

CYBORGS: A Mere future or a Science-Fiction

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Abstract: A cyborg generally known as a "cybernetic organism", Its an existant with Boilogsics and Bio-Mechanical-Electronic body parts. They are organisms with restored functionalities or advanced abilities created with the integration of artificial components or technology relying upon certain feedback. They are commonly thought of as mammals which include humans and considerably any organism.

In sci- fic, the utmost recognizable or identfiable stature of a cyborg is a human being with visible mechanical parts. They may appear as humanoid robots, or as non-humanoid robots, they are equipped with physical or mental abilities beyond humans capability, such as, super strength, enhanced senses, computer-assisted brains, or in- built weaponry.

Introduction:

Ever since technology has evolved, humankind has attached itself to the technology emerged. It not only includes technological pieces such as phones, internet, computers and others, but, includes life monitoring technical components too thus making the humans more of cyborgs. The concept of a man-machine relation spread wide in the world of science fiction even before the Second World War. The outcome of this concept was the need for an intimate relationship between humans and machines as the new frontier of sci-fi which opened up to a new era of physiological instrumentation and electronic data-processing systems which could & would finish the assigned task in the time span specified based on the user requirement. It is essentially a man-machine system in which the control mechanisms of the human portion are externally modified by drugs or by regulatory devices so that the being can live in an environment different from the normal one

In this current era, the idea of the cyborg influences our lives indicating the interest in a complete mind transfer with the ultimate melding of soul to Artificial Intelligence. The idea of the cyborg has touched many areas of humanity, including the medical world.

The Tissue of a Cyborg:

The Cyborg tissues are structured with carbon nanotubes and plant or fungal cells and are used in artificial tissue engineering to produce new materials for mechanical and electrical uses. The cyborg tissue obtained is inexpensive, light and has unique mechanical properties which can also be shaped into desired forms. The cells thus combined co-precipitated as a specific clust of cells and nanotubes that further formed a viscous material & the dried cells still act as a stable matrix for the network. When observed microscopically the output material resembled an artificial

"tissue" which was composed of highly packed complexed cells. When a specific physical interaction was established between the networks and cells, it was observed that the cell wall plays a major active role in establishing a network and stabilizing it. This new material can be used in a wide range of electronic applications from heating to sensing and has the potential to open important new avenues to be exploited in electromagnetic shielding for radio frequency electronics and aerospace technology.

As human life span increases there increases a demand for availability of organs for transplantation, due to the shortage in donations, the development of artificial alternatives with Artificial Intelligence often called as "Bionic" emerged. Advances in the field of medicine have led to the availability of artificial blood, joints replacement, valves of the heart, and lung & heart machines that are commonly implanted using Artificial Intelligence for Bionic organs. One of the primary and major goal of artificial intelligence research is to develop machines with human-similar intelligence. Great progress has been made since the start of AI. An outstanding research paradigm in AI is based on the assumption that, various aspects of human intelligence can be described and understood well enough to the extent, that, it can be simulated by computer programs through smart representational frameworks and generic reasoning mechanism. The Biological beings and computer systems share some common physical foundations. Communication in both biological nervous systems and computer systems, depends on electrical signals with the gap being bridged with "Cyborg Intelligence". As certain researchers and practitioners dilem between Bionic/AI and Cyborg, wheras studies clearly states that Bionic is biological functions, methods, systems and procedures mimicing electronically with neuron interfacing, but, Cyborg is another possibility in Medical Robotics domain which is a "Cybernetic organism" known as a being with both organic and Biological mechanic electronic body parts, using which, humans can increase their power in all means.

At first a detail study has to be carried on Neuroscience theory to analyze Cyborg with the intention as to what the engineer and the designer design Cyborg interfaces based on objectives. Then the researchers have to study the human biology and anatomy and functionality of biological organs to interface and sync with Cybermatic parts and further design domain devices, engineer and fabricate accordingly. Then study on bio-membranes, tissues, cells and anatomy has to be done , The"Brain Computer Interface (BCI)" with ions-electrons command and exchange signals to establish communication between biological and electronic system. And In the last stage, the bio-potential and how to interface the ions with electronic devices have to be engineered with "Neuron Command Operating Devices (NCOD)" /Cybermatic devices.

The Cyborg Interface and Support engineering model to implement Cyborg Intelligence is based on four criterions with further division into two domains, instead of a sequence it is a random model which covers four most important designing issues to implement Cyborg Intelligence (CI). A strong Brain Computer Interface with depth BCI engineering has to be designed on how to synch biological system with strong precise electronic systems. Another task is how to design

a Neuron Command Operating Devices (NCOD) and how to interface NCOD with the biological system, further, how to analyze and design Vision, Sound, touch and Movements with NCOD for Cybermatic support engineering. The last important engineering issue which we cannot be neglected is ‘malfunction’, since Cybermatic devices function 24 hours with human body, there may-be a higher chance of malfunction due to continuous processing, hence “Error detection and correction” engineering is important for continuous accurate error free working.

Their Applications:

- **Medicine:**

In the field of medicine, there are two types of cyborgs namely, the restorative and the enhanced. The Restorative cyborgs restore the lost function, organs, and the limbs. The key aspect of this is to repair the broken or missing processes and to revert them to a healthy or average level of function. The enhanced cyborg follows a principle of optimal performance which says *maximising output (the information or modifications obtained) and minimising input (the energy expended in the process)* It intends to exceed normal processes or even gain new functions that were not originally present.

- **Military:**

Here the cyborgs are used for the purpose of a supposed tactical advantage, sensors are implanted into these during their budding stage with their motion controlled by a Micro-Electro-Mechanical System (MEMS). These neural implants are controlled by humans by the impulses it received through the implants.

- **Sports:**

In the field of sports these cyborgs play a significant role by allowing the disabled people to compete by providing them assistance in the form of the mechanical parts which they have lost.

- **Body Modification:**

With technological developments like implantable silicon silk electronics, augmented reality and QR codes the bridge between technology and the body has been patched up. Hypothetical or sensitive theoretical technologies such as digital tattoo/imaging interfaces blend with body modification aesthetics with interactivity and functionality thus bringing a transhumanist way of life into present day reality.

- **Space:**

Humans space aviation could be a dangerous task, & to overcome this danger Cyborg technologies could be implemented in the future. A major issue of space exploration is the need for oxygen & exposure to radiation and to tackle this issue cyborgs containing sensor which detect exposure to radiation and to curb exposure they can pump the required pharmaceuticals to the astronauts.

Conclusion:

When given, the technical scope of current and futuristic implantable sensory devices, they will greatly proliferate, and will stabilish connections to commercial, medical, and governmental networks. If these devices are to be proliferated within society, then there rises an agency will monitor the operations and security of these devices. With regulatory framework & laws keeping up with developments in implantable technologies.

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