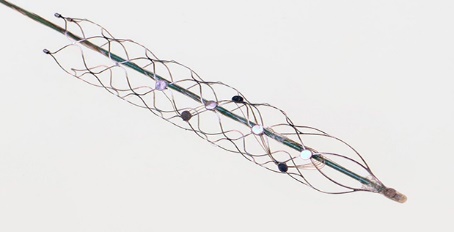
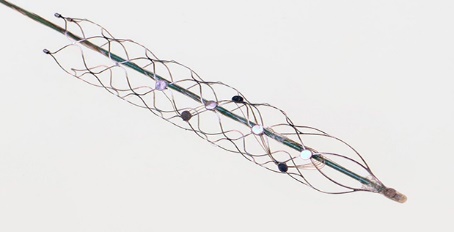
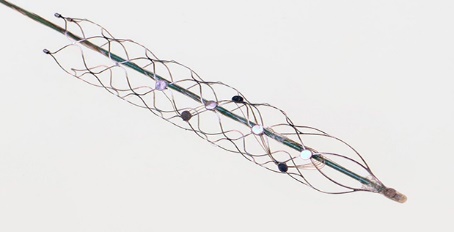
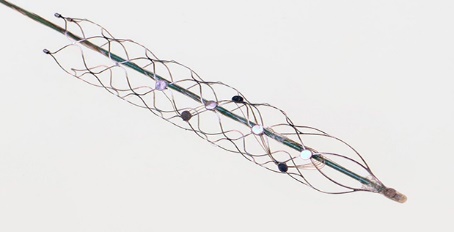
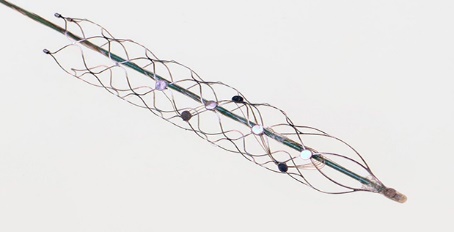
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Course: CIS 150-78

Date: February 14, 2016



Since the dawn of man, human beings have been limited by handicaps that vary in their impact. It is through technological innovations that human beings are able to ease the impact of disabilities ranging from the physical, to the psychological, or even both. The deaf once went a lifetime with expectations of a limited life. The sightless also suffered from a grim, yet realistic proposition that unlike their neighbors they could never gaze on anything beautiful. It is with the innovation of a key critical device alongside the technological peripherals it would operate, that hope glimmers to the sightless, and recovery beckons for the lame. That device is known as a stent-electrode recording ray, or stentrode for short. A stentrode is a device that can be placed in the brain to record activity from specific regions. The brain is accessed via a blood vessel in the patient’s neck, and then delivered to a suitable location. It is from this location the stent sends signals through wires to a transmitter in the patient’s chest. (Byrne)

In a recent study published in Nature’s biotechnology section, researchers from the University of Melbourne have developed a matchstick-sized stent that can be inserted through a vein in a patient's neck. The Melbourne group, led by neurologist Thomas Oxley and funded by DARPA, tested their technology in a sheep brain for six months. The technology of entering the brain via blood vessels is itself not brand new, but until now they’ve only been implanted for a few hours at a time. (Byrne)

The reason I chose this device to discuss, is due to its importance within the medical community. This is merely the beginning phases of technology like this. It is truly amazing how the future of brain surgeries and operations may be drastically altered by this innovation. The skull no longer needs to be penetrated, the brain barrier no longer bypassed. This drastically reduces risks of patients in much need of complicated brain surgeries. Surgery is not in itself the only technological possibility. Future applications may include motor cortex sensors in the brain which could give biofeedback to an external robotic limbs, eyes, or ears. It could even be used to predict epileptic seizures. One could even stimulate target brain areas, which shows promising modalities of treatment for Parkinson’s, and obsessive-compulsive disorder. (Byrne)

In late 2017, a select group of paralyzed patients from the Royal Melbourne and Austin Hospital in Australia will be chosen for a trial involving restoring movement to paralyzed individuals via a stentrode and an exoskeleton. Utilizing the stentrode to collect brain signals, these signals act as the electrical messengers that provoke intricate muscle movements and can, theoretically, be coded into software that links to an external skeleton. If the trial succeeds, the technology could become commercially available in as little as six years. The long road to coding will begin at the Austin Hospital’s Spinal Cord Service. The first patients will most likely be young people who have suffered a traumatic spinal cord injury around six months to a year earlier, who are suitable for exoskeleton legs. They will be chosen for their level of determination, their resolve and their physiology. (Gardner)

A cyborg is a being with both organic and biomechatronic body parts. The concept of cyborgs or cybernetics is not of course without its critics. Critics foresee numerous potential negative social consequences from this sort of technology. One is the technology would further divide society into those who could afford it, and those who could not. Only those wealthy enough will be able to augment their personal attributes as they see fit, staving off death for as long as they wish, while the majority of humanity will continue to suffer. This may cause a schism within society itself, in which the master race is those who are cybernetically augmented. The possibility of developing militaristic application is inevitable as well. Super soldiers may become instruments of destruction, augmented by cybernetics and given these augmentations it is very possible that these soldiers could turn on their leaders, or be utilized by those seeking absolute power. These super soldiers could be powerful enough to enslave humanity. Finally, a huge concern would be that people’s thoughts could be monitored, and controlled through this sort of technology. (Mizrach) These all bear threat to our natural rights as human beings. Would the rights of regular humans be superseded by those with such augmentations, and implants? (Kantian Duty) Would such innovations really be providing the greatest good for the greatest number, or is it possible that they could lead to the enslavement of billions? (Teleological Ethics)

Another possible ethical dilemma could occur in families who believe in things like Christian Science, which states that sickness is an illusion that can be corrected through prayer alone. Someone belonging to such a faith who is also paralyzed or handicapped might be faced with a crisis of conscience. On the one hand they could treat their illness through cybernetic augmentation, but then they would be breaking their believed or perceived duty to God. (Christian Science)

A future application that wasn’t mentioned is obviously militaristic applications. The super soldiers of science fiction could become a reality. Operating mechanized suits, all via their cognition. While this would drastically lower the amount of deaths for the military organizations operating such technology, it may drastically increase the death of other countries battling against such technology. While it is a useful tool, for defending democratic principles against tyranny, it may become tyrannical in of itself, being utilized as a measure of oppression against the countless masses unable to defend themselves. (Mizrach)

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