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# The Ethics of Radio Frequency Identification Chips in Humans

Fifty years ago, people were promised a future with the wrist-mounted communicators, robot servants, and the transporters iconic to the space opera genre. It was a bright idealistic future full of hope. Instead of the *Star Wars* or *Star Trek* future that was promised, the world became *Blade Runner*. Idealism turned to cynicism, and the technology changed likewise. However, are the technologies that came with this change necessarily bad? Human implants are something one would see in a cyberpunk, yet their merits are far more beneficial than their pop culture counterparts. Technologies such as human-implanted radio frequency identification (RIFD) chips have many potential benefits, but one must always be aware of the potential downsides.

Implanting technology in humans, in one form or another, has existed for years now and it only grows more mainstream with each passing year. Take Cochlear implants, for example. They began in the late 1970's and have slowly developed and become more useful. Nearly 188,000 individuals have one worldwide (NIH Fact Sheets – Cochlear Implants). Contact lenses and hip replacement are also examples of augmenting the human body. Up until RFID's, all implants have been "restorative" implants (Gasson). Rather than adding convenience or additional function to the user, they seek to repair or "restore" an aspect of the user that was lost or is no longer functional. RFID's are new in that regard. Instead of repairing a lost bodily function, they aim to enhance the experience for the user. They do not assist the user in sight or movement, they make the life of the user more convenient. One such example is allowing the user to open doors and log in, as Wisconsin company Three Square Market did in 2017 (Wisconsin Company Three Square Market to Microchip Employees). This is understandably a concern, but the applications of such an implant are not to be ignored.

The role that engineers play in the decision to implant RFIDs is a valuable one. As the designers of these chips, it is imperative that they get a voice in the creation and implementation of RFIDs. While

businesses will pursue cost-effectiveness and utility and lawmakers and politicians will voice about the potential breaches of personal freedoms and safety of the government, engineers will raise questions about potential dangers to the user and hazards associated with implanted devices. This is a decision that all members involved in the process must have a say on. Implanting a person with a chip was science fiction thirty years ago and now it is something lawmakers are making decisions on (Loos). The voices of engineers are vital to any argument involving RFIDs and their potential applications and dangers, for as the designers, they have an insight that others do not.

The ethical dilemma of RFIDs is a much grayer area, however. One side of the argument states that RFIDs will enable convenience in the user and protect them from potential dangers, while the other states that such a device could be used to track, identify and create a "Big Brother" society (Gasson). While the fear of tracking every individual and profiling them sounds like a conspiracy theorists dream, trends in the past 30 years suggest a degree of truth to this (Kietzman). Additional events, such as the Snowden-NSA scandal have only reinforced the idea of a "Big Brother" state. Implanting devices with a GPS could potentially become a society in which every person is tracked at all hours of the day and profiled for their actions throughout it. Despite the benefits that RFIDs would reap, the potential dangers are far too large to ignore. It is important to keep all applications, good and bad, as RFIDs continue to grow in popularity/ As the years pass, the stigma associated with implants will fade, and they will grow to be more popular. Current models are nothing more than an ID card that has been inserted into your hand, but analysists claim that future models will contain GPS tracking devices (Graham).

The IEEE code of ethics provides a valuable perspective to analyze this topic. As engineers are required to follow all ten points of the IEEE code of ethics, applying all ten to the argument of RFIDs would assist in the potential applications. There are three points of the IEEE code of ethics worth

analyzing in detail. The first point, “To hold paramount the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices, and to disclose promptly factors that might endanger the public or the environment”, could be shorted to “to protect the public, provide ethical designs, and bring attention to any potential dangers” (IEEE Code of Ethics). This point is of importance to the topic of RFIDs and has two potential arguments associated with it. The first of which places focus on the safety of the public at the cost of endangering the public. Placing a chip within someone to track their location would protect the chipped individual from human trafficking and similar crimes but would infringe upon the freedom of privacy. The second argument places focus on personal freedom at the cost of personal safety. The implanted device would not contain a GPS device, but would otherwise be identical. This would still allow the user to experience the convenience of the implanted device without the infringement on privacy. The second point, “To improve the understanding by individuals and society of the capabilities and societal implications of conventional and emerging technologies, including intelligent systems”, is vital to analyzing this argument using the IEEE code of ethics (IEEE Code of Ethics). It states that it is the engineer’s duty to spread knowledge about the technologies they are responsible for. As stated above, it is vital that engineers play a part in shaping discussion about RFIDs implants in humans. As the creators and designers of the technology in question, engineers have the unique perspective of how they work and how they achieve their intended goal. Businessmen and politicians would not have this knowledge, and it would be a mistake if this knowledge was not included in the discussion about that very technology. The third point, “to avoid injuring others, their property, reputation, or employment by false or malicious action”, is like the first point in that it argues for personal safety (IEEE Code of Ethics). However, the focus is instead on the intentions of the engineer. Using this point as a baseline, it would be unethical for an engineer to create a device that purposely brings harm to any individual or groups. This is where the challenge of this argument develops from. Ethics, by nature, differ from person to person. For one person, it may be

unethical to create a device that tracks the location of the user. For another, this may be a valuable tool for protecting them in the case of emergencies. For a third engineer, this may be perfectly acceptable with no potential drawbacks. The nature of ethics is murky and differs between people, and because of this, there is no clear answer to whether implanting a RFID into a person is an ethical decision or not.

Technology advances at an alarming rate, and what was fiction years ago is a reality today. RFIDs are no exception. Fiction is filled with implanted chips used for a variety of actions, some good and some bad. As an up-and-coming technology, it remains to be seen how the chips will be utilized. The ethics of some of the applications are very clear, such as using it as a convenience tool to open doors, make purchases and make life easier, while other applications, such as using it to track every implanted individual, are much less clear. Leading this discussion should be engineers, as their unique perspective provides valuable input to lawmakers and businessmen. The future closes every day, and it is up to the people responsible for it to prevent it from becoming a dystopic nightmare.

Sources:

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