Family Concerns
"Bridging the Information Gap"
A Publication of Concerned Women for America of Kansas 2006-09 March 30, 2006

MAN'S QUEST FOR IMMORTALITY HAS RISKS

Nanotechnology, cyborgs, cybernetics: Terms for the future

As we pointed out in the last *Family Concerns,* man has been on a quest for immortality since he sinned in the Garden. He has been looking for a way around the curse much like my dog Gabriel searches for ways to escape the confinement of his crate. God has given man an intricately and wonderfully-made body and brain and he has allowed man to use the order of His universe to find ways to better himself. God was not surprised when early man discovered fire and in that discovery, found a way to warm his home and his food. However, the same benevolent flame, when out of control, could envelop his home in a conflagration leaving nothing but a charred residue. Such it is for modern man as he searches for newer and better ways to control his environment and to enhance his life; with every good discovery there are both good and bad applications.

Nanotechnology

Nanotechnology is one of the newest developments science has mastered. It is the field in which man attempts "engineering or manipulating matter at nanometer scale, which is one billionth of a meter."

An essay by Christopher Hook, M.D. entitled "Nanotechnology Cybernetics, Transhumanism and the Remaking of Humankind", illustrates how far man has come in this search. A nanometer is spanned by ten hydrogen atoms side by side; it takes 2.3 nanometers to equal the size of a DNA molecule. Lest you think that this is the stuff of science fiction novels, please note that in 2003, the President signed into law the Twenty-first Century Nanotechnology Research and Development Act, authorizing $2.3 billion to be spent over three years. Primarily, the research has focused on the miniaturization of electronic components; the application is that more durable and efficient materials can be made through this technology.

Some of the technology is being utilized by the military in producing highly durable, light-weight protective clothing, with the capacity of detecting biological or chemical weapon attacks. Other uses could be incorporated into creating a cyborg soldier who would be enhanced by microscopic sub-cellular machines that would interface with computers and the human brain.

Medical uses: developing tiny little nano-machines that would target tumor cells or infectious agents; nano-devices that would stimulate timed drug release in the body; tissue engineering or re-engineering; diagnostic tools that would operate in the body rather than in the laboratory, signaling disease or injury; tools to augment or repair interaction between neurons in the brain; and more durable prosthetic devices and implants.

The research

Nanotechnology relies on two methods of research according to Dr. Hook – the top-down approach, which attempts to directly manipulate the matter atom by atom or molecule by molecule, or by using the bottom-up approach that uses chemistry-based applications. These applications are now producing carbon nano-wires or carbon spheres known as buckminsterfullerene or "buckyballs." The carbon nano-wires are highly conductive and are being researched in the formation of new types of transistors and microscopic circuitry, which is advantageous in miniaturizing electronic devices. This technology can be incorporated into living organisms producing little machines that operate at the nano-scale. In fact, tiny little motors from nanotechnology are now propelling cells like amoebas in the laboratory. Some have predicted, according to Dr. Hook, that "nanotechnology and cybernetics together will enable humankind to pursue a form of technological immortality."

Recently an article in LiveScience.com claims that research has shown that the human brain operates much like a computer. Conceivably, little nano-transistors could replace injured circuitry in the brain that would aid patients with Alzheimer's, schizophrenia and other brain disorders. Some have suggested that such "machines" could allow people who have lost the ability to control parts of their body to be able to be synchronized with a computer that allows their thought processes to control movement of parts of their body. [Bjorn Carey, Live Science, "Brain Power: Mind Control of External Devices" March 17, 2005] One of the scientists developing this technology, John Donoghue, director of Brown's Brain Science Program, stated, "The ultimate goal of the neuromotor prosthesis is to use physical systems – smart sensors and implantable electronics – to restore a considerable degree of function to paralyzed limbs. A neural sensing system with adequate processing of signals could potentially drive muscles through implanted stimulators."

The downside

The downside of this technology is that the same principle that allows a nano-device to track and kill cancer cells in a human body could be adapted as a weapon for war by using the technology to develop super-weapons that seek out and destroy healthy human beings. Some of the devices are self-replicating leaving some to wonder if we have created a Frankenstein-like monster that human beings will not be able to control.

The ethics of science

Obviously, most people would welcome technology that could improve function for spinal cord injuries, disease and injuries; however, once again man is faced with a rapidly-developing science about which he will have difficulty developing ethical rules to protect himself from destruction.

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Family Concerns is published 36 times a year. Suggested donation is $15.00 per year.