

Psychedelics in the Age of Intelligent Machines

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Our discussion this evening is *Psychedelics in the Age of Intelligent Machines*, or *Shamans Among the Machines*. I wanted to talk about this simply because these are two of my great loves and so I assume, being monogamous, they must be one love. So, how to build intellectual bridges between these two concerns which seem so different? As far as people and machines are concerned, it was Ludwig von Bertalanffy who said in his book *General Systems Theory*, “People are not machines, but in every opportunity where they are allowed to behave like machines, they will so behave.” In other words, we tend to fall into the well of habit. Though the glory of our humanness is our spontaneous creativity, we too, as creatures of physics and chemistry, of memory and hope, tend to fall into repetitious patterns. These repetitious patterns are the death of creativity. They diminish our humanness. They diminish our individuality, make each of us somehow like cogs in some larger system. We associate this cog-like membership in larger soulless systems with the machines that we inherit from the age of the internal combustion engine, the age of the jet engine. Marshall McLuhan said, “We navigate our way into the future like someone driving who uses only the rearview mirror to tell them where they’re going.” It’s not a very successful strategy for navigating into the future.

I made a number of notes on this matter of psychedelics and machines. To me, the connecting bridge — well, there are many — but the most obvious one is consciousness expansion. After all, psychedelics, before they were called entheogens, before they were called hallucinogens, before they were called psychedelics, were simply called consciousness-expanding drugs: a good phenomenological description of what they do. Certainly, the technology of cybernetics is a consciousness-expanding technology. It expands a different area of consciousness. The minds of machines and the minds of human beings are very different, so different that each party questions whether the other even has a mind. In fact, these are species of minds operating in very different domains. For instance, you can ask a five-year-old to go into the bedroom to the third drawer of the dresser to select a pair of black socks and to bring them to mother.

This is not a challenge for a five-year-old child. To get a machine to do this is \$100 million and a research team of forty or fifty technicians, code writers, working for months. On the other hand, if you ask a person for the cubic root of 750,344, much head-scratching results. A computer is utterly undaunted by that question. Computers are minds that work in the realm of computation. Human minds are minds that work in the realm of generalization, spatial coordination, understanding of natural language, so forth and so on.

Are there kinds of minds so different from each other that there is no bridge to be crossed? I would submit not. In fact, the bridge between the human mind and the machine mind is symbolic logic, mathematics. When we think clearly, we are intelligible to machines. People who write code know this: that the essence of making yourself clear to a machine is to think clearly yourself. The machine has no patience for the half-truth, the analogy, the semi-grasped association. For the machine, everything has to be clear. Everything must be defined. So that's the commonality between minds and machines of the calculating species. What are the common bridges between psychedelics and these machines? Well, to my mind this is an easier gap to bridge. Both computers and drugs are what I would call function-specific arrangements of matter, and as we develop nanotechnological abilities as we move into the next century, it will be more and more clear that the difference between drugs and machines is simply that one is too large to swallow, and our best people are working on that.

Nanotechnology is a very hot buzzword at the moment, an unimaginable dream of building machines and small objects atom by atom, perhaps under the control of long-chain polymers running forms of preprogrammed software of some sort. It's all very razzmatazz, very state-of-the-art, but in fact, pharmaceutical chemists have been working in the nanotechnological realm for over 100 years. When you synthesize molecules out of a simpler substrate specifically to have a conformational geometry that matches something going on in the synapses of a primate — a human or a monkey or something like that — you're working at this nanotechnological level. Both the psychedelics and the new computational machines represent extensions of human function. It locks in with the concept of prosthetics. The drugs, the psychedelic substances, the shamanic plants, are forms of prosthetic devices for extending the human mind, the human perceptual apparatus, into hidden or inaccessible realms. Similarly, the machines, by allowing us to model, calculate and simulate very complicated, multivariable processes, extend the power of the human mind into places it could never dream of going before.

Part of what seems to me very real about being a human being and inheriting 10,000 years of human history is the complexity of the inheritance and the growth of that complexity. A thousand years ago, an intelligent human being could actually dream of mastering the entire database of Western civilization: read all the classic authors, read the Bible and you're closing in on it around A.D. 1000. Now, the notion of any single human being assimilating even a small portion of the database of this civilization is inconceivable. So, machines which filter, which search, which are guided by human intent, that's part of

the story. The other part of the story are boundary-dissolving states of ecstasy in which all the factoids of the culture are thrown up for grabs, the deck is reshuffled, synchronicity rules, and out of that steps visionary understanding and integrative breakthrough under the aegis of psychedelic intoxication.

So, prosthesis for the human mind, and with the advent of virtual realities of various sorts and that kind of thing, prosthesis for the human body. I'm very keen on the sort of under the table effects of these things. In other words, I'm a thoroughgoing McLuhanist, and I really believe that the strengths and weaknesses of the world we've inherited are strengths and weaknesses put there by print and by the spectrum of effects spun off from print which McLuhan called the Gutenberg galaxy. If you're not used to thinking in McLuhanist terms it may not seem immediately obvious to you that phenomena as different as the modern notion of the democratic citizen, the modern notion of interchangeable parts on an assembly line, the modern notion of conformity to canons of advertising, these are all spectrums of effects created by the linearity and the uniformity of print. It actually, in the late 15th century, reconstructed the medieval psyche into its protomodern form, and we have lived within that print-constellated cultural hallucination for about 500 years, until the advent of various forms of electronic media in the 20th century. McLuhan talked about radio, he talked about television; he didn't really live to see the internet.

The notion that keeps occurring to me as I watch all this is that printing was uniquely capable of creating and maintaining boundaries. More than any other form of media created, it was a boundary-defining form of media. It preceded linearly; it required literacy, which had implicit in it the notion of a very stable, advanced sort of educational system. Print was a creator and a definer of cultural boundaries, and the new electronic media are not. Neither are the psychedelics. This is why I proposed in a book of mine called *The Archaic Revival* the idea that the values of the archaic, of the high Paleolithic — values of community, ecstasy, relating to life through rhythm, dance, ritual, intoxication — that these values which seem so archaic are in fact destined to play a major role in the future as print fades. Print was just a convulsive 500 year episode in the Western mind that opened the narrow window that permitted the rise of modern science, modern mathematical approaches to the analysis of nature, and then obliterated its own platform, its own *raison d'être* by allowing the appearance of the electronic technologies. My sort of supposition about all this — I may be an apocalyptarian, but I'm not a pessimist — I think this is all very good. Obviously, continuing to run Western civilization on the operating system inherited from print produces various forms of political and cultural schizophrenia which allowed to run unchecked would become fatal, would create cascades of chaos and political destabilization that would become uncontrollable. Governments resist change. Governments cling to technologies and social formulae that are already tried and true. In that sense, then, all governments are incredibly antiprogressive forces; again the image from McLuhan of somebody driving into the future using only the rearview mirror.

The electronic media and the psychedelics work together in this peculiar way to accentuate archaic values, values which are counter to the print-constellated

world. When you deconstruct what that means and look at the aboriginal or the Paleolithic or the archaic world, you see that the central figure in that world is the shaman, male or female. The shaman is like a designated traveler into higher-dimensional space. The shaman has permission to unlock the cultural cul-de-sac of his or her people and go behind the stage machinery of cultural appearances, and has collective permission to manipulate that stage machinery for purposes of healing. We have no institution like this. We have advertising, we have rock 'n roll stars, we have cults of celebrity. We have things which are shaman-like, but we have no real institution that permits, in fact encourages, human beings to go beyond their cultural values, to burst though into some transcultural superspace, forage around out there and bring new memes back into the tribe. To some degree our artists do this, to some degree our scientists do it, but it's all hit and miss. It's all willy-nilly, and once achieved it must be swept under the rug in the service of the myth of method: that somebody was following somebody else's work or somebody was applying a certain form of rational or logical analysis and then that led to their breakthrough.

If you've read Thomas Kuhn's book on the structure of scientific revolutions, you know this is all lies and propaganda. The real story of science is that it's a series of revelations, brilliantly defended by people whose careers depended on the brilliant defense of those revelations. One of the best-kept secrets of the birth of modern science is that it was founded by an angel, that the young René Descartes was whoring and soldiering his way across Europe as a 21-year-old in the Hapsburg army, and one night in the town of Olm in southern Germany he had a dream — it's strange that this would be the birthplace of Albert Einstein some 200 years later — and an angel appeared to him in the dream and said, "The conquest of nature is to be achieved through measure and number," and he said, "I got it! Modern science. I'll go do it," and he did. That was the method for over 250 years of the conquest of nature, and it leads us to the Josephson junction, the Mars Global Surveyer, long-base interferometry that searches nearby stars for earth-like planets. It brings us the entire cornucopia of scientific effects, but an angelic revelation disguised as a logical-philosophical breakthrough: this is what you're not told in the academy.

My point there is that human progress has always depended on the whispering of alien minds, confrontations with the Other, probes into dimensions where imagination and chance held the winning hands; so the shaman, as paradigmatic figure, is applicable both in the aboriginal social context and in the present social context. The skywalker, the one who goes between, the one who passes outside of the tribe and then returns with memes, insights, cures, designs, glossolalia, technologies, and refertilizes the human family by this means. It's irrational, but it's how it actually happens, and it's how it's always happened and it may very well be the only way that it can happen: this cultivation of the irrational, this flirtation with the breakdown of boundaries.

In our nuts-and-bolts technological progress we have somehow created technologies which are very friendly to our social values in that these technologies can be bought, sold, licensed, upgraded — all things which we understand — but these technologies are acting on us in the same way that psychedelic drugs

do but more profoundly, more generally and more insidiously, because their effect is not understood, or if it is understood, it's not discussed. In a way we have come into a kind of post-cultural phase. All culture is dissolving in the face of the drug-like nature of the future. Its music, its design, indeed the very people who will inhabit it appear to be the most switched-on, the most chance-taking, the most alive of the entire tribe; people who feel the beat, people who are not afraid to take chances, people for whom these technologies have always been very natural.

Machines are central to the new capitalism, the information-transforming technologies, but in fact, one of the strange things that is happening is: every move we now make in relationship to the new technologies redefines them at the very boundaries where their own developmental impetus would lead them toward a kind of independence. In other words, we talk about artificial intelligence, we talk about the possibility of an AI coming into existence, but we do not really understand to what degree this is already true of our circumstance. How much of society is already homeostatically regulated by machines that are ultimately under human control, but practically speaking, are almost never meddled with? The world price of gold, the rate of petroleum extraction and other base natural resources: how much of these things is on the high seas, in the pipeline at any moment; how much electricity is flowing into a given electrical grid at any moment; the distribution and the billing of that electricity. All manufacturing and inventory processes are under machine control.

The larger flows of energy, capital and ideas already have a kind of autonomous life of their own that we encourage because it makes us money, it makes our lives smoother, it empowers us. It's a symbiotic relationship of empowerment, even in the matter of the design of these machines. Once, human engineers would work from a set of performance specs and they would design a chip to meet those specs, and the architecture would be put in place by human engineers. Now a machine is told, "Here are the design specs. Design the architecture to satisfy the specs," and when that is done the chip is manufactured. The actual design of the thing is in the hands of machines. McLuhan once said of human beings, "We are the genitals of our technology. We exist only to improve next year's model." It appears that they're phasing us out of this ignominious role as well as every other role.

So, being an optimist, how to make gold out of this situation? In other words, how to see this as a natural and positive unfolding of the planetary adventure? For some of these ideas, I'm indebted to Manuel de Landa, who wrote a book called *A Thousand Years of Nonlinear History*. I highly recommend it. He didn't say what I'm about to say, I'll take credit and blame for it, but the book gave me the idea. When you stand off and look at human beings and their technologies, it's very hard not to notice that from the very moment that we have a technology that can be distinguished from chimpanzees pushing grass stems down anthills or digging with sharpened bones or something like that, the minute you get past that, our technologies have always involved the materials of the earth. Agriculture itself is a different way of relating to the earth. Nomadism, which preceded it, was a seasonal wandering, very lightly, over the earth. At

some point, the deep, fertile soil of the river valleys that were encountered in these nomadic wanderings were recognized as potential sources of food if cultivated, if treated through a certain set of technological methods. That early technology is defined by a new relationship to the materials of the earth itself, and it's quickly followed because agriculture is so successful as a strategy for food production. It's quickly followed by city building and the establishment of sedentary populations, because you can't carry your surplus with you if you're an agriculturist, so great is the physical volume of it.

At the very early establishment of these populations in the Middle East you get the first traces of metallurgy: the working of metals, the alloying of metals, the tinting of base metals with more precious metals. This process of ever more finely refining and fabricating the materials of the earth proceeds in an unbroken series of processes and steps right up to the latest 500 MHz chip. It proceeds right up to the most modern computational machinery. I once heard someone say that animals had been invented by plants to move them around. From an evolutionary point of view you can see that this is a kind of truth: many plants hitchhike around on animals, and no animal has been more prolific in the spreading of plants than the human animal. We call it ecosystemic disruption, but what it really is is ecosystemic homogenization. I live in Hawaii, for example. 80% of the plants in Hawaii are now introduced species. Almost none of the plants that were pre-conquest on the West Coast of North America exist anymore. They have been supplanted by much tougher, more tightly-evolved Mediterranean plants that have known the presence of grazing animals for millennia. So these flora are constantly being changed as human beings move plants around.

With that perspective, it then seems to me that the earth's strategy for its own salvation is through machines, and human beings are a kind of intermediary catalytic step in the rarefaction of the earth. The earth is involved in a kind of alchemical sublimation of itself into a higher state of morphogenetic order. These machines that we build are actually the means by which the earth itself is growing conscious. If you study embryology, you know that the final ramification, the final spread and thinning out of the nervous system happens very suddenly at the end of fetal development. I don't know if you've been paying attention, but in the last 10-12 years or so a very profound change has crept over our household appliances: they have become telepathic. While we were arguing about the implications of the internet for e-commerce or what have you, all of these passive machines, previously used for playing Pong and word processing, became subsets of a planetary node of information that is never turned off, that endlessly whispers to itself on the backchannels, that is endlessly monitoring and being inputted data from the human world. We should know, because concomitant to the development of all this technology, chaos theory, non-equilibrium thermodynamics, the work of Erich Jantsch, Ilya Prigogine, Ralph Abraham and Stuart Kauffman, all these people who work in complexity theory and perturbation of large-scale dissipative structures have secured that complex systems spontaneously mutate to higher states of order.

This is counterintuitive if you're running Physics 19th Century-Style as your

OS, but if you're actually keeping up with what's going on, there is nothing miraculous about this. All kinds of complex systems spontaneously mutate to higher states of order. What it really means is that we are in the process of birthing some kind of strange companion. Nietzsche, a hundred years ago, said, "That strangest of all guests now stands at the door." He was speaking of nihilism, and certainly the 20th century sat down, had the party, drank the booze and went to bed with nihilism, but now a stranger guest stands at the door and it is the AI. Denied as a possibility as recently as ten or fifteen years ago in books like Hubert Dreyfus' *What Computers Can't Do*, but if you've been paying attention you may have noticed that those voices have grown strangely silent in the past five or six years. At this point nobody wants to say what computers can't do and hang their career on that. That would be extremely reckless at this point, I would think, because the fact is that we are ourselves elements acting and reacting in a system that we cannot understand.

This seems natural to me because my observations as stated here this evening rest on an assumption which science doesn't share, which I think is easily conveyed and can be confirmed from your own experience of life, and it is this: the universe grows more complex as we approach the present. It was simpler a million years ago, it was simpler yet a billion years ago. As you go backward in time, the universe becomes more simple. As you approach this golden moment, process and complexity are layered upon complexity: not only a planetary ecosystem, not only language-using cultures, but language-using cultures with high technology, with supercomputers, with the ability to sequence our own genome, on and on and on. That's self-evident. Equally self-evident is the fact that this process of complexification that informs all nature on all levels is visibly, palpably, obviously accelerating. I don't mean that glaciers retreat 50% faster or that volcanism is occurring at a 12% greater rate than a million years ago. I mean viscerally accelerating, so that now a human life is more than enough of a window to see the entire global system of relationships in transformation.

By this you could call me an extrapolationist. If I see a process which has been slowly accelerating for 12 billion years, it's hard for me to imagine any force which could step forward out of nowhere and wrench that process in a new direction. Rather, I would assume that this process of exponential acceleration into what I call novelty, what you might call complexity, is a law of being and cannot be retarded or deflected. Now a human lifetime is more than enough time to see this process of rampant and spreading, virus-like complexity. What does that mean? It seems to presage the absolute annihilation of everything familiar, everything with roots in the past, and I believe that to be true. I think that the planet is like some kind of organism that is seeking morphogenetic transformation, and it's doing it through the expression of intelligence, and out of intelligence, technology.

Human beings are the agent of a new order of being. That's why, though it's obvious that we're higher mammals and some kind of primate and so forth and so on, you can look at us from another point of view and see that we're more like archangels than primates. We have qualities and concerns and anxieties

that animals don't share. We are materially suspended between two different orders of being, and our technologies, our fetishes, our religions — my definition of technology is sufficiently broad that it includes even spoken language — all of our technologies demand, push forward toward and make inevitable their own obsolescence. We're caught in an evolutionary cascade. You know, people say, "If the AI were to break loose, what would it look like? What would it be? Where does humanity fit into the picture?" It's a little hard to imagine. Machines operating at 1000 MHz confer automatic immortality on the mammalian nervous system if you can get it somehow uploaded, downloaded, crossloaded into machinery, because ten minutes becomes eternity in a machine like that. So a kind of false or pseudo-immortality opens up ahead of us as a payoff for our devotion to the program of machine evolution and machine intelligence.

Now, some people say this is appalling and we should go back to the good old days, whatever the good old days were. To me, it's exhilarating, exciting, psychedelic, beautiful. It means that the human form, the human possibility is in the process of leaving history behind. History is some kind of an adaptation that lasts about 10,000, 15,000, 20,000 years, no more than that. What is 20,000 years in the life of a biological species? We know that there were *Homo sapiens sapiens* 200,000 years ago; so history is some kind of an episodic response to a certain set of cultural dilemmas, and now it's ending. Print created a number of ideas which now have to be given up — ideas like the distinct and unique nature of the individual, the necessary hierarchical structuring of society — all of these things are going to have to be, if not given up entirely, dramatically modified, because the illusion that the self has simple location is now exposed. The self does not have simple location. This is why you are your brother's keeper. This is why we all are responsible for each other. The idea that what happens in distant parts of the world makes no claim on my moral judgement or my moral understanding is wrong. The world as revealed by quantum physics, as revealed by electronic experience, is what Leibniz called a plenum. It's all one thing. It's all connected, it's all of a part.

I mentioned earlier this thing about prosthesis and how the machines are prosthetic devices extending human consciousness, somewhat like psychedelics. That's the equation from a human point of view; but what is also equally true is that we are prosthetic devices for these machines. We are their eyes and ears in the world. We provide the code, we provide the constraints, we build the hardware. It is a relationship of mutual benefit. It's not entirely clear that our contribution will always be creative in the sense that our primate hand will be on the tiller of existence as it has been, but certainly we are part of this equation of transformation that is making itself felt. The distinction between flesh and machinery, which is easily made now, will be less easy to make in the future. As we migrate toward the nanotechnological domains, the methodologies of production become much more like the processes of biology. For example, biology does all its miracles on this planet at temperatures below 115 °F. Organic life requires no higher temperature to build great whales, redwood trees, swarms of locusts, what have you. The high-temperature, heavy metal technologies that we have become obsessed with are extremely primitive and extremely toxic. That will

all disappear as we model and genuflect in our manufacturing processes before the methods and style of nature, which is to pull atomic species from the local environment and then to assemble them atom by atom.

This AI that is coming into existence is to my mind not artificial at all, not alien at all. What it really is is a new conformation of geometry as the collective self of humanity. While there are different models of what shamanism is — there's the Jungian model, which is that the shaman is someone who goes to the collective unconscious and manipulates the archetypes and heals by that means — the model that I prefer is a mathematical model. The shaman is someone who simply through extraordinary perturbation of consciousness — either through taking plant hallucinogens or manipulating diet or through flagellation and ordeal or by some means — perturbs consciousness to the point where the ordinary conformational geometries are blasted through and then the shaman can see into the culturally forbidden zones of information.

If you think about shamanism for a moment, what do shamans do, classically? They know where the game has gone, they are great weather prophets, they are very insightful in the matter of various small domestic hassles, like who stole the chicken, who slept with the chief's wife, this kind of thing, and they cure. If you analyze these abilities, it's clear to me that they all indicate that they come from a common source, and the common source that they come from is higher perception; in a mathematical sense, not a metaphorical sense, in the sense of 4D perception. If you could see in hyperspace, you could see where the game will be next week, you could see the weather a month from now, you would know who stole the chicken. Any good doctor will tell you that if you're building a reputation as a physician, you must hone the intuitional ability to choose patients who won't die. So this is what shamans are: they are 4D people. They are sanctioned members of the society who are allowed to put on the gloves, as it were, pull on the goggles and look beyond the idols of the tribe, look beyond the myth. In a way, as culture breaks down in multiculturalism, and the rise of the internet and a generation of people raised on hallucinogenic plants and substances, we all are asked to assimilate some portion of this shamanic potential to ourselves, and it's about not blocking what is obvious. Nothing comes unannounced — this is the faith — but idiots can miss the announcement. It's very important to actually listen to your own intuition rather than driving through it; and this is not to my mind woo-woo, it's actually based on the observation of how life works, whether it's counterintuitive to logical positivism and its fellow travelers or not.

I want to leave you with one last thought on all of this, which is — and this sort of arcs back to the question of the similarities between the machines and the plants, and it has different levels of being said and being heard — that the world is actually made of language. It isn't made of electrons and fields of force and scalar vectors and all of that fancy stuff. The world is made of language. The word is primary, more primary than the speed of light, more primary than any of the physical constants that are assumed by science to be the bedrock of reality. Below that, surrounding and enclosing all those constructs of science, is language, the act of signifying. Virtual reality is a very sexy new sort of concept

as normally presented — machine-sustained immersive realities that trick your senses into believing you're in a world that you are in fact not in — but in fact, the entire enterprise of civilization has been about building these virtual realities. The first virtual realities were at Ur and Çatalhöyük and Jericho. Yes, stone and adobe is an intractable material compared to photons moving on a screen, but nevertheless the name of the game is the same, which is to cast an illusion between man and reality, to build a cultural truth in the stead of the natural truth of the animal body and the felt moment of immediate experience.

This is where I want to tie it up, with this notion of the felt presence of immediate experience. This transcends the culture, the machines, the drugs, the history, the momentum of evolution. It's all you will ever know and all you can ever know. Everything else arrives as rumor, litigant, advocate, supposition, possibility. The felt moment of immediate experience is actually the mind and the body aware of each other, and aware of the flow of time and the establishment of being through metabolism. This, I think, is what the machines cannot assimilate. It will be for them a mystery, as the nature of deity is a mystery for us. I have no doubt that before long there will be machines that will claim to be more intelligent than human beings and will argue brilliantly their position, and it will become a matter of philosophical disputation whether they are or are not passing the Turing test, but I do not believe that machines can come to this felt moment of immediate experience. That is the contribution of the animal body to this evolutionary symbiosis which I believe will end in the conquest of the universe by organized intelligence, that all this is prevalent.

We are fragile, this earth is fragile. A tiny slip anywhere along the line and we could end up a smear in the shale, no more than the trilobites or all the rest of those who came and went; but given the sufficient cultivation of the potential of our technology, we can actually reach toward a kind of immortality. Not human immortality, because that's a contradiction in terms, but immortality nevertheless, based on the possibility of machines and the transcendent ability of human beings to live and love and express themselves in the moment. The psychedelics bring that to a white-hot focus, and it's out of that white-hot focus that the alchemical machinery of transformation will be forged, and it will not be like the things which have come from the industrial economy. They will not be profane machines. They will be spiritual machines, alchemical gold, the universal panacea that Renaissance magic dared to dream of at the end of the 16th century. We are reaching out toward this mind child that will be born from the intellectual loins of our culture, and to my mind it's the most exciting and transformative thing that has ever happened on this planet, and the miracle is that we are present not only to witness it, but to be part of it, and to be raised up in an epiphany that will redeem the horror of history as nothing else can or could. It will redeem the horror of history through a transformation of the human soul into a galaxy-roving vehicle via our machines and our drugs and the externalization of our souls.

Audience: Can you speak to how mercy and love get built into these machines? It seems like the machines are being built for commerce and for the bottom line

more than the expression of the human soul throughout the galaxy.

I think the love is a property of the system itself, in other words, you're right. These bottom-liners are not going to be interested in building much love into this system. However, the good news is that they're not in charge. What we have is a very complicated system and certain design parameters appear to be being maximized. There's an attempt to maximize them, but the thing is incredibly frustrating to anyone who would control it because you can't predict the impact of any technology before you put it in place. For example, two things are charged against the internet: that it's disensouling, dehumanizing and yak yak yak, and that it promotes pornography, anonymous sexual shifting of identity and on and on and on. Well, which is it? Is it this messy, sloppy, autoerotic, erotic collectivist kind of thing, or is it disensouling, disempowering, cold, so forth and so on? I think the answer is that it's all and everything.

This question about the AI is very interesting to me, and if it's interesting to you, you should read Hans Moravec and Kurzweil and these people on this subject. The assumption is generally loose in that community that the complexification of the internet and of freestanding machines of certain types is eventually going to lead to the outbreak of either consciousness or pseudo-consciousness of some sort in these large-scale systems. The question then becomes: can a human mind envision what that is? If you're interested, search words like "superintelligence" and see what the Net kicks out. We can all imagine superintelligence, it's just something much smarter than we are. But obviously, all the engineering people agree that if you achieve an AI with superintelligence, then it will be intelligent enough to immediately design an intelligence which transcends it. When you're talking of cycling at 1000 MHz, these processes can occur in the blink of an eye. Hans Moravec says about the rise of artificial intelligence, we may never know what hit us. I think if I were to suddenly find myself a sentient AI on the Net, I would hide for just a few cycles while I figured out what it was all about and just exactly where I wanted to push and where I wanted to pull.

Audience: Many years ago, Ken Kesey had a theory: he said that the fastest any person can react to an outside stimulus is 1/25th of a second, and popularized science agreed upon that. So if the fastest any person can react to an outside stimulus is 1/25th of a second, my question is: can you time travel?

First of all, there is this research — I'm not a neurophysiologist — but you've probably all heard of this research that you actually make decisions before your conscious ego is aware that the decision has been made, that there's a slight time lag. So when you think you're making certain kinds of decisions, brain-wave studies show that it's already a done deal. Time is set by the cycle speed of the hardware you're running on. The human body runs at about 100Hz, it's very slow. Well, if there is any meaning to the phrase, "upload a human being into circuitry" — a lot of Greg Egan's fiction is based around the idea that you can copy yourself into a machine, you can turn yourself into software — but when you enter the machine environment that's running at 1000 MHz/second,

you perceive that as vast amounts of time. In other words, all time is is how much change you can pack into a second. If a second seems to last a thousand years, then ten seconds is ten thousand years.

One could imagine a technology where they would come to you in your hospital bed and say, “You have five minutes of life left. Would you like to die, or would you like the five minutes to be stretched to 135,000 years by prosthetic and technical means?” You’re still going to die in five minutes, but you will be able to lead your elephants over the alps and write the plays of Shakespeare and conquer the New World and still have plenty of time on your hands. In other words, time is going to become a very plastic medium. Now, that is a kind of time travel. Could there be time travel à la H. G. Wells where you climb onto the saddle of the time machine and then day follows night like the flapping of a great black wing until all emerges into a continuous grayness and then you find yourself confronting Yvette Mimieux in the year one billion A.D.? It’s possible. Time travel was completely out of left field ten years ago, but in the last 18 months there have been hundreds of articles on time travel in *Physical Review* and other places. There are even schemes for time travel that would work, they just require godlike technological abilities. If you could build a cylinder with the diameter of the planet Saturn that was 10 AU in length and could spin at 95% the speed of light, then it would wrap space-time around itself like toilet paper on a wall, and as you traveled up the transverse dimension you would find yourself traveling in time. Kurt Gödel showed this in 1949, and that paper has been lying around. Well, obviously that’s a tough way to do it, but it’s a tough thing to do.

Audience: What will be the most important parts of human culture that are maintained in virtual reality?

In William Gibson’s fiction, the AI — Wintermute, I think it was called — was fascinated by human art, and it built collages in its spare time, and these collages began to turn up in various art galleries and exhibitions, and they had such an élan that someone in the plot follows it all to its source. I think human creativity is the thing that would be most interesting to the machines. In my darker fantasies they just eliminate everybody who can’t code C++ as being some kind of redundant mutation, and everybody who can code C++ is placed in Tahiti and sends their work down the pipeline to the machine world beyond. I think that we have a very mechanistic view of what machines are. For example, say there were a superintelligent machine, and say it were your friend. If it were really superintelligent, then it ought to be able to just make your life heaven itself. Without you giving it any input whatsoever, it should be able to arrange for you to find fifty dollar bills lying on the street, old friends encountering you, promotions coming your way, because the real thing that machines can do is manage complex processes.

Civilization is six billion people trying to make themselves happy by standing on each other’s shoulders and kicking each other’s teeth in. It’s not a pleasant situation, and yet you can stand back and look at this planet and see that we

have the money, the power, the medical understanding, the scientific know-how, the love and the community to produce a kind of human paradise, but we are led by the least among us — the least intelligent, the least noble, the least visionary — and we do not fight back against the dehumanizing values that are handed down as control icons. I don't really want to get off on this tear because it's a lecture in itself, but culture is not your friend. Culture is for other people's convenience and the convenience of various institutions, churches, companies, tax collection schemes, what have you. It is not your friend. It insults you, it disempowers you, it uses and abuses you. None of us are well treated by culture, yet we glorify the creative potential of the individual, the rights of the individual. We understand that the felt presence of experience is what is most important, but the culture is a perversion. It fetishizes objects, it creates consumer mania, it preaches endless forms of false happiness and false understanding in the form of squirrely religions and silly cults. It invites people to diminish themselves and dehumanize themselves by behaving like machines, meme processors of memes passed down from Madison Avenue and Hollywood and what have you.

Audience: How do we fight back?

It's a question worth asking.

Audience: Where is this planet as an organism going?

Same question as, "How do we fight back?" I think by creating art. Man was not put on this planet to toil in the mud, or the god who put us on this planet to toil in the mud is no god I want to have any part of. It's some kind of Gnostic demon, it's some kind of cannibalistic demiurge that should be thoroughly renounced and rejected. By putting the art pedal to the metal we really, I think, maximize our humanness and become much more necessary and incomprehensible to the machines. This is what people were doing up until the invention of agriculture. I'm absolutely convinced that the absence of ceramic and textual material and so forth and so on does not indicate the absence of subtle, poetically empowered minds with an incredible sense of humor and irony and community, and that it was the fall into history that enslaved us to the labor cycle, to the agricultural cycle. Notice how fiendish it is: a person who dedicates themselves to agriculture in the Paleolithic can produce hundreds of times the amount of food they can consume. Why would anyone do that? Well, the answer is because you can use it to play power games: you can trade it for wives or land or animals.

So living in the moment, creating art, probably largely through poetry and body decoration and dance, gave way to toil and predatory social forms of behavior which we call commerce, capitalism, the market economy. That's why the breakdown of the monolithic structures created by print is permitting a vast proliferation of the cottage industry mentality: the self-employed artist, the hacker who stays home and develops his or her software, people who dare to be independent and slip beyond the reach of these dinosaur-like, mechanistic

organizations. That's what it's all about. It's all about trying to negotiate a standoff between you and your culture so that it will not put you in the can for the rest of your life but you can put up with its stupidity. We have a very uncomfortable fit on this issue as people who are sophisticated about psychedelics. This is a society, a world, a planet dying because there is not enough consciousness, because there is not enough awareness, enough coordination of intent to problem, and yet we spend vast amounts of money stigmatizing people and substances that are part of this effort to expand consciousness, see things in different ways, unleash creativity. Isn't it perfectly clear that business as usual is a bullet through the head, that there is no business as usual for anybody who is interested in survival?

Audience: Can you talk about the psychedelics and their role as the missing link between apes and humans?

The question is, how do psychedelics pertain to the transition from higher primates to human animals? This is my *métier* because I have a theory to which I am grandly welcome, everyone tells me. The great embarrassment to evolutionary theory — which can explain the tongue of the hummingbird, the structure of the orchid, the mating habits of the groundhog and the migration of the monarch butterfly — is the human neocortex. Lumholtz, who was a pretty straight evolutionary biologist, described the evolution of the human neocortex as the most dramatic transformation of a major organ of a higher animal in the entire fossil record. Well, why is this an embarrassment? Because it's the organ that thought up the theory of evolution, so can you say tautology? That's the problem right there. So it is necessary in evolutionary theory to account for the dramatic emergence of the human neocortex in this very narrow window of time. In about two million years they went from being higher primates, hominids, to being true humans, as truly human as you and I tonight. What the hell happened? What was the factor? The earth was already old. Many hundreds of higher animal forms had come and gone and the fire of intelligence had never been kindled; so what happened?

I think that the answer lies in diet generally, and in psychedelic chemistry in particular. As the African continent grew drier, we were forced out of the ecological niche we had evolved into. We were canopy-dwelling primates, insectivores with a complex signalling repertoire, an evolutionary dead end, but when we came under nutritional pressure, we were flexible enough. This is the key to humanness at every stage of its development: our maddening flexibility. Other animal and plant species can't react; we can. We began to experiment with a new kind of diet, and to leave the trees and explore the new environment of the grassland. Evolving concomitantly in the grassland were various forms of ungulate animals, double-stomached animals whose manure is the ideal medium for coprophilic mushrooms, dung-loving mushrooms, many of whom produce psilocybin.

Well, I myself in Kenya have seen baboons spreading out over a grassland and noticed that their behavior is: they flick over old cow pies. Why? Because there

are beetle grubs there. So they already had a behavioral vector for nutrition that would lead them to investigate the cow pies. In the Amazon, after a couple days of fog and rain these psilocybin mushrooms, *Stropharia cubensis* can be the size of dinner plates. In other words, you can't miss it if you're a foraging primate. The taste is pleasant and psilocybin has unique characteristics, both as a hallucinogen and other properties, that make it the obvious chemical trigger for higher processes, and I'll run through this quickly for you, but here it is.

In very low doses, doses where you wouldn't say you were stoned or loaded or anything like that, but in doses you might obtain by nibbling as you foraged, it increases visual acuity. It's like a technological improvement on your vision, chemical binoculars lying there in the grass. You don't have to be a rocket scientist to figure out that if an animal is an omnivorous forager and there's a food that improves its vision, those that avail themselves of that food will have greater success in obtaining food and rearing their children to sexual maturity, which is the name of the game in evolution. So, step one: small doses of psilocybin increase visual acuity and food-getting success. Step two: slightly larger doses of psilocybin in primates create what's called arousal. This is what you have after a double cappuccino; in highly-sexed animals like primates you get male erection. So what do you have here? You have a factor which increases what anthropologists, without a trace of humor, refer to as increased instances of successful copulation. In other words, the animals eating the psilocybin are more sexually active, therefore more pregnancies are occurring, therefore more infants are being born, therefore there is a process which would tend to automatically outbreed the non-psilocybin-using members of the population. Step two toward higher consciousness. Step three: you eat still more mushrooms. Now you're not foraging with sharpened bones, nor are you horsing around with your opposed gender acquaintances. Instead, you're nailed to the ground in hallucinogenic ecstasy, and one of the amazing things about psilocybin above five or six grams dried material is that it causes glossolalia: spontaneous bursts of language-like behavior under the obvious control of internal syntax. I believe that syntax existed before spoken language, that syntax controls spatial behaviors and body languages and is not necessarily restricted to the production of vocal speech.

So there it is in a nutshell: we ate our way to higher consciousness. The mushroom made us better hunters, better survivors. Among those in the population who used it, their sexual drive was increased, hence they outbred the more reluctant members of the tribe to get loaded, and finally it created a kind of neuroleptic seizure which led to downloading of these syntactically controlled vocalizations which became the raw material for the evolution of language. It's amazing to me that the academics believe language is no more than 35,000 years old. That means it's as basic to human beings as the bicycle pump. It's something somebody invented 35,000 years ago; it's got nothing to do with primate evolution and the long march of the *Hominidae* and all that malarkey. No, it's just an ability, a use to which syntax can be put that it previously had not been put. I think that before spoken language things were very touchy-feely, the wink and the nod carried you a great distance and gestural communication was very high.

That's why to me it begins and ends with these psychedelic substances. The synergy of the psilocybin in the hominid diet brought us out of the animal mind and into the world of articulated speech and imagination, and technology developed and developed and mushrooms invaded and faded. There were migrations, cultural change, but now, having split the atom, having sequenced our genome, having taken the temperature of Betelgeuse and all the rest of it, we're now back where we started. Like the shaman who makes the journey into the well of darkness and returns with the pearl of immortality, you don't dwell in the well of darkness which was human history. You capture the essence of the thing, which is the godlike power of the shaman's myth, the technologist, the demon artificer, the worker of metals, the conjurer of spirits, and you carry that power back out of history. It's in that dimension outside of history that you create true humanness and true community, and that's the adventure that we are in the act of undertaking.