because there is not personal information in the number itself."

³² Trudy Hayden & Jack Novik, *Your Rights To Privacy* 100 (1980). Additionally, the safeguards required for the SSN to be a universal identifier are not in place i.e., internal check features to prevent falsification and to prevent reuse of the number after a person's death.

verified.³³ Moreover, the system now in place, which requires underlying documents for verification before a SSN is issued, is also subject to fraud because of “the ease of obtaining fraudulent underlying documents (breeder documents) such as birth certificates and driver’s licenses.”³⁴ Thus, the SSN is not entirely suitable for a national identification card.

Alternatives that encode certain physical characteristics numerically may be employed instead. Biometric identifiers are preferable because they contain an inherent validation mechanisms. If the identifier is merely a random number, it only has meaning when connected to an individual. By contrast, a biometric identifier representing a particular human characteristic may be clearly matched to an individual.³⁵ One possibility is the numerical expression for the unique contours of an individual’s iris.³⁶

³³ In a statement made by Dr. Shirley S. Chater, Commissioner of Social Security before the House Committee on Governmental Reform and Oversight, Mar. 7, 1995, she indicated that the General Accounting Office “concluded that the card would not be a good identifier because it does not satisfy three criteria for a reliable identity document.” A reliable document would be “difficult to counterfeit; allow verification that the person presenting the document is, in fact, the individual to whom it was issued; and be difficult to obtain fraudulently.” She also estimated that the cost of making the Social Security card more secure would be \$3–6 billion.

³⁴ Because the breeder documents are themselves subject to fraud by counterfeiting, the use of the Social Security numbers (SSNs) as accurate identifiers is undesirable, according to testimony given by Gregory T. Nojeim, Legislative Counsel for the A.C.L.U. on Capitol Hill on Mar. 14, 1995. Testimony the same day by the Commissioner of Social Security Dr. Shirley S. Chater also cast doubt on the utility of the SSN as an identifier. She indicated concerning the Death Master File, “we do not verify most of the death reports which we receive from family members, funeral directors, or postal authorities, nor do we verify death reports for people who are not beneficiaries.” So it is conceivable that an individual’s death would not be reported to the Social Security office, and that number could subsequently be conveyed to another for identification purposes. Thus, the SSN has very large loopholes both in the use of counterfeit breeder documents and in the continued fraudulent use of numbers which should be decommissioned due to death, which allow for deception in identification and make it a poor universal identifier.

³⁵ An example of a biometric identifier is the fingerprint. The Comparator Systems Corp. has developed a Fingerprint Identification System (utilizing software and scanners) to be used on a national identification card for an unspecified foreign country. *Business Wire*, Mar. 6, 1995, available in Lexis–Nexis Library, News File.

³⁶ U.S. Patent No. 5,291,560. By this technique, a reference code for an individual is first established. Subsequently, the reference code for a particular individual is compared to the code obtained for the iris imaged. Using statistical calculations which compensate for variations in pupil dilation, the degree of similarity is established. A very close correlation will confirm that the reference code and the present image were taken from the same individual. *Id.*

Aside from the difficulties involved with the assignment of a reference number for each individual, other concerns came to light when a system for country-wide identification purposes was proposed in Australia.³⁷ Among the problematic issues in the introduction and regulation of a national identification card in Australia were: inaccurate, incomplete, irrelevant or misleading data and unauthorized disclosure of personal data.³⁸ Concerns that “[o]nce the system is established, it will be virtually impossible to resist demands to make it available to a wider and wider range of agencies” were voiced.³⁹ The most serious overtone, however, was that “requiring each citizen to carry a government number is another step along the path of treating people as a ‘national resource’, which means government property, whereas the liberal democratic view has always been that the government is the people’s ‘property’.”⁴⁰

A system has also been advanced for U.S. worker verification,⁴¹ in part to combat illegal immigration. To that end, President Clinton has asked for a \$1 billion budget for the Immigration and Naturalization Service to control illegal immigration.⁴² Approximately \$28M of that money has been allocated for a worker verification system,⁴³ in response to pressures from Congressional representatives for action.

³⁷ See, *Law Society opposes Australia Card*, *Law Soc’y J.*, June 1986, at 32.

³⁸ The government had proposed that a registry linking the ID number to specific information be kept for each citizen. Adam Marshall, *The “Australia Card” A Survey of the Privacy Problems Arising from the Proposed Introduction of an Australian Identity Card*, 2 *J.L. & Info. Sci.*, 111, 113-115 (1986).

³⁹ Geoffrey de Q. Walker, *Information as Power: Constitutional Implications of the Identity Numbering and ID Card Proposal*, *Queensland L. Soc’y J.*, June 1986, at 153, 158. A governmental committee was formed to determine the structure for a “national identification numbering system.” The card was to be required for financial transactions, obtaining employment, and transfer of real estate among others. In a chilling commentary which indicates that the government was aware of the extensive intrusion of individual’s privacy, it was stated that “[i]t will be important to minimize [sic] any adverse public reaction to implementation of the system. One possibility would be to use a staged approach for implementation, whereby only less sensitive data are held in the system initially with the facility to input additional data at a later stage....” *Id.* at 159.

⁴⁰ *Id.* at 163.

⁴¹ Alan K. Simpson, *That’s not the Idea*, *The Plain Dealer*, Aug. 15, 1994, at 9B.

⁴² “The INS’s budget went up 25 percent from 1994 to 1995, and under the president’s proposal it would go up another 24 percent.” Susan R. Kneller, *Daily Labor Rep.*, Feb. 7, 1995, available in Lexis-Nexis Library, News File.

⁴³ *Id.*

Barbara Jordan called for a “simpler more fraud-resistant system for verifying authorization to work” in a speech to the Senate Immigration Subcommittee in 1994.⁴⁴ California Proposition 187 to decrease services for illegal immigrants has been approved. In conjunction, Governor Wilson has suggested that “all legal California residents carry a tamper-proof identity card.”⁴⁵ However, opponents have intimated that the use of the system would not solve the problem but would worsen the situation by forcing the undocumented workers “into the underground market and into more dangerous or less secure jobs.”⁴⁶

Others have also expressed interest. A Republican proposal includes “a tamper-resistant Social Security card that would have to be produced when someone applies for a job but at no other time.”⁴⁷ Still others recommend updating and completing Social Security Administration and Immigration and Naturalization Service databases.⁴⁸ These are steps towards creation of a worker verification database.

Problems with the introduction of a national identification card in the U.S. would be similar to those related previously in conjunction with the Australian system. Further problems revolve around the privacy implications connected with the maintenance of a large database or registry to connect the identifier to actual information.⁴⁹

⁴⁴ *Id.* As chair of the congressional Commission on Immigration Reform, Jordan’s speech was to recommend methods to deter illegal immigration. Senator Simpson argues that the system called for is not a national ID card because it would not have to be routinely carried and produced to officials. Instead it “would be presented only at the time of new-hire employment, or at the time of application for federally funded benefits, including health care.” *Id.* See also *Immigration Reform: Can a Central Data Bank Detect Illegal Aliens Without Trampling Civil Liberties?* A.B.A.J., Nov. 1994, at 44, 45.

⁴⁵ George de Lama, *Candidates Backing Proposition 187 Could Get Burned*, Chicago Tribune, Oct. 28, 1994, at 1.

⁴⁶ Scott Hodge, *Big Brother’s I.D. Card Better Yet, Why Not Just Brand Babies?* Los Angeles Daily Journal, July 2, 1990, at 6.

⁴⁷ Gil Klein, *National ID Seen As Way To Screen Illegal Workers*, Tampa Tribune, Dec. 31, 1994, at 1. It was also proposed that the card have a magnetic code, which would be read to verify whether or not the individual carrying that card had the legal right to work. *Id.*

⁴⁸ Robert Suro, *Workplace May Be Focus of Immigration Control; White House Officials Consider Programs That Could Spawn Computerized National Registry*, Washington Post, Jan. 11, 1995, at A11. On Jan. 24, 1995 at his State of the Union address, the President announced his approval for this immigration policy. It is apparent that the registry will only be useful if individuals are required to carry some identification to link them to the updated database. *Id.*

When a computer is used to search for all the data on many different databases concerning a person as listed by his identifier (computer-matching), there is an increased risk of intrusion into personal privacy, especially where the information can be obtained by or disseminated to many others. Obviously, the use of a microchip implant would serve the purpose of a tamper-resistant⁵⁰ identification card, but it would also be connected to a computer-based registry to access desired information about an individual. Thus, the difficulties described above related to computer-matching will also be relevant. It is evident that the issue of what identifier the microchip will be coded with must be addressed before the microchip implant can effectively serve as a national identifier in the U.S.

2. Read-write

Another form of the microchip implant could be a read-write device. This type of microchip would be capable of carrying a set of information which could be expanded as necessary. That is so because this type of device allows the storage of variable data, and is programmable at a distance.⁵¹ For example, if the microchip were to carry a person's medical history, as that history evolved the subsequent information could also be added to the microchip without the necessity of removing the implanted chip.⁵² While the use of such a chip in this

⁴⁹ See, e.g., John Shattuck, *In the Shadow of 1984: National Identification Systems, Computer-Matching, and Privacy in the United States*, 35 *Hastings L. J.* 991 (1984), Jonathan P. Graham, *Privacy, Computers, and the Commercial Dissemination of Personal Information*, 65 *Tex. L. Rev.* 1395 (1987), *Whalen v. Roe*, 429 U.S. 589 (1977) (State of New York's desire to have the names and addresses of all people who filled certain classes of prescription drugs which could have legal or illegal uses ruled to be a reasonable exercise of the State's broad police powers). *But see*, *John Doe v. City of New York*, 15 F. 3d 264 (2nd Cir. 1994) (regarding a press release concerning conciliatory agreement revealed that individual had AIDS, the court stated that he had a constitutional right to privacy regarding his medical condition).

⁵⁰ The implant is not completely tamper-free because there is a possibility that the microchip could be excised, and replaced with a microchip with manipulated data.

⁵¹ An RF transmitter forming part of a read/write device is generally used to radiate an electromagnetic field via an antenna. When the chip enters this field, the detection microchip receives energy from the RF field and begins transmitting its stored data.... In return, it is possible with read/write systems, to modulate the RF transmitter, and to transmit data to the detection microchip over a distance. U.S. Patent No. 5,218,343.

⁵² See, e.g., Smith, *supra* note 23, where a read/write device is under current evaluation and also Bill Hart, *Big Brother's Watching... the Family Pet*, *Phoenix Gazette*, July 24, 1994, at G1. Charles Jenkins, a Phoenix psychologist is reportedly

capacity might require the encoding of an enormous amount of data, scientists continue to develop chips which are equal to the task.⁵³

The need for instantaneous access to the medical records of individuals has been expressed by President Clinton as a part of his universal health care coverage plan.⁵⁴ Therefore, the development of a microchip implant as a read-write device to carry medical information has already begun⁵⁵, and already has a potential application.

This however, is not the only purpose that a read-write microchip implant could serve. It could also facilitate and record financial transactions. Many credit card companies are already working to develop Smart Card technology, using chip-based payment products which are projected to reduce both fraud and transaction processing costs.⁵⁶ Another example of the interest in a device with read-write capabilities is the Australian proposal for a national identification card which mandated compulsory production of the card in the following situations: investment, land transactions, deposits at financial institutes, social security benefits, and dealings in futures contracts.⁵⁷ It is evident that microchips do have utility for recording financial transactions. Moreover, if the credit card companies employed a microchip implant, instead of the current external Smart Card under development, the opportunity for loss or falsification would be even more drastically reduced.

close to marketing a microchip implant containing a medical profile to aid paramedics at the sites of disasters.

⁵³ Scientists have already described microchips capable of holding a billion bits of information, and predict that within the next twenty years chips which hold a trillion bits of information will be available. Gary Stix, *Toward "Point One"*, *Sci. Am.*, Feb. 1995, at 90.

⁵⁴ The connection between a universal health card and a national ID card is close because one could easily be adapted for the purposes of the other. Charles Oliver, *Do We Need a National ID Card?* *Investor's Business Daily*, Aug. 12, 1994, at 1.

⁵⁵ See, e.g., *supra* note 23.

⁵⁶ *Mastercard Will Support Smart Card Technology*, EFT Report, Aug. 3, 1994, available in Lexis-Nexis Library, News File. The program should be phased in by the end of the year 2000 and is expected to save more than \$3 billion worldwide. The changeover involves cards containing the chips and terminals to read the new cards.

⁵⁷ Graham Greenleaf, *The Australia Card: Towards a National Surveillance System*, *Law Soc'y J.*, Oct. 1987 at 24, 25. The same article also reveals that "[e]very person in Australia will be required to obtain a Card, including children. The Bill does not make it legally compulsory: it simply makes it impossible for anyone to exist in Australian society without it because they will be unable to carry out normal activities... such as operation of bank accounts."

The third important set of information that a read-write microchip could carry would be criminal records. If one were to apply for a job, employers could readily possible criminal convictions. This might be particularly important for sensitive positions such as security guards, bus drivers, or day care workers.⁵⁸ Additionally, if a police officer made a routine traffic stop, the individual could be quickly "scanned" to see if he had a nefarious background.

Other potential applications could also be envisaged. The use of read-write capabilities of the microchip would enable an airline passenger to fly without purchasing a ticket. Upon sale, the information that the purchase had been made could be imprinted on the chip. Later at the airport, instead of asking for a ticket, the stewardess would merely scan the individual to insure that they had paid for travel, and were taking the correct flight. This would serve a dual purpose in the case where the chip carried information about criminal records. Subversives, known terrorists or wanted criminals could quickly be identified before their departure and be prevented from boarding.⁵⁹

Moreover, another commercial application would be to aid in toll collections. The implantable microchip might replace the traditional coin-operated highway toll system. Instead of paying as one drives through the booth, one would be scanned, and a bill would be posted to the driver's account. Prototypes of electronic toll systems are currently undergoing testing.⁶⁰ Because of the multitude of applications, this type of read-write microchip would generate both commercial and governmental interest.

⁵⁸ The utility of the device would be obvious, but the question would then become how much information to include. For instance, if the microchip only contains information on convictions, it would not be as helpful as a record of all arrests. As more and more information is stored, the intrusion on personal privacy is correspondingly increased.

⁵⁹ Jonathan Lewis Miller, *Search and Seizure of Air Passengers and Pilots: The Fourth Amendment Takes Flight*, 22 *Transp. L. J.* 199, 200 (1994). The usual searches conducted at airports reveal only drugs or firearms. However, "[i]t would technically be possible to implant felons with microchips via hypodermic injections, which would announce their status as felons as they passed through airport arrival and departure gates." *Id.* at 200.

⁶⁰ A system currently undergoing testing in six states is a pre-paid tag placed on a vehicle which can be read by overhead antennas on the toll booth. *For Whom the Tolls Swell: Electronic Toll Systems Promise Big Growth*, *The Wall St. J.*, Sept. 8, 1994, at 1.

3. Read-write and Tracking

In addition to the read-write capabilities described above, a device can also emit a radio signal which could be tracked. Applications would again be numerous as evidenced by the less advanced technologies already in existence. An electronic tethering system is used in some jurisdictions as a pre-trial detention monitor.⁶¹ An ankle bracelet monitors a subject to ensure that he remains within his home. If the device is removed, or the subject is more than 50 feet from the receiver (telephone) it should transmit a signal to police.⁶² If a microchip implant had tracking capabilities, it would be superior to the currently available electronic tether because it would not require the telephone as an adjunct. For the tether system to work properly, no one can use the phone for extended periods, and line failure can interrupt monitoring.⁶³

With a microchip implant, constant monitoring would be possible. If each chip emitted a signal of a unique identifying frequency, implanted individuals could be tracked by simply dialing up the correct signal. The implantable microchip could be monitored from the police station, a car or perhaps even a helicopter, in contrast to the current tethering device, which only works if the tagged individual remains close to the monitoring unit in his home. Because the receiver is mobile, the tagged individual can be tracked anywhere.

Such devices could also be used to keep a building secure, by providing information as to who is in what portion of a building.

Some analogous devices are now used by biomedical researchers to track animals. Microprocessor-based implantable telemetry systems have been developed which require batteries for power to emit signals.⁶⁴ However, batteries present problems due to their lifetimes

⁶¹ United States v. Cashin, 739 F. Supp. 1107 (E.D. Mich. 1990).

⁶² The device can be programmed to monitor the subject as frequently as every 30 seconds. Once the subject is out of the range of the receiver, a warning may be sounded, but the bracelet cannot then be used further to track the subject's movements. *Id.* at 1108.

⁶³ If some interference with the telephone line occurs, the warning signal of that event may not be received until between 30 minutes to four hours later. For that reason, the system is somewhat limited in scope. *Id.*

⁶⁴ A flexible system which can be programmed for a variety of short-term experiments has been described. Kenneth W. Fernald et al., *A Microprocessor-Based Implantable Telemetry System*, Computer, Mar. 1991, at 23.

and weight.⁶⁵ These problems need to be addressed for implantable microchips to have such capabilities.⁶⁶

Post-Implantation Detection Avoidance

For several uses, such as encoding criminal records, persons implanted would find it undesirable that that information be readily available. As quickly as technology for implantation can spring up, evasive techniques can be developed. For example, one might wear certain clothing to block signals or even have the implant removed. Equipment might be developed which could be held up to the body to decommission the device.

If only criminals had implants, the result would be that criminals would suddenly appear as law abiding citizens.⁶⁷ A requirement that everyone be implanted would circumvent such problems.⁶⁸ Cloaking would be the most rudimentary method of deception. It would be much more difficult to replace a correct chip with a counterfeit. Strict controls and secrecy of manufacture would be imposed to prevent this.⁶⁹ Even if the implant carried only work verification or medical information, mandatory implantation is still needed.⁷⁰

⁶⁵ *Id.*

⁶⁶ Interestingly, A. F. Westin has suggested a solution to this problem. "However, it is possible that low-level electrical charges generated within the body or other bodily power sources, such as body heat or pressure changes, might be harnessed to provide the operating energy." Westin, *supra* note 2 at 86.

⁶⁷ The same would apply for the situation in which the microchip contained information on medical history. Some might be motivated to remove evidences of psychological instability which might be encoded. Also, if one were suing for injuries obtained, they may not want an easily accessible record which might indicate that that injury was actually a pre-existing condition.

⁶⁸ This conclusion has been drawn as a result of interviews with experts in the industry who attest to the veracity of the concept of necessitated universal implantation.

⁶⁹ In addition to controls of manufacturing, there would probably be secrecy surrounding the encoding of the information and the receivers or scanners to read the microchips. Additionally, as with certain key components of the manufacture of drugs, the necessary materials to make the microchip would be closely monitored. Also, the government would probably employ some sort of electronic signature, similar to the watermark on currency, to make duplication extremely difficult. Thus, the multiplicity of obstacles to overcome would effectively prevent counterfeiting by implantation of microchips bearing false information.

⁷⁰ This is so because otherwise undesirable information could relatively easily be blocked. For example, if only those with serious diseases that are also contagious such as AIDS are required to have a microchip implant, someone who does not want that information to be known could simply block it as described in the text. With the

We will therefore presume that, for microchips to have broad utility, they must be mandatorily implanted. Commercial uses involving consensual implantation,⁷¹ or voluntary implantation for government record-keeping purposes would be far less effective. Below, the ramifications of mandatory governmentally-imposed implantation will be viewed from the perspectives of common law, constitutional and property rights.

Rights Infringed by Microchip Implants

Common Law

The right to privacy may be inferred from the language of the First, Fourth, Fifth and Ninth Amendments. It has also been established through common law precedents.⁷² As early as 1891, Justice Gray of the U.S. Supreme Court indicated that “[n]o right is held more sacred, or is more carefully guarded, by the common law, than the right of every individual to the possession and control of his own person, free from all restraint or interference of others, unless by clear and unquestionable authority of law.”⁷³ Similar sentiments have been echoed by Justice Cardozo in his famous statement that “[e]very human being of adult years and sound mind has a right to determine

chip’s information effectively silenced, the individual could appear to be disease free, because he would have no scannable record. However, in the case of worker verification, counterfeit chips would play a part, if only those eligible to work had implants. To become “eligible” one need only have a counterfeit implant inserted. The government would have to take steps to insure that the microchip was not readily counterfeited. Thus, even if the microchip was only used to carry medical information or worker verification information, the government would find administration of a microchip implantation program simplest if all citizens were to be implanted.

⁷¹ If a parent wanted their child to be implanted for identification purposes in case of kidnapping, one of the techniques described above could be easily used to nullify their identity as indicated on the chip. If it were not mandatory for all children to have the chip, it would be impossible to tell if the microchip had been removed or altered.

⁷² Because these matters concern an individual’s self-determination, they form part of the right to privacy. Privacy involves “an interest in making certain kinds of important decisions.” *Whalen v. Roe*, 429 U.S. 589, 599-600 (1977). In *Whalen*, the objectionable government regulation was a requirement to keep centralized computer files with names and addresses of those who ordered certain prescriptions.

⁷³ *Union Pacific Ry. Co. v. Botsford*, 141 U.S. 250, 251 (1891). A woman had been injured in a train accident and was suing for negligence. A lower court had ordered that she submit to a physical examination prior to the trial to determine the extent of her injuries. The Supreme Court decided that the lower court had no power to subject a party to a physical examination against her will. This was well before development of rules for Civil Procedure. *Id.*

what shall be done with his own body.”⁷⁴ The right to privacy defined by Justices Gray and Cardozo is a right to bodily integrity.⁷⁵

One manifestation of that right is apparent in cases concerning the terminally ill. These situations involve terminally ill adults who wish, or whose relatives wish, to end their life. In *Satz v. Perlmutter*, a competent terminally ill adult was allowed to decide to terminate life support, based on his rights under the common law doctrine of bodily integrity.⁷⁶ However, under the law of some states, a person in a vegetative state must be demonstrated, with clear and convincing evidence, to have earlier expressed a desire to terminate life support under such circumstances before support can be removed.⁷⁷

A second manifestation in the common law of the right to bodily integrity is the doctrine of informed consent. Though this doctrine allows a pregnant woman to make informed choices for her life and the life of her fetus, legal disputes have centered around the question of whether or not the mother must submit to a Cesarean section to save the life of her child, even if it is against her will.

An example of the use of the doctrine of informed consent is found in *In Re A.C.*, where a pregnant woman with terminal lung cancer was forced by court order to have a Cesarean section.⁷⁸ Her difficulty in breathing was damaging to the fetus, and doctors determined that a Cesarean section would give the fetus a greater chance for survival,

⁷⁴ According to this decision, if a surgeon operated on a patient without his consent, it would be an assault. *Schloendorff v. Society of the N.Y. Hosp.*, 211 N.Y. 125, 129 (1914).

⁷⁵ Dawn Johnsen, Symposium: *Substance Use During Pregnancy: Legal and Social Responses: Shared Interests: Promoting Healthy Births Without Sacrificing Women's Liberty*, 43 *Hastings L. J.* 569, 582 (1992).

⁷⁶ *Satz v. Perlmutter*, 362 So. 2d 160 (Fla. Dist. Ct. App. 1978). It was estimated by his doctors that once the life supporting artificial respirator was removed, he would live less than one hour.

⁷⁷ Nancy Cruzan was critically injured in an automobile accident. She entered a persistent vegetative state, kept alive by artificial feeding and hydration equipment paid for by the State. Her parents petitioned to cease life-sustaining care, but the care was not terminated because the Supreme Court of Missouri felt that clear and convincing evidence of her wish not to be kept artificially alive (expressed in a competent state) was missing. *Cruzan v. Director, Missouri Dept. of Health*, 497 U.S. 261 (1990).

⁷⁸ Despite apparent mootness due to the fact that the operation had been performed, the Court of Appeals ruled on the case because of the basic dispute over the right to make such decisions. *In re A.C.*, 573 A.2d 1235 (D.C. Cir. 1990).

though she never acquiesced to the surgery. Unfortunately, two hours after the court-ordered C-section the child died; the mother died two days later. The Court of Appeals, in recognizing a right to bodily integrity as illustrated by the right to accept or refuse medical treatment, said that the woman's competent informed decision to not have a C-section should have been honored.⁷⁹ The ability to refuse invasive surgery and the ability to hasten death both stem from the concept of bodily integrity.

To determine the legalities of policies affecting a person's bodily integrity, courts often apply a balancing test whereby the weight of the government's regulational objectives must be compared to the weight of the individual's right to bodily integrity. The court in *In Re A.C.* used this technique for "[i]n its analysis, the court balanced A.C.'s interests of privacy and bodily integrity against the state's interest in the potential life of the fetus, by comparing the chances of survival for each."⁸⁰ Alternatively, it has been suggested that strict scrutiny is the preferable test to determine whether or not a regulation or requirement impinges upon an individual's right to bodily integrity since the issues involved have such serious consequences.⁸¹ Therefore, some have suggested that the most rigorous of tests, requiring compelling governmental interest and least restrictive means possible, must be applied.

If the government mandated that all Americans be implanted with microchips, it would be compelling an invasive procedure. Insertion through a needle would not be complicated or delicate surgery, but it would nonetheless interfere with bodily integrity. In addition to the

⁷⁹ In 1994 another dispute about a court-ordered C-section over the mother's objections arose in Chicago. The doctors felt that the fetus would not survive unless delivered immediately surgically, but the mother refused to submit to the surgery, protesting on religious grounds. The State wanted to appoint a guardian over the fetus so that consent for performance of a C-section could be obtained. The court decided that based on the concept of bodily integrity and applying the principle of informed consent, a woman had a right to refuse invasive medical treatment. Despite the doctor's predictions otherwise, the child was born healthy in a natural delivery. *In re Baby Boy Doe*, 260 Ill. App. 3d 392 (1994).

⁸⁰ Annette Williams, Comment, *In re A.C.: Foreshadowing the Unfortunate Expansion of Court-Ordered Cesarean Sections*, 74 Iowa L Rev. 287, 293 (1988).

⁸¹ Johnsen, *supra* note 63. "If the courts fail to apply strict scrutiny to adversarial policies, the government will be free to override or penalize any decision by a woman upon a simple showing that the regulation is rationally related to a legitimate interest in reducing a risk to fetal development." *Id.* at 584.

invasiveness of the initial surgery for implantation, the continuing presence of the microchip within the individual must also be taken into account. In combination with the surgery, the implant represents a substantial permanent intrusion.

If a balancing analysis was used to determine whether one's rights to bodily integrity were violated, the government would have persuasive reasons for implantation due to the myriad of applications previously described.⁸² The numerous uses for microchip implants would indicate that a great common good would indeed be served by their use. Moreover, with regard to the degree of invasiveness, this implantation does not require any in-depth surgical procedure, as in the case of a Cesarean section.⁸³

Yet, intrusion upon individual's rights must also be considered. The element of continuous intrusion elevates the consideration from one of how drastic the surgical procedure is, to a consideration which also includes the long-term, continuous effects. The continuous intrusion could tip the balance against the government's police powers.⁸⁴

If strict scrutiny analysis were employed, it would be even more readily understood that implantation represented a clear violation of individual rights. Ordinarily, this level of analysis is required only where suspect classes are involved or where fundamental rights are being regulated. Classification of the right to prevent foreign objects from

⁸² For criminals, the government generally exercises a more far-reaching control. Thus the implantation of microchips does not result in as great a loss in the bodily integrity rights of a criminal as it does for a law-abiding citizen. Johnsen, *supra* note 72, at 582.

⁸³ The C-section may be considered to be a much more serious operation because the body cavity must be opened, and general anesthetics are required. However, a microchip implantation would be a much simpler procedure.

⁸⁴ If Norplant, a contraceptive device which must be surgically implanted, is mandated by the government, an analogous argument might apply. The use of Norplant represents a continuous intrusion because as the device slowly releases contraceptives for a period of up to five years unless surgically removed by a sometimes complicated procedure. Julie Mertus & Simon Heller, *Norplant Meets The New Eugenicians: The Impermissibility of Coerced Contraception*, 11 St. Louis U. Pub. L. Rev. 359, 360 (1992). Thus far, only a few cases have touched on this subject. *See, e.g.*, In re: Lacey, 189 W. Va. 580 (Ct. App. W.Va. 1993), and In re S.S.J., 634 So. 2d 198 (Fla. Dist. Ct. App. 1994). Government has already expressed an interest in at least encouraging the implantation by increasing welfare payments to women who have the implant in proposed legislation. This could foreshadow a mandate. Karin E. Wilinski, *Involuntary Contraceptive Measures: Controlling Women at the Expense of Human Rights*, 10 B. U. Int'l L. J. 351, 362 (1992).

being placed in the body as a fundamental right is plausible, and will trigger a strict scrutiny analysis. Although the compelling governmental interest might be evident, microchip implantation is not the least restrictive means to achieve objectives. Hence, mandatory implantation would not be legal.⁸⁵ Thus, by either mode of analysis, implantation could be precluded because of violation of rights to bodily integrity.

Constitutional Rights

Devices described above can be said to impinge upon various constitutional rights, depending on the embodiment. Here we focus on the relation of human microchip implantation to the Fourth and the Fifth Amendments.⁸⁶ The Fourteenth Amendment will be discussed in conjunction with the impingement upon property rights.

Fourth Amendment

The Fourth Amendment protects individuals from unreasonable searches and seizures. A type of search which has been frequently tested for potential violation of constitutional rights is the use of electronic surveillance. In that instance, a bifurcated framework has been used to analyze which acts of surveillance constitute illegal searches. This approach considers first the implications of the attachment of the surveillance device and second the implications of continual monitoring once a device is in place.⁸⁷ These considerations must also take into account the requirements of probable cause and particularity.⁸⁸ There must be a definite reason for suspicion necessitating the search, and the search must also be placed within finite limits. In this section, a search

⁸⁵ Requiring the carrying of I.D. cards, electronic tethers and even tattooing would all be less intrusive options.

⁸⁶ There is some indication that Article I Sec. 10 of the Constitution may be applicable. In 1980, the Supreme Court affirmed a lower court ruling that struck down a Louisiana law which required itinerant workers to obtain identification cards. Because the scheme in question would interfere with free movement of labor across state lines, the law was invalidated. David Ranii, *ID Cards For Laborers Ruled Illegal*, Nat'l L. J., Nov. 10, 1980, at 4.

⁸⁷ The Ninth Circuit has used this analytical approach, but holds that the use of a beeper to follow an automobile or an airplane is not a search within the Fourth Amendment. *United States v. Bruneau*, 594 F.2d 1190, 1194 (8th Cir. 1979).

⁸⁸ The Fourth Amendment to the U.S. Constitution reads:
The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue, but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

will first be defined, then the method of determination of whether or not a search is constitutional will be explained, and finally the applicability to microchip implantation will be explored.

The courts often examine whether or not the activity under surveillance normally has associated with it a legitimate expectation of privacy in making their determinations as to whether or not a "search" (requiring constitutional protection) took place. This factor may be illustrated by a hypothetical surveillance of an individual walking on the sidewalk. Privacy often has two aspects: 1) actual expectations and 2) their reasonableness.⁸⁹ Applying these to the hypothetical, just because a pedestrian thinks sidewalk activities are private and precluded from surveillance does not mean that they are. Legally, because of no reasonable expectation of privacy on a sidewalk, observing the pedestrian does not amount to a search for Fourth Amendment purposes.

The same type of question has been asked in litigation over whether or not surveillance of a moving automobile is a search. If a beeper is placed on an automobile for tracking, is it within the realm of public activities and therefore a type of surveillance which is not a search? Courts have answered that question in the affirmative, terming driving an activity associated with a "diminished expectation of privacy," not a search because "[a] car has little capacity for escaping public scrutiny."⁹⁰ The same reasoning has also been applied to beepers placed on airplanes,⁹¹ and the use of infrared devices to examine the heat content emanating from buildings.⁹²

⁸⁹ A beeper had been placed on a container of chloroform that was sold to an individual suspected of using the chemical to manufacture illegal drugs. Because the moving of the drum by the suspect outdoors was an activity with no reasonable expectation of privacy, the use of a beeper was not ruled to be a search. *United States v. Knotts*, 460 U.S. 276, 280 (1983).

⁹⁰ *Id.* at 281 (citing *Cardwell v. Lewis*, 417 U.S. 583, 590 (1974)).

⁹¹ Placement of a beeper on an airplane was not a search because in that instance, there was no reasonable expectation of privacy. Planes are constantly monitored as to their positions, heights and altitudes already, so a flying plane is a scrutinizable activity that is not a search. *United States v. Bruneau*, 594 F.2d 1190 (8th Cir. 1979).

⁹² The devices are forward looking infrared devices used to detect differences in surface temperature. These instruments can be used by police to determine whether or not marijuana is grown inside a structure, because the extra lighting necessary to grow marijuana plants generates a high amount of heat. *See, e.g.*, *United States v. Pinson*, 24 F.3d 1056 (8th Cir. 1994) and *United States v. Ford*, No. 92-5181, 1994 WL 514580 (11th Cir. Sept. 21, 1994).

The generalized concepts relating to the definition of a search have been related to external examples of beepers or wiretapping. However, the Fourth Amendment has also been invoked with reference to internal intrusions upon individuals to obtain evidence which could be used against them. Examples include the withdrawal of blood and bodily searches which require surgical procedures or other means to extract substances from the body. In *Winston v. Lee*,⁹³ a robber was shot during an escape of the scene of an attempted robbery. Shortly thereafter, a man with a gunshot wound was discovered in the vicinity. To confirm that the suspect was connected with that particular robbery, the police wanted to compel surgery to remove the bullet. Because of the complicated and life-threatening surgery required to remove the bullet, the Supreme Court ruled that the surgery would be an unreasonable search.⁹⁴ Alternatively, other decisions have classified these highly intrusive searches as warrantless searches rather than unreasonable ones.⁹⁵ Thus, it seems that the courts are unwilling to totally relinquish the power to conduct a highly intrusive search, regardless of the conditions involved.

Arguments have also been made that taking blood samples is another example of an internal search which may be said to implicate the Fourth Amendment, where those samples indicate intoxication.⁹⁶ The same reasoning has been suggested as a reason to prevent the collection of blood samples from convicted criminals to obtain DNA for a genetic data bank.⁹⁷ However, these arguments have not been

⁹³ 470 U.S. 753 (1985).

⁹⁴ The surgical procedure to remove the bullet lodged in his chest was estimated to carry a 1% chance of nerve damage and a 1/10% chance of death. *Id.* at 755.

⁹⁵ A man was carrying illegal drugs. Upon obtaining a search warrant, the police attempted to find the drugs by attempting a body cavity search, but the suspect was uncooperative. Assuming that he had swallowed the drugs, they gave him laxatives to recover the evidence. These were unsuccessful, so x-rays were taken which revealed that an object was lodged in his stomach. Upon endoscopy, a surgical procedure, a plastic bag filled with heroin was retrieved from his stomach. The court ruled that the actions of the police to perform an endoscopy violated the suspect's Fourth Amendment rights "because the endoscopy exceeded the scope of what any reasonable police officer would believe to be authorized by the search warrant. *United States v. Nelson*, No. 93-3628, 93-3848, 1994 WL 526111 (8th Cir. Sept. 29, 1994).

⁹⁶ The reason for the blood test was that the petitioner was in an automobile accident where it was suspected that he caused the accident due to his intoxication. *Schmerber v. State of California*, 384 U.S. 757 (1966).

successful against the claim that greater restraints on liberties are required for the convicted.

Once it has been established that a search has indeed taken place, it is thereafter unconstitutional only if a valid warrant was not obtained prior to the search. The warrant is evidence that the proposed search has been examined, and considered not to infringe upon the suspect's rights. The leading case detailing the constitutionality of the search when a warrant is provided is *Katz v. United States*,⁹⁸ which examined the constitutionality of wiretap surveillance by the government. The petitioner had been convicted based on improperly-obtained evidence because the safeguard of first obtaining a search warrant before bugging the phone booth had been ignored. On appeal the court stated that "[i]n the absence of such safeguards, this Court has never sustained a search upon the sole ground that officers reasonably expected to find evidence of a particular crime and voluntarily confined their activities to the least intrusive means consistent with that end."⁹⁹

The principles evolved for Fourth Amendment claims can be applied to microchip implants. The clearest application will be to the embodiment of the device that can read-write and track. Still, read only and read-write devices also implicate Fourth Amendment principles because, once installed, either could be scanned by police to obtain information about the individual. Scanning of the microchip would be considered as a search.

The first question to consider is whether or not a search (worthy of Fourth Amendment protection) took place. Thus, scanning or interrogation of the implanted microchip to obtain information from it is the action to be evaluated. The act of implantation itself does not constitute a search.¹⁰⁰ Rather, it is subsequent actions relating to the garnering of information from the microchip which are of consequence to the Fourth Amendment analysis.

⁹⁷ See, e.g., *Doe v. Gainer*, No. 75806, 1994 WL 515549 (Ill. Sept. 22, 1994), *Gilbert v. Peters*, No. 93 c 20012, 92 c 20354, 1994 WL 369643 (N.D. Ill. June 28, 1994), *State v. Olivas*, 122 Wash. 2d 73 (1993), *Jones v. Murray*, 962 F.2d 302 (1992), cert. denied, 113 S. Ct. 472 (1992).

⁹⁸ 389 U.S. 347 (1967) (FBI agents attached an electronic listening device in a phone booth where phone calls related to illegal gambling were made).

⁹⁹ *Id.* at 356.

¹⁰⁰ At the time of the installation, there is no motivation to recover or obtain evidence. That is only possible later when the individual is tracked or scanned.

In the case of any of the embodiments, an individual may have an expectation of privacy as to the information on the microchip. However, it would be more difficult to defend that expectation as a justifiable one, if the microchip carried information of medical records on a read-write device.¹⁰¹ Because the information is vital for the good of society, there is no reasonable expectation of privacy. Proponents of this theory would argue that such information was available and on record already, and that this technology merely increased the speed with which it could be recovered. If these arguments prevail, there would be no search and no Fourth Amendment protection.

However, one court has found that personal information should be kept private and not readily accessible.¹⁰² In a *Doe* case, this philosophy was validated for medical information by judges who declared that "Doe has a right to privacy (or confidentiality) in his HIV status, because his personal medical condition is a matter that he is normally entitled to keep private."¹⁰³ Therefore, under *Doe*, retrieval of information from a microchip read-write device is a search when the information retrievable is of a type that is normally protected.

Monitoring a read-write device with tracking capabilities could be defined as a search if the implanted citizen were law-abiding. Because criminals have lesser privacy rights, tracking in their case wouldn't be termed a search.¹⁰⁴

Once it has been established that a search has occurred, the Fourth Amendment protections insure that the search is only permissible under certain conditions: that a warrant has been issued and that the search is described with particularity. Even if it is a possibility that blanket warrants could be issued, or that a warrant could be easily obtained, it will be difficult to evade the particularity requirement of the Fourth

¹⁰¹ It may be in the vital interest of society to have access to the medical records if they contained, e.g., information that someone had a contagious disease.

¹⁰² This argument is particularly suited to the case that the implant carries medical records, but less so if the implant is to carry criminal records which are afforded less protection.

¹⁰³ In this case, his condition was revealed in a press release. Proponents of the microchip implantation may argue that the information will only get into the hands of a select few, such that this case is not governing. *John Doe v. City of New York*, 15 F.3d 264, 269 (2nd Cir. 1994).

¹⁰⁴ Similar arguments have been used to justify the intrusive DNA sampling of criminals to create genetic data banks.

Amendment with reference to microchip implantation. That requirement is to prevent an overbroad search which impinges on an individual's privacy rights.¹⁰⁵

If the embodiment of the device is read only or read-write, the particularity requirement could be satisfied with a warrant. Conversely, if the device was read-write with tracking capabilities, the search would not be defined with particularity, as a person could be monitored at any time, in any place.¹⁰⁶ In summation, in any form, interrogation of the microchip implant can be considered a search under the bifurcated analytical framework. The Fourth Amendment protections to make a search constitutional could conceivably be met by the government when the search involves certain information from read only or read-write devices. However, if the device is used for tracking purposes, it will fail the particularity test and thus violate the Fourth Amendment on the grounds that a valid warrant has not been issued.

Fifth Amendment

The Fifth Amendment provides, in part, that no citizen "shall be compelled in any criminal case to be a witness against himself."¹⁰⁷ Verbal self-incrimination is commonly understood to be covered by the amendment,¹⁰⁸ but it has also been applied to removal of objects from someone's body.¹⁰⁹ "[A] person is compelled to be a witness against

¹⁰⁵ The Particularity Clause has recently been examined in relationship to the proposed use of the Clipper scheme. For the protection of data there are currently a number of methods for scrambling the data (encryption). Only authorized users are then able to read the data. The government has proposed that only one encryption method be utilized, the Clipper scheme, so that they will effectively be able to read any information from any source. It has been proposed that the Clipper scheme violates the Fourth Amendment because it would allow an essentially continuous review of data in an unlimited fashion. Mark I. Koffsky, Comment, *Choppy Waters in the Surveillance Data Stream: The Clipper Scheme and the Particularity Clause*, 9 High Tech. L. J. 131 (1994).

¹⁰⁶ Each microchip might be on its own particular frequency, which would enable police to "tune in" to anyone they might wish to track.

¹⁰⁷ U. S. Const. amend. V.

¹⁰⁸ In addition, the use of beepers for surveillance has been said to have Fifth Amendment implications. "The government, by a trespass minimal in the physical sense, causes the unwitting suspect to become a reporter to the government of information incriminating to himself." *United States v. Michael*, 645 F.2d 252, 271 (5th Cir. 1981).

¹⁰⁹ In one instance, a man swallowed pills suspected to be illegal drugs. The police forced him to take an emetic to recover the evidence. The court ruled that the evidence obtained by the forced vomiting violated the suspect's constitutional rights.

himself not only when he is compelled to testify, but also when... incriminating evidence is forcibly taken from him by a contrivance of modern science” according to a concurrence by Justice Black.¹¹⁰

Non-verbal communications are not as easily categorized. For example, in a case concerning whether or not blood withdrawn from a suspect could be used to prove intoxication, the court commented that “[s]ince the blood test evidence, although an incriminating product of compulsion, was neither petitioner’s testimony nor evidence relating to some communicative act or writing by the petitioner, it was not inadmissible on privilege grounds.”¹¹¹ Yet later in the same opinion, Justice Brennan tempered the decision in the following manner: “That we today hold that the Constitution does not forbid the States minor intrusions into an individual’s body under stringently limited conditions in no way indicates that it permits more substantial intrusions, or intrusions under other conditions.”¹¹² Thus, there appears to be some disagreement as to the extent of the reach of the Fifth Amendment’s protection as applied to bodily intrusions. However, a common theme in such cases is that the courts examine the difficulty involved in terms of the level of intrusiveness required to obtain the “non-verbal communication,” to determine whether it is constitutional.

The Fifth Amendment could be applied to the use of microchip implants in humans because it could be a form of self-incrimination where the device has tracking capabilities.¹¹³ Note that the implantation itself would not be incriminating, but the scanning or tracking of the implant could be. The question which arises is whether or not the act of carrying the implant is self-incrimination. According to decisions which require a communicative act such as speech or writing, the implant would not be an example of self-incrimination

Rochin v. California, 342 U.S. 165 (1952).

¹¹⁰ *Id.* at 173 (Black, J., concurring).

¹¹¹ The court held that only communicative testimonials were protected by the Fifth Amendment, and withdrawal of blood did not qualify as such. *Schmerber v. California*, 384 U.S. 757, 765 (1966).

¹¹² *Id.* at 771.

¹¹³ If the device is read only or read/write, it would be much more difficult to relate the device to the concept of self-incrimination. If the device were read/write and contained a criminal history or history of mental illness, there might be some intersection with Fifth Amendment principles. *See also supra* note 64.

worthy of Fifth Amendment protection. Yet the carrying of the implant might properly be categorized as a communicative act because the chip would provide for constant communication of location. If the government has the ability to determine where someone is at all times, that information could be used as evidence in the commission of certain crimes. It would be analogous to the situation in which a suspect wore a beeper for surveillance 24 hours a day for the rest of his life.¹¹⁴ In that instance, it might be most properly characterized as self-incrimination and therefore prohibited by the Fifth Amendment. Conversely, if the implantation were consensual, it could hardly be said to represent self-incrimination because of acquiescence.

Moreover, if tracking or scanning of the microchip is considered merely as a non-verbal communication, it may not qualify for Fifth Amendment immunity if constitutionally obtained. Since the act of scanning or tracking does not involve any life-threatening operation, or serious physical disruption, but rather only the monitoring of an electronic device, it would not be intrusive enough a method to qualify for immunity.

Property Rights

Property rights are protected from governmental deprivation without due process by the Fifth and Fourteenth Amendments.¹¹⁵ Here, we focus on the latter. To determine what is protected by the due process clauses, it is necessary to understand what is meant by the term "property." This is constantly refined and expanded by the courts, but basically it refers to a collection of rights held in a particular object.¹¹⁶ They may be tangible, as in the case of land or possessions, or intangible, as in the case of intellectual property. Property has been defined as "every species of valuable right and interest" which may be protected by the State.¹¹⁷ Although the concept of one's own body as

¹¹⁴ This possibility was foreshadowed by Justice Rehnquist, but disregarded as technologically unlikely. *See supra* note 4.

¹¹⁵ The Fourteenth Amendment reads: "nor shall any State deprive any person of life, liberty or property, without due process of law." The Fifth, applicable to the federal government reads similarly.

¹¹⁶ Roy Hardiman, Comment, *Toward the Right of Commerciality: Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 *UCLA L. Rev.* 207, 213 (1986).

¹¹⁷ In the same paragraph, the author also explains that the term "property" is purposefully vague so that the courts can interpret it as modern life evolves. *Id.*

one's property has not been embraced by the courts, there is some precedent for that expansion. The law does not provide an overtly obvious method of insulation from bodily intrusions such as mandatory microchip implantation, but it is argued that novel situations require novel applications and expansions of existing legal concepts.

Here, the current rationale for and against the definition of the body as property will be examined, followed by current indications that the theory should be generally adopted. Last, the application of the concept of the body as property to the use of microchip implantation into humans will be explained.

1. Rationale

As explained, the concept of the human body as property is not generally accepted. One reason is fear that if the body were property, one could sell oneself or a portion thereof to another for profit. The basic rights in property include the right to transfer it as one wishes.¹¹⁸ However, those fears could be allayed by specific statutes covering and limiting transfers. Even the transfer of land is subject to, e.g., zoning restrictions.¹¹⁹ Another reason for hesitation to consider the body as property is that it harkens back to slavery.

If the body were recognized as property, it would provide certain advantages. Namely, the Fourteenth Amendment which insures that the individual will not be deprived of property without due process of law could then be invoked against intrusions into an individual's body. It may be argued however, that the individual is already afforded Fourteenth Amendment protection through the liberty aspect of the amendment.¹²⁰ Liberty is generally thought to refer to personal rights in conjunction with torts such as battery, assault and false imprisonment.¹²¹ These may be categorized as external events, ones

(quoting Susan Rose-Acherman, *Inalienability and the Theory of Property Rights*, 85 Colum. L. Rev. 931 (1985)).

¹¹⁸ The ability to transfer the property is alienability. It has been pointed out that merely because an item is property does not mean it must be fully alienable without restriction. Lori B. Andrews, *My Body, My Property*, Hastings Center Report, Oct. 1986, at 28, 29.

¹¹⁹ For instance, a law might be passed which would allow transfer of organs or body parts, as long as it is not for valuable consideration. This would decrease the possibility that a person would be tempted to damage himself for monetary gain. *Id.* at 33.

¹²⁰ U.S. Const. amend. XIV.

¹²¹ In this note, it is argued that one can have property rights in one's own body. Erik

which are not the doing of the individual himself, but rather the acts of another against the self. Conversely, property rights in one's own body would cover the acts of the self concerning the self. Therefore the liberty interest does not strictly apply, and the property interest in the self could result in a right distinct from the liberty interest. The importance of this feature will be illustrated below.

Current Indications

Evidence for some situations in which the body has been considered as property, or at least as quasi-property, can be found in statutes and court decisions. For example, individuals can have limited rights with respect to the corpse of another, referred to as quasi-property rights.¹²² Surviving spouses often have the ability to determine how to dispose of the dead.¹²³ Other rights in an individual's body are defined by the Uniform Anatomical Gift Act (UAGA) which determines how and to whom gifts of transplantable organs can be made subsequent to the death of a donor.¹²⁴ Since one of the rights attached to property is the ability to alienate it, the introduction of the UAGA serves as evidence that it is permissible to have property rights in one's body,¹²⁵ though they are statutorily limited.¹²⁶

In *York v. Jones*, a couple had an embryo cryogenically frozen for future use.¹²⁷ Later, they wished to transfer it from an in-vitro

S. Jaffe, Note, "*She's Got Bette Davis[s] Eyes*": Assessing the Nonconsensual Removal of Cadaver Organs Under the Takings and Due Process Clauses, 90 Colum. L. Rev. 528, 554 (1990).

¹²² These property rights are very limited, and are generally only concerned with burial. Thomas P. Dillon, Note, *Source Compensation For Tissues And Cells Used In Biotechnical Research: Why a Source Shouldn't Share in the Profits*, 64 Notre Dame L. Rev. 628, 631 (1989).

¹²³ The Note cites cases where this right has been given to the widow. *Id.*

¹²⁴ All 50 states have adopted the Act in whole or in part. Among the stipulations of the Act are: definition of the scope of legal donations, rules on how determination of donation may be made by next of kin, and to whom donations may be given as well as for what purposes. Jaffe, *supra* note 121, at 532.

¹²⁵ Note that though these concepts pertain only to dead bodies and not to the living, whatever rights are afforded to the dead should be available in even greater portion to the living, since they are in much greater need of protection.

¹²⁶ This argument has been propounded by the dissent in the case *Moore v. Regents of the University of California*, 51 Cal. 3d 120, 154 (1990).

¹²⁷ The couple had been receiving fertility treatments for a number of years. Six eggs were removed from Mrs. York and fertilized. The dispute centered around a cryogenically frozen embryo that was left over after an unsuccessful implantation of

fertilization institute in Virginia to another in California. The Virginia institute refused, citing the Cryopreservation agreement signed by the couple which specified only one of three fates for cryopreserved embryos. Interinstitutional transfer was not one agreed upon. The Yorks' argument, adopted by the court, was that the Cryopreservation Agreement was an admission by the Institute that the Yorks had property rights in addition to contract rights in the embryos.¹²⁸ Thus, within the confines of a contract, the court was willing to recognize property rights in an embryo.

In a later dispute over the ownership of frozen embryos, another court was not as willing to go as far.¹²⁹ The Davises had seven in-vitro fertilized embryos stored at a clinic for later implantation. Afterwards, in divorce proceedings they disagreed over who should get the embryos. Finding it impossible to call the embryos "persons", and unwilling to call them "property", the court compromised by putting them in an "interim category that entitles them to special respect because of their potential for human life."¹³⁰ The rights or duties entailed by the interim category were not further elaborated upon other than to indicate that the interest of the parents was one of ownership (where they had equal weight in determining the fate of the embryos).¹³¹ In both *York* and *Davis*, the emphasis was on an embryo outside of the human body. Property rights exerted, where granted, are still external to the human body.

In a third example, external rights were also the issue where a man sued to obtain the monetary gain of the use of his cells to create a profitable cell line.¹³² In part of his argument, he claimed that he had

five embryos in her uterus. *York v. Jones*, 717 F. Supp. 421 (E.D. Va. 1989).

¹²⁸ The court indicated that language such as "our pre-zygote" and the provision that in the event of a divorce, the ownership "must be determined in a property settlement" indicated a recognition by the defendants that the plaintiffs did have property rights in the embryo. *Id.* at 426.

¹²⁹ *Davis v. Davis*, 842 S.W.2d 588 (Tenn. 1992), *cert. denied*, 113 S. Ct. 1259 (1993).

¹³⁰ The implication is that the embryos are in a temporary category somewhere in the middle of the continuum from property to person. It may also be that the more permanent solution would ultimately be to define them as one or the other. *Id.* at 597.

¹³¹ It was ruled that the lower court's decision to allow normal procedure in disposing of unused embryos was correct. For the Davises, this meant that relative interests of each spouse to either the use or the deliberate refraining from the use of the embryos must be weighed. *Id.*

property rights in the cells removed from him during the course of his treatment. Because he never agreed that his cells could be used by the researchers to develop a new cell line, he claimed that they had converted his property based on the belief that the cells were still his property (because he had not released them) even after they were removed from his body.¹³³ The argument had been accepted by the lower court, but was not confirmed by the California Supreme Court. Instead, that court sustained the demurrers of the defendants to the cause of action of conversion, citing that the burden that would be placed on researchers to confirm consent before utilization of human body fluids in research would be too great.¹³⁴ Here again, the case focused on the ability of one to define products of his body external to himself as his property.

Applications of Property Law Concepts

Implantation of microchips concerns an internal property interest in the self because placement of the device involves breaking the skin to place a foreign object within the body permanently. It may be likened to the use of an artificial eye or a pace-maker. However, in those cases, the implant is desired. In the case of the microchip, there is only a convenient accounting system and repository for government information. Thus, new questions such as whether or not property rights can be extended to oneself now arise.

If *York* could be used as a precedent, it would then be possible to extend the right from a frozen embryo removed from the body, to internal bodily organs. If embryos outside an individual's body are his

¹³² The plaintiff patient had a rare form of leukemia. His doctors took many samples of his blood and bodily fluids from which they harvested cells to create the Mo cell line. The importance of the created line was that it could be sold to researchers who wished to use the cells to determine how best to combat the disease. *Moore v. Regents of the University of California*, 51 Cal. 3d 120 (1990).

¹³³ The researchers never informed him of their ultimate goals but rather insisted that the harvesting of the bodily fluids was a necessary part of the treatment of his condition. *Id.* at 126.

¹³⁴ The following rationale was provided by the court: "The extension of conversion law into this area will hinder research by restricting access to the necessary raw materials.... At present, human cell lines are routinely copied and distributed to other researchers for experimental purposes, usually free of charge. This exchange of scientific materials, which is still relatively free and efficient, will surely be compromised if each cell sample becomes the potential subject matter of a lawsuit." *Id.* at 144.

or her property, why then couldn't the embryos inside the body also be that individual's property? From there the conclusion that anything within an individual's body was the property of that individual, or that the body as a whole is property if its components are, could be reached. *York* is somewhat different however, because concerns and interests in reproductive freedom enter into disputes over fetuses, embryos and contraception in general.¹³⁵ *York* or *Davis* or other cases concerning reproductive rights and technologies are therefore not the best models for the microchip, but they are closest in substance.¹³⁶ Additionally, the very closest legally applicable statutory precedent is the Uniform Anatomical Gift Act. Unfortunately, as previously stated, because this Act covers intrusions into self only after death, it is not directly applicable either.

As stated previously, in the absence of close precedent, and in the face of emerging technology, it is sometimes necessary to forge new legal concepts to cover the previously unanticipated developments of science. The use of microchip implants in humans is such an instance, wherein the application of novel legal theories is required, because of the novelty and the direness of the implications for humans. The concept of property should be extended to oneself as concerns internal matters to prevent technology from swallowing up the individual.

One important aspect of property is the owner's right to exclude others from it. It follows that if an individual can be said to have property rights in himself, he can exclude others from invading his body which he controls as his property. Thereafter, if it is recognized that the individual has that right to prevent intrusions into his own body under property law, he can invoke Fourteenth Amendment protection to dissuade others or the government from requiring the placement of foreign objects in his body or at minimum provide adequate compensation.

Those principles can be analogized to the scenario of governmental mandate of microchip implantation. If the government desires to

¹³⁵ There are very famous cases concerning abortion which touch upon the concept of the self as property, but these concerns are too closely intermingled with emotional questions of reproductive freedom to provide a clear basis for comparison.

¹³⁶ In the situation that courts begin to mandate Norplant for child abusers, the same arguments might be made for self as property. However, here again, the reproductive freedom issue would overshadow other concerns.

mandate microchip implantation, it must provide just compensation for those implanted. The question would then become how to value this level of intrusion. Compensation required would include money damages for the initial implantation,¹³⁷ as well as carrying a foreign substance,¹³⁸ difficult calculations indeed. Even if an amount could be calculated, it is unlikely that the government could give its value in cash because the total amount required for compensation of all individuals would be prohibitively high.¹³⁹

Thus, if property interests were recognized in self, the compensation required by each individual from the government to implant the chip in each individual would be very great. The renumeration aspects of the program would effectively make it difficult to uniformly mandate the implantation of the microchip.¹⁴⁰ To overcome this obstacle, the government might insist on some form of nonmonetary compensation. For example, a tax break, an additional legal holiday or some other compensatory program might be invoked which did not involve an actual exchange of money on the part of the government.

In summation, property rights in self should be recognized in the case of mandated microchip implantation.¹⁴¹ This would ensure that individuals receive compensation for their inconvenience, though the government may provide nonmonetary compensation which would be less satisfactory.

¹³⁷ The compensation might be for pain and suffering, if any in the initial insertion, as well as emotional distress.

¹³⁸ Other compensation might be for side-effects of carrying the implant such as discomfort, irritation, or emotional distress. Certain individuals may also make claims for other physical ailments if they feel that they have been worsened or brought on by the implantation.

¹³⁹ Even if the compensation were a nominal amount, such as a dollar, this cost would be high when multiplied by the number of U.S. citizens. The cost becomes prohibitive when added to the costs of implantation, and maintenance of records to run the program.

¹⁴⁰ If these arguments that self is property fail, instead, the fact that the act of microchip implantation forces deprivation of life might be proffered to invoke Fourteenth Amendment protection from a deprivation of life theory. Life would be deprived because part of the individual's body would now be occupied by the government. This would not be a total deprivation of life (such as death) as is commonly associated with this principle. It is not inconceivable that partial deprivation of life by microchip implantation could be covered.

¹⁴¹ If the microchip implantation is voluntary, compensation will not be applicable. This itself brings up another interesting point, as the government may follow the logic that the mandated implantation is completely voluntary, to avoid remuneration.

The Need for Legislation

Although microchip implantation might be introduced as a voluntary procedure, in time, there will be pressure to make it mandatory. A national identification system via microchip implants could be achieved in two stages. Upon introduction as a voluntary system, the microchip implantation will appear to be palatable. After there is a familiarity with the procedure and a knowledge of its benefits, implantation would be mandatory. To forestall this, legislative protection for individual rights must be enacted. For example, a recent poll indicates that safeguards would increase by 11% the number of people willing to accept health care identification numbers.¹⁴²

Legislation which concerns and protects the consensual implants might address two possible problems. First, laws should protect minors. Though a child may be too young to give his own consent, the parents may be allowed to make the decision. At some age, the child should be allowed to decide whether or not he or she wants to keep the implant. Second, laws should allow an implantee to remove a chip at will. These safeguards should insure that once implanted, the microchip can be removed without further legal action. For example, if the individual enters a contract with a service to store medical records on a microchip, she should be able to end it. That is, a commercial institution should not have the power to insist that the microchip remain, even if only for a short time. Also commercial parties should not "own" the implant. Once it is in the individual, it belongs to that individual and not the corporation providing the service. In this way, the individual will be free, for example, to remove a chip or reinstall another.¹⁴³ That decision should rest solely with the implantee.

To avoid a governmental mandate, citizens may advocate for an outright ban. This drastic measure may also be necessary in a system

¹⁴² The survey, conducted by Louis Harris and Associates in conjunction with Alan Westin, showed that 60% would agree to a health care identification number. The proposal would be even more acceptable to a greater number of Americans according to the pollsters, when additional safeguards were proposed such as "criminal penalties for improper use of the information" and "the personal right to sue someone who misused their health care ID number." *Safeguards Allay Distrust of ID Efforts*, *The Wall St. J.*, Feb. 10, 1995, at B1.

¹⁴³ Commercial entities will likely insist on certain types of insulation from liability concerning the implantation, but we do not explore that side of the issue.

that is initially voluntary, for it may well be the precursor to a mandate. A voluntary program will lead to the desensitization to the loss of legal rights. When the government subsequently announces a mandate, it is conceivable that the public would acquiesce by reason of familiarity with the benefits obtained, without adequate consideration of the implications. If at that point, many people have already chosen implantation and reaped its benefits, then it is less likely that they will protest. Thus, an outright ban may be the surest form of protection. Short of that, the best way of preventing incipient problems is to protect rights before desensitization.

That all of these protections against microchip implantation should fail must also be considered. If none of the current protections is strong enough to prevent mandatory implantation, legislation must be enacted to ease the very great intrusion into individual privacy. Minimally, if the government is to initiate broad usage, it must provide assurances. Of utmost importance would be a guarantee of the limited access of the information contained on the microchip or within associated databases. It would be essential that information access be severely limited. Such protections could be modeled after the Consumer Credit Protection Act and the Privacy Acts.¹⁴⁴ For example, individuals should have the opportunity to review all records kept on or in connection with microchips¹⁴⁵ and be given the opportunity to correct them.¹⁴⁶

¹⁴⁴ Robert S. Peck, *Extending the Constitutional Right to Privacy in the New Technological Age*, 12 Hofstra L. Rev. 893, 898 (1984). The Census Act as well as the I.R.S. Code "restrict disclosure of information collected except for certain limited statutory exceptions." *Id.* at 898.

¹⁴⁵ In his testimony on Capitol Hill on Mar. 14, 1995, Gregory T. Nojeim enumerated several safeguards for guarding the privacy of citizens where a national identification system is required. One requirement is "immediate, automatic notification to any person about whom the data base is queried... with the opportunity to contest unauthorized transmission of the information before it occurs."

¹⁴⁶ Lack of current legal protection notwithstanding, the individual citizen may still have options open to him to oppose implantation after it has occurred. Though governmental entities are generally thought of as having immunity from liability in tort, it is conceivable that the government, the manufacturer of the implant or the person that implants the microchip could have product liability charges leveled against them. Individuals might claim that the implants have given them headaches, cancer, brain tumors, impotence or a great host of other ailments. Thus, the individual could demand removal of the device on the basis that it contributed to or worsened some illness in his body, should the legislative protections and banning attempts fail.

Summary and Conclusion

Three categories of rights are relevant to implanting microchips in humans: common law, constitutional and property. The common law concept of bodily integrity precludes nonconsensual implantation. When microchips constitute a legal search, the Fourth Amendment applies to preclude the government from using devices with read-write and tracking capabilities, but a warrant could legitimize scanning a read only or read-write device. Property rights might be applied to prevent intrusion without just compensation. This would seem to require expanding current law, but novel and unique situations may spawn novel applications of laws.

Of the approaches described, it appears that the closest parallels and thus the strongest protection are afforded by common law right of bodily integrity. Though cases have generally concerned death or birth issues, in contrast with permanent insertion of a foreign substance into the body, the analogies are much stronger than in two other branches of the law discussed. Concerning constitutional rights, the strongest protection is afforded with certainty only against the most complicated device, the one with read-write and tracking capabilities, for which there is not yet evidence of a marketable device. It is much more likely that the read only or read-write implant would be initially used.

The common law right of bodily integrity seems most weighty and convincing, especially where law-abiding citizens are forced to undergo implantation. If only criminals must be implanted, as opposed to the population at large, it will be more difficult to argue against implantation in the face of the increased latitude of governmental control over law-breakers.

Although use of such a device at first appears farfetched, examination of the existing technology and the potential utility proves that microchip implantation is both possible and, for some purposes, desirable. Beginning with voluntary introduction, Americans may be lulled into accepting them. This article thus sounds a warning bell. The time to prevent grievous intrusion into personal privacy by enacting appropriate legislative safeguards is now, rather than when it is too late.



