



**THE CYBORGIFICATION OF A ROBOT AS REPRESENTED IN
ISAAC ASIMOV AND ROBERT SILVERBERG'S *THE POSITRONIC
MAN: DIGITAL ANTHROPOLOGY VERSUS CYBORG
ANTHROPOLOGY***

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Abstract

The research paper attempts to primarily analyze the roles of “Digital Anthropology” and “Cyborg Anthropology” in the contemporary times through the lens of “Postcolonialism” in the context of Isaac Asimov and Robert Silverberg’s *The Positronic Man* (1992) which is a digital text. The digital text revolves around the NDR series robot Andrew and is based on themes of humanity, slavery, prejudice, maturity, intellectual freedom, conformity, sex, love and mortality. The research paper elucidates cyberculture in everyday life thereby partially debunking the strictly utilitarian aspect associated with cyberculture. It explores the role of ethics in the field of “Digital Anthropology” and “Cyborg Anthropology”. The paper attempts to explore the power dynamics associated with the relationship between the humans and the machines. It attempts to coin a new term “Roborgology” which explores the process of transition that a humanoid robot has to undergo to become a cyborg or a cybernetic organism to adapt and survive in a human world which does not want to accept it easily. The paper explores new concepts related to a “robotic subaltern” in this case Andrew who gains acceptance among the humans when he becomes a cyborg as a result of his hybridity. It questions the efficacy of gaining acceptance in the human world. The paper foregrounds the championing of the rights of Andrew, the cyborg, when his intellectual freedom is established and he is finally accepted as a human being. The paper on a different level does a self-reflexive study of the digital text namely *The Positronic Man* in relation to the implementation of digital texts, the devices used to access them, the interactivity associated with these texts as well as the concepts of open access and open source in relation to them.

Introduction to Robots and Robotics:

Karel Capek, a Czech writer, used the term “Robot” in his fictional automata namely R.U.R. (Rossum’s Universal Robots) in 1921 which means “forced labour”. A robot is defined as a mechanical machine made to perform one or more tasks repetitively with precision (“Robot and Robotics”). In *The Positronic Man* (1992), NDR – 113 is the robot that is owned by Gerald Martin and his family which was bought from U.S. Robots and Mechanical Men as a mechanical servant or a domestic help or a robot laborer. The evidence of it being a mechanical servant can be witnessed in the novel when we are acquainted as readers to the Martin household we see that Gerald Martin’s house has a pair of robot gardeners to tend his lawns, a robot housecleaner to keep his grand and majestic mansion clean and Andrew, the NDR – 113 robot, who served as a valet, butler, lady’s maid and chauffeur for the Martin family (*The Positronic Man* 11).

The basic characteristics of a robot are:

- (i) It functions by itself
- (ii) It is responsive to the neighbouring environment
- (iii) It is task oriented
- (iv) It has capability to use various methods to finish a task (“Robots and Robotics”)

In the novel, NDR – 113 alias Andrew Martin is shown to function by itself. An instance of it is seen in the novel: “At the moment Andrew was arranging the books in the Martin library, which had wandered a little out of alphabetical order, as books have a way of doing” (*The Positronic Man* 12). Here Andrew Martin functions by itself. Andrew is shown to be responsive to the neighbouring environment when Melissa, Gerald Martin’s elder daughter, asks him whether he can swim in the sea or not he says that he can do it if it is absolutely necessary. When he is further asked by Melissa whether water would short-circuit his brain or not he states that he is insulated. Finally, he is asked to take the plunge in the sea but he is reluctant as he is there to protect the girls, Melissa and Amanda (*The Positronic Man* 15). Andrew was task oriented as we are told that he prepared meals, selected and poured wines which Gerald Martin liked, supervised the wardrobes of the Martin family, he arranged and cared for their fine furniture, their works of art and their other possessions (*The Positronic Man* 11). Thus, the term “robot” meaning forced labor is used for him. He serves the Martin family and becomes a member of the family over a period of time but does not have freedom. The robot has the capability to use various methods to finish a task such as when Andrew Martin visits the robot surgeon the readers are told about the various ways of performing a surgery through the discussions that both Andrew Martin and the surgeon have. The surgery

can be performed using a set of sensors and monitors and an array of tool manipulating devices. The other way would be performing the operation by an individual entity and not by a limb of some remote machine resulting in the creation of the robot surgeon which is independently brained whom Andrew Martin was presently visiting (*The Positronic Man* 4).

The robot can have the following components:

- (i) Effectors: The parts of robots which really do the work are known as effectors such as hands, legs, torso, arms etc.
- (ii) Sensors: The parts of robot which perform like senses and collect the information about its neighbouring environment (like obstacles, light, heat etc) are known as sensors.
- (iii) Brain: The part of robot which has instructions in the form of algorithms to control the system of robot is known as brain.

The synchronization between the three components is required for finishing the particular task. (“Robot and Robotics”)

Andrew takes the plunge in the sea under the command of Melissa and as soon as he is in the sea the heavy foam flecked surf hits his knees so as a result Andrew is able to adjust his gyroscopic stabilizers to negotiate the breaking waves that assail him. The rough, sharp rocks that are strewn over the floor of the sea are meant to be no challenge to the metallic treads of Andrew (*The Positronic Man* 17). Andrew is able to take the challenges posed by surf and rocks in his stride because of his powerful effectors. He is able to sense his environment in the sea, collect information related to it and adjust his gyroscopic stabilizers as a result of his powerful sensors. Andrew has a positronic brain which is akin to a Central Processing Unit (CPU). His positronic brain is programmed to act per the laws of robotics. An instance of it is witnessed in the novel when he receives a command from Melissa to swim in the sea to get the eggs of cormorants whereas as per the first law of robotics he is expected to protect the girls. Since there was a contradiction in the two laws of robotics in the given situation for Andrew it leads to a building up of contradictory potentials in the brain, a faint trembling in the fingertips resulting in a perceptible sense of vertigo (*The Positronic Man* 16).

The study of robots is referred to as robotics. There are various types of robots available for different purposes and different platforms. They may be developed for domestic assistance, industrial employment, investigations, entertainment etc. The robots may be classified on the basis of applications, kinematics structure, shape of workspace, operating method, type of

controller, type of technology, arm configuration, type of locomotion etc. The robots can be classified into two basic classes: (i) Stationary Robot is a robot that is not motionless but its motions are restricted to a small boundary, for example, industrial robots and (ii) Mobile Robot is a robot which can move from one place to the other within an environment, for example, autonomous guided vehicles and humanoid robots (“Robots and Robotics”). Andrew Martin is there in the Martin household for domestic assistance and he is shown to be a mobile robot as he is meant to do household chores. We see Andrew taking care of the two daughters of Gerald Martin while going to the beach. It is Andrew Martin who holds the hand of Melissa and carries Amanda in the crook of his arm when they scramble down the trail to the beach. His purpose in the Martin household is well-defined in relation to him being a mobile robot.

The types of locomotion of robots depend on the relationship between the total and the controllable degrees of freedom. In mechanics, the degrees of freedom of system are the number of independent parameters which were required for defining its configuration. In the robotic system, it has two types of degrees of freedom of system: the first is the total degrees of freedom which are the number of independent parameters that completely described the system and second is the controllable degrees of freedom which are the number of controllers required to control the system. Holonomic locomotion refers to the type of locomotion that results when the number of controllable degrees of freedom is equal to the number of total degrees of freedom. Non-holonomic locomotion is the type of locomotion that results if the number of controllable degrees of freedom is less than the number of total degrees of freedom. Redundant locomotion refers to the type of locomotion that result when the number of controllable degrees of freedom is greater than the number of total degrees of freedom (“Robots and Robotics”). Andrew Martin does not display any of these types of locomotion but displays bipedal locomotion which is akin to the human movements in order to accomplish various kinds of tasks in the Martin household and elsewhere.

The three laws of robotics as postulated by Isaac Asimov are:

- (i) A robot may not injure a human being or through inaction should not allow a human being to be harmed.
- (ii) A robot may obey any orders given to it by human being, except where such orders would conflict with the first law.
- (iii) A robot must protect its own existence as long as such protection does not conflict with the First or Second Law. (“Robot and Robotics”)

Andrew Martin has a positronic brain which is programmed to obey all the three laws of Robotics. Andrew obeys the first law in protecting Melissa and Amanda while on their trip to the beach. He obeys Melissa's command to swim in the sea thereby obeying the second law and takes into consideration the third law so that there is no damage caused to the positronic brain as a result of sea water.

The humanoid robots do the work like human beings with better precision. They are built for homes and offices, for medical professions, for space research and for military applications etc. Andrew Martin in the novel may be classified as a humanoid robot as he is built for home and is meant to work as a human being.

Digital Anthropology and Cyborg Anthropology:

“Digital Anthropology” refers to the anthropological study of the relationship between human beings and digital era technology. *The Positronic Man* is rooted in “Digital Anthropology” as the narrative in the text revolves around an NDR – 113 robot, Andrew Martin, who is ardently involved in his quest for humanity and human acceptance. He is shown to adapt to the human environment and display creativity. The narrative meticulously charts the course of metamorphosis that Andrew Martin, the product of the digital era technology, undergoes from a robot to a cyborg and finally a human being. In this journey of his, he associates with various human beings, longs for companionship and wants to be an equal among the humans. The novel describes not only his coexistence with the human beings as a robot or a cyborg but also the fact that his creativity had been used in the service of mankind. An instance of his benign and philanthropic relationship with the human beings is depicted here:

... “Andrew Martin has given the world the prosthetic kidney, the prosthetic lung, the prosthetic heart, the prosthetic pancreas. In return all he asks is the right to continue his research in peace on the property where he has lived and worked for well over a hundred years. Who among us would refuse such a small request when it comes from so great a benefactor of mankind?” And after a certain amount of debate the zoning variance was granted and the buildings of the Andrew Martin Laboratories Research Center began to rise amid the somber cypresses and pines of what had, long ago, been the wooded estate of Gerald Martin. (*The Positronic Man* 157)

Technosociality that refers to the relationships between the real and the virtual worlds since the very rise of Internet technologies is an important aspect of “Digital Anthropology”. It helps in the building of technological infrastructure and the shaping of the new

configurations of State-Citizen-Market relationships and is shaped by the emergence and widespread adoption of Internet technologies. Technosociality is represented in the novel *The Positronic Man* in Andrew Martin the NDR - 113 robot's interaction with the human beings such as Gerald Martin who is initially his owner, Lucie Martin who is Gerald Martin's wife, Melissa Martin and Amanda Martin who are Gerald Martin's daughters, George Charney who is the son of Amanda Martin and Paul Charney who is the grandson of Amanda Martin. None of the members of the Martin family or later the Charney family through the generations have treated Andrew as a mere robot. They have thought him to be a member of their family as a result Amanda Martin was instrumental in advocating the rights of freedom of Andrew Martin. The Martin family and later the Charneys have shown to be very protective of Andrew Martin and they have always helped him to lead a life as a human being rather than a robot so much so that they have not only supported him in his quest for freedom but also in his transformation into a cyborg and later a human being by replacing his platinum-iridium positronic brain by an organic cellular brain that is susceptible to death.

The new media theorist Marshal McLuhan (1964) suggested that any new technology gradually creates a new environment which eventually leads to technology becoming a habitus or a space of living which sustains the production of social, cultural and political imaginations. In *The Positronic Man*, a new environment is shown to be created by the mutual coexistence of robots and human beings which sustains social, cultural and political imaginations. An instance of Andrew Martin's social interaction with human beings gives an insight into the social dynamics which has changed as a result of advancement in technology. Andrew Martin approaches the congresswoman Chee Li-hsing who is older now than when he had met her earlier. He is in discussion with her regarding him being granted the status of a human being. Li-hsing is the individual who is debating the issue in the World Legislature. Li-hsing states that:

“No. It has become my cause. I have no doubt that you are human, Andrew – perhaps made so by your own hand, but human all the same. And I understand that to deny the humanity of a single member of our kind is to raise the renewed possibility of denying humanity to whole multitudes, as was done all too often in our ugly past. We must never permit that to happen again. But even so – even so, Andrew –”. (192)

This example shows Andrew Martin's seamless adaptation to the society of human beings but the only jarring note is his non-acceptance as a human being by the humans. The humans

have learnt to mutually coexist with robots as the robots are useful to human beings but they deny the human status to a robot or at best to a cyborg.

The placing of Andrew Martin amidst humans provides an insight into the cultural climate of the futuristic times which is the outcome of the development in technology. The altered cultural environment is a result of the support provided to the heightened technological creativity of a robot.

Magdescu must have made things very clear to the Board of Directors, and the urgency of the message must have gotten through to them. For it was within quite a reasonable time indeed that word reached Andrew that the corporation was willing to do business with him. U. S. R. M. M. would build and design the combustion chamber and install it in his android body at its own expense; and it was prepared to enter into negotiations for a licensing arrangement covering manufacture and distribution of the entire range of prosthetic organs that Andrew might have under development.

Under Andrew's supervision a prototype metabolic converter was constructed and extensively tested at a newly constructed facility in Northern California, first within robot hulls, then with newly fabricated android bodies that had not been equipped with positronic brains and were operated on external life-support systems. (149)

The existence of Andrew Martin, a robot, and his desire to be accepted as a human being leading to lengthy political debates in various forums leads to the production of a new political imagination that is altered by technological advancement. The situation foregrounds the superb creativity of the robotic brain of Andrew Martin that competes with the caliber of a human brain and the robotic brain is of course the creation of a man-made brain which desires an equal status in relation to the human brain.

The fusing of the spheres of the physical and virtual, the digital and the sensory is best understood in the process of creating a cyborg – cyborgification. A cyborg is a human-machine hybrid in which there is a physical merging of flesh and electronic circuitry. The concept of production of the self within technosocial spaces is perhaps the most visible within Donna Haraway's notion of the cyborg which is a cybernetic organism a creature of social reality as well as a creature of fiction. It is a concept of fiction and lived experience. It hints at an organic-mechanical coupling derived from visions of android or bionic humans. It is also considered as an optical illusion between social reality and science fiction thus

defining a technological polis that rests on the blurring of three boundaries namely that of biological determinism, organism-machine and the physical-non-physical. Donna Haraway is of the opinion that we all are in the process of becoming cyborgs and calls it “cyborgification” as our lives become increasingly intimate with machines and technologies in the age of cyberspace. A figure that lives on the boundaries irreducible to the binaries of human/machine, human/animal, nature/technology, the cyborg inhabits both worlds simultaneously our knowledge experience and imagining of it distributed across its multiple sites.

Andrew Martin in *The Positronic Man* is initially a robot and then becomes a cyborg as he is changed into a human-machine hybrid resulting in his “cyborgification”. The process of metamorphosis from a robot to a cyborg refers to “Roborgology”. There is a description of his cyborgification in the text:

It was a splendid body. They had made him tall, but not so tall that he would seem overbearing or frightening. His shoulders were broad, his waist was slim, his limbs were supple and athletic. He had chosen light-brown hair for himself, since he found red too flamboyant and yellow too obvious and black too somber, and human hair did not seem to come in other colors than those, except for the gray or white or silver of age, and he had not wanted that. His eyes—photo-optic cells, really, but very convincing in appearance—were brown also, flecked ever so subtly with gold. For his skin color Andrew had selected something neutral in tone, a kind of blend of the prevailing skin quite as dark as some. That way no one would be able to tell at a glance which race he belonged to none. He had had the U.S. Robots designers peg his apparent age at somewhere between thirty-five and fifty human years: old enough to seem mature, not so old as to show serious signs of aging. (*The Positronic Man* 128)

This process is considered to be the initial step in his becoming a human. Thus, he too is a cyborg that exists on the boundaries irreducible to the binaries of human/machine.

David Bell (2000) was able to think of Haraway’s cyborg as an “everyday cyborg” as embedded in a crucial mechanics of urban survival where urban social reality functions as an information system. His cyborg did not exist between improbable neural networks of neural-interactive simulation but in a performative relationship between human beings and the technology that they use to define themselves and the world around them. Andrew Martin too is an “everyday cyborg” in *The Positronic Man* who is embedded in a crucial mechanics of

urban survival. An instance of his urban survival is foregrounded in his struggle to gain acceptance as a human being which culminates in his platinum-iridium positronic brain being substituted by an organic cellular brain which ultimately leads to his death but as a human being.

Postcolonialism:

In “Postcolonial Literature and Theory: An Introductory Note”, Postcolonialism is described as a literary theory which aims at “derailing accustomed trains of thought” (McLeod 2). It surfaced in 1980s and 90s and has been instrumental in advocating the rights of the dispossessed and the exploited in this world. It subverts the cultural legacies of oppression based on race, caste, class and gender. Another category is added to the mentioned categories that of inanimate objects as they are viewed in terms of strictly utilitarian aspects which puts in place a power gradient that is favorable for the humans who are viewed as the creators of the machines and the machines are the disadvantageous entities and tools in the hands of their creators namely the humans. *The Positronic Man* can be analyzed in the context of Postcolonialism as it is the tale of a household robot NDR – 113 with a positronic brain which is produced by U.S. Robots and Mechanical Men and is a mechanical servant owned by the Martin family. In this case, the novel shows a departure from the usual practice of leasing robots by U.S. Robots and Mechanical Men as the Martin family owns it. Thus, the robot is projected as a marginalized character or a “robotic subaltern” when introduced in the novel with no agency as it is a mechanical servant of the Martin family, its positronic brain functions in a limited way as it has been programmed to do just like a CPU (Central Processing Unit) of a computer. The positronic brain of the robot provides it with a consciousness that is recognizable to the human beings. The narrative depicts the journey of the NDR -113 robot from its status as a mere robot or a mechanical servant to that of a cyborg which is a hybrid of flesh and circuitry and finally to a human being with an identity that of Andrew Martin who has sentience (creativity, emotion and self-awareness). The fact that his status as a robot is that of an oppressed being and his conversion to a human being provides him agency and freedom, provides him an entry into the echelons of the powerful oppressors namely the humans thereby bringing him to the center of the power politics from the margins and inverting the center periphery power dynamics establishes him to be decolonized. His conversion to a human shows the dissolution of the binary between robots and humans. The mobility that he acquires dilutes the power gradient that gives humans a privileged position over the robots. The display of superior intelligence in terms of the sentient characteristics which are traditionally the province of the humans by Andrew Martin

who is a mere robot rehabilitates him, provides him an entry into the world of the human beings and subverts the superiority of the humans based on intelligence but at the cost of losing his immortality after living for two hundred years as a result of the decay of his positronic brain. The role of the human beings as oppressors is further corroborated by the fact that U.S. Robots and Mechanical Men stops manufacturing robots of the NDR series and there is a movement to develop centralized processing in relation to robots which includes centralized control of robots and avoids self-reflecting robots such as Andrew Martin so that no robot is able to prove itself to be as able as any human being. These measures stem from the fear of the human world that AI (Artificial Intelligence) which is the creation of the human world would leave human intelligence behind and stride ahead.

Postcolonialism involves appropriation of the oppressors' languages ("Postcolonial Literature"). It refers to using the language of the oppressor by the oppressed that has been used to subjugate them and challenging them in the process. Andrew Martin the robot has acquired the language of the humans, that is, English in this case. He communicates with the members of the Martin family in this language. An instance of Andrew's communication in English with the two daughters of the Martin family namely Melissa and Amanda can be mentioned in this context:

She picked up the discarded piece of driftwood and handed it to him for inspection.

"Algae, yes," he said.

"Algy?"

"Algae. The technical term for seaweed."

"Oh. Algy." Little Miss laughed and put the driftwood down near the beginning of the trail, so she would remember to take it with her when they went up to the house again. Then she rampaged off down the beach again, following her older sister through the foamy fringes of the surf. (*The Positronic Man* 14)

This example shows the mastery that Andrew has attained over the semantic aspect of English and he challenges the humans through his mastery in the semantic domain of the language.

Postcolonialism involves the disruption of the metanarrative of civilizational and [biological] superiority of the oppressor in contrast to the oppressed ("Postcolonial Literature"). The narrative of emancipation of the oppressed is subverted by upholding the exploitation of the oppressed by the oppressor. The metanarrative is written from the point of view of the

oppressor. In *The Positronic Man*, when Andrew Martin the robot shows the sentient characteristics such as creativity, emotion and self-awareness which traditionally belong to the province of humans and is able to create wealth by selling his creations it disrupts the metanarrative of the civilizational and biological superiority of the human beings who are the privileged and the oppressors in this case. The robots are considered to be oppressed because they are perceived as utilitarian objects or entities who exist to revolutionize life on Earth. Thus, they merely serve as laborers or tools in the hands of the humans without any agency being provided to them thereby reminding the readers of chattel slavery. Their exploitation exists in the fact that they have to remain subservient to the humans but Andrew Martin proving himself to be as good as a human being in the case of superior intelligence subverts this distinction between humans and machines.

Postcolonialism aims at the decolonization of the mind of the oppressed which refers to the mental and cultural liberation from the structures and philosophies of oppression (“Postcolonial Literature”). The decolonization of the mind is represented through Andrew Martin’s attainment of sentience and the resultant pursuance of creativity thereby displaying that robots are also capable of displaying superior intelligence and are not inferior to human beings in any way whatsoever.

It aims at valorization of the identity of the oppressed (“Postcolonial Literature”). The bestowing of a human identity of Andrew Martin to the NDR -113 robot establishes the fact that the robots are capable of possessing superior intelligence and displaying sentience which have long been the domains under human beings. The valorization of Andrew Martin’s identity is further brought about by his quest for humanity and his final attainment of it. Moreover, the story is narrated from the perspective of Andrew.

Postcolonialism challenges stereotypes (“Postcolonial Literature”). Andrew Martin’s display of superior intelligence through his projection of sentience and pursuit of creativity challenges the stereotype related to robots that they are capable of existing only as laborers who are subservient to humans, the intelligent beings.

Digital Textbooks:

A digital textbook is a digital book or e-book intended to serve as a text. They may also be known as e-textbooks or e-texts. They are the main components of technology-based education reform. They are used for MOOCs (Massive Open Online Courses). The digital

textbooks are available free of cost or have low cost. They are open sourced and have open access as they are free (gratis), easy to distribute, modifiable and can be updated (libre). *The Positronic Man* by Isaac Asimov and Robert Silverberg, the central text on which the research paper is based is a digital text or an e-text. The pdf version of the text was acquired from an online source namely https://openlibrary.org/works/OL46375W/The_positronic_man and acquired free of cost in India which is a part of the developing world thereby portraying the ease in accessing the e-texts in the third world which can also be considered as a facet of Postcolonialism. This text is available in the pdf version hence is not modifiable or cannot be updated. It has a file size of 1.1 MB (megabytes).

A laptop or e-reader is an electronic device that is required to access the digital textbooks. The device used to access this digital text is a laptop, that is, Apple MacBook Air. In the case of digital textbooks, there is creation of interactive and customizable content in terms of interactivity. The interactivity in relation to this e-text is nil as it is a text which has valid copyright laws and it is in the pdf format so alterations cannot be done in the text depending on the demands of the reader.

Conclusion

The focus of the research paper is on robots, cyborgs and their relationship with human beings. The text projects the power of digital era technology of which Andrew Martin the robot is a product or can best be considered a representative and his gradual transition to a cyborg and finally a human being. But tragically, his metamorphosis into a human being makes him lose his immortality, he becomes a mere mortal and dies. The power gradient between robots or cyborgs and human beings is projected and finally subverted as a robot gradually becomes a human being after securing his rights of freedom. The ideas of “Digital Anthropology”, “Cyborg Anthropology” and “Technosociality” depict the adaptation of a robot to the human environment and his association with human beings. The display of creativity by the robot Andrew Martin in woodwork or in creating prosthetic organs brings him at par with the human beings thereby inverting the power dynamics of center periphery structure. On the other hand, the sourcing and use of digital texts in the third world gives an insight into the technology based educational reform.

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