



Programme Five: Playing at God?

The following transcript contains all to-camera presentation, narration and interviews from the programme first broadcast on Edge Media TV's Controversial TV (Sky channel 200) on 12th January 2010. To ease readability as a transcript, most other parts of the script have been removed.

TITLE SEQUENCE

EXT: ROCKFACE, CAVES & FOREST: DAY

CHRISTOPHER BARNATT (CB) TO CAMERA:

Welcome to Challenging Reality. I'm Chris Barnatt, and in this series we're questioning the certainties of the modern world, and examining the key challenges and opportunities of the future.

As a futurist, I basically try to address two fundamental questions. The first is "how will we live in the future?", whilst the second is "what will we become?" In this programme I'm going to focus on the second of these questions, and the blurring boundaries between human beings and machines.

CAVE PAINTINGS, THEN NATURE & TECHNOLOGY MONTAGE

Since our early ancestors used clubs and spears to kill their prey and each other, the human race has progressed by developing more and more sophisticated technology. Until very recently the differences between technology and ourselves – and more generally between what was "natural" and what was "artificial" --were also extremely clear. However, in the face of rapid developments in biotechnology, genetic engineering, nanotechnology and computing, we now need to adjust to the fact that such definitive boundaries will not exist in the future.

More and more new technologies will be organic, and programmed at the cellular or atomic level. This means that it won't just be the "natural" world that is biological and living, with "artificial" technology always lifeless and inert. It also means that in future it won't only be animals and plants that are able to reproduce and evolve, with technological items always having to be designed and manufactured. With developments in artificial intelligence, it will also one day not only be living organisms that will be smart and able to learn, with artificial technologies always

dumb and in need of human programming. As a consequence, in the future we will share our first planet with living, self-replicating and intelligent technology.

CAVES: CB TO CAMERA

These types of scenarios strike at the very heart of our relationship with the rest of creation. It's therefore not surprising some fear we're beginning to "play at God". After all, until this point in history, only those divine beings that we've worshiped have been deemed capable of having power over life itself.

As we'll explore later in this programme, the fears of those who believe we're starting to interfere with nature are not unfounded, with scientists now starting to experiment with things that until recently were beyond human comprehension, let alone our potential control.

INTER-TITLE: THE NEW INDUSTRIAL CONVERGENCE

STUDIO: CJB TO CAMERA + MOTION GRAPHICS

Futurists use the word "convergence" to refer to a blurring in the boundaries between two or more previously different things. For example, way back in 1980 it was predicted that developments in digital technology would lead to a convergence of computing, communications and publishing and broadcast content. Nicholas Negroponte, the Director of the Media Lab at the Massachusetts Institute of Technology, drew three rings to indicate that at this time the three industries had very few overlaps. He then predicted that due to their reliance on digital technology, only twenty years later they'd be very similar indeed.

Today, humanity and technology are coming together due to what I term the New Industrial Convergence. This refers to a blurring in the boundaries between traditional manufacturing, medicine and computing and communications media. Specifically what I'm signalling is that around 2010, the traditional manufacturing, medicine, and media industries are starting to share some common ground. Further, I'm suggesting that by around 2030 these currently distinct areas of human activity will use many of the same technologies, practices, and scales of operation.

To some extent, the New Industrial Convergence is starting to occur as manufacturing, medicine and media all increasingly use the same digital technology. However, they are also beginning to converge as engineers, doctors and computer scientists all learn to create and program materials, products, media services, and even life itself at a near atomic scale. In time, the kind of work being done by an engineer designing a new material for a building a bridge will therefore not be that different from the labours of a doctor working to genetically reprogram their patient, or computer scientist developing next generation silicon chips. Indeed, we have recently seen developments in computing that combine inorganic technology with synthetic DNA. However, we do not even have to look to such

cutting edge research to find considerable evidence of widespread technological convergence.

INTER-TITLE: OUR EMERGING CYBORG SELVES

MOBILE PHONE MONTAGE + MOTION GRAPHICS

Many people now depend on a wide variety of electronic devices. It's therefore not surprising that Professor Sherry Turkle notes how "In our culture, technology has moved from being a tool to a prosthetic to becoming part of our cyborg selves." Whilst not yet physically implanted, the mobile phone in particular is now a device from which many people are inseparable. New forms of portable and wearable technology are also on the horizon.

INTERVIEW: THOMAS CHESNEY, LECTURER IN INFORMATION SYSTEMS, NOTTINGHAM UNIVERSITY

For a long time people have been used to wearing technology on their bodies – I mean glasses are an example of that. And the modern version of glasses is that you can access, you can view the same thing that you could on any computer screen through your glasses. So the technology exists at the minute that would allow you to check your e-mail, for instance, as you walk down the street. Which may or may not be a good idea, but the technology exists that you could do that. And an extension of that would be with contact lenses. Now we're not quite there with contact lenses yet. But we could imagine that in the future you will be able to access information and to read information and view information and no one else would know that you're actually doing it. You essentially could look at a computer screen at the same time that you're looking at somebody.

NARRATION: Beyond the communication of visual information, wearable technology can now also allow people to physically interact when they are geographically separated. Just one example is the hug shirt.

INTERVIEW: THOMAS CHESNEY

The hug shirt lets you send a hug to someone you love. It uses Bluetooth technology, and the Bluetooth technology sends a hug that you give yourself like this [HUGS HIMSELF] to your mobile phone. The mobile phone sends the information contained in that hug to your friend's mobile phone. And your friend's mobile phone then translates the same hug into pressure that their hug shirt puts on them. So they feel as if you have just hugged them.

HUG SHIRT IMAGES, THEN ROBOTIC HAND

The hug shirt is a first-generation haptic device capable of electronically communicating a sense of touch. Such forms of interface will also one day allow people to feel prosthetic limbs and control robotic bodies. In the future, the

possibility may therefore exist for the creation of a new, technologically augmented form of human being.

INTER-TITLE: THE TRANSHUMAN AGENDA

A group of people called transhumanists believe that we should use all possible technologies to artificially advance the human race. As defined by Nancie Clarke, "transhumanism is a commitment to overcoming human limits in all their forms including extending lifespan, augmenting intelligence ... and gaining the ability to leave the planet."

The Transhuman Agenda may in future be achieved by using genetic engineering and nanotechnology to augment our natural immune systems and reprogram our DNA. Transhuman enhancements could also include brain implants to enhance our mental capacities, as well as the replacement of organic organs with cybernetic body parts.

One major transhuman development is likely to be 3D organ printing. Whilst conventional 3D printers build inorganic objects in layers by solidifying liquids, bonding powders or extruding hot thermoplastics, future 3D organ printers will create living tissue by spraying layers of cells. In the past few years several research teams have modified conventional inkjet technologies and used them to test-print veins, arteries and even working heart muscle. Our ability to artificially synthesise the human body from digital data is therefore edging closer.

LAKESIDE: CB TO CAMERA

It's a very long time indeed since the earliest of our ancestors crawled up out of the water and continued to evolve into higher and higher forms of life. Such a process of species development continues to this day. It's just that gradual, biological adaptation is no longer where the cutting edge of our evolution now is.

Some may fear the artificial adaptation of the human race, whilst others will welcome all forms of transhuman evolution with two or more open arms. Either way, it's now time for us all to engage in a debate about the future of our species whilst there are still decisions left to be made.

END OF PART ONE

PART TWO

LAKESIDE: CB TO CAMERA

Welcome back to Challenging Reality. In Part I we looked at the blurring boundaries between human beings and machines, and how the future of our evolution may be under our control. Having examined what may in future be possible, let's therefore now consider how we may mentally cope with such developments, as well as the rise of cybernetic civilization.

INTER-TITLE: THE FOURTH DISCONTINUITY

MOTION GRAPHICS

During the industrial revolution, machines started to evoke an emotional response in many people. For some, machines were mechanisms to be feared that threatened jobs and tradition. However, others were fascinated by machines as a source of great power and opportunity.

Today, technology continues to be both loathed and welcomed, with the growing similarities between ourselves and machines starting to provoke considerable debate. Whilst most books on the topic are an interesting and sometimes disturbing read, by far the most significant is *The Fourth Discontinuity* by Bruce Mazlish.

Mazlish examines the way in which humanity has constantly wrestled with the boundaries of its own identity. He begins by considering how we once believed ourselves to be separate from the rest of creation. However, this First Discontinuity was challenged when 16th century astronomer Nicolaus Copernicus proposed his theory of heliocentrism -- with the Earth rotating around the Sun and not the other way around.

A Second Discontinuity to be challenged was the belief that human beings were entirely distinct from the animal kingdom. However, when Charles Darwin proposed his theory of evolution, a radical questioning of humanity's uniqueness was once again triggered. To the alarm of many, Darwin proclaimed a new order in which human beings had evolved from lower species. He was therefore disputing God and Genesis as the force behind our creation.

Yet a Third Discontinuity was crossed when Sigmund Freud questioned any absolute divide between our conscious and sub-conscious selves. Freud forged a rational science out of the irrationality of language and dreams. He thereby exposed human beings as psychological as well as physiological creatures not always in conscious control.

According to Mazlish we will soon break past a Fourth Discontinuity by accepting that there's no absolute divide between human beings and artificial technology. This does not mean that human beings and machines will ever be the same.

However, it does imply that a spectrum will exist with human beings at one end, machines at the other, and no clear boundary in-between.

In defence of his argument Mazlish states that it's no longer realistic to think of humans without machines. He also suggests that the same concepts and processes are involved in the workings of human beings and new technology, with any absolute distinction thereby being bridged.

INTER-TITLE: THE PLANETARY MACHINE

METAMAN MONTAGE

The first sign that we are crossing the Fourth Discontinuity — that it's no longer possible to think of human beings without machines — is demonstrated by our reliance on the interconnected systems of global civilization. As explored in previous programmes, humanity and technology have already become a global cyborg that Gregory Stock has named Metaman.

All of us depend on the continued functioning of the Metaman super-organism. Not least, all modern cities would descend into anarchy in a few days if Metaman's water, transportation, power and communications infrastructures ceased to operate. Some may claim the ability to live independently. However, in practice we have all long since passed the point of irrevocable mass interdependence.

Metaman is already a cybernetic creature that negates the Fourth Discontinuity by spanning any possible divide between human beings and technology. It also now has an increasingly sophisticated nervous system in the form of the ever-expanding Internet.

Human beings click on a web link billions of times a day. Each click causes a disk drive head move and seek or write data. However, each click also teaches Metaman by forging another electronic connection between technology and ourselves.

INTER-TITLE: THE INVITED PANOPTICON?

MONTAGE OF CCTV CAMERAS, PLUS 3D PANOPTICON GRAPHICS

Today, Metaman not only has an increasingly sophisticated nervous system but also a great many eyes. Soon vision recognition technology will allow the tracking of people and objects from camera data. Metaman may therefore become a global surveillance machine.

Way back in the 18th century moral philosopher Jeremy Bentham first conceived the idea of a panoptic structure. He envisaged panopticons as prisons or other institutions within which every inmate may be subject to constant observation. Bentham's plans were put into effect in Russia in 1787 when a polygon-shaped factory was built around a central watchtower. Mirrors were positioned to provide

additional lines of sight, allowing those at the top of the tower the opportunity to continually observe workers. "Universal transparency" was therefore achieved, with the panopticon inducing a conscious state of permanent surveillance. The behaviour of the panopticon's inhabitants thereby started to change.

We may well have welcomed cameras into our public places to allow us to feel more safe. However, the implication may be the emergence of an invited global panopticon. The universal transparency of surveillance society is today already starting to arrive. A major implication of our growing interconnection may therefore be a potential for constant surveillance that changes human behaviour.

INTER-TITLE: LIVING WITH THINKING MACHINE

AI MONTAGE

Also due to mass interconnection, the possibility may one day exist for the Internet to become a single, sentient creature. However, even if this does not occur, it seems inevitable that the human race will give birth to thinking machines.

Sometime this decade the devices on our desktops and in our pockets will have as many transistors as there are neurons in the human brain. This will not by itself make our technology intelligent. However, it will offer an incredible artificial intelligence potential. Even if we don't technologically augment the human species, the distinction between human beings and technology will therefore continue to blur as smart machines become more like us.

We don't yet know if the first sentient artificial intelligences will be based on today's silicon hardware, or perhaps biocomputer chips built from synthetic DNA. We also have no idea what kinds of thoughts artificial intelligences may think. However, we are already preparing to share our first planet with another species. For example, in 2007 South Korea started to write a code of ethics to protect robots from abuse by humans.

Given the level of regulation that governs genetic engineering, it's surprising how the development of artificial intelligence receives no regulation. In other words, whilst the actions of those who tinker with existing life may be closely monitored, scientists who are working to introduce a second race of intelligent beings to planet Earth are simply not scrutinised. This is not to suggest that they necessarily should be. However, as the Fourth Discontinuity is crossed, this moral inconsistency not be sustainable.

INTER-TITLE: KEEPING PANDORA'S BOX SHUT?

CG PANDORA'S BOX GRAPHICS

In Greek mythology, the first woman — Pandora — was given a beautiful box by Zeus, the King of the Gods. The only condition was that the box was never opened.

Unfortunately, as Zeus had anticipated, Pandora's curiosity was so powerful that she opened the box, so releasing death, disease, and all the other evils of mankind.

Today, our own Pandora' box of technological possibility is brimming with a great many temptations. As our sciences and knowledge converge, the potential will soon exist to control the complexities of our own biology, to create new forms of intelligent life, and so to become Gods ourselves. We may, however, still have time to question whether we really ought to do this.

CAVES: CB TO CAMERA

The Pandora's boxes of the world's greatest research labs are unlikely to be held shut so long as capitalism continues to mediate our lives. This said, whatever some may fear, new technology development by itself will never do anything to our humanity. However, it is likely that we will continue to choose to do things to our humanity with new technology. In other words, the extent to which the cyborg will emerge is therefore up to us, with the future evolution of the human race resting in all of our hands.

END CREDITS

END

"Challenging Reality: Programme Five – Playing at God?" written by and copyright © Christopher Barnatt 2009.

This transcript published online by ExplainingTheFuture.com.

TV programme first broadcast in the UK by Edge Media TV's Controversial TV on Sky Channel 200, 2th January 2010.

This document may be freely cited and distributed provided that the source is acknowledged.

- o O o -

CHRISTOPHER BARNATT is an lecturer and futurist currently working in Nottingham University Business School in the United Kingdom. He is the author of five books and the websites ExplainingTheFuture.com and ExplainingComputers.com.

For more information, please see www.ExplainingTheFuture.com/reality