

Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence

By Andy Clark

Chapter 1: Rats in Space

How do we make it possible for humans to survive in space? Clynes and Kline thought it would be better to alter the genetics of humans rather than altering the environments we explore. They were working on cybernetics which is the science of control and communication in animals and machines. Rose, a rat implanted with the Rose osmotic pump, was certainly not a cyborg but quite close. The pump acted as an additional homeostasis layer for the rat, acting when needed. A second example of "cyborg" is the advanced version of the cochlear implants that connects directly to the brain stem. Professor Warwicks experiment – implanting a silicon chip in his arm - sent radio signals to open doors and turn off lights. Another test by Professor Warick was implanting a spike array that connected to the median nerve and identified signals associated with hand movements.

Imagine using sensors to sense wavelengths beyond our capabilities, but how would we be able to identify what we are seeing? The more advanced we become in cybernetics the closer to the brain we get. Our reservations about combining with wires and chips also fade away. We bind so well with the technology around us and rely on the systems to do the rest of the work while we sit at the control panel. Phones are no longer used for their original capabilities but as a bridge the connects the user to "information, control, and response".

1. Summarize the distinction(s) from the traditional Klines & Clines definition of the cyborg vs. the one that Clark is proposing as the main thesis of his book?
 - a. Cyborg from Kline and Clines definition is purposely adding external components for extending a self regulating system to aid in adapting to new environments. Clark's definition of a cyborg is that the things do not have to be attached to us but can be tools that we use to help us complete tasks.
2. From The book, "Cyberneticists were especially interested in self-regulating systems." What are 2 or more examples of these, make sure to include both biological systems and also non-biological systems.
 - a. One example of a self regulating system is when the human body begins to work harder and there is less oxygen in our blood, we start to breathe harder and our heart beats faster to pump more oxygen into the bloodstream. Another example is the thermostat system; when the room cools down a circuit is activated and the heater turns on. Similar to thermostat systems, when computers heat up the fans to cool it down start working harder.
3. What other kind of definitions of a hybrid humans are there that are not based on definitions above but popular in literature, media culture, etc.
 - a. Human hybrids often talked about in literature are most common from mythology, specifically centaurs and mermaids.

Chapter 2: Technologies to bond with

Untransparent technologies are not meant to be hidden, but rather are the large, bulky machine parts that we relate/connect to the past. While Transparent technologies are devices that have integrated with our lives that they become invisible, this is ironic to me because we rely on them so much. Similar to opaque and transparent technologies, there are human centered and technology centered products. Human centered products are easy to understand and learn. Technology centered products are a little more difficult to deal with. They are created to complete tasks but it does not matter how well done the tasks are and the creators have to turn them into easy-to-use products for it to sell.

The example of wristwatches is interesting. The reason they are so popular is because it is convenient and personal, we enjoy the convenience of knowing we can look at the time whenever we want. This is a great example of a transparent technology.

1. Summarize a definition as described in the book of what the significant attributes are for 'opaque' technology vs. 'transparent' technology.
 - a. Transparent technology are devices that are easy to learn and teach like a wristwatch. While opaque technologies are more complicated. We need to learn how to use them, they are not very reliable and can be distinguished from self. ie. tower clock
2. Give some examples of technology that might be better served if it were more transparent and also give some example of a technology that should be more opaque.
 - a. If phones were made into an opaque technology I wonder how often we would use them and if we would use them for anything other than calling and messaging. Cars are a transparent technology. Though we need to learn how to drive them in the beginning; later they become an extension of us and our decisions.
3. Does the watch and dictionary example discussed in the book seem valid to you? Why?
 - a. The dictionary and watch example do seem perfectly valid. The only reason why we say yes when asked if we have the time is because we have the watch on our wrist. When asked about a word in the dictionary we say no because we do not have the information readily available.