

THE TECHNOLOGY OF TELEPORTATION

By Students Name

Course:

Tutors Name:

University Name:

Department name:

Date:

Teleportation technology has been seen by many as a Frankenstein event in humanity's long history. Although the technology has inspired many with its numerous potential applications, it also terrifies a lot of pessimists. Teleportation is a technology that promises to provide instantaneous travel from one location, for instance, Bangkok to another site far from the earth like the Alpha Centauri star system. Such power is one that is worth grasping after. Some have gone ahead to suggest that such power can be humankind's saviour and additionally any incidental technology from it could eventually alter what it means to be human. Questions have emerged about how such technology, with the potential ability to rebuild a digitized copy of someone on the other side, can be applied to produce an enhanced copy of that individual who is much stronger, younger and smarter (Bonsor and Lamb, 2000). This form of bio-digital teleportation is both appealing to many, but at the same time raises far reaching ethical concerns. If the humans were to grasp this technology adequately, the possibility of travelling enormous distances would become a reality. Interplanetary travel will literally be compared to man's accomplishment of landing on the moon. Nevertheless, most of the sci-fi depictions illustrate an inherent danger of mastering the technology that eventually dehumanizes with absolute horror. Ethical issues regarding life, death, time and space need to be settled with well-defined boundaries between man and godhood. All this notwithstanding, several science fiction literature and media have been developed surrounding this concept. One of the notable films is the Star Trek franchise and The Fly. The critically acclaimed film The Fly by Cronenberg released in 1986, depicted a scientist who was reprogrammed by his own teleportation machine. The film shows how the science behind teleportation run amok and the inventor scientist evolves into a hybrid fly creature. Another Hollywood film showcasing the effects of teleportation is the 2008 film by Doug Liman the Jumper. Its plot revolves around how a teleporting super human or globetrotter is hunted down by a rogue organization that believes that such abilities should not be possessed by average people who they consider as unethical. The globetrotter uses their ability to steal money from bank vaults. However, there have been earlier depictions of this concept found in 20th century novels. For instance, in the novel by Albert Bester, The Stars my Destination published in 1957, it discussed the complications that emerge from a futuristic world that has accommodated the notion of teleporting— or as was put in the book, jaunting. Additionally, the book The Last Leap by Daniel F. Galouye produced in 1960, illustrates how a safe jump would only be guaranteed only if the individual does not think of the sun and can find a landing spot that is on an empty equipotential empty (Science Fiction Encyclopedia, 2015).

In 1993 the idea of teleportation shifted from popular science fiction into the realm of metaphysical reality. A team of six led by the physicist Charles Bennet, an IBM fellow, concluded that the idea of teleportation was possible. The only caveat to their conclusion was that the original object used in the quantum teleportation must be destroyed. Their explanation for such a caveat was based on the reality that the original object would be disrupted during scanning. The official report by the IBM team was released in 1993 through the Physical Review Letters.

Following this pronouncement, other researchers have done experiments to prove the concept of teleportation by using systems such as trapped ions, single photons and coherent light fields (IBM Research, 2012). A team at Caltech University, in 1998, were successful in conducting the first teleportation experiment by teleporting a photon. As was earlier predicted by Charles Bennet, the original scanned photon was destroyed after the replica appeared on the other end of the one metre coaxial cable (California Institute of Technology, 1998). The current developments include the combination of quantum teleportation with other components such as telecommunication and quantum physics, producing promising and astounding results. The experiments conducted by these researchers are abomination free and are far from the depictions in science fiction.

The Heisenberg Uncertainty Principle is one of the limiting principles that bar the teleportation of objects bigger than a photon. The principle explains the difficulty in determining the simultaneous location and momentum of a particle. However, the future of teleportation technology has enormous potential. In 2002, a group of Australian researchers was able to teleport a laser beam over a distance of one metre. The lead researcher Dr. Ping Koy Lam insisted that while the science behind teleporting a human was still too complex a problem, the science of teleporting solid matter may be theoretically proven within our lifetimes (The Guardian, 2002). Following closely after the Australian team's accomplishments was another milestone in 2006, where a group of Denmark researchers from the Niels Bohr University teleported data stored in a laser beam over a distance of half a metre into the cloud of atoms (Phys.org, 2006). Another landmark achievement was registered in 2012 at the Chinese University of Science and Technology when they transported a photon over 97 kilometres setting a new record (Slezak, 2012). Most recently in 2014, a group of European physicists teleported quantum information through a standard fibre optic cable. This development is most notable due to its direct effect on quantum computing (Emerging Technology from arXiv, 2014). Quantum computing would enable the development of quantum internet which would then allow the transmission of information more securely than the regular internet. The biggest factor that would empower this technology to take root, is the presence of entangled photons oscillating at the same wavelength as the fibre optic cables. Such technology is predicted to exist in the near future. At present, the most fundamental question is whether humans would ever be able to make the quantum jaunt. Sadly, the consensus of most scientists is that such a feat is practically impossible given the present level of technology. One limiting factor is Einstein's theory of special relativity that prohibits the movement of an individual's information at the speed of light. The computer that is to be equipped with teleportation capabilities will also have to analyse all the trillion trillion atoms present in a human body and reconfigure them perfectly on the other end. If the molecules in a human body do not reconstitute perfectly, the occurrence of physiological and neurological damage would be a guarantee. Furthermore, a fundamental question that needs to be addressed is what would happen to the original. Many hold that any act of bio-teleportation is, in fact, an act of murder. Nevertheless, this technology is bound to be refined. In the near future the present visualization of life and death, in particular to teleportation concerns, would be deemed barbaric and unenlightened. Our ancestors may view such technology as vital to their evolution and survival.

References

Bonsor, K. and Lamb, R. (2000). How Teleportation Will Work. [online] HowStuffWorks. Available at: <http://science.howstuffworks.com/science-vs-myth/everyday-myths/teleportation3.htm> [Accessed 19 Sep. 2016].

California Institute of Technology, (1998). Caltech physicists achieve first bona fide quantum teleportation | Caltech. [online] The California Institute of Technology. Available at: <http://www.caltech.edu/news/caltech-physicists-achieve-first-bona-fide-quantum-teleportation-291> [Accessed 19 Sep. 2016].

Emerging Technology from arXiv, (2014). Quantum Internet: First Teleportation to a Solid-State Quantum Memory. [online] MIT Technology Review. Available at: <https://www.technologyreview.com/s/524186/quantum-internet-first-teleportation-to-a-solid-state-quantum-memory/> [Accessed 19 Sep. 2016].

IBM Research, (2012). Quantum Teleportation - IBM. [online] Researcher.watson.ibm.com. Available at: http://researcher.watson.ibm.com/researcher/view_group.php?id=2862 [Accessed 19 Sep. 2016].

Phys.org, (2006). First quantum teleportation between light and matter. [online] Phys.org. Available at: <http://phys.org/news/2006-10-quantum-teleportation.html> [Accessed 19 Sep. 2016].

Science Fiction Encyclopedia, (2015). Themes: Teleportation : SFE : Science Fiction Encyclopedia. [online] Sf-encyclopedia.com. Available at: <http://www.sf-encyclopedia.com/entry/teleportation> [Accessed 19 Sep. 2016].

Slezak, M. (2012). Teleportation record heralds secure global network. [online] New Scientist. Available at: <https://www.newscientist.com/article/dn21811-teleportation-record-heralds-secure-global-network/> [Accessed 19 Sep. 2016].

The Guardian, (2002). Physicists beaming with teleport success. [online] the Guardian. Available at: <https://www.theguardian.com/education/2002/jun/17/highereducation.research> [Accessed 19 Sep. 2016].