

CLOSING KEYNOTE

Closing Keynote

ON RADICAL EVOLUTION

BRUCE STERLING

Thanks a lot. I enjoy being the last keynote speaker, because it means nobody gets to leave until I say.

Thanks for having me in. It's been a very edifying three days. I enjoyed it here. I'm not gonna try not to keep you, because the weather is beautiful. But I have rather a lot on my mind today.

Because I have this writing assignment which I've been working on, which ties in closely with the theme of your conference on "Evolution and Revolution". It has to do with this interesting book written by colleague of mine.

His book is called "Radical Evolution," like this speech. "Radical Evolution: the Promise and Peril of Enhancing Our Minds, Our Bodies and What It Means To Be Human."

The author of this book is now the Lincoln Professor of Law Culture and Values at Arizona State University, and his name is Joel Garreau. And Professor Garreau has this website, which is called "The Prevail Project," where he wants to grapple with the problems he describes in this book. Or maybe acquaint many of us with what he perceives to be a "Radical Evolution" in what it means to be human.

Radical Revolutionary Human Evolution. Truly radical ethnographic change in the human race. Basic change in our definition of humanity. That's the subject of this book.

I'm suppose to write some kind of blog post, or essay, or a little preface, that explains to a wondering mankind why Joel has a pretty good idea with this scheme of his.

And after I hung out with you people, ethnography guys, for three days, I think I have a better grasp of the issues. I am actually going to improve this piece of writing.

I was asked to be provocative here, and these are provocative topics. So, I'm gonna skim over some of these "Radical Evolution" notions for about half an hour.

But why this stuff is relevant to you? Well, "ethnography" is all about "people" and "human culture." You ethnographers are keen on the business world. Business is a set of methods to create a profit. But business is imbedded in culture. All businesses are part of culture. So, if you're an ethnographer, you've got to meet a business guy, and you have a conversation.

Sort of like this.

CLOSING KEYNOTE

Business guy says: Look, why isn't this product or service selling?

And you, the ethnographer, reply: Well, there seems to be a culture conflict.

Well, I'm the businessman! Why can't I see that for myself?

Well, you see, your business also has a culture, and you're blinded by your business culture. That's why you can't perceive certain culture realities -- like I can.

Okay, how much will it cost me for you to find that out for me?

Well, how much do you have? [Laughter]

So, you get hired, and then you take the old clipboard and the videocam, and you go out and you relate to the people.

So, you ask: Well, how do we do things around here? Quote "we" unquote, quote "here" unquote, quote "things" unquote?

The answer is generally: Well, it's not the way that businessman wants.

Then you suggest that they get over it. You suggest: Well, how about if we called this "Mom's Old-Fashioned Nuclear Power Plant?" [Laughter] Would that make you feel more comfortable?

It's a pretty good line of work, because people are just people. You could take comfort in the certainties of human variety, and you don't have the limited mindset of your client the businessman. That's why you exist as a group.

Now, "Radical Evolution" postulates that there is a time coming when certain people are no longer "people." Because there are radical technical capacities loose in the 21st century that don't have historical parallels. They have capacities we've never seen before. And that really could transform our ideas of self.

They're not imaginary sci-fi technologies, like time travel. They're genuine technological promises, or capacities, that are loose among us, really.

So, the day then comes when you sit down with the old survey checklist, and you try get cozy with your informant. Then you realize they're just not reacting like a human being would react. They might look human -- they have the proper physical proportions and so forth -- but they're just not behaving like anybody from any previous culture has ever culturally behaved.

They're stakeholders, and they're social actors, and they might be wealthy and powerful and capable, but they're just not human.

CLOSING KEYNOTE

Now, that prospect sounds very sci-fi, and that's because sci-fi is a line of writing that's keen on non-human characters. For instance, Mary Shelley and "Frankenstein." Sci-fi has been extremely keen on non-human actors, robots, androids, space aliens, Martians, monsters. We've got this by the truck load. It doesn't bother us any. We're happy with it.

This "radical evolution" prospect is not sci-fi. Because sci-fi is a form of popular entertainment. It's looking for dramatic moral conflicts and some eye-catching special effects. That's what we do as entertainers. A sci-fi writer like myself is always gonna pull something spectacular or melodramatic.

That's what critics in my line of work call "cognitive estrangement." That's what we sci-fi people are keen on, when we're like getting very serious with one another. "Cognitive estrangement" means "I never thought of it that way before." That's what you, the reader, ought to do after a really effective sci-fi intervention. That's the victory condition: just like, "I never thought of it that way before."

I'm "cognitively estranged." I'm in a space where these things literally never occurred to me. It might have something to do with reality, or it might not, but that's what science fiction writers do. It's like the palming techniques of stage magicians.

But that's not what Joel Garreau is concerned with, because he's not a science fiction writer, although he has some friends who are. He is concerned with specific technologies which he calls GRIN, G-R-I-N, Genetics Robotics Information and Nanotech.

In the 20th century, there wasn't a lot of "Genetics Robotics Information and Nanotech" going around. Nowadays there most certainly is. These are all technologies, he says, that could be radically accelerated by Moore's Law. Because a lot of them are dependent on computer analysis, computerized means of production.

So, as our computers get stronger and more capable, our ability to go mess with genetics, robotics, information and nanotechnology all increases. It's Moore's Law, chugging along at a doubling rate of eighteen months.

This suggests that maybe these things can get radically out of hand in short order. That concerns Joel, because he is a socially responsible guy, being a Professor of Law, Culture, Values and so forth.

So, he's trying to come up with a way to make social responses also radically accelerate. In other word, GRIN goes on, but then we also find this method where we agglomerate people together, so that we don't get blindsided. We find a method to get huge masses of people up to speed, as quickly as the technologies themselves are accelerating.

We get policy makers on board. We just react really fast. We enable ourselves to reach a rapid consensus. We take rapid effective action, and this is what he calls "prevailing."

CLOSING KEYNOTE

It means that we prevail. We just stay on top of it. It's fast but we're just as fast, faster. Mankind prevails. We muddle through. We create enough time, in our 30 minutes. We create enough time to deal with these things.

So now I'm gonna give you my frank opinion on where I think these GRIN things are going. Not as a science fiction writer, who is keen to blow your mind, but as a futurist.

I'm gonna divide it up into three segments. The melodrama aspect, the policy issue aspect and the everyday likelihood.

Now, as a science fiction writer, I'm keen on melodrama. Joel Garreau, as a law professor, is keen on policy issues. Then there's the stuff that is likely to happen.

So let's just take "genetics." Okay, the melodrama aspect in genetics, starting from day one, has always been "super babies."

I change my own genetics, then I have my super baby, and he goes out and conquers the world. He's Genghis Khan, or whatever. He out-competes your normal baby, so then I've created a baby gap with the overclass.

What should be the policy issues here? Should we make sure that everybody has an equal number of super babies?

Okay, I don't think super babies are at all plausible. They have nothing to do with the constraints of real world technical development. Anybody who created the Alpha Super Baby Roll Out would be crazy, because the second super babies are absolutely gonna be better than the early super babies.

There are other ways to change genetic expression in people besides creating one in the ovum. That doesn't really make any sense. Genetics exist to express certain kinds of chemistry. Having magic DNA does not give you magic.

I think the likely scenario for genetics is that the breakthrough aspect will be bacterial. I think it will be J. Craig Venter's "Synthetic Biology," because Dr. Venter has major financing from Exxon. He can go out and tinker with bacteria and there's a very little political blow-back in messing with bacteria.

If you messed with the super baby, you're guaranteed a hot-button, melodramatic response. Or you could create some yogurt and feed it to the baby. It happens to be full of radically accelerated bacteria that then lodge inside the body and perform all the functions that the genetics would have performed. That's just "super baby food." That's not really a problem.

You might feed your infant on straw for 5 cents a week. Because, you know, Dr Venter's colleagues are working on termite bacteria, the bacteria that break down wood and allow termites to run around.

CLOSING KEYNOTE

Okay, how come we can't just eat newspapers and live? Why can't human beings eat straw? Okay let's just assume this is happening.

I know this sounds farfetched, theatrical and comical, but as an ethnographer, you can put yourself ahead of this. Imagine your client is asking you: We are really worried about the cafeteria expenses among the employees. We think we can get them to eat straw.

So, then, wait a minute. There's gonna be fantastic cultural resistance to the idea of eating straw. Everybody knows that a culture is defined by its diet. You can't just tell Italians to stop eating spaghetti.

So, it's like, why don't you just make the straw spaghetti-shaped? Why isn't it "Mom's Old Fashioned 100 Percent Natural Tuscan Straw?" Then you drink a little yogurt or lime with it, and you digest it just fine. And it's fantastically cheap.

Then you've got the population to step down the food chain. This releases a lot pressure on the environment. It reduces their carbon footprint. And it's mostly a question of cereal box design. Look at the substances that are already in cereal boxes. They don't look anymore "natural" than any other kind of flake or chip.

I mean it's an achievable project. Now, rich people are not gonna "eat straw," because the rich don't eat GMO food. But GMO employees would be great. If you look at them objectively, a lot of them are already horribly obese. Clearly the population is not being well fed already.

So this is the kind of future engineering project -- the social engineering project that I think ethnographers are likely to tackle. Because eating straw is primarily a cultural problem. It's not beyond likelihood. You could persuade people to do that. That's within your power. A very few other people could do that. And if it was done clumsily, Monsanto style, there would be people with pickets on the street. But nonetheless, Europeans do eat genetically modified food now.

It was a long term social struggle, and this is the sort of thing that you might face from GRIN technologies.

Okay, now robotics. What's the melodrama aspect of robotics? My android husband. I thought I loved him, and it turned out he was a machine, and then there's this set of moral lessons are drawn. It's very Philip K. Dick. He's a Robocop. Maybe he's a giant anime monster. These are just a set of spectacular melodramatic disappointments. I don't expect any of those things to happen.

People have been talking about android robots since eighty years ago. They've been nothing but staged puppets. There's no there there.

CLOSING KEYNOTE

The policy issues around robotics are pretty well established already. It's all about unemployment, automation. Lately we've been talking about killer drones in the air, autonomous aircraft spying on people as a hot button issue in robotics.

What's really likely to happen? What's one of the realistic upshots? Well, the real problem with robots is they can't do enough computation inside their little robot heads. They can't carry around enough machine smarts to get themselves to see and operate and move and maneuver in three dimensional spaces.

That's why most robots are nothing but an arm. They go through a certain limited number of dull, dirty, dangerous functions. That's where robots traditionally existed within our society.

Okay, now imagine a Roomba which is piloted by the Google cloud. It's an Internet peripheral which runs on Android, and just snuffles around inside your home doing various small useful tasks. Vacuuming, pursuing vermin, finding shoes, whatever.

It doesn't get lost. It remembers where everything is. It's just basically snuffling around, geolocatively dealing with your interior environment. And, basically, its operations to you are as opaque as the operations of Facebook. Just as with my Facebook, here he comes, my robot. Maybe he's got like a little "F" on him.

Why is he doing this for free? I don't really know. I don't care. Are you aware that you are the product of this service? Like, it has infiltrated a robot into your private home. But listen everybody, my robot caught a rat last week. He purrs when I stroke him. I don't care. It was cheap! It's getting cheaper and more capable.

They're rolling them out, he's got Facebook, I've got the Google plus version, and sometimes they fight. That's what a real world robotics looks like. Maybe it sounds comical, but the implications are quite serious. It's about a robot gap with other people that could change your domestic life in an ethnographic, measurable fashion. Genuine robotics could free up the productive capacities of house workers, and so forth, and so on.

Practically every implication that people have talked about, done through robotics, could be done through one of these relatively simple and cheap robotic devices. This humble thing is not your husband, not your wife. It's not some kind of existential threat to you. It's just existent, and maybe as rapidly proliferating as your mobile phone.

A robot is also a "mobile device," it just has wheels, plus maybe arms and a camera.

Okay now, "information." So what's the melodrama aspect of this? Artificial Intelligence, of course. Because science fiction writers always try to construe technologies as dramatic actors. So we all know how Artificial Intelligences behave in sci-fi films, or perhaps some cyberpunk cyborgs with dramatic holes bored in their heads.

CLOSING KEYNOTE

Information policy issues. There are zillions of these. Obviously we are overwhelmed by them. They're multiplying on all sides. Twitter revolution. Collective intelligence. Chinese human flesh search engines. Political extremes. Kid porn, drug dealers, Mafia, terrorists. Globalization issues. Finance crisis. They're all related to proliferating information. That is workaday information. Our policy makers have very little understanding of what's going on. They are continually being blindsided. There is not an institution in our culture which hasn't have been subverted and transformed by this.

Nobody gets away from it. What is the likely upshot of this? There are just too many to count.

But from an ethnographic perspective, you're gonna start seeing people with truly bizarre value systems. Dropouts from analog culture. Drop ups, jetsetters, gypsies, the globalized, the deracinated. Sharable communards. Denationalized people who have no national heritage. Just a network society which reticulates rather than progressing. They have forgotten what mom, flag, and apple pie ever were. They just never saw one. They learned their reality on a street corner in Hyderabad off a mobile device.

That's how they were brought into society. They just don't respond any of the conventional sticks and carrots, the rewards and punishments. They lose a mobile, and they act as if they've been decorticated.

Nothing else there for them. The world's most effective political actor is a strange old man in a Pakistani safe house, wrapped up in a blanket, watching himself on TV with the stack of thumb drives. That's our most important political actor in the past 20 years. They came out of helicopters and killed him.

A very strange guy by ethnographic standards. I mean, imagine debriefing him. "How did you get to be like this?"

Then there's nanotechnology. There's a melodrama aspect to nanotechnology, because it's really small and fast. The legend of nanotech has bizarre bacterial vibrations going on, tiny super robots, Grey Goo scenarios where there is a Chernobyl style replication of tiny invisible objects, and so forth. Nano implants that run around inside the body. These are familiar science fictional themes.

They don't concern me. Because I don't think they are likely. I think the real policy issues for nanotech are issues like pollutants and familiar biotech problems. Nanotech and biotech are very similar.

If you wanna do a very, very small capable engine, you just adapt cellular structures. You don't build little machine Volkswagens. That doesn't make any engineering sense.

There will be externalities for nanotech industries, because its easy to make small stuff and sweep it under the carpet where nobody sees it. It's too small to see.

CLOSING KEYNOTE

Microchip design and Moore's Law are dependent on nanotechnology. I expect those to continue to accelerate. There will be more storage, more capacity, more crunching, just packed smaller and smaller. "Plenty of room on the bottom," as Richard Feynman used to say.

These are real technologies, but I'm not particularly concerned about that. I think the term "nanotechnology" will probably die of hype. "Nano" just means "small," which is a rather meaningless thing to say. It's like praising "megatechnology," and being obsessed with who has the biggest skyscraper. You can have a really, really big skyscraper or a really, really tiny skyscraper, but those are not crucial issues in themselves. The likely upshot of nano is gonna be stuff like pollutants, home microlabs, and new kinds of interesting composite materials. But of the four grand technologies, I think that one has the least traction. It is not something I think I'm likely to wake up sweating over, even though it's very common and popular amongst sci-fi writers.

So, I want to give a couple of hints here about how to get one's head around this set of nebulous threats and promises. It's easy to fall for the rhetorical sci-fi gesture. "Mental kartha hai," as the kids in Hyderabad like to say. The prospect blew my mind, and therefore, I forgot to really think about it. That's not a good idea.

You really should try to make the unthinkable thinkable. I think the best way to deal with these things is not to think about them in abstract metaphysical terms, but to seek out areas of practices where people are genuinely dealing with the possibilities.

In the case of grand technologies, I think there are basically four areas worth watching in terms of the transformation -- the technical transformation -- of the human condition.

First, the differently abled. Somebody who's already broken and has less to lose: this is where advanced therapies are being carried out. People have means, motive, and opportunity to mess with themselves when they are already very messed with.

Athletes. They are fanatics. There's a lot of money involved. Means, motive and opportunity again. They are willing to possibly harm themselves in order to achieve superior levels of performance.

The military doesn't have to worry about everyday budget processes. They're not in a consumer business. They are willing to do extreme things for military advantage.

Then the sciences: lab animals, cell cultures, especially human cell cultures. What's going on in the lab? Does it work in the lab? If it doesn't work in the lab, then it's still sci-fi. You won't see any humans who really aren't human until you see some lab rats that aren't really rats.

There aren't many of these around yet. The labs have some pretty strange-looking rats, but not many post-rats, trans-rats, the ultra un-rat-like. But there are harbingers of this. For instance, the "Methuselah mouse."

I want to go on about this entity for a while, because I think there is some daylight there. The Methuselah mouse is associated with Dr. Aubrey de Grey. De Grey is this gerontologist, and he is

CLOSING KEYNOTE

working on extending the human lifespan. He comes from a computer-science background and he thinks there are basically seven different pathways of metabolic decline.

In other words, we get sick and age for seven physical reasons, and he is trying to map these out. I suspect that he is on to something there. I really think that life extension, hacking metabolic pathways, is one of the simplest things we could do that would plausibly transform the human condition.

I don't think anybody is gonna take a magic sci-fi immortality pill and have aging go away overnight. But I would expect there to be some creeping advances along that line. Your Provigils, your Rogaines, your Viagras, your Cialis pills. You're gonna see these things creeping in under the door.

That will not be framed as "post human" and it will not necessarily feel very sci-fi, but it will still have a strong ethnographic effect that will really change the way society works. The sense of wonder has a short shelf life, but the implications of a technological breakthrough will go on for decades.

So, I wanna tell you a story about this. I'll try to make it clear to you what the implications are. So, let's assume you're Silvio Berlusconi, the prime minister of Italy. You're this seventy four year old rich politician, and you're overheard on a wiretap boasting to a friend of yours that you had sex with eight women in one night, and that you had eleven women standing by in order to meet your needs.

You're not boasting, because it's a private conversation. You merely relating the claim that you had sex with eight demimondaines, even though you're seventy four years old. You have dyed hair and you have a facelift, so clearly you're not afraid to mess with your body. You're basically a show business personality, willing to go on and do the whole Ronald Reagan nine yards.

So obviously you've been taking Viagra or Cialis or some other kind of male enhancement chemical. That has created this fantastic political sex scandal which has frozen a G7 major power.

The population is traumatized by this in Italy. I can promise you: these incidents have very serious political, social, ethical, and legal repercussions and implications. It's not a joke that this guy has become the Barry Bonds of upper class playboy decadence. He is a sexual athlete with a chemical prosthetic -- but nobody frames the issue in this way.

Nor do we frame this as a "network society" issue-- although Berlusconi would never have been overheard saying this, if it were not for the fantastic digital wire tapping capacity that's been built into the Italian justice system.

There's really a collision of two grand trends, am I right? They are happening today. One is the biotech implication, this new pharmaceutical, and then the other one is now an information society implication. It's weird, it's here, and it will change society.

CLOSING KEYNOTE

What does it mean? It means you will meet some guy in the future who will tell you, "Well, I'm seventy three, and I think it'd be great to have sex with eight women tonight. I've got a lot of money and I know where to find the women on the Internet. So I want you to sell me some of that stuff."

The natural reaction is, "Well sir, um, that's not how we do things around here."

However, yes, it is actually how things are done around here. It just is. Because the prime minister does it, and therefore, why can't I do it?

"Well, you're seventy four years old sir."

"But I'm already doing it. It's not an issue of whether it's possible. We are talking about the price point. Fork it over. Give it up. I know it's possible. Now I just want it."

"Well you know I'm-- I'm sorry, but my pharmaceutical companies aren't ready to comply with your ambitions. It is, um, formally, physically, ethically, and socially impossible."

"Not any more. That is a fact on the ground. Deal with that."

Okay, so, that's how I think this will likely play out. That's not framed as an opposition to human tradition. It's not a sci-fi singularity. It's not a sudden blinding tsunami like an H. G. Wells Martian Invasion. We're looking at a series of weird hairline, cracks, and ruptures in the dikes of the human condition. Somebody is gonna have to debrief those people. The twenty first century GRIN mutants. The radically evolved -- whoever they are. The military-athletic top of the food chain, or the lowest on food chain, it's not necessarily gonna be anybody you expect. It might be a G7 head of state, it might be some desperate favela housewife who just couldn't afford to stay human anymore.

Now, whose profession will actually deal with "radical evolution" -- should such a thing happen? Who's actually got a chance to like get their head around this? Who is it who could be the post-anthropologist?

The sympathetic listener. Somebody who appreciates its everydayness, somebody who can get behind the quotidian qualities of not being human. Who in our society is even remotely capable of dealing with such emergent realities?

Somebody's gonna do it. There will be tremendous pressure to do it. There will be ethical, legal, social, economic reasons.

Why not you? Who else is there?

Thanks for your attention.

