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The world that we are facing is one that we won't necessarily be comfortable with.

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I honestly think we're reaching an adapter dive point.

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There is no reason to believe our present stage of development is the end of the line.

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What we evolved to may not look like the present human race anymore than we are like the apes,

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but they will be our direct descendants.

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We've met the enemy in a dive.

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Great hulking factories, monuments to efficiency in the golden promise of the industrial age.

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This was high technology, circa 1940, but in less than a lifetime, the future that was built for us is obsolete.

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Hello, I'm Tim White, and on this special edition of Sightings, the future. Where do we go from here?

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On this special edition of Sightings, the future, genetic perfection achieved.

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We can expect biological and electronic components to come together in the future to create super organisms that will be a new form of life.

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The future, human beings become heart machine.

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What if we've got this nice interface between us and the machine which allows us to think in the machine world?

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Then we're effectively a different species.

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The future, secrets of immortality are revealed.

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Perhaps in the future you'll go to the doctor and simply get a shot by which you can begin to change your genetic makeup to perhaps extend the human lifespan.

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The future, silicon chips and human brain cells mate.

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The project currently is to develop computer chips that will function just like a part of the brain.

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The future, artificial intelligence, humanoid robots, behavior modification, warring machines, replaceable body parts, download your brain, live forever.

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Imagine a whole body that's there and can't be hurt and yet it still has your soul and your brain in it. It's a whole new human race.

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Or are we engineering our own demise?

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In the future battlefield I'll be out there and a terminated robot will walk up to you with a huge weapon, shake my hand and then it'll blow me away.

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It's not fiction. The future is now. But is it the end of humanity or the next step in human evolution?

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Stuff that sounds insane right now is probably going to happen in another 15 or 20 years.

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It's a sighting special in depth and beyond. Biopropection, building the new human race.

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This silent, rusting dinosaur of the 20th century is extinct as foretold not by the great thinkers of our day, but by street corner prophets.

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The end is near, they proclaim. And as the 21st century approaches, some say the end is now.

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The end is near.

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This is the future as predicted by the prophets of the past, war, fire, panic, plague.

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And in this frightening millennial vision, it's two minutes till apocalypse.

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Chief among these doomsday predictors is Michel Nostradamus. He's been dead for more than 400 years, but his prophetic words still resonate.

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Perhaps because Nostradamus' predictions have been so accurate. Perhaps because his vision of the 21st century is so disturbing.

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Nostradamus went into print during the 16th century and he has stayed in print continuously for those 400 years until today.

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I believe the main reason why Nostradamus has been so popular is because he's been so successful.

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Author John Hoog has spent more than 20 years interpreting the cryptic prophecies of Nostradamus.

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The interest people have now for four and a half centuries almost of Nostradamus comes from two factors.

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He's so obscure that every generation can pin some idea of the future on him.

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And there are a few hundred of his prophecies that aren't obscure at all.

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That name names, mention dates, mention things that are beyond chance,

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which shows that whatever he's hiding behind that, which is brew of syntax, may be quantum futures that we can access.

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Accessing that future may never be more important than it is right now.

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According to Nostradamus, the year 1999 is the beginning of the end.

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In the year 2000, they're about something is going to end, but it's not the world.

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It may be the world that we understand now, but it's not the world outside, it's the world inside.

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Is it possible that the 16th century prophet who foretold the rise and fall of the Third Reich

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has also left us an equally accurate warning about what will happen when the Tuesday clock strikes 12?

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Other ancient systems of prophecy seem to support Nostradamus.

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There are many time cycles coming to an end.

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The most famous is the Mayan calendar. It's also the most accurate. 2012 time ends.

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The Maya calendar runs out in the year 2012.

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Is this a message from the past about our future? Is 2012 the end of time or the end of us?

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What I think about that is that time, at least as far as the ancient and dead Mayans are concerned, is ending.

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But time will not end. Time will renew. A new cycle is coming, a new age.

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And strikingly similar predictions about this new age have been passed down for centuries from shaman to shaman in the remote Andes.

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When the Spanish came, we knew there was going to be a period of darkness.

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That period, when the Spanish arrived, is known as the 9th Pachacute, and our leaders knew it would come.

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My people knew that a time of darkness was coming.

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Don Videl Sanchez is a Peruvian shaman whose ancestors were part of the great incarnation of Peru.

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His people are the people of Machu Picchu.

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He is descended from prophets who foretold their own demise at the hands of conquistadors and who passed down to Don Sanchez, their vision of the next millennium.

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The era of the 9th Pachacute ended in 1992, after 500 years, and then began the 10th Pachacute.

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According to the Mayans and the Incas, the earth must change by the year 2013.

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This new era will last for four and a half million years.

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And after that will be the end of that era, but not the end of the world.

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For indigenous peoples around the world, the earth continues to turn and nature continues to take its course.

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Their prophecies are based on the inevitabilities of their natural world, but in a world ruled by technology, who is looking into our future?

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I thought that if we could predict the future, we would be less anxious about it.

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In the late 20th century, one man has brought technology and prophecy together for the first time.

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Terence McKenna is a writer and researcher who has developed a vision of the future that is alarming in its eerie similarity to what the Maya calendar has predicted.

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McKenna's calendar, called the Time Wave, is based on the Chinese fortune telling system called the Yi Qing.

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And according to the Time Wave, the end is very near.

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The creation of the Time Wave arose out of thinking about the Yi Qing, thinking about the way the hexagrams of the Yi Qing are arranged.

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And out of that came a mathematical algorithm that obviously wanted to be a calendar.

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And when I looked at it as a calendar, I saw that it described the ebb and flow of change in history.

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In the Yi Qing, mathematical patterns called hexagrams trace the ups and downs of human life.

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But when applied to the timeline of history, the Yi Qing seems to trace the ups and downs of all humanity.

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Here, 1356, the Black Death, a third of the population of Europe, dies.

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And here, the culmination of the Italian Renaissance in 1492 with the discovery of the New World.

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Over here, the American and the French revolutions. Here's World War II. And here's us.

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McKenna says that his Time Wave doesn't distinguish between the past and the future, and that it successfully marks all of history's most significant events.

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So the predictions of the past give us confidence that what it's saying about the future will also turn out to be true.

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On exactly December 21st, 2012, the year the Mayas said would be the end of time,

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McKenna's Time Wave calendar dips off the chart into infinity. Is this the apocalypse?

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I predict the most novel event in the history of the world in 2012. I don't see it in this day.

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We see enormous concentration of novel change. And for a conservative mind, that might look like Doomsday.

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But it isn't Doomsday. It's simply that we are moving deeper and deeper into uncharted territory, novel territory.

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And that's frightening to some people and exhilarating to others.

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So where exactly is this uncharted territory on the millennial frontier?

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Many great thinkers say it can be found just beyond the intersection of humanity and technology.

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In the last 2,000 years of science, we've been observers to the dance of nature.

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We've wondered, why is it that things grow? Why is it the sun shines? Why is it that our brains can function?

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For the last 2,000 years, those were unsolvable mysteries. In the next period of time, we will be able to manipulate matter, life and intelligence almost at will.

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I do think we are at a crossroads. I think that we are rapidly maturing to the point where we might be wise enough to deal with some of the terrible decisions we're going to have to make.

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We passed one big test. We didn't blow up the world during 50 years of nuclear brinksmanship. That's one for us.

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Now we're going to have to pass tests dealing with cloning, nanotechnology, organic engineering, biological warfare, the communications revolution.

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We're going to have to pass all these tests over the course of the next 50 years.

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But who will we be in 2012, 2050 and beyond? Will we still be all flesh and blood or will we be part human, part machine?

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Will computers control us in the same way that we now dominate and control the animal kingdom?

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Are we at humanity's end or is this the beginning of a new stage in the evolution of the species and the planet?

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We now have the scientific expertise and the technical capacity to produce paradise or hell on this planet.

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That's the source of our anxiety about the future because we know that it belongs to us.

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What will we build from the raw materials of the present? How will we configure the world if technology is God and clean rooms are our houses of worship?

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No one knows, especially since we're only now beginning to understand what the choices are.

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Biological perfection, behavior modification. Are we playing genetic roulette trying to create the new human?

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Later, rebuilding the species with spare parts, the era of the bionic human is coming.

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I could see it happening and then you're really going to have superhuman.

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When Henry Ford perfected the assembly line at the turn of the last century, he single-handedly created an industrial complex that transformed the world.

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At the turn of the next century, scientists are predicting Ford's assembly line mentality will remain alive and well, cranking out rubber-stamped humans.

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Up to the past to the present day period of time, we were basically observers of nature. We could only look and wonder about the dance of nature.

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Today, we are becoming master choreographers of nature. We're able to manipulate life for the first time in terms of DNA.

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Right now, in thousands of laboratories around the world, scientists, corporations and governments are manipulating life at the genetic level, creating novel new forms of bacteria and viruses, creating novel new forms of plants, creating new transgenic animals,

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and now even beginning to use genetic surgery to change the genetic constructions of human beings.

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The day is fast approaching when we will no longer be able to let nature take its course because nature is no match for genetic manipulation.

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Through the Human Genome Project, I believe we're really opening the door to looking at our own genetics and we're going to manipulate it.

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Well underway at the National Institutes of Health, the Human Genome Project is a monumental undertaking that is mapping the more than 100,000 genes in the human body.

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Any criteria they come up with is still based on the idea of creating a more perfect, more efficient organism so that you cannot really divorce the discussion of eugenics from this new technology.

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Nazi Germany funded the earliest research into eugenics. They attempted to create superior humans by breeding children from exemplary Aryans, and by slaughtering millions of people they considered inferior.

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I think actually what's very interesting about the Nazis and their appalling attempts at eugenics is that in fact virtually all the science they did was almost entirely useless.

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None of their genetic or breeding work I think has had any impact at all, and so there's an added impetus to protect society from that sort of experimentation.

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The Nazis had the point of view that if you weren't of the right biological type, they were going to kill you, or castrate you or something, and that's me loath them.

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And as an evolutionary biologist I think it's a disaster because you need as much variation as you can get.

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But if Hitler's diabolical research machine had had today's knowledge of genetics, it may very well

have succeeded in creating carbon copy Nazis.

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And with the imminent breaking of the genetic code, any future manipulator of our human destiny will have control on a molecular level.

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By the year 2005, the first human will have a complete readout of all 100,000 or so genes.

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And by the year 2010, we're going to have many of the 5,000 genetic defects like Tay-Sachs, sicklecellenemia, cystic fibrosis, completely deciphered.

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And then by the year 2020, magic is going to happen.

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By the year 2020, we'll have the ability to have individual genetic printouts.

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Even without a complete map of our genetic code, gene manipulation of plants and animals is already

underway.

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From the fruits and vegetables we farm to the pigs and cows we breed, genetic restructuring is commonplace.

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So how long will it be before someone, somewhere, begins to work on humans?

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To clone people, all you have to have is \$10,000 and a bachelor's degree in genetic engineering.

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That's all it takes to begin the process of cloning.

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So I think there are very large potential dangers if this gets out of control.

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The possibility of cloning with humans is imminent.

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It's going to happen next year, the year after. It's going to happen somewhere very soon.

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So what will our cloned world look like? Will you walk into a bar and see perfect pairs of perfect people?

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We always say our motto in the restaurant is you can only make a first impression once, we make it twice.

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And we're looking for triplets now, so we have a pair with this bear so if one gets sick we have two left.

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But we also specialize in single-mold scotches because it's the only single thing we have in the restaurant besides two of ours.

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And if one were to have a clone, what would your relationship be to that person?

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It's like having your most annoying quality standing next to you for the rest of your life but you can't get rid of it and you can't divorce them.

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I think people misunderstand cloning if they think that the second person or the third person who comes into being as a replica of the first

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is the same person in some way, physically, religiously, spiritually.

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Religiously you would say no, they don't have the same soul but also physically they don't have the same brain or brain patterns or the same experiences.

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Will we use cloning to create cloned drones who can be trained to perform the mundane tasks that we superior humans load?

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Or will we keep a cloned body on ice from which we can harvest spare parts?

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The vision actually is of a human sort of biomorph, a brain-dead human being that's grown for body parts which is really grotesque vision of the future.

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And it's something that's very, very likely to happen.

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And with mice, an elementary form of this kind of biomorphing is happening right now at the University of Southern California.

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USC researchers may have isolated the genes responsible for pathological violence and have bred them into these mice.

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They are called super-thug mice and if left alone long enough, these transgenic mutations will tear each other limb from limb.

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So we'll have tremendous impact in the future because right now we don't understand that much about

the molecular basis of these behaviors.

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And once we understand that, we can design treatment for these behaviors and modify the behavior and that will help the society.

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The goal is to breed out sociopathic behaviors and then to breed in those biological qualities humans lack or just want more of.

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Within about 10 years or so, we should isolate the main genes concerning aging and perhaps within 20 years we'll begin to see the manipulation of these with gene therapy.

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Perhaps in the future you'll go to the doctor and simply get a shot, just like you get an antibiotic shot today, or a vaccine, a shot by which you can begin to change your genetic makeup to perhaps extend the human lifespan.

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The biological clock is ticking for all of us and no one understands this better than Dr. Michael Rose.

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He has spent the last 20 years trying to unlock the genetic code for aging.

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Ultimately, through breathing experiments with fruit flies, Dr. Rose believes he will be able to slow down or even reverse a process that has always been thought to be irreversible.

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Nobody, when I started, knew that people could do what I have been doing for the last two decades and people still don't.

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People still don't know that aging is something we can easily control, manipulate in shape and it's no fundamental deal.

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Most of all, I just myself included 20 years of thought.

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Aging was a really fundamental preset feature of each particular organism's life.

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Couldn't change it.

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No, we can change it.

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The fruit flies that Dr. Rose is breathing now will live twice as long as normal flies.

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If an equivalent breathing program were applied to humans, we would live for 200 years.

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One way to put it is to say when normal flies are 90% dead, 80% of these flies are still alive and leading very vigorous lives.

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They're acting like young flies and they act like young flies for a very long time indeed.

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Given current advances in gene manipulation and pharmaceutical research, Dr. Rose believes that in the future, it will not be uncommon to meet someone who is 200, 300 or even 400 years old.

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Consider this, in the last 150 years alone, we've already doubled the human lifespan.

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There's almost no question about what's going to happen.

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Somebody working with some simple organism, whether it's a mouse or a fruit fly, will discover a particular pathway that is associated with greatly increased lifespan.

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And they will discover pharmaceuticals that intervene in that pathway, that you can produce the change synthetically without doing a genetic change.

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And then they will try that pharmaceutical in humans.

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While science continues to make tremendous strides in life extension experiments, relatively little attention is being paid to what impact those experiments will have on society and on the planet itself.

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We pose that dilemma to one of the greatest thinkers of the 20th century, physicist Dr. Stephen Pockey.

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If we want to live forever, there's an awful lot to fix.

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Anyway, living forever wouldn't be much good.

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With human development through genetic engineering, one would soon get hopelessly obsolete.

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An awful lot of time and money is being spent on genetic engineering and genetic manipulation, while very little has been done to develop a real working code of ethics.

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This is the most powerful technology ever conceived by the human race.

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We now are on the cusp of a new era where we can become the architects in part of our own biological destiny.

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What are the environmental implications?

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The philosophical, ethical and moral implications?

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00:24:17,000 --> 00:24:24,000

The social and cultural implications of playing God with the genetic code of the biology of this planet?

187

00:24:25,000 --> 00:24:32,000

If you place a genetically engineered bacteria or virus or even a plant into ecosystems and then it runs amuck, how do you clean it up?

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00:24:32,000 --> 00:24:36,000

How do you constrain it? How do you bring it back to the lab?

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00:24:36,000 --> 00:24:42,000

So because they're alive, they reproduce, they mutate, they migrate, you can't recall them to the laboratory.

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00:24:42,000 --> 00:24:44,000

We're dealing with ecological roulette.

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00:24:44,000 --> 00:24:48,000

Every time we place a novel genetically engineered organism into the environment.

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00:24:49,000 --> 00:24:55,000

What's really frightening is that at this point, no one's minding the store of human knowledge.

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00:24:55,000 --> 00:25:04,000

It's up to the individuals who are creating the future to decide, is it working? Is it sane? Is it moral?

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00:25:04,000 --> 00:25:10,000

Coming up next on Sightings, out of disaster, the bionic human is born.

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00:25:10,000 --> 00:25:14,000

It's a future where disability is eliminated with spare parts.

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00:25:14,000 --> 00:25:21,000

Maybe in 40 years I won't need to worry about an organic hand, maybe I'll just be able to get some kind of mechanical contrivance.

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00:25:35,000 --> 00:25:40,000

In the 20th century, machines were the slave of humankind.

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00:25:40,000 --> 00:25:44,000

Silent partners, ours to command the push of a button.

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00:25:44,000 --> 00:25:51,000

Well now the lines are being blurred because scientists are experimenting with new ways of merging man and machine.

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00:25:51,000 --> 00:25:55,000

The goal to cheat disability and death.

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00:25:55,000 --> 00:26:10,000

A violent accident, the pilot's fragile body blown apart.

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00:26:10,000 --> 00:26:18,000

In speculative fiction, television and film, from this disaster would come a bionic human, a cyborg, part man, part machine.

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00:26:18,000 --> 00:26:27,000

A human replicant, refashioned in a medical workshop out of spare parts to house a brain that needs a body to survive.

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00:26:27,000 --> 00:26:35,000

And it's happening right now. We may not be quite ready to create the \$6 million man, at least not for that price,

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00:26:35,000 --> 00:26:44,000

but we are on the verge of a future where we will not only re-engineer who we are, but also rebuild ourselves in an infinite number of ways.

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00:26:49,000 --> 00:26:56,000

A discus thrower, a surfer, pioneers on the frontier of physical empowerment.

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00:26:56,000 --> 00:27:03,000

Each has been changed, augmented, enhanced they would tell you, through advances in biological technology.

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00:27:03,000 --> 00:27:09,000

Bionics, prosthetics and microsurgery are merging and changing lives.

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00:27:10,000 --> 00:27:14,000

Sean Brown is an amateur athlete at Mesa College in Arizona.

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00:27:14,000 --> 00:27:22,000

When he's not competing in track and field at football, Brown is helping to develop new and better body parts based on his personal experiences.

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00:27:22,000 --> 00:27:30,000

Sean has worn a prosthetic left leg since 1991, and in that time he's set a number of world records throwing the discus.

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00:27:30,000 --> 00:27:34,000

In fact, Brown throws farther on his prosthetic leg than he ever did before.

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00:27:35,000 --> 00:27:42,000

When I got a hold of the list of the world records, it was down around 144 feet or something like that, like 44 meters,

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00:27:42,000 --> 00:27:46,000

which I knew I could throw that without even a day of training.

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00:27:46,000 --> 00:27:52,000

So I knew that there was an opportunity for me to come in and establish myself as a dominant discus thrower.

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00:27:52,000 --> 00:27:57,000

And it wasn't just winning at the time, it was just breaking a world record.

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00:27:57,000 --> 00:28:00,000

I was fortunate enough to have eight consecutive world records.

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00:28:04,000 --> 00:28:07,000

Nicolette Gibson was born without her right arm.

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00:28:07,000 --> 00:28:12,000

As a child, she was fitted with one of the very first myoelectric prosthetic arms.

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00:28:12,000 --> 00:28:15,000

She sees herself as a biotech pioneer.

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00:28:15,000 --> 00:28:19,000

I think it's been a benefit growing up with it, actually.

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00:28:19,000 --> 00:28:21,000

Part of it's been that I've overcome it.

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00:28:21,000 --> 00:28:23,000

And so, you know, it gives me a lot of confidence.

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00:28:23,000 --> 00:28:28,000

Like, I can go out there and surf, and I was a professional snowboarder and a nationally ranked tennis player,

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00:28:28,000 --> 00:28:33,000

and I got a lot more attention than anyone else that was a professional snowboarder.

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00:28:33,000 --> 00:28:37,000

Because, you know, it was like I'd gone one step further than them.

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00:28:37,000 --> 00:28:41,000

Tom Goothe heads RGP Prosthetics Research Center.

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00:28:41,000 --> 00:28:49,000

For the past 30 years, he has been designing, engineering, and fitting state-of-the-art prostheses for physically active men and women.

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00:28:49,000 --> 00:28:55,000

As a result, Dr. Goothe has gotten comfortable with creating the impossible, whether for now or in the near future.

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00:28:55,000 --> 00:28:59,000

I've always taken an interest in athletes for two reasons.

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00:28:59,000 --> 00:29:04,000

One is they're asking me to do things that most prosthetists will tell their amputees they can't

do.

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00:29:04,000 --> 00:29:11,000

And so I thought, well, this challenges me because I have to create something for these people that seems impossible.

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00:29:11,000 --> 00:29:17,000

We're working with another doctor over here at the university, and he's mapping the brain.

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00:29:17,000 --> 00:29:22,000

And he was using arm amputees because in our brain we're finding out what makes what function,

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00:29:22,000 --> 00:29:25,000

and what they're trying to do is enhance that.

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00:29:25,000 --> 00:29:32,000

Well, prosthetics will be able to enhance that once they get to the point where they're put on a permanent, more like a Luke Skywalker.

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00:29:32,000 --> 00:29:38,000

So you'd actually have a stronger arm or hand than a normal person.

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00:29:38,000 --> 00:29:43,000

I'll probably end up, you know, having a better, stronger arm than everyone else out there.

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00:29:43,000 --> 00:29:48,000

And that's kind of what I'm hoping for down the line when they can make an arm that lets go quickly,

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00:29:48,000 --> 00:29:54,000

and that is waterproof, and definitely I'll have superpowers to something like that.

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00:29:54,000 --> 00:29:59,000

I think what you're going to end up having is a prosthesis implanted on a patient.

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00:29:59,000 --> 00:30:06,000

And the thing that's going to, has been stopping that from happening is the fact that we have no artificial skin

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00:30:06,000 --> 00:30:10,000

that will group up to the regular skin and grow together.

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00:30:10,000 --> 00:30:15,000

I don't know what year that'll happen, but it will happen, and the skin will cover the whole thing,

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00:30:15,000 --> 00:30:20,000

and it'll heal itself if it gets punctured. That's probably where prosthetics will go.

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00:30:20,000 --> 00:30:25,000

But the day they have it on the market where you can go in and get the bionic leg made

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00:30:25,000 --> 00:30:31,000

and cover it with actual flesh, I'd probably be the first to go for it.

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Judging by how much it's moved in the last 20 years, it wouldn't be unrealistic to say that it could be in the next 20.

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00:30:38,000 --> 00:30:43,000

The mechanics of artificial limbs are nearly as sophisticated as real flesh and blood,

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00:30:43,000 --> 00:30:46,000

so the next step for researchers is inevitable.

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00:30:46,000 --> 00:30:50,000

I thought, well, what's going to happen? Are we going to have limb transplants down the road?

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00:30:50,000 --> 00:30:55,000

Are we going to be generically able to regrow our limbs? We know that the DNA is all there.

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00:30:55,000 --> 00:31:00,000

How come it stops after birth? How come after a couple of years we don't grow anymore?

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00:31:00,000 --> 00:31:04,000

And actually I met a few doctors that were working on those projects.

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00:31:04,000 --> 00:31:10,000

An arm transplant. That's what I really want. Let me know if anyone out there is finding one.

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00:31:10,000 --> 00:31:12,000

That would be ideal.

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00:31:12,000 --> 00:31:18,000

For Gibson, transplantation seems more like a dream than a realistic possibility.

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00:31:18,000 --> 00:31:23,000

But for engineer Mark Pauline, this seemingly impossible has already happened.

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00:31:23,000 --> 00:31:30,000

While experimenting with an engine and highly volatile fuel, Pauline lost most of his hand in a devastating explosion.

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00:31:30,000 --> 00:31:35,000

I was tapping a pin out and it detonated and practically killed me.

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00:31:35,000 --> 00:31:41,000

And it blew all the fingers off of my hand, except for this one, which they were able to reattach.

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00:31:41,000 --> 00:31:44,000

I had a part taken off my back to replace this.

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00:31:44,000 --> 00:31:53,000

And I had a toe from one foot and a toe from another foot placed on my hand, where I can see them more easily.

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00:31:53,000 --> 00:32:03,000

It's not a pretty sight. One which Pauline hopes to rectify by being the first to have a complete hand transplant with breakthrough micro-surgery.

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00:32:03,000 --> 00:32:11,000

I'm the first in line. Once the technology is mature enough that I won't be making a horrible mistake by doing that,

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00:32:11,000 --> 00:32:16,000

I'll be one of the first in line to get someone a cadaver's hand installed.

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00:32:16,000 --> 00:32:19,000

And so I'm looking forward to that.

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00:32:19,000 --> 00:32:27,000

It is theoretically and technically possible right now to take a donor hand and put it on someone else's body.

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00:32:27,000 --> 00:32:33,000

The issues with that are rejection issues and there are emotional and psychological issues.

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00:32:33,000 --> 00:32:39,000

The person would have to be looking at somebody else's hand on a daily basis, somebody else's tissue and flesh,

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00:32:39,000 --> 00:32:44,000

and there would certainly be emotional, moral and ethical implications with that.

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00:32:44,000 --> 00:32:50,000

And then again, maybe in 40 years I won't need to worry about an organic hand.

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00:32:50,000 --> 00:32:55,000

Maybe I'll just be able to get some kind of mechanical contrivance, which would be that much better.

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00:32:56,000 --> 00:32:58,000

Certainly an interesting horse race.

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00:32:58,000 --> 00:33:04,000

I think that is a reality and I think the prosthetics will be implanted. You won't be able to tell the difference.

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00:33:04,000 --> 00:33:09,000

I'd say the year 2050 will be getting close to that.

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00:33:09,000 --> 00:33:18,000

With astounding advances in medical and mechanical technology and with brilliant and courageous men and women willing to push the biological envelope,

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00:33:18,000 --> 00:33:21,000

it appears that the sky's the limit.

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00:33:21,000 --> 00:33:27,000

You mean are you ever going to be able to go to the shelf and get a body part and put it on somebody?

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00:33:27,000 --> 00:33:31,000

Right now I can't envision that, but you certainly never know.

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00:33:31,000 --> 00:33:41,000

The real issue with that is going to be moral and ethical issues that I think probably are going to need to be dealt with ahead of time.

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00:33:41,000 --> 00:33:46,000

Some people think that perhaps we are going to be creating our future bodies.

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00:33:46,000 --> 00:33:50,000

Perhaps one of these days we will merge with our creation.

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00:33:50,000 --> 00:33:55,000

Already it's possible to have artificial hands, artificial legs made out of steel.

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00:33:55,000 --> 00:34:00,000

Maybe one of these days we'll trade in bodies of flesh for bodies of steel,

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00:34:00,000 --> 00:34:04,000

because that will give us in some sense a form of immortality.

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00:34:04,000 --> 00:34:11,000

I could see it happening and then you're really going to have superhumans because it starts with an arm that gives me more power.

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00:34:11,000 --> 00:34:21,000

I mean imagine a whole body that's there and can't be hurt and waterproof and stronger and yet it still has your soul and your brain in it.

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00:34:21,000 --> 00:34:24,000

It's a whole new human race, right?

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00:34:26,000 --> 00:34:33,000

At the University of Cambridge, some of humanity's most basic prejudices are being redefined for the future.

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00:34:33,000 --> 00:34:35,000

Among them, what is disability?

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00:34:35,000 --> 00:34:46,000

At the Department for Applied Mathematics and Theoretical Physics, a man whose body is wracked by disease can still communicate his revolutionary discoveries about the birth of the universe.

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00:34:47,000 --> 00:34:51,000

Dr. Stephen J. Hawking has Lou Garrick's disease.

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00:34:51,000 --> 00:34:56,000

He cannot speak, can move only a few muscles and yet his brilliant mind is undamaged.

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00:34:56,000 --> 00:35:04,000

He communicates to the world through a process of word selection on a computer, which then translates the signal to voice synthesizer.

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00:35:04,000 --> 00:35:08,000

I would expect the total Hamiltonian would be gauged invariant.

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00:35:08,000 --> 00:35:14,000

A newer version uses the world's smallest Pentium computer designed at Cambridge Adaptive Communications.

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00:35:14,000 --> 00:35:20,000

Here, they specialize in freeing the mind from the constraints of an uncooperative body.

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00:35:20,000 --> 00:35:29,000

It's all about allowing people who may be trapped because of their physical disabilities, it's

going to allow them to start communicating with the outside world.

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00:35:29,000 --> 00:35:34,000

I think it all helps towards making disabled people more equal.

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00:35:34,000 --> 00:35:41,000

And now, Cambridge Adaptive Communications is taking Dr. Hawking's communication system one step further.

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00:35:41,000 --> 00:35:45,000

They've put a computer directly into a man's brain.

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00:35:45,000 --> 00:35:54,000

This gentleman has had to put into his brain as a small sensor on the surface of his brain that is going to pick up signals from him thinking.

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00:35:54,000 --> 00:36:02,000

Paralyzed from the neck down in a motorcycle accident, Peter Gannicott is the first person to have a silicon chip implanted directly into his brain.

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00:36:02,000 --> 00:36:07,000

There's a relay board and various interface bits of electronics inside his body.

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00:36:07,000 --> 00:36:12,000

And he's actually just sending that as a radio signal, which can then be just translated into a switch press.

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00:36:12,000 --> 00:36:16,000

The switch is designed to function just like Dr. Hawking's clicker.

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But before it can, the challenge will be to train Gannicott's mind to manipulate the chip in his brain through the electrical impulses of thought alone, a true merging of man and machine.

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At USC, another team of researchers is attempting to also merge man and machine.

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But this experiment goes one giant step further. The goal is to replace dysfunctional brain cells with computer chips.

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The project currently is to develop computer chips that will function just like a part of the brain called the hippocampus, which is responsible for forming new memories.

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It's the part of the brain you need to learn a new word to associate a name with a face or to remember a phone number.

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What these scientists are doing is creating mathematical models of these functions and then duplicating them in a computer.

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Once the computer can mimic these functions, it may be possible to download them back into a damaged brain.

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What we're now doing is trying to develop a brand new kind of computer chip that will serve as the interface between this computer model that we have and the real brain.

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And so the idea is to develop a set of computer chips that will mimic a brain function and then to be able to plug that computer model back into the brain.

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To essentially take the place of damaged brain regions or dysfunctional brain regions and to replace brain parts.

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We're building replacement parts for the brain, basically.

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The long-term goal is to implant the silicon neurons into living brain or living spinal cord.

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00:37:47,000 --> 00:37:55,000

A real challenge is how then now to bring biological neurons to interface and connect with the silicon neurons.

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To do that, what we've begun to do is to grow neurons onto these silicon chips that have electrodes placed on top of them.

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Yes, that's right. We are now growing brain cells on computer chips.

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00:38:09,000 --> 00:38:14,000

We're doing that so that we can create this interface between real brain cells and our computer chips.

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00:38:14,000 --> 00:38:19,000

And it's through that kind of interface that we hope to connect our computer models back up to the brain.

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Who will be a candidate for this new computer brain interface?

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00:38:23,000 --> 00:38:26,000

Will the technology be used only for the severely disabled?

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Or is it possible that the vast majority of end users will be people who simply want to be smarter?

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00:38:31,000 --> 00:38:38,000

But I think the more that we learn about how the brain works and are able to translate that information into the silicon neurons,

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00:38:38,000 --> 00:38:44,000

we have the real potential then to step back and ask, well, not only replacing brain parts,

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00:38:44,000 --> 00:38:51,000

but attempting to enhance what might not be working as well in one brain as in the other.

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00:38:51,000 --> 00:39:00,000

The tantalizing possibility that your brain will one day contain everything from the Library of Congress to your personal address book is exciting to some.

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00:39:00,000 --> 00:39:05,000

But frightening to others who caution that brain chips could lead to mind control

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00:39:05,000 --> 00:39:11,000

and the ability of hostile forces to track you down wherever you are in the world.

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00:39:11,000 --> 00:39:16,000

I think eventually some of us will choose to have chips planted in our brains.

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00:39:16,000 --> 00:39:19,000

I think some of us will choose to have little optic things stuck in their eyes.

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00:39:19,000 --> 00:39:22,000

I think some of us will have metal plates in our heads.

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00:39:22,000 --> 00:39:25,000

A great many people will choose to do a great many things.

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00:39:25,000 --> 00:39:27,000

And you know what?

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00:39:27,000 --> 00:39:32,000

We'll look at these things the way we now look at our car, at our telephone.

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00:39:32,000 --> 00:39:37,000

Best things that we're not shocked by that we wouldn't want to live without,

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00:39:37,000 --> 00:39:40,000

but we'll tell ourselves I could live without this if I had to.

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00:39:40,000 --> 00:39:43,000

We'll get used to it.

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00:39:43,000 --> 00:39:50,000

Coming up on Cytings, creating super machines capable of putting humanity out of thin air.

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00:39:50,000 --> 00:39:54,000

What does the idea of an intelligent machine mean for the future of mankind?

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00:39:54,000 --> 00:39:59,000

And later, will a new race of robots rule the world better than us?

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00:39:59,000 --> 00:40:05,000

We humans should be creative while we can. We may soon be overtaken.

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00:40:05,000 --> 00:40:26,000

The worldwide domination of computer technology is touted as a revolution in a box.

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00:40:26,000 --> 00:40:31,000

But it's wise to remember that in every revolution there's a winner and a loser.

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00:40:31,000 --> 00:40:37,000

And if the computers emerge victorious, what kind of world will they create for us?

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00:40:42,000 --> 00:40:48,000

Everyone it seems has their own predictions about what the future holds for our relationship with the computer.

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00:40:48,000 --> 00:40:52,000

But predictions, even scientific ones, are just guesses.

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00:40:52,000 --> 00:40:57,000

There's only one thing for sure. Computers are going to get a whole lot smarter.

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There's something called Moore's Law.

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Moore's Law states that the power of the computer doubles every 18 months.

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Now if you project now into the future, Moore's Law, Moore's Law states that probably within 30 to 50 years

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00:41:13,000 --> 00:41:19,000

we will have machines as fast and as powerful as the human brain.

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00:41:19,000 --> 00:41:25,000

With this rapid advancement of computer intelligence comes the threat that this intelligence will become greater than our own,

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00:41:25,000 --> 00:41:29,000

alive and unstoppable through the internet.

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00:41:29,000 --> 00:41:36,000

And maybe how we'll know if and when the internet is a living system is when it tells us that.

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00:41:36,000 --> 00:41:45,000

And it'll also let us know if it wants to take over or if it wants to unite with us in some form of ferro intercourse or whatever.

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00:41:45,000 --> 00:41:56,000

The computer is now the most ubiquitous tool, machine that human society has ever created.

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00:41:56,000 --> 00:41:59,000

The most ubiquitous. It is everywhere.

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00:41:59,000 --> 00:42:03,000

Kirkpatrick's sale is in the old law night. Stormslake Anti-Technology.

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00:42:03,000 --> 00:42:06,000

He's written eight books and has never used a computer.

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00:42:06,000 --> 00:42:15,000

I feel that it is a lonesome machine and it makes me ill even to contemplate it, so I won't use it.

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00:42:15,000 --> 00:42:19,000

How much does Kirkpatrick's sale hate computers?

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00:42:21,000 --> 00:42:32,000

I do it as a metaphor, a wake-up call to people who think that there is no downside to these computers and that everything is wonderful.

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00:42:33,000 --> 00:42:42,000

I'm certain that we are about to experience more and more of the horrors of the downside of this computer.

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00:42:42,000 --> 00:42:47,000

Sale knows he can never smash enough computers to change the future of technology,

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00:42:47,000 --> 00:42:51,000

but maybe he can change people's minds about their future with technology.

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00:42:53,000 --> 00:43:00,000

I've smashed dozens of them and it still has no effect upon computers. There's no way to escape it.

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00:43:00,000 --> 00:43:05,000

This computer will customize a drug specifically for your condition.

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00:43:05,000 --> 00:43:09,000

We are literally encased by a technological world.

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00:43:09,000 --> 00:43:16,000

I think that if anybody really sat and thought about it, they would realize that their entire survival,

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00:43:16,000 --> 00:43:26,000

everything from where they get their food to how they amuse themselves, is completely dependent on mass technologies.

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00:43:30,000 --> 00:43:32,000

Gary Kasparov has arrived.

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00:43:34,000 --> 00:43:43,000

In the spring of 1997, an IBM computer named Deep Blue presented the first serious challenge to the world's greatest human chess player.

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Never had so much international attention but paid to a chess championship.

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00:43:47,000 --> 00:43:56,000

Would Gary Kasparov, the grandest grandmaster of all, be able to outplay a computer capable of thinking through 400 million positions per second?

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00:43:56,000 --> 00:43:58,000

By the of chess words.

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00:43:58,000 --> 00:44:04,000

In the end of the calculation, there would obviously be no contest, but Kasparov believed he could win the computer

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00:44:04,000 --> 00:44:10,000

because chess is strategy and great players often win because they sense how their opponent will move.

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00:44:10,000 --> 00:44:18,000

We should recognize that the machine was fighting a world champion who was trying his best and machine was at the level.

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00:44:18,000 --> 00:44:27,000

That's why I believe that this match could have a major importance in order to compare two different approaches.

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One is the approach of the machine and another one is the approach of a human being.

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Because we play nearly equal chess in that match but having a totally different set of mind.

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Deep Blue every time and Gary Kasparov has won the first game of the rematch.

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World champion Kasparov did win the first match, bolstering his contention that great chess was not simply a matter of mathematical calculation.

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But something about that first match was disturbing.

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The computer seemed to know more about Kasparov's style of play than he did.

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And then the game took.

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I didn't play a good game of chess. I played something very awful.

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It's not only about losing or winning this game, it was about my psychological status for the rest of the match.

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Because machine went on long thinking.

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Not only was the computer making brilliant moves, it also seemed to be learning from its mistakes,

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sinking Kasparov into deeper and deeper psychological turmoil with every move.

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Later Kasparov would say the computer played like a god.

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Maybe it was just a machine but at that time I couldn't even listen to the rational argument.

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The move that machine made, the move H7H5, it was a purely human, it had a lot of human logic.

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All these variations in here.

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Gary Kasparov has designed the position.

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All his strategies throughout the match was how to beat the fastest computer.

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After game two he was surprised. He was shocked how can a computer play like a grandmaster.

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And I think he never recovered from that event.

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I'm not afraid of any opponent, even emotionally his computer.

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But I'm afraid of an unknown qualities.

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And that was something that I couldn't figure out during the match and that's why I was afraid.

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It was frightening indeed to play a machine that had suddenly become human in the mind of its opponent.

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Machine very often is finding the best moves, the moves that I would find.

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And we have to understand how come that the machine with no positional knowledge, with no understanding of the game,

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just purely calculating and using this computing power comes to the same conclusion.

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I believe that the approach is irrelevant, the result is everything.

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Now if machine gets the same result, this is a form of artificial intelligence.

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In the sixth and decisive game of the match, Deep Blue opened play in the white pieces,

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giving it a slight tactical advantage.

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In a mere 19 moves, incredibly, it was all over for Gary Kasparov.

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And whoa, Deep Blue Kasparov, after the move C4, has resigned.

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It raises the idea of thinking machines and makes people think a lot about what that means.

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What does the idea of an intelligent machine mean for the future of mankind?

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Everybody is very concerned about the future role that computers will play in our life,

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because it will affect everybody's lives.

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How can you compare a computer quote-unquote intelligence with humans?

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Every normal comparison will fail because we're so different.

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Suddenly chess was able to provide a unique measure of these two different powers,

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because it was a result, somebody wins, somebody loses.

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And that's why I was a great proponent of man versus machine confidence.

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And therein lies the question we must ask and answer in the future.

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How different are we from the technology we create?

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What do we as human beings bring to the table of existential experience that a computer will never

duplicate?

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I have never had much interest in chess.

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Why waste all that mental effort on something that is so prescribed and routine,

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that it can be done better by computer?

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I would rather spend my time on something creative.

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Computers can't do this.

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They are very good at exploring the consequences of rules, like in chess,

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but at least at the moment, they can't invent the rules.

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Until they can, they won't deserve the description, artificial intelligence.

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We humans should be creative while we can.

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We may soon be overtaken.

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Next on Sightings, will we remain the dominant species on the planet,

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or will biology and technology merge, creating a new species that will rule the world?

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In a not too distant future, it'll be a robot world, not a human world.

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Science fiction movies from Metropolis to Terminator

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have had a vision of the future where robots are intelligent, sinister machines

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held bent on destroying their creators.

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What real robots created in labs around the world right now seem to have the same potential.

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So the question is, will humans still have the ability to pull the plug in the next millennium?

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The next generation of robots

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My own feeling is that in a not too distant future, we're going to have machines

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that are more intelligent than humans, particularly when we look at networks of machines.

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Now, if that's the case, then we're going to have a future where machines will be controlling things,

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robot machines, rather than humans.

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It'll be a robot world, not a human world.

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We'll be very much second class citizens.

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There's no controversy about the fact that computers and robots are engineered.

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And yet, if robots and computers become as capable and as intelligent as human beings,

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then effectively we may have engineered our successors,

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and the biology in fact will be just a footnote.

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Do we have anything to fear from a future world dominated by robot intelligence?

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Judging by the way humans have dominated our supporting species in the past, the answer is yes.

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How do we treat cows? How do we treat sheep?

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Well, we put them on farms, when they get to a certain age we kill them.

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That's how we treat the other animals.

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We certainly don't treat them equally and give them a vote in elections.

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I mean, we'd be crazy giving cows a vote in our elections and so on.

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So when we look to a future with machines being more intelligent than humans,

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are they going to give us a vote in their elections?

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Well, no, they'd be crazy to do that.

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What are they going to do?

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That we're going to have human zoos and human farms.

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There are of course many positive benefits to robotics in our society,

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from manufacturing to farming, in space exploration and hazardous waste disposal.

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They will be indispensable tools in the future, but is it realistic to expect them ever to do more than we program them to do?

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Can robots ever be human?

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We have the Honda P2 robot, which can walk around just like a human for about 15 minutes.

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It can push carts, it can walk up and down stairs.

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So physically, we've got things that look like humans, they're the same size and they walk around a bit like humans.

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But in terms of intelligence, then robots are still some way away.

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Recent breakthroughs in cybernetics mean that in 20 years, robots will exist with brain power equal to our own.

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Some people say, why should we build robots that are going to put us out of a job,

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that are going to make humans obsolete?

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One of these days we're going to build a robot so big, someone will say, is there a God?

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And the computer will say, yes, here I am.

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That's very dangerous.

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It is possible, now within a 50 to 100 year span of time, that we will have robots with their own goals,

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their own ideas about what life should be like.

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They could be dangerous to us.

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That's why I think we should always have the plug and be ready to pull it once we have machines that have a will of their own,

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that are stronger than us, that are perhaps smarter than us, and have desires other than our own.

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Once we've switched on the first machine or machines that are more intelligent than we are,

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we probably won't get the chance to switch them off.

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We won't get the chance to say, hey, we got it wrong, let's think again about it.

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Because they're more intelligent than we are, they are in control of the situation.

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How will they control us?

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Cybernetic researchers hope it will be through their superior intellect,

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but there are indications that we are more likely to be controlled through the forces of a soulless, unstoppable, terminator-like future.

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Downtown San Francisco, 1998.

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Mechanical gladiators are in a battle royal for human amusement.

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This is the work of SRL, Survival Research Labs.

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Its mastermind is Mark Pauline, a modern-day Dr. Frankenstein who builds destructive machines from scrap metal and government surplus.

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Pauline may be at the controls, but more often than not, troll becomes a relative term.

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We go back and kind of flip through the pages of technology and go through what was done in military technologies,

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what was done in industrial technologies, and look at them and say, well, okay, you can take a jet engine

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and you can just fly a plane with, you can use it in a car or something like that.

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But on the other hand, why not take a jet engine and attach it to an enormous police whistle

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and use it to make a very, very loud, incredibly piercing, disturbing sound

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and then inject diesel fuel into that and make sort of a flamethrower that provides a curtain of flame on the ground.

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I mean, these are the kind of things that the people that originally developed these devices would never really have considered.

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A lot of thought and effort goes into making these machines as real as living creatures.

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It seems like the machines take on not only just a personality, but they make decisions of their own,

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and you're amplifying that by doing everything wrong that you would normally do with machines you're doing

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on a really compressed time scale and all sorts of accidents happen that can be easily attributed to the creation of a new life form.

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Make no mistake, this new life form is programmed for destruction.

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Any of the devices that we make, pretty much the bottom line is, it has to be visibly apparent that they could kill you instantly if something should go amiss.

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They're very powerful machines and we maybe don't have the luxury of really dealing with the safety issues

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like a regular laboratory would make. There's a lot of fear involved too. You have to be very careful around machines like this.

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You know, I think the relationship again is more like you're dealing with wild animals really.

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The robots will become increasingly flexible, increasingly more initially animal-like and then human-like, adaptable basically.

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SRL doesn't just operate remote controlled robots. They have also adapted military technology to operate their war machines through the internet from anywhere in the world.

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It's a track robot that has essentially treads to make it move around so it'll be able to go over some rough terrain, which is sometimes an obstacle.

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It's a pretty dexterous machine. We'll be able to come up to things in very precisely align it and actually maneuver things.

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There's a video camera on as well and there's an audio feed. People will basically get some of the sense of being there.

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They'll have an audio and video and they'll actually be able to reach out and grab at people and objects and things during the show.

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One of the things that we've been talking about is actually putting some type of device that would actually cause projectiles to be expelled from it.

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It's almost like a gun. People could actually target things remotely and essentially annihilate them.

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The internet control system was developed out of necessity when Japan refused to allow SRL to operate explosive devices during the Tokyo performance.

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We basically used it as a way to circumvent the gun laws in Japan where we had a device in San Francisco which was a high-pressure gas launcher which was firing at targets here in San Francisco.

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We were operating that in Japan by pressing buttons on a button robot. So we were operating a very dangerous machine.

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The concern, of course, is that even if you respect the chaos these machines can create, a hacker might not.

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People obviously have a fascination with hacking into machines and stealing data.

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But obviously if someone hacks in or takes control of a physical machine that uses towards their own ends, what really is the implication?

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I mean who are these people that are controlling this? You don't know if it's friend or foe.

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And this is pretty much what's going on in the military.

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In fact, the military of the future is one that will fight with the lethal combination of robots, computers, and ammunition.

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Fire! Fire!

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Get off!

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We're doing things in robotics. We're doing things in what's called battlefield visualization, which is the effort to try to give the commander

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a better picture of what's going on, which has been one of the things commanders throughout history have wanted to know.

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What we're doing is trying to apply information technology, sometimes referred to as digitization of the battlefield,

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to allow us to bring the power of the computer to the commander.

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The idea is to keep the human being out of harm's way.

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Eventually getting to a robot that's small enough that a soldier could carry it, maybe in their backpack or a special case they would have.

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So you go 10 miles out into the battlefield and start dropping off your robots who then go and find strategic places to watch the enemy.

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Those small robots can then communicate back to the larger mothership and who can communicate back to the commander,

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feed that data into the battlefield visualization, a situational awareness, and you close the loop.

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So we've taken humans out of harm's way using machines that if they are lost, it's much less of a loss than a human life or someone being wounded.

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It's called fuzzy logic, a primary form of artificial intelligence that allows unmanned vehicles to be controlled from a distant, safer location.

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We're using fuzzy logic, for example, to control maybe a robotic helicopter.

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So we're not just talking about ground vehicles, but something that might be flying through the air.

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And in Japan and in the United States, there are already robotic vehicles of this type, helicopters, they're maybe six feet long that can carry a payload of cameras, communications equipment, other things.

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The ultimate goal is to not only take humans out of harm's way, but also out of the loop.

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Right now, much of the robotic work, unless it's a routine, follow the same course type of thing,

has some human in the loop.

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We're looking at situations where the humans outside the loop and then you have situations where you want to have the robots working together.

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But with humans out of the loop, who's calling the shots?

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Especially once artificial intelligence outstrips that of humans.

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Kevin Warwick likens it to IBM's deep blue beating Gary Kasparov at chess.

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I think it's a very big event that it is a bastion of human intelligence that machines have now surpassed.

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Particularly if you look rather at a game of chess, the same scenario on a battlefield or in a

military strategy.

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Now we pit a human brain against a machine brain.

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And if we're saying there that the machine brain can outwit, can outmaneuver, can outplan the human brain,

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then we're looking at military strategies for the future being intelligent machines fighting intelligent machines

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and no human involvement because the machines can think better in that way.

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And if future wars are going to be fought by robot warriors and computerized weapon dispensers carrying deadly payloads,

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what will the human role be in all of this?

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Could there ever be enough security to prevent urban terrorism or an insane threat from an unstable world leader?

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We're trying to expose some of the elements that are going to come out as consequences of research into robotics, tele-robotics.

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And there's certainly a number of empowering things. I mean, certainly you could visit a remote place and interact.

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That's a very interesting thing. But we also hear more concern with the actual interactions that are perhaps more lethal.

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Imagine it, a destructive machine, perhaps an unmanned fighter jet with a lethal payload controlled over the internet.

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Just pull the plug, you say. Well, it may not be that simple, since a machine with artificial intelligence would certainly have knowledge of the basic rule of natural law known as survival of the fittest.

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If a machine tries to keep itself alive by shooting or killing anything that tries to switch it off or kill it, that's alright from a machine point of view.

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It's trying to keep itself alive from a human point of view. It could be humans that are being killed, but that's bad from a human moral standpoint, but good from a machine moral standpoint.

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A future where the weapons of mass destruction are controlled by artificial or machine intelligence is a frightening thought.

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Yet there is hope in the belief of many technologists that perhaps the weapons we build will be so intelligent, they will choose not to fight each other.

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What happens when robots become more intelligent than humans?

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The machines will take over ultimately, and it may not be that bad.

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Thinking machines that one day may rule the world, next on Cytings.

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One of the most disturbing aspects of the future is already here. Time appears to be speeding up. A factory built to last forever is obsolete in 50 years.

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The computers we bought just a few years ago aren't even worth keeping for spare parts.

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And technological advances that should be the stuff of science fiction are already on the drawing boards.

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I think we're looking at 10 years when a single computer has the same brain capacity as a human brain.

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But computers have the big advantage that they can be networked together.

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And really the brain that you're looking at in a computer or machine brain is not a single brain.

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It's a whole network communicating very rapidly.

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So I think it's not such a clear picture, but 10 years and we're in a bit of a problem area, I think.

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At the Department of Cybernetics at Reading University in England, Kevin Warwick directs a project aimed at empowering machines to think for themselves.

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And just like a human baby, before a robot can walk, it must learn to crawl.

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01:05:25,000 --> 01:05:35,000

This robot has not been programmed to move forward. It has only been given enough information to, hopefully, allow the infant robot to figure it out for itself.

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01:05:37,000 --> 01:05:40,000

Come on, Elma, pick yourself up, go.

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01:05:40,000 --> 01:05:52,000

Inside she's learning, literally, how to walk, how to organize herself in terms of the six legs for that particular goal, for that particular thing.

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01:05:55,000 --> 01:06:04,000

Within 10 minutes, the robot, Warwick affectionately calls Elma, has learned how to walk with confidence just a fraction of the time it takes a human baby.

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01:06:05,000 --> 01:06:13,000

It's only a small demonstration in terms of it's walking and the robot can learn how to do that.

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01:06:13,000 --> 01:06:22,000

In terms of learning generally, if a robot can learn that particular thing, there's nothing to stop robots, machines, learning anything, essentially.

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01:06:23,000 --> 01:06:36,000

As the world's leading expert in cybernetics, Professor Warwick is keenly aware of the implications that this research will have and is calling for an international robot anti-proliferation treaty.

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01:06:36,000 --> 01:06:45,000

I don't see any problem with me looking in the area with researching in the area. I think that's good. We have to find out what the problems are.

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01:06:45,000 --> 01:06:58,000

If perhaps more the defence interests and the commercial interests where everything for them is more progress and staying one step ahead in the university world, one can say,

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01:06:58,000 --> 01:07:01,000

hey, there could be a problem here, let's watch what we're doing.

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01:07:02,000 --> 01:07:08,000

But will any machine, no matter how intelligent, ever really be able to usurp its human creators?

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01:07:08,000 --> 01:07:17,000

I think a sufficiently intelligent entity will be able to manipulate us any way it wants, probably without us even knowing it.

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01:07:17,000 --> 01:07:35,000

But on the other hand, a sufficiently intelligent entity, especially one that's descended from us, is likely to think about us once in a while and may in fact give us a kind of existence in its thoughts that's more secure than anything we could have done just with our own limited minds.

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01:07:36,000 --> 01:07:42,000

So I think, yes, the machines will take over ultimately and it may not be that bad.

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01:07:49,000 --> 01:07:54,000

They make us into different people and I think it's all fine and good on that level.

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01:07:54,000 --> 01:08:05,000

I mean at a certain point, if machines reach beyond just being helpmates and they become something along the lines of terminator robots, then it's a whole different ballgame.

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01:08:05,000 --> 01:08:15,000

Part of the reason that I proceed in the area here at SRL is like I'd like to think that in the future battlefield I'll be out there and a terminator robot will walk up to you with a huge weapon

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01:08:15,000 --> 01:08:21,000

and pointed at me and look at me and say, hey, that's Mark Pauli and he'll come up and shake my hand and then it'll blow me away.

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01:08:22,000 --> 01:08:31,000

If computers and robots are poised to take over the world, perhaps we should be thinking, if you can't beat them, join them.

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01:08:34,000 --> 01:08:44,000

We can expect biological and electronic components to come together in the future to create super organisms that will be a new form of life.

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01:08:44,000 --> 01:08:50,000

But first it's to be possible we have to develop a better interface between them.

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01:08:51,000 --> 01:09:01,000

Human computer interface is long been a staple of science fiction and if we see the human brain as an internal hard drive and brain cells as organic microprocessors,

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01:09:01,000 --> 01:09:06,000

it seems likely that someday we will be able to turn on, tune in and upload.

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01:09:07,000 --> 01:09:13,000

We're talking about being able to have devices which will hook up directly to the human brain.

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01:09:13,000 --> 01:09:18,000

However, the brain is going to remain a mystery for many decades to come.

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01:09:18,000 --> 01:09:25,000

There are as many brain cells in the brain as there are stars in the galaxy.

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01:09:26,000 --> 01:09:33,000

The fastest supercomputer known to mankind is still at least a thousand times slower than the stupidest human being.

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01:09:34,000 --> 01:09:37,000

So the computer is a stupid beast by any stretch of imagination.

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01:09:37,000 --> 01:09:45,000

But it is becoming smarter at a rate of about a thousand a decade and that seems to be, why not, the current rate that might well accelerate in the future.

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01:09:45,000 --> 01:09:56,000

We expect a computer by 2015 to have roughly the same memory capacity as you do and we expect it all to be around about the same time, plus or minus five years, to have the same intelligence.

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01:09:57,000 --> 01:10:06,000

At the moment, the best we can do to transfer information is a computer screen in one direction, on a keyboard in the other.

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01:10:07,000 --> 01:10:12,000

Both of these have a low-bod rate or rate of data flow.

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01:10:13,000 --> 01:10:20,000

It's a very archaic system that we have at the moment and most people get very, very annoyed with the interface they have to the computer.

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01:10:20,000 --> 01:10:22,000

They feel like taking an axe to it every now and again.

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01:10:23,000 --> 01:10:27,000

We just have a terrible handle on interfacing computers to people at the moment.

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01:10:28,000 --> 01:10:35,000

In Ipswich, England, the Research and Development Department at British Telecom isn't waiting for technology to catch up.

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01:10:35,000 --> 01:10:46,000

Recently, they announced that a microchip, small enough to be placed undetected behind the human eye, is not only theoretically possible, it's also likely to happen within our lifetime.

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01:10:47,000 --> 01:10:49,000

The microchip is called the soul catcher.

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01:10:50,000 --> 01:10:53,000

In our speculation, we thought that, well, what if we've got really smart machines?

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01:10:53,000 --> 01:11:02,000

What if we've got this nice interface between us and the machine which allows us to think in the machine world, in a computer which is a million times smarter than us?

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01:11:02,000 --> 01:11:04,000

Doesn't that mean that we're a million times smarter too?

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01:11:04,000 --> 01:11:07,000

Then we're effectively a different species.

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01:11:07,000 --> 01:11:11,000

Theories vary on how the merging of man and machine will be accomplished.

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01:11:11,000 --> 01:11:16,000

What is needed is something like a direct electrical connection to the bridge.

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01:11:17,000 --> 01:11:24,000

This has actually been suggested for me to solve my particular communication problem.

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01:11:25,000 --> 01:11:28,000

But I don't fancy wires attached to my head.

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01:11:29,000 --> 01:11:35,000

Quite apart from the risk of infection, I would like to keep my thoughts to myself.

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01:11:35,000 --> 01:11:39,000

We now know how to interface with individual cells.

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01:11:39,000 --> 01:11:42,000

But the interface with the human brain is still impossible.

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01:11:42,000 --> 01:11:48,000

There are literally hundreds of millions of connections that we simply don't know how to decipher them.

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01:11:48,000 --> 01:11:53,000

We simply do not know which neuron connects to which brain cell.

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01:11:53,000 --> 01:12:04,000

But again, on a scale of 50 to 100 years, we're in that realm now where we can begin to tease apart, nerve for nerve, the way in which our brains are hooked together.

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01:12:04,000 --> 01:12:09,000

I for one wouldn't want to queue up to get surgery to have a chip implanted in my head.

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01:12:09,000 --> 01:12:14,000

It's something about us which resists that much of a link to the machines.

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01:12:14,000 --> 01:12:19,000

But if it's something which is just an intuitive understanding by the machine, it's much less threatening.

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01:12:19,000 --> 01:12:21,000

It's something you can walk away from if you don't like it.

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01:12:21,000 --> 01:12:31,000

What BT Labs suggests is that this new man-machine species, Homo cyberneticus, wouldn't be achieved by a direct computer connection.

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01:12:31,000 --> 01:12:38,000

Instead of being hardwired into your brain, the computer would be able, through electromagnetic impulse, to read your mind.

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01:12:39,000 --> 01:12:48,000

So you could build up a model of the brain which works exactly the same way as your brain on a very smart computer outside, which would be no trivial task at all.

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01:12:48,000 --> 01:12:52,000

But say 30, 35, 40 years in the future, we could probably do that.

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01:12:52,000 --> 01:13:01,000

That's very exciting indeed because then just by thinking you can have that thought emulated in the outside computer.

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01:13:01,000 --> 01:13:06,000

And you do then have a definite way of having this direct brain link.

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01:13:06,000 --> 01:13:13,000

We're a long way from even being able to consider the recording of consciousness.

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01:13:13,000 --> 01:13:19,000

We don't yet know what consciousness is, what it constitutes.

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01:13:19,000 --> 01:13:24,000

That's still one of the big arguments in the emerging science of artificial intelligence.

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01:13:24,000 --> 01:13:25,000

What is intelligence?

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01:13:25,000 --> 01:13:33,000

We don't know how human beings work, so we're not quite sure what we're supposed to be modeling.

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01:13:34,000 --> 01:13:42,000

To download a human mind onto a computer, we would have to understand how the brain and intelligence work.

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01:13:42,000 --> 01:13:52,000

But if we could do that, we could design a much better mind, free from all the encumbrances that evolution has left us with.

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01:13:52,000 --> 01:13:55,000

So why bother with human minds?

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01:13:55,000 --> 01:14:01,000

In less than 40 years, we've gone from punch cards to computers with voice recognition.

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01:14:01,000 --> 01:14:06,000

Computers with mind recognition are probably not far behind.

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01:14:06,000 --> 01:14:15,000

It will be possible to achieve an intuitive link between man and machine just by you thinking something and you'll effectively have much higher intelligence than you've really got.

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01:14:15,000 --> 01:14:18,000

That will be achieved, it's only a matter of time.

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01:14:18,000 --> 01:14:29,000

Imagine that we could go back and implant one of these things for one day in Einstein and then get it back to the time machine and run it back.

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01:14:29,000 --> 01:14:36,000

We're sitting there, Einstein has stopped, he's looking at a tree, he looks at the tree for 15 minutes and then he walks on.

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01:14:36,000 --> 01:14:39,000

What we all want to know is what was he thinking about?

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01:14:39,000 --> 01:14:41,000

Which we don't know.

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01:14:41,000 --> 01:14:46,000

So we're not talking about recording consciousness, we're talking about television.

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01:14:46,000 --> 01:14:54,000

Researchers say they are not so much interested in recording information as the reverse in planting global intelligence at will.

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01:14:54,000 --> 01:15:04,000

When we achieve this transparent link between the man and the machine, what we're connecting to is a phenomenally sophisticated device which is very, very intelligent indeed.

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01:15:04,000 --> 01:15:13,000

Which is connected to the global superhighway and has got access to all of mankind's accumulated intelligence and all the intelligence generated since by smart computers.

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01:15:13,000 --> 01:15:16,000

And we will have access to that just by thinking ourselves.

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01:15:16,000 --> 01:15:20,000

That's a very exciting technology indeed, but it's also frightening.

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01:15:20,000 --> 01:15:24,000

We would want to proceed down that path with great caution.

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01:15:24,000 --> 01:15:31,000

I would jump at the chance to do it. I would literally leap a wide chasm in order to be able to do that.

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01:15:31,000 --> 01:15:35,000

And I would probably be even more likely to do it if it was reversible in some way.

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01:15:35,000 --> 01:15:38,000

I don't think that you would have any shortage of takers.

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01:15:38,000 --> 01:15:44,000

BT Labs estimates that they will be downloading images from the brain by 2025.

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01:15:44,000 --> 01:15:50,000

I'd be very curious to see what the output from one of these devices would be like.

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01:15:50,000 --> 01:15:55,000

That would be one of my main problems with what BT is proposing.

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01:15:55,000 --> 01:16:02,000

I don't think we see what's coming in through the optic nerve as straight input.

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01:16:02,000 --> 01:16:08,000

I think it's probably going through an infinite number of filters, some of which are cultural.

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01:16:08,000 --> 01:16:14,000

So we all know that there are things which we see and yet we don't see.

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01:16:14,000 --> 01:16:23,000

But would the device record everything we saw? It's actually a sort of disincorporate concept.

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01:16:23,000 --> 01:16:27,000

Many see the device as a weapon, a way of controlling human thought,

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01:16:27,000 --> 01:16:30,000

but others see its potential in a much more positive light.

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01:16:30,000 --> 01:16:38,000

The possibility of downloading into the computer and having a conscious experience as an alternative to death

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01:16:38,000 --> 01:16:43,000

is something to look forward to, something that might happen.

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01:16:43,000 --> 01:16:49,000

I mean, stuff that sounds insane right now is probably going to happen in another 15 or 20 years.

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01:16:49,000 --> 01:16:53,000

And we've finally found the way to cheat death.

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01:16:53,000 --> 01:17:01,000

If you sign up and it works, you will be able to see a future world with remarkable advances in technology.

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01:17:01,000 --> 01:17:06,000

Will we be a species of immortals? Next on Cytings.

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01:17:06,000 --> 01:17:08,000

Cytings.

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01:17:21,000 --> 01:17:26,000

Planned obsolescence. It's built into most of the machinery of the 20th century.

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01:17:26,000 --> 01:17:32,000

And let's face it, it's built into us too. No one lives forever. At least not yet.

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01:17:37,000 --> 01:17:47,000

Some people as they're getting older think that maybe if I freeze my body, then 100 years from now, a cure will be found for cancer.

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01:17:47,000 --> 01:17:50,000

This could be your body in the next century.

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01:17:50,000 --> 01:17:57,000

It's a practice as old as the ancient Egyptians who used mummification to preserve the physical body for the next life.

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01:17:57,000 --> 01:18:01,000

Now, the preferred method is cryonics, chemical freezing.

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01:18:01,000 --> 01:18:06,000

But the goal is the same, to make death nothing more than an intermission between lives.

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01:18:06,000 --> 01:18:16,000

If an animal can be created from a few spare cells today, surely in the future we will discover how to duplicate, perhaps even reanimate, ourselves.

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01:18:16,000 --> 01:18:22,000

You're looking at the body of a 50-year-old man who is just moments ago been pronounced dead of colon cancer.

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01:18:22,000 --> 01:18:30,000

And these people are medical personnel from the American Cryonic Society, with whom he contracted to be frozen.

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01:18:30,000 --> 01:18:39,000

Right here, in his own living room. Alerted by cell phone, they have arrived within moments of his death to begin the process of cryonic preservation.

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01:18:39,000 --> 01:18:49,000

Sirius' consideration of cryonics first began in the 1960s, when research scientists experimented with the reanimation of frozen organisms.

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01:18:49,000 --> 01:18:59,000

Early success with insects led to similar successes with frogs, then hamsters, then dogs, bolstering the notion that the same process could also work for humans.

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01:18:59,000 --> 01:19:04,000

In the 1980s, frozen embryos became living, breathing babies.

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01:19:04,000 --> 01:19:11,000

Furthering the cause, cryonics is a viable method of not just preservation, but perhaps also suspended animation.

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01:19:14,000 --> 01:19:19,000

Research scientist Ralph Merkel is one of the leading advocates for the cryonics movement.

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01:19:22,000 --> 01:19:28,000

I think that's one of the major misconceptions that people have about cryonics is, cryonics is freezing dead people.

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01:19:28,000 --> 01:19:34,000

And the answer is no, we're freezing people, and whether or not they're dead remains to be seen.

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01:19:34,000 --> 01:19:38,000

If in fact they can be revived, then in fact they were never dead.

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01:19:39,000 --> 01:19:44,000

Today's medical technology often can't keep us alive, let alone healthy.

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01:19:44,000 --> 01:19:53,000

Cryonic suspension is an imperfect method of preserving ourselves into the future, when there will be a technology, a medical technology,

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01:19:53,000 --> 01:19:59,000

able both to reverse the damage caused by the cryonics suspension and to restore good health.

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01:20:00,000 --> 01:20:05,000

To live forever, that's certainly my goal, and I think that's the goal.

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01:20:05,000 --> 01:20:14,000

Well, it's very least to extend our life spans as far into the future as possible, and with a lot of luck and with a lot of research, that just might be forever.

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01:20:14,000 --> 01:20:16,000

But cryonics is only a life then.

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01:20:16,000 --> 01:20:22,000

Cryonics will get the patient who is dying today to the medical technology of the future.

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01:20:24,000 --> 01:20:30,000

We are watching the patient being packed in ice as the cooling down process is begun.

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01:20:31,000 --> 01:20:33,000

In this first stage he will be ventilated.

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01:20:34,000 --> 01:20:43,000

Medications such as anticoagulants, antioxidants and other drugs, his temperature, blood gases, and so on will be constantly monitored.

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01:20:43,000 --> 01:20:49,000

And his blood will gradually be pumped out and replaced with water-based coolants.

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01:20:50,000 --> 01:21:00,000

The freezing of an entire human body using 20th century technology is laborious, expensive, and say some cryonics researchers, completely unnecessary.

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01:21:01,000 --> 01:21:04,000

There's a lot of choices on how one can be frozen.

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01:21:04,000 --> 01:21:08,000

The cheapest way to be frozen is by going head-only.

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01:21:08,000 --> 01:21:19,000

And since we're pretty sure that almost everything that makes us up is contained within our head, memories, personality, and such stuff, growing a new body shouldn't be that hard.

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01:21:20,000 --> 01:21:26,000

For example, you know about dolly, and that was a case where a single cell was used to grow a whole animal again.

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01:21:27,000 --> 01:21:31,000

So single cells have got all the information that you need to grow a new copy of yourself.

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01:21:31,000 --> 01:21:37,000

I'm personally signed up for the economy job, which involves head-only.

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01:21:38,000 --> 01:21:46,000

But most of the people that I've helped freeze, their bodies were in such bad shape that that's probably building them a new one is a good idea.

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01:21:49,000 --> 01:21:59,000

Over a period of up to a week, the patient's temperature will gradually be lowered as he is placed in a series of tanks and cooling boxes filled with liquid nitrogen.

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01:22:00,000 --> 01:22:07,000

Ultimately, all his blood will be washed out and replaced by a combination of medically treated coolant liquids and ice.

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01:22:08,000 --> 01:22:19,000

And finally, encased in a tube, he will be lowered into his permanent resting place in this vacuum vault, which will then be placed underground to await the day he returns to life.

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01:22:20,000 --> 01:22:24,000

I certainly wouldn't pay to be cryogenically preserved.

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01:22:25,000 --> 01:22:30,000

Even supposing it was possible to reanimate people, which I very much doubt.

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01:22:31,000 --> 01:22:35,000

Why should the people that have taken your money go to the butter?

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01:22:36,000 --> 01:22:46,000

And even if one was broad-round, one would have lost all the electrical activity in the brain and probably much of one's memory and personality.

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01:22:46,000 --> 01:22:56,000

So your body may come back, but your consciousness, your essence may not, and you will have no idea what scientists are doing with your cells.

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01:22:57,000 --> 01:23:04,000

In the future, with molecular manufacturing, we'll be able to arrange the atoms exactly as we want and precisely the pattern we want.

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01:23:05,000 --> 01:23:06,000

It's called nanotechnology.

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01:23:07,000 --> 01:23:17,000

It's a technology of the near future that will work at the molecular level and has the potential to create nearly anything by the structural rearrangement of atomic matter.

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01:23:18,000 --> 01:23:26,000

Is it even possible to imagine what could be created from a rearrangement of the protons, neutrons, and electrons that used to be you?

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01:23:27,000 --> 01:23:31,000

Disease and ill health are caused by damage at the molecular and cellular level.

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01:23:31,000 --> 01:23:35,000

Today's surgical tools are very large and crude at that level.

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01:23:36,000 --> 01:23:42,000

But in the future, we'll be able to make surgical tools that are molecular, both in their size and precision.

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01:23:43,000 --> 01:23:49,000

And for the first time, we'll be able to intervene at the level where the damage actually occurs and correct that damage.

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01:23:50,000 --> 01:23:57,000

One thing you might be able to do in the future would be to have a fleet of very small molecular-sized machines that you inject into the body.

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01:23:57,000 --> 01:24:03,000

They'd circulate through the tissues and when they found something that was wrong, they would correct it.

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01:24:04,000 --> 01:24:07,000

This will create a revolution in our medical capabilities.

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01:24:08,000 --> 01:24:10,000

Nanotechnology is the reason I got into crannics.

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01:24:11,000 --> 01:24:17,000

I had this view of crannics, which I'd known about for a very long time, as being like a frozen tomato.

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01:24:18,000 --> 01:24:22,000

When you defrosted it, it would just be fall to pieces into a total mush.

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01:24:22,000 --> 01:24:31,000

But then, when you start dealing with things like nanotechnology, it's no big deal to go in and seal up all the cell walls.

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01:24:32,000 --> 01:24:36,000

You're dealing with tools which are so small that a cell is enormous by comparison.

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01:24:37,000 --> 01:24:40,000

The laws of physics say that molecular machines are possible.

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01:24:41,000 --> 01:24:43,000

It may be incredibly difficult, but possible.

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01:24:44,000 --> 01:24:51,000

And that's why some people rely on nanotechnology to solve all the problems that we cannot solve with any other technology.

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01:24:52,000 --> 01:24:57,000

However, my attitude is, let me see it. I'll believe it when I see it.

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01:24:58,000 --> 01:25:03,000

But, more than the cryonists, playing the waiting game won't do you any good when you're dead.

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01:25:04,000 --> 01:25:09,000

Unless, of course, you're waiting in a stainless steel tube in some freezing suspension.

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01:25:11,000 --> 01:25:16,000

I know several people who have arranged for their future cryonic suspension.

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01:25:17,000 --> 01:25:22,000

I think the odds are getting good enough so that it's almost sort of worth it.

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01:25:23,000 --> 01:25:28,000

I consider the whole enterprise to be rather immature at this point, and yet I'm glad they are doing it.

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01:25:29,000 --> 01:25:32,000

Because ten years from now, I will very likely change my mind.

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01:25:33,000 --> 01:25:38,000

Because someone is doing the foolish early experiments, we may all benefit.

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01:25:39,000 --> 01:25:41,000

So I'm glad they're out there doing what they're doing.

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01:25:42,000 --> 01:25:45,000

Even though I think they're nuts.

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01:25:47,000 --> 01:25:51,000

They're one of two possibilities. Either cryonics works, or it does not.

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01:25:52,000 --> 01:25:56,000

And either you sign up for cryonics suspension, or you don't.

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01:25:57,000 --> 01:26:06,000

Now, if you sign up and it works, then you will be able to see a future world with remarkable advances in technology.

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01:26:07,000 --> 01:26:14,000

If you don't sign up or it doesn't work, well, that's pretty much the same as the current situation.

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01:26:17,000 --> 01:26:23,000

Next on Sightings, a future with limitless possibilities of hope and great advances for humanity.

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01:26:24,000 --> 01:26:28,000

This is the most fascinating moment in the history of this planet.

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01:26:37,000 --> 01:26:43,000

In an uncertain future, apocalypse is easy.

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01:26:44,000 --> 01:26:48,000

It's human nature to hope for the best and expect the worst.

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01:26:49,000 --> 01:26:56,000

To put it in the context of our shared future, people are just not programmed to unconditionally embrace the unknown.

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01:27:07,000 --> 01:27:21,000

The reason this millennium is different from other millennial expectations in the past is that technology can now actually deliver extinction or transformation to the human race.

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01:27:22,000 --> 01:27:27,000

It no longer is something we talk about. It's something some of us are doing.

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01:27:31,000 --> 01:27:35,000

We have indeed reached the crossroads of humanity and technology.

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01:27:36,000 --> 01:27:40,000

And that's how the world becomes which way to return at this millennial intersection.

780

01:27:41,000 --> 01:27:52,000

I have predicted and I have laid down bets on this that by the year 2020, we will have a worldwide crisis that will threaten the existence of the human species.

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01:27:53,000 --> 01:28:00,000

If the computer revolution just goes on in the way it's going on, human species is probably doomed by 2020.

782

01:28:00,000 --> 01:28:04,000

This is a different kind of doomsday scenario from those of the past.

783

01:28:05,000 --> 01:28:10,000

The four horsemen of the apocalypse are now named greed, power, fear and technology.

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01:28:11,000 --> 01:28:18,000

And the world will be increasingly divided between the haves and have-nots, those who have access and those who do not.

785

01:28:19,000 --> 01:28:21,000

Societies are being torn apart.

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01:28:21,000 --> 01:28:32,000

Stable countries that have held together for centuries are now just collapsing under the pressure of a global economy that is driven by the computer.

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01:28:33,000 --> 01:28:40,000

We are at war. The society that we're living in is ever expanding in order so that it can function.

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01:28:41,000 --> 01:28:47,000

And that's a war. And at the edges of that war are indigenous people all over the world who are struggling for their own sustainability against it.

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01:28:47,000 --> 01:28:50,000

And it's pushing, pushing out.

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01:28:51,000 --> 01:28:53,000

Man is being destroyed by his machines.

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01:28:54,000 --> 01:28:58,000

Man is using chaos and the division of races to destroy himself.

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01:28:59,000 --> 01:29:04,000

Today we humans divide everything because we think we are better than the one who created everything.

793

01:29:05,000 --> 01:29:10,000

Clearly it's naive to imagine that humanity can ever turn back the clock.

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01:29:10,000 --> 01:29:17,000

But in the post-computer age, it's well to remember that human innovation is still no match for the awesome power of nature.

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01:29:18,000 --> 01:29:22,000

We will always be at the mercy of hurricanes, floods and earthquakes.

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01:29:23,000 --> 01:29:29,000

So respecting the planet's ultimate domination, says Don Sanchez, will be our salvation.

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01:29:33,000 --> 01:29:38,000

All the modern technology that man has today doesn't do any good when it comes to predicting earthquakes.

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01:29:38,000 --> 01:29:42,000

And all things made by this technology gets destroyed.

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01:29:49,000 --> 01:30:00,000

And in the midst of rampant technological advancement, there are signs that even the most ardent supporters of a plugged-in universe still crave a primal human connection.

800

01:30:00,000 --> 01:30:13,000

At the Burning Man Festival in Nevada, techno junkies turn in their computers and forsake their internet connections for one weekend a year to create a bizarre world that may be a window on the future.

801

01:30:14,000 --> 01:30:21,000

Is this the need for human contact in a world of isolation or the first signs of a world gone mad?

802

01:30:22,000 --> 01:30:29,000

In Burning Man you can see that there's actually the evolution of genuine eccentricity, you know, genuine surrealism happening.

803

01:30:30,000 --> 01:30:37,000

The ability of individuals to be able to encompass that is probably the primary hope of evolution.

804

01:30:38,000 --> 01:30:46,000

An evolution where human beings are still participants rather than just play things or pets for the machine overlords.

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01:30:50,000 --> 01:30:53,000

We must help all others to evolve to a higher level.

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01:30:54,000 --> 01:30:59,000

I believe that we are finishing the three stages of man and we are evolving to a super man.

807

01:31:01,000 --> 01:31:09,000

From a shaman on an Andean mountain top to a researcher developing intelligent robots, the message is the same.

808

01:31:10,000 --> 01:31:16,000

We are on the cusp of a new era and attention must be paid to where we're going before we get there.

809

01:31:17,000 --> 01:31:26,000

So I don't think people will be much different in 30 to 40 years, but 150 to 200 years is another matter.

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01:31:26,000 --> 01:31:29,000

We might not recognize ourselves.

811

01:31:30,000 --> 01:31:43,000

Historians of the future looking back will say, oh what a wonderful time it was when humanity made the transition from being passive observers of nature to active choreographers of nature.

812

01:31:44,000 --> 01:31:55,000

Science and technology have led us into places that we haven't seen before and we need to take that very seriously and look at what we think the consequences and moral import of the very existence of nature.

813

01:31:56,000 --> 01:32:01,000

And we can do that and be excited and afraid and I think we should be both.

814

01:32:02,000 --> 01:32:15,000

We should be not scared but exalted, excited, fascinated. This is the most fascinating moment in the history of this planet. This is payday that we're talking about.

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01:32:15,000 --> 01:32:28,000

To be sure the merging of humans and machines raises profound and for some frightening questions about who or what will be in control of the future.

816

01:32:29,000 --> 01:32:34,000

But in a strange way, the more we come to depend on technology, the more human we become.

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01:32:35,000 --> 01:32:38,000

Let the computers of the world calculate, sort and copy.

818

01:32:38,000 --> 01:32:45,000

We can practice compassion, explore our own creativity and play baseball.

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01:32:46,000 --> 01:32:50,000

For this special edition of Sightings, I'm Tim White.

820

01:32:50,000 --> 01:33:08,000

Tomorrow, don't miss an all new Sci-Fi Channel Special. He has been described as one of the 20th Century's most important science fiction writers.

821

01:33:09,000 --> 01:33:16,000

Meet the prolific, the influential, the always controversial Harlan Ellison on Masters of Fantasy at 10am Eastern.

822

01:33:16,000 --> 01:33:25,000

Now, programmed for pleasure, reprogrammed to kill, the high-tech combatants of a futuristic theme park have gone offline.

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01:33:26,000 --> 01:33:29,000

It's time to bring in the Outsider next.