

GLOBORG



COMING SOON TO THE PLANET NEAR YOU

C20: Cars Replace Horses

C21: Robots Replace Humans

Globorg Is GO

GO Dominion Is GOD

GOD Is Great!

Interviewing Andy Ross

Candid exchanges with the author of **Mindworlds** and **G.O.D. Is Great**

By Ivy Cross

Cars replaced horses last century, robots replace humans this century. That claim was all I knew about controversial philosopher Andy Ross and his Globorg ideas before I met him. Globorg is his name for the global organization – G20 summits and all that. In **G.O.D. Is Great** he argues that Globorg dominion – the GOD in the title – is the biggest news for life on Earth in half a billion years.

Scene 1 3

A conference room in New York

Scene 2 8

A private apartment in New York

Scene 3 12

A restaurant in London

Scene 4 14

Another restaurant in London, with Bob and Carol

Scene 5 16

A rented flat in London

Scene 6 22

A London pub, with Dan

Scene 7 25

The rented flat in London

Scene 8 27

An English domestic lounge, with Evan

Scene 9 30

In a car near Heidelberg, Germany

Scene 10 31

A private apartment in Heidelberg

GLOBORG



Andy Ross

Scene 1

A conference room in New York

I: What gave you the idea for Globorg?

A: The first glimmer was many years ago. I invented an electronic globe that I called the Global Hyperatlas.

I: Tell us more about the Global.

A: This was some twenty years ago. No one has actually made more than a prototype so far, but soon the hardware will be cheap enough that it could become a household toy that sells by the million.

I: How does this relate to Globorg?

A: Global thinking, I guess. You see this thing, this globe, and think of all the functions you might program into it, and all the facts you can collect to get started with that. But then you start to think more widely about this planet of ours. What is it? Is it just a big ball of rock with a slick of tiny DNA creepy-crawlies like us on the surface? Or is it a kind of organism in its own right, like Gaia, the planetary organism that James Lovelock invented to describe global feedback mechanisms?

I: Is Gaia related to Globorg?

A: Not directly. Globorg is an independent concept with a different rationale. I'm skeptical about Gaia as a mechanism, although there might be something there, but Globorg is an immediate political reality. Globalized technology is here to stay, and it forces us to think globally whether we like it or not. I'm just extrapolating to the long view.

I: How long is your long view?

A: The scope of my view in the book is this century, but the idea is that the concept is a foundation for a thousand years and more. The underlying biological concept describes the biggest step forward for life on Earth in half a billion years, since the Cambrian Explosion.

I: That's ambitious.

A: Not really. The idea has been kicked around like a football in philosophy for centuries. There's a premonition of it in the Christian idea of the global body of Christ, which gives us two thousand years right from the start. But the immediate springboard for my concept was the Singularity. Do you know the story there?

I: You mean Vernor Vinge's idea that machines will overtake us and we'll lose our ability to control how the future develops?

A: Yes, that was toward the end of the last century. Ray Kurzweil talked it up in his 2005 book *The Singularity Is Near*, then founded the Singularity University with help from Google and NASA in California.

I: Isn't Globorg somehow more practical than that? It's hard to see how it relates to the Singularity.

A: Globorg is the human instrument for keeping control of the planet for as long as possible as the machines gradually take over more and more of the commanding heights of the infrastructure that keeps us all alive in our civilized world. The machines won't take over suddenly, everywhere at once, because we won't have any reason at all to build machines that could do anything like that. Basically, we'll build machines that help us and do what we say. We can go a long, long way by following

that general approach before we begin to lose control of the strategic heights. But that's true only if we stay organized. And the only way to stay organized is to think globally.

I: Can you spell this out more fully?

A: I think robots are the key here. They will soon be able to threaten us on a big scale. I don't mean military Terminator robots killing people and all that. I mean robots in industry, doing productive jobs more or less autonomously. Robots are getting better every year. They're getting faster, cheaper, smarter, more sensitive, more robust, and more capable of running their own daily work routines. Whereas people aren't. If anything, people are getting more difficult, with all the legislation governing working conditions and rights to time off and pensions and so on, and more risky for an employer to take on at all. So if you draw the curves of robots costs and benefits versus human costs and benefits, you find that the decision to go for more robots will become irresistible for more and more employers within a surprisingly short period of time. We shall live to see the effective extinction of the industrial proletariat, with more and more other jobs following behind. People will still be in control higher up, but they'll be shrinking islands in an increasingly robotized world.

Robots are getting better every year.

They're getting faster, cheaper, smarter, more sensitive, more robust, and more capable of running their own daily work routines.

Whereas people aren't.

I: So how will humans reorganize themselves to cope with all this?

A: We shall learn to think globally. The machine infrastructure of the world is global. More and more machines are going online and optimizing whatever they do in relation to machines around them, or far away, continents away or in orbit. Obviously, we shall design and develop their online environments and begin to apply the perspective they give us to ourselves as well. National boundaries will look more and more absurd as we seek to extend our machine empires. The global coordination we get now from institutions like the global summits – G20, G8, G2, and so on – will soon seem rather thin, and we shall find excuses to extend it. So what I call GO will come soon enough. But that's only the start. We – humans, like you and me – will

soon see that our personal autonomy and identity is limited and superficial, and see that our shared identity as buds of higher organization in a single organism that extends globally through all DNA-based life makes more sense.

I: This sounds more like biology or psychology. Can you elaborate?

A: The orthodox view now is that we are separate individuals both physically and mentally, and everything we know about human biology and psychology suggests that this is a good first approximation to the truth. But psychology is still very young as a science – I think most people say it's about a hundred years old and call William James the first scientific psychologist – and we still lack a convincing theoretical model of how our minds are organized. In the science of physics, for example, the first good theoretical model was probably Isaac Newton's mechanics, which came a long time after the data was already quite scientifically organized. And in biology, it took a century or more to advance from lots of interesting data in persuasive patterns to Charles Darwin's evolutionary perspective on all that data. I think we still lack that sort of overall model for the conscious human mind, or for consciousness, as we say.

GLOBORG

I: Are you saying that Globorg has something to tell us about consciousness?

A: Yes. It's one of the forms of our top-level model. We think at different levels and we make models to make sense of things at those levels. So I have a model of me as an aging gentleman navigating in rooms and streets and a model of us as people in a city and a model of us all as animals on the surface of a planet and a model of the planet as a little rockball in a huge universe. My consciousness hops from level to level as I contemplate all this. My mind is a kind of universal tool that puts context around any items in my focal awareness. On this view, consciousness offers a global workspace.

I: Where did the global workspace idea come from?

A: A California scientist called Bernard Baars, a great pioneer. So in the global workspace I set up these models to provide context for the stuff in focal awareness. Global for Baars was relative to the brain, of course, not the planet, but I see this as an opportunity to generalize. In my wider view, Globorg is our shared context. However different, or dissonant, or even incommensurable, the stuff in our heads may be, somewhere we share a common context. And all of us, all humans on the planet, share

the Globorg context – and of course all higher contexts, such as the big-bang universe.

I: Can you be more specific about this Globorg context?

A: Globorg is a shared context for us all. And it's growing, growing fast. All our machines and all the lifestyle accommodations we make for them form the leading edge of Globorg invading our personal lives. The action is increasingly up there in the cloud and we spend more and more of our time reaching up to take part in it in some way.

I: Up in the cloud?

A: The cloud is everything up there in cyberspace and beyond. Actually, we should say the clouds, because many of the apps we use live in proprietary spaces, in their own clouds, which may be firewalled off from the big public cloud. So let's say clouds. We live a lot of our lives in the clouds, and define ourselves more and more by our cloud presence or our footprints in cloud devices such as mail servers and commercial app servers.

I: But our footprints in the cloud servers are all completely different. Where's the shared identity in that?

A: Yes, the details are personal, but the shared

context is the decisive innovation. We've made a shared space where we can be as different as we like, quite capriciously, and still be in public, as it were. Privacy is now a willed thing, a choice to keep some data private. The data itself is just data like any other, with no more personality than an ID number.

I: Do you mean we lose our individuality just because we put our personal data in the clouds?

A: It's actually a bit more indirect than that. Just agreeing that the personal data defines me is enough to compromise my individuality. If I accept that my personal and private data expresses my essence as a unique individual, then my essence has been cut and dried. It's become a standardized thing that can be bought, sold, copied, erased, and so on. We all become cells in a huge structure that we share. I can be as private as I like in my cell, but it still encloses me and shapes me as part of a public structure.

I: How does this relate to psychology?

A: Well, I know that when I define my essence I'm left with precious little. Whatever is special about me is just a combination of standard elements. Anyone with the recipe can just mix up the right things and reconstitute me. It's

like my genes. Once I know that all my peculiarity as a human animal is coded in my genes, and that my environment acts on them to make me what I am here and now, the magic of my own biology is gone. I'm just an odd combination of standard elements again. Anyone with the right gene kit can make a clone of me and grow it in a suitable environment to get an arbitrarily accurate copy of me.

I: That's a lot easier said than done!

A: But this is a matter of logic. In logic, you and I are just trivially different combinations of essentially identical molecules. We live in a shared world and depend entirely on that world to confer upon us the worth – the sense of dignity and value – that makes life worth living in the social sense, to have families and so on.

I: Do you mean we depend on Globorg to decide whether to have a family?

A: Yes, of course. You need money, for a start. You need a recognized place in a settled community. You need an income and a reasonable expectation of prosperity for a couple of decades. And you need a sense that you're a worthwhile person, that the world will be better off, or at least not worse off, with more people like you around.

I: That doesn't sound like the usual breeder psychology at all! What about – me horny, you sexy, let's make baby?

A: You're talking about sex, which is quickly becoming a quite separate topic from breeding. The animal psychology you mention is precisely what has limited us so far to a personal psychology of separation and competition. Now, in the post-sexual era, once we see the genetic ingredients for top-quality humans, we just do the mixing in a test tube and forget the old way.

I: You mean forget sex.

A: Yes, having sex is still a great way to make babies, but there's no reason to expect that we'll let that stop us making better people in labs just as soon as we've mastered the details. Once we can build a robot lab with artificial wombs – wombots, I call them – and design a few really good gene combinations, there's no reason not to produce as many people as we like that way and forget about the nine months with a bump followed by a rather painful pop.

Once we can build wombots, there's no reason not to produce as many people as we like that way.

I: It would certainly make life easier. But it would also take away a lot of the fun of it all. The birthing experience is also a great bonding experience. How would you learn to love kids that just came fully formed out of a lab?

A: Sure, there's a lot to fill out here before the vision becomes reality. But we'll find ways. We seem to have found ways to enjoy sex with contraceptives, even though a traditionalist would argue that without the piquancy of remaining open to the transmission of life, as I think the Catholic Church still puts it, the act of sex is a meaningless scratching of an itch.

I: Scratching an itch can be fun, if it means having sex.

A: Sure, but it's a reduction to something profane. What was once a sacred rite, surrounded by marriage ceremonies and taboos of all kinds, becomes a mere bodily function, like defecating or urinating. Whereas creating a new human being should remain a significant event.

I: And do you think that growing babies in wombots will be better than conceiving and birthing them into life?

A: Yes, I think we'll be better off without all that squirting and squeezing.

I: But people will still breed the old-fashioned way for a long time to come. How do we get from here to there?

A: Yes, they will, at first. But our technology is hustling us along quite fast here. Medical professionals already get involved from day one. How many people give birth now without doctors in attendance?

I: Plenty, in Africa and similar places.

A: With all due respect to Africans and others, that will change. Natural developments have a way of forcing us to consider the medical implications of the things we do. Most people don't just shit in the river any more but go and find a sanitized loo. We know too much about the health issues to accept the old animal ways. It's similar.

I: But natural birthing needn't be insanitary.

A: It's still a huge source of mortality. Hospitals offer better control of the risks. And new bugs bring new dangers that need to be brought under control.

I: Admittedly the spread of AIDS made people use condoms, which is introducing technology into what was once a natural function, but it's hard to see a new danger that would force us to go for wombots. Many women positively enjoy the birthing experience. In fact they say

it's the hospital regimentation that takes away the enjoyment. If you're healthy and you're ready, you can do it at home.

A: Sure, we can agree on all that. But as with AIDS, things change. In a future where a dangerous new disease spreads among people who don't have the right gene extensions and kills them, we might find the best way to fight back against the disease is to start making new people with the right gene extensions in a lab and growing them in wombots. It might be much simpler than fixing natural-born humans.

I: Tell us more about the human biology aspect. At first sight, Globorg seems to be a political idea from the impact of technology and globalization. How did you make that leap?

A: Political ideas arise from human nature, from our psychology. And psychology, as I said, isn't a mature science yet. We have a lot of good new data about the brain and so on but no very convincing models to show how brain processes generate fully functioning people.

I: Really? We keep hearing that we're living in a golden age for brain research. They say we're making huge strides in understanding people.

A: Strides, maybe, but the steps are just heuristic, as in biology before Darwin. The humanities have pre-scientific ideas about

psychology that are still getting in the way. Think of the idea of a rational agent in economic theory, for example, the consumer who maximizes utility and minimizes outlays and so on. It's all based on a view of how people think that almost certainly won't hold up when the new data has been properly put together in rigorous new models. As it is, all the anomalies in the naïve model the economists still use become loopholes for financiers and marketers to exploit. No marketer sees his targets as rational maximizers of utility. And no politician sees his or her voters as judicious evaluators of competing value propositions. They see them as people with hot buttons. They push the button.

I: Where do you think the new work in brain science is going? When we can run a good simulation of a human neocortex on a big machine, do you think we'll have a person in the machine?

A: No, I don't. A brain in a vat is not a person. The philosopher Daniel Dennett has thought a lot about these issues. His brain-in-a-vat thought experiments made me rethink what we claim to know about human consciousness. 'Where am I?' – that was one of the questions he asked. Imagine your brain is in a vat and communicating wirelessly with the cavity in your skull as you go about your daily life. Are

GLOBORG

you in the vat in the lab or in your body as usual? Of course we skip over the details and imagine the wireless link is perfect and so on.

I: I'm inclined to say I'm here and now, whether my brain is in my skull or sitting in a jar on a lab bench somewhere. I'm not my brain.

A: You think you're here and now. And where you think you are is where you are – I think therefore I am. Except that you might be wrong. You think you're here, but that might be an illusion. You might be in a Matrix-like simulation and really in a pod somewhere.

I: No, that's the brain in a vat again. Why is it more real to be in a pod somewhere? This – here and now, all around us – is our reality. Or have I got it wrong?

A: No, that's good enough, as far as it goes. But this reality is changing all the time and revealing new facets. We discover new facts and achieve new levels of understanding. We enjoy insights and revelations. After them it's never the same again. We look back and think that what we thought before was all wrong. My claim is that we're all of us close to doing that right now, with our personal realities. We're missing an 'aha' moment, and that moment relates to the new psychology of the global organism, Globorg.



Scene 2

A private apartment in New York

I: You were about to tell me about the 'aha' moment in psychology that awaits anyone who understands your concept of Globorg.

A: I think we need to circle in on the idea again, to set the context and see what problem the 'aha' moment solves, if any.

I: You said our usual mindset make us out to be individual people with their own minds and so on, who interact and compete as separate centers of consciousness.

A: Yes, that's right, separate centers of consciousness. That's what changes. Consciousness is a concept with wiggle room. We can change our ideas there without wrecking everything else. Are you familiar with the old Hindu concept of consciousness?

I: You mean cosmic consciousness? The cosmic ocean of consciousness that we all swim in?

A: Yes, exactly that. It's what you get when you lose yourself, say by means of meditation. When the self dissolves, your awareness is the inner luminosity of a boundless space. And the idea is that the self is a construct, a cage or a prison for the psyche. Once you escape from that, the cosmos is all you have left.

GLOBORG

I: From me to the cosmos in one bound – that makes it sound so easy!

A: Too easy, I'm afraid. Our world is a lot more complicated than that. There are layers and layers of self, and not all of them are personal.

I: How do you know this? Please explain.

A: It's basic logic. The logic of self-reference is as old as modern logic. Do you remember Bertrand Russell?

I: Not personally. He died before I was born. But I remember reading his history of Western philosophy as a student.

A: Yes, that was a good book, or at least some of it was. As a young man, Russell made some major and pioneering contributions to mathematical logic. He and his senior colleague Alfred North Whitehead wrote a three-volume classic called *Principia Mathematica* that provided a logical foundation for all of classical mathematics.

I: How is that relevant?

A: I'm coming to that. Have you heard of Russell's paradox?

I: Russell's paradox – was that the one about the barber who shaves all and only the men who don't shave themselves?

A: Yes. The problem was whether the barber shaved himself or not. Generalized in logic, the problem was whether the set of all sets that aren't members of themselves was a member of itself or not. If it is, it isn't, and if it isn't it is. That was the paradox that broke Gottlob Frege's earlier system of set theory.

I: How does this relate to consciousness?

A: It was self-reference that broke the system. Ever since then, logicians have been leery of it and tried hard to minimize its appearance in their systems.

I: But what about consciousness?

A: We're getting there, step by step. Self-reference was impossible to banish entirely. A young man called Kurt Gödel proved a theorem about arithmetic using self-reference that more or less wrecked the ambition behind the *Principia Mathematica* trilogy, and Alan Turing built on Gödel's work to prove a major theorem about what computers could and couldn't do.

We're biological robots.
We're logically equivalent to
Turing machines.

I: Alan Turing – you mean the man who broke the Nazi secret codes and committed suicide because he was gay?

A: The story went something like that, yes. He invented the Turing machine, which is a computer stripped to its ultimate logical essentials, and proved some basic results about all such machines. The point for us, here and now, is that Turing machines embody logical systems and all robots are Turing machines. So any ultimate fact about self-reference for Turing machines automatically applies to any and all robots that we can construct, and probably applies to us as human beings too.

I: How so?

A: Well, according to the best science we now have, we're biological robots. We're enormously complicated constructions from organic macromolecules, like giant Lego toys plugged together from a big box of bricks, except that for us the bricks are nanoscale configurations of atoms like carbon and so on and the overall architecture the bricks make up is a bit sloppy and inexact in places. Still, all our parts operate together in a rule-governed way. We're assembled from standard pieces and all our inputs and outputs seem to define discrete states that we can tabulate, in principle. So we're logically equivalent to Turing machines.

I: And does this mean that Gödel's theorem applies?

A: Yes, it does. And that means in turn that self-reference is dangerous and must be limited to preserve consistency.

I: So therefore our own self-image is a construct of limited validity.

A: Right, spot on. To get back to consciousness, what we're always conscious of, to a first approximation, is a self in a world. My world and I form an inseparable pair.

I: Does that make you a dualist? Or a monist?

A: Well, yes and no to both, or neither. There's an Australian guy I know called David Chalmers who organizes consciousness conferences. He's big on these philosophical categories. I think they're jargon, but yes, I guess I could say I'm a dual-aspect monist, if you can imagine what that means. There's one phenomenal reality in consciousness – that's me – and another physical reality out there – my world – but they're two aspects or poles of a single underlying substance or process. Me and my world are two sides of a coin.

I: What about the rest of us? Or is there no room for anyone else in your world?

A: I'm not a solipsist, if that's what you mean.

I'm someone who mistrusts all these philosophical categories. I don't like to be pigeonholed.

I: Doesn't the 'me and my world' picture leave you in an ivory tower of your own reflection?

A: The problem of other minds is the flip-side of the Western concept of personalized consciousness. There's an image of you in my mind, but it's not you. And there's an image of me in your mind, but it's not me. As we get to know each other, our respective images get closer to the truth, but there's always a logical gap there.

I: What happens when people fall in love? Does the image then become the reality?

A: Maybe love is the zone where image and reality become one. But in our everyday wheeling and dealing, where I'm me, you're you, and he, she, and it are all what they are, the images I form are like puppets in my own little mindworld. I make a model of it all, and I'm in the model just like you are, as another puppet on the stage of the Cartesian theater, with the only difference being that my puppet is at the navel of the world, so to speak, as the personal toy of the puppet master who pulls the strings of the entire mindworld.

I: Can you really get that to work in logic?

A: Sure. Look at shared virtual realities on a computer screen. All those avatars move around and interact in a vaguely humanoid way, and I identify with one of them, as my avatar, and see it as the locus of my control and presence. All you have to do is transpose that into your mind.

I: So my mind is a virtual reality?

A: Sure. And your brain is a virtual reality generator. You're an avatar in your own virtual reality, or your own mindworld, to use my own term there. Your body and brain work hard to convince you, the self behind the avatar, that all this virtual reality is really real reality.

I: That sounds somehow familiar.

A: Well, maybe you've heard of a German philosopher called Thomas Metzinger. It's his picture, in my words.

I: He wrote a book called *The Ego Tunnel*, didn't he?

A: Yes, that was his popular book in 2009, the one I suggested he should write because his big book a few years earlier was so heavy. In my jargon, the brain sets up a mindworld, or rather a series of mindworlds strung out in time to track your changing experience, and in that mindworld – those mindworlds – there's an avatar called you who does what you want.

GLOBORG

You identify with that avatar as yourself. Maybe that's an example of self-love, come to think of it.

I: What about Globorg and the 'aha' moment?

A: Consciousness is not the avatar. Consciousness is the zone where avatar and mindworld come together. When we interact, we build a shared mindworld for the interaction. We also build shared mindworlds in the clouds, in cyberspace. The more we advance a shared world culture, with music and movies and so on, the more substantial these shared mindworlds become. To a good approximation, many of us already share one big mindworld. Our avatars move around in what people in the gaming community call a multi-user domain – a MUD – and therefore we live in a shared consciousness. Globorg is the domain we all share.

I: Gaming in the mud – great!

A: The shared reality embraces a lot of what's important to us. In the bad old days when people lived in their own mental worlds, religions were just about the only way to get people to share their outlooks. They all worshiped God together and realized they were living in the same world as their neighbors. Then in more modern times we got nation states and language communities where



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solidarity at a more practical level became feasible. Now, with Globorg and electronic media, we have so much sharing that it's hard to feel like an individual at all. Globorg has taken over from God and pervaded our mindworlds, our avatars, everything.

I: Let's go back to the roots and review how you came up with the idea for Globorg.

A: I'd been teaching mathematics and physics in London for a few years when I decided to move into science publishing in Germany. I was moving from teaching the safe, standard, basic stuff to working with the best scientists on their latest work, sharing their sense of opening up the frontiers. My student ideas in philosophy woke up again. Toward the end of the last century, I got excited by all the new work on consciousness. I went to a conference in Denmark and loved it so much I went to more and more.

I: Are you still in science publishing?

A: No. After about ten years, when I began to sense that my consciousness ideas were drifting too far from the state of the art in robot technology, I moved to a software company and got into software development. The idea was to get a feel for how far information technology can help us recreate consciousness in hardware.

I: And can it?

A: Not yet. Our best machines are still a factor of millions away from the size and logic power they'd need for that, but we're getting there socially, via the web.

I: You mean all of us, in a global network?

A: Yes. If you check the numbers, all the online machines in the world – that's several billion now – make up a network with the right order of complexity to implement something like global consciousness, with us humans as like neurons in the network. We just don't really know what to look for to find it.

I: So where's the 'aha' moment?

A: We're almost there. I said we don't know what to look for to find global consciousness, but that's wrong. Of course we do, when we just stop and think about it.

GLOBORG

I: We do? What does it look like?

A: Like we all know and agree what's going on. Like the CNN headlines are the main events of the day for all of us. Like Oprah Winfrey's latest guest or the singer at the top of the charts or whatever is at the focal point of global consciousness for a few seconds, perhaps even fifteen minutes.

I: Fifteen minutes – that was Andy Warhol, wasn't it?

A: Yes, but now we're down to three minutes, I'd say. The length of a hit single or a viral video. The main thing is that an audience of millions has an instant response. That's the sort of resonance that you get between neurons when events in your brain make it to consciousness.

I: You mean if I make a hit single I can enjoy stardom in the spotlight of global consciousness?

A: It's not quite that simple, but something along those lines, yes.

I: So your Globorg is like the eye of God or something, giving me my moment of glory.

A: Yeah, that's the religious hint in all this. That's where I can launch off and retool the God of Abraham for the *me* generation.



Scene 3

A restaurant in London

I: How does the 'Globorg is me' idea work in daily life?

A: We have to identify with Globorg, or it falls away as another failed utopia or a dismal dystopia – or just a bad idea. The identification is the key to replacing or renewing religion. The concept of self gets its social meaning within a social order that embraces and accepts the self. I have to feel that my basic relation to reality – at the level of me versus my world, as we discussed last time – is reflected and accommodated in my social matrix. So unless I can identify with Globorg and feel it as my own body and mind, I'm going to lose the whole idea. Either it works for me or I move on and find another fad.

I: When we discussed the 'me and my world' idea I thought you might be stuck in an ivory tower. How do you escape that charge of being wrapped up in yourself?

A: Well, we're all wrapped up in ourselves, all the time, by definition. This is part of the new psychology paradigm I mentioned. I made a Newtonian axiom out of it – subject and object are equal and opposite. So a self and its world reflect each other. Naturally, they both change

GLOBORG

in time and extend in different ways, so this identity only works at rock bottom. The self becomes an avatar navigating in a series of evolving mindworlds, and our mindworlds overlap and build versions or surfaces of the big, wide, objective world that we all share. Somewhere up there, we see that our shared concerns and projects come together in Globorg, and also above that in the big-bang universe of the cosmologists.

I: Are you saying I reflect Globorg in some way?

A: Yes, in form at least, and in content momentarily, from time to time. Globorg is a self too, an agent facing out into the cosmos, but also dissolving into a few billion fractious parts from time to time. You can either live like a pinball being bounced around in the world of hard knocks and unfriendly neighbors or you can reflect your way to a more global perspective where all that goes on around you is just the working out of your own deeper plans and purposes.

I: You had a phrase for this – something about how in my more exalted moments I could rise and touch the face of Globorg.

A: Yes, that was my feeble attempt at a poetic resonance. The logic is that Globorg is like an envelope self, a sum total of all the little selves we each bring to the mix. Behind us all, a



I can embody Globorg in the same way that a monarch can embody the nation.

unified self gathers strength and embodies itself in our more orchestrated efforts. When we pull together, we achieve something, and that something is an act of Globorg. It's an act of life on Earth. Globorg is just a self-made label for the agency you get by summing up all life on Earth. When living beings act in concert, their acts are acts of Globorg. So if I act in tune with my fellows, I can share the agency of Globorg. I can embody Globorg in the same sort of way that a monarch in the age of kings and queens could embody the nation or the state.

I: Being a royal personage speaking for Britain or France is easier than being all life on Earth – isn't that stretching it a bit?

A: We can't stretch it less without losing the plot. There's a story in the history of life on Earth that gets lost in the noise if we insist on seeing ourselves as naked apes in a Darwinian survival story.

I: Are you denying Darwin's theory of evolution?

A: No, no, not at all. It's a layer of the truth, just like it's a layer of the truth that each of us is a big lump of several octillion atoms bouncing around in accordance with the laws of mechanics. But if we stay at that level, the complexity of the picture obscures the bigger truths that emerge if we let ourselves rise higher. So if we insist that the final and perfect truth about us is that we're a few billion apes in competition with each other for food and mates, we become deaf to a lot of the celestial music that makes life in Globorg worth living.

I: Many people would say that we are apes, period. If we deny that, we're stuck with God and the angels, aren't we?

A: Sure, we're apes, but we're apes with big brains. But also, from an information-theoretic perspective, we're processing nodes in a matrix that includes forests, cities, and human ape bodies. We can externalize these bodies just as we can externalize cities and so on. Or we can identify with cities and forests as well as with our own bodies. It's easy when you stop and think how freely we use the word 'we'.

I: Do we?

A: Yes, we do. We went to the Moon. Who did

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– you, me, the Europeans? We beat the fascists. Who did – kids today? We invented the wheel. Who did, modern man? We hate broccoli. Who does? We’re wearing pink this season. Who is? The freedom there is incredible. We hop around like fleas and don’t give it a moment’s thought. Think of the word ‘we’ as a variant of ‘I’ – the only difference is the singular/plural thing, which is just arithmetic and no bar to the more basic logic of me versus the world. I think it was Walt Whitman who said ‘I am large, I contain multitudes’ – that’s my principle here. We can ‘we’ our way right up to Globorg.

I: The mind boggles. Globorg seemed like a political idea and now it becomes biology and psychology.

A: Yes, it’s hard, but once you start, you have to go on and accept the logic of the self in all its generality. Basically, the ‘I’ word takes you all the way to the God of Abraham, the self behind the ‘I am’ utterance that so impressed the prophet Moses.

Scene 4

Another restaurant in London, with Bob and Carol

B: Tell us in a nutshell what we need to know about Globorg.

A: Globorg is here and now already, but it’s getting more pervasive and more organized every day. Soon we’ll see ourselves as inseparable parts of a planetary life form, like little tentacles on a carpet that covers the whole Earth.

B: Okay, but that’s biology. How does that relate to politics and economics, and to information technology?

A: Those things are all expressions of our biology. They’re all part of what Richard Dawkins called our extended phenotype, if that means anything to you.

C: Richard Dawkins is the atheist who preaches fundamentalist Darwinism to creationists and their ilk.

A: That’s what Dawkins does now. But a few decades ago he extended the Darwinian paradigm with his selfish gene ideas. More to the point for me, he proposed that we see all the works of our civilization as parts of what biologists call our phenotype, the physical presence that we embody at each stage in the passage of generations. The point of the proposal is to get over the barrier between natural and artificial. Everything we do is a natural expression of our human nature, including politics, economics, and information technology.

B: So our globalized networks are like a natural ecosystem. In my company we walk and talk ecosystems every day. It’s the best metaphor there is for what we do in our smart planet activities.

A: Your company is not alone there. All the big tech companies think in terms of business ecosystems. It’s part of the greening of industry.

C: But is it green to use energy on the scale we do now for the sake of a few more points of gross national or global product? Do we not have a moral obligation to do more to prevent the vanishing of species and their habitats?

A: Well, sure, the greenwash of industry is

largely public relations. But behind all that there's a huge development under way. Globorg is in a state of permanent revolution and the past is no longer a precedent. We're making big changes and they have big side effects. But once we've sequenced the genome of a species, why not let it go? You recall *Jurassic Park*, the movie. We certainly don't want a lot of old dinosaurs around the place. Life moves on. Species appear and disappear much like individuals. We have to let the old stuff go.

C: Are you saying there's no higher morality here?

A: Our morality has biological roots and is really a code to promote our own flourishing, as a smart young man called Sam Harris has recently argued.

I: Who's Sam Harris?

C: Sam Harris is another militant atheist. Together with Richard Dawkins and two other atheists, they formed a little conversation circle and made a documentary video called *The Four Horsemen*, which was presumably a reference to the four horsemen of the apocalypse. Sam Harris wrote a couple of best-sellers aggressively critiquing Islam and Christianity, then went on to study neuroscience and morality.

A: Thank you, I couldn't have said it better myself. But the point is that morality is not some God-given thing. It's another product of our natural heritage, another part of our extended phenotype, if you will.

I: Forgive me for seeming stupid, but doesn't morality – especially religious morality – go against the dog-eat-dog world of Darwinian evolution? And what about breeding as the highest good? How does that go with monks and nuns and sexual repression?

A: Not a problem. Studies have shown that religious communities as a whole outbreed secular ones. The rules about sex and the encouragement of celibacy seem to help, not

hinder. Maybe they're like stop lights and speed limits and so on, which help traffic on the roads to go faster in the long run. Similarly for moral codes forbidding murder and theft and so on. If people are killing each other all the time, it's hard for civil society, with all its benefits, to get going. So there's nothing in morality that contradicts evolution, rather the contrary.

I: Hmm, okay.

B: Returning to information technology, what does it bring to the table that's new in this biological perspective? We've had some kind of global ecosystem ever since life began, if the Gaia idea is right, but we didn't have computers until recently.

A: What it brings is a new level of globalized awareness. If you see the sum total of life on Earth as Gaia, then you have to admit that Gaia hasn't woken up until recently. Life on Earth on the global scale has been like nothing more glorious than a thin smear of green slime on the surface of the ball of rock we call home. It didn't look very intelligent at all until human inventions like CNN came along, and even then, if there are little green men a few light years away picking up our CNN signals they may be forgiven for thinking we're still a rather primitive global organism by cosmic standards.

The Four Horsemen



Christopher Hitchens, Dan Dennett, Richard Dawkins, Sam Harris
DVD cover picture, richarddawkins.net

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It's new information technology that gives us the chance to implement global consciousness as a functioning and everyday fact. Our big networks form a real planetary neuronet, just like the ones in our heads but bigger. So we get a global mind for real, and not just as a pious idea for greenfreaks.

B: Yeah, that's right, the technology make a difference. We can plan agriculture on a global scale now, and optimize all the parameters that relate to climate change so that we minimize rainfall disruption and icecap melting and so on. We can engineer waterworks for whole nations and run good predictive models of global weather patterns.

C: Your techno-hubris is showing again, Bob. We still can't predict the weather well enough to tell me when to take my umbrella to work.

B: Weather is a chaotic phenomenon, Carol. That means perturbations below the threshold of the modeling granularity can blow up and impact the whole system. Individual rainfall episodes are random events in that sense and we don't expect to predict them all. But we can give you good probabilities of rain on most days. That's progress.

A: One day Globorg will get it right.

C: Techno-hubris strikes again!

Scene 5

A rented flat in London

A: Online life kind of creeps up on you. We do more and more online without ever making a big decision to move over to doing things that way. When I was young there was no online life. Everything was on paper and television was the new thing.

I: That's hard to imagine.

A: The hardware is the enabler. These sleek new toys are irresistible. The apps and the content are tempting too. And the incentive to keep developing apps for more and more trivial things in daily life and to suck up content from daily life and recycle it in the apps is hard to deny. For someone from the television generation, it's evolution on fast forward.

I: Yes, I see that it must look exciting. For us it's just normal life.

A: We're developing a symbiosis with our technology that's getting ever more intimate. My laptop goes everywhere I go, like my current book did when I was young. Books were rare and exotic items until the printing revolution, the Gutenberg revolution, five hundred years ago. Do you recall a Canadian media professor called Marshall McLuhan?

I: Yes, didn't he have a slogan – the medium is the message?

A: That's him. And that's the truth about the new hardware. Soon we'll all go around with augmented reality headsets and be online literally all the time.

I: How does that work?

A: The headsets will be built to look like cool sunglasses with thick frames carrying all the electronics and earbuds and a mike to give you sound and voice activation. Maybe you'll have a webcam built in that sees your movements so you can run the apps by waving your hands. All this will be cheap enough for everyone to have them.

I: Hmm, that seems plausible. What about looking for wi-fi hotspots? If we're all doing it, that might be a problem.

A: It surely will. That's a technical challenge we won't solve overnight. There's privacy to consider too. All those wi-fi signals will need to be encrypted and that needs more bandwidth. The opportunities for spoofing and phishing are too big to ignore too, so all this will take time to unfold, but these are surely soluble problems.

I: What about power? My laptop battery keeps running out just when I need it most.

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A: That's easier to solve. First, piezoelectric devices can generate power from your body movements, so all you need to do is keep jogging. Second, nanotech can improve the efficiency of lithium cells and other cell technology by at least an order of magnitude. And third, we shall install recharging stations everywhere, for example with induction plates, so you can top up whenever you like. And you can hang quite a big power pack around your neck before it becomes a problem accessorizing it with your outfit. So that won't be a show-stopper.

I: Sounds like you've really thought this through.

A: Sure I have. There was a lot of work for me behind all this, as you can guess. I had to collect a lot of facts to build up a sense of where it was all going. And what came out clearly was that the online orchestration of all these apps was a massive temptation for Big Brother government.

I: Big Brother – George Orwell – *Nineteen Eighty-Four*, right?

A: Right. A great novel, by the way. His idea, based on his experience of Britain in the Second World War and the evolution of communism into Stalinism, was that the state would invade everyone's personal space so far

that it was like everyone's big brother, organizing everything. He only knew television technology and the very first clumsy computers, but he was visionary enough to see the rest.

I: That's impressive. Does your Globorg vision go beyond that?

A: Well, yes, a long way. Globorg will be me – and you, us, all of us. We become a single monster organism.

I: That sounds like the Borg in *Star Trek*.

A: Exactly. That's the downside. That's what we may end up looking like from the outside. But the upside is far better than in the Borg nightmare. We shall feel like we have godlike powers. We shall merge and flow in different mindworlds with different groups of people in a seamless phenomenal joy that beats anything you can get in a single body all day.

I: How do you know that? I know that being me all day can be boring sometimes, but at least

We become a single monster organism. But the upside is far better than in the Borg nightmare.

I'm in control and I only have myself to blame if I don't like it.

A: Think about the joy of sex. Part of the fun is the feeling that you're sharing someone else's take on the world, that you're not so alone after all. That's the feeling you can have just about all the time in a Borg world. And that's a feeling we'll get addicted to very quickly, believe me.

I: I do. But do we need machines for that? Isn't half the fun of sex the fact that there's no machinery involved, all you need is a body?

A: You said it. You need a body, a body full of machinery for erections and lubrication and so on, not to mention a bed or maybe some mood music and soft lighting, or maybe a space on the beach and a tent or a towel, whatever turns you on. But as technology becomes more pervasive, for example by being implanted and so automated that you don't even need to think about it, the feeling of sharing experiences online will be more like sex and less like fiddling with geeky stuff that's unintuitive and distracting.

I: I see that. There's something there, obviously. But this is only half your story. What about robots taking over and making us obsolete?

A: Well, yes, that's important too. More machines means more factories to make them and more infrastructure to support them, plus more companies to service them and more utilities to power them, and so on in an ever-expanding multiplier that pumps up a whole economy. There aren't enough people in the world to do all the work involved – and if there were, there'd be too many and our environment would collapse. Fortunately, robots ride to the rescue.

I: That's not how most commentators see it. They see mass unemployment.

A: That's the downside. People will move out of manufacturing and into services and so on. People will still be the best machines for human interaction, for example as medical nurses. But they'll have robot support, for example to make beds or decide which medication to offer. The art of finding good ways for people to do what they do best and leave the rest to the machines will be a fine one, with many ways to go wrong, but there's no reason to panic. Mass unemployment is a political problem reflecting political incompetence, not a technical one reflecting the rise of the robots.

I: That's easy to say, but what work do you offer a person with no useful skills?

A: There will always be problem cases at the periphery. There always have been. But in a world of massive wealth, it can't be an insoluble problem to allocate something at the margin to cover the problem cases. A society that can't organize welfare is like a person who never gives to charity. You need that basic humanity to make life worth living.

I: Let's focus a bit more on robots.

A: Robots are to this century what cars were to last century. Millions of people developed a passion for cars and integrated them into the best parts of their lives, like courtship and family outings. Now, as soon as the technology matures, millions of people will integrate robots into their daily lives both at work and at home. As soon as we learn to build robots, both as steerable avatars that stand in for us and as autonomous units like factory droids, they'll be everywhere.

I: Avatars and droids – can we zoom in there and elaborate?

A: Avatars we know from the James Cameron movie. His avatars were real biological bodies with a brain linkage, but we'll stay with electromechanical bodies for a while yet, and with relatively simple control technology. Meanwhile, factory droids that just do stereotyped work routines will get better. As

bionic interface technology advances, we shall learn to inhabit our avatars more intimately, perhaps even live inside them as if they were bio-friendly suits of armor. Gradually we shall find that autonomous robots can do about as much as the avatars, so for the world of work it'll be optional whether we stay in the loop or not. The robots will be about as capable as we are. They'll catch up with us and demand equal rights.

I: But can they do that? Is it technically possible?

A: Yes. We humans are the living proof of that. We have processors in our heads that are very untidily programmed and react to a very chaotic chemical environment in the body, but the whole brain mechanism is only finitely complex. With enough effort, we can model it in software. Then we can simulate it to any desired level of fidelity in purpose-built hardware. It's a sweet engineering challenge for a few generations of bright kids and I have no doubt we'll crack it. The sense of achievement in making machines that can essentially upgrade and replace us will be a fusion of the geek joy of making a really cool new app or product and the basic human joy of being a parent to healthy kids. The combination is hard to beat.

I: I see that. But won't there be laws limiting how human robots can be, or what we can do with them? If a robot feels pain, for example, it might be rather unethical to just scrap it when we get bored with it.

A: Yes, those issues will arise, as Thomas Metzinger among others has emphasized. Doubtless a generation of lawyers will get rich building up a suitable body of case law. But before we need take them seriously we need to get a grip on what David Chalmers calls the hard problem of consciousness.

I: The hard problem. Remind me.

A: David points out that we not only don't have but apparently can't have decisive evidence for the existence of consciousness in another being, where by consciousness we mean inner phenomenal experience, or as some philosophers put it, there being something that it's like to be in that state. It's hard to pin down, but that's the point. Consciousness is somehow ultimately hard to pin down. For all I know, everyone else in the world except me could be a zombie, with no lights on inside.

I: If that includes me, I think you've just insulted me.

A: It's a philosophical puzzle, which means it's independent of any possible empirical evidence

about how bright you are or how good it feels to be with you or anything like that. In principle, you could get all that from a robot with no inner life at all.

I: That sounds like utter nonsense to me. If that's right, love is an illusion and we might as well all go and drown ourselves.

A: Indeed. The man in me tends to agree. But the logic engine is still stalled on the problem. My first reaction is to try to cut down the problem into manageable pieces. If consciousness itself is too big or grand a concept, then let's see how far we can go without ever mentioning it. For robots, what you need to build in to enable them to behave more like people is a rich and growing sense of self. We have selves, we please ourselves, we respect ourselves, we try to improve ourselves, we have doubts and fears about ourselves, and so on. It's a rich field of psychology to map all that and tease out some logic behind it. Once we can map all that into a robot architecture, my guess is that we'll say we've got the hard problem practically licked.

I: Does David Chalmers agree with you?

A: He hasn't said yet. I'm sure he'll find some reason to disagree. But I'm on firm technical ground. The logic of various kinds of self-reference is a rich field and offers plenty of traction for the sort of incremental advance that science is good at. I'm sure people will develop it so far and so fast that the hard problem will soon seem like – I don't know – the problem of whether God has the power to contradict himself, or some such theological riddle that no one cares about.

I: But what about consciousness?

A: It's a big concept. I see it as the concept that gives us room to escape the personal minds that Western philosophers have been obsessed and trapped by. If consciousness is an oceanic state that we all share somehow, we can rise above our personal mental prisons and share our experiences for real, and not just by giving each other isomorphic experiences.

I: I beg your pardon? Please define 'isomorphic'.

The Hard Problem

A: Two things or concepts or whatever are isomorphic when they have the same shape, or when they're the same in all relevant respects, or when you can map them exactly onto one another. It's a standard mathematical term.

I: We're not all mathematicians. How does the term 'isomorphic' help us understand consciousness?

A: If we all live in separate minds, we can never have the same experience. We always have our own experiences. But we can have isomorphic experiences. On this view of the mind, the point of our sharing information with each other is to enable us to enjoy increasingly isomorphic experiences of the things referenced by the information.

I: That might work for knowledge and cognition, but what about love? What about human states that don't seem to fit the robot logic of isomorphic states?

A: Well, there you have me. The phenomenon of love suggests that genuine unity of experience may be possible after all. If we don't allow that, then there's nothing in our picture that prevents our minds from fragmenting off to infinity. And a self is clearly a unified thing. It's made up of disparate elements that fuse somehow. The concept of love may help us describe a concept of self that

can really be unified, as one, and really merge with others, to form social bonds and so on. Alternatively, we can sound more scientific by invoking quantum voodoo.

I: What's quantum voodoo?

A: It's hand-waving in a way that looks vaguely scientific. We invoke the mysterious properties of what physicists call Bose-Einstein condensates. But let's not open that can of worms now, because it's hardly more than speculation in the present state of science. Until we have stable concepts here, the problem of building convincingly human-like robots remains open.

I: So you don't think we'll soon build androids that we confuse with people.

A: No. There we have a long way to go. Making an android that can eat what we eat, for example, is still way out of the ballpark.

I: Let's move on. You said our global summits are the first steps toward your Globorg state. Would you care to elaborate?

A: This is more of a suggestion on my part than an observation of fact, but it seems to me that the global coordination we see in these summits is a precursor to what we shall increasingly see as a normal part of running the planet in a reasonable way. We have regions

on Earth – such as Europe, North America, and East Asia – and these regions need to coordinate policy on a whole range of issues that have global impact. So a permanent forum with an agreed infrastructure and protocol and so on is only to be expected. I think we should support the more formal establishment of a GO, as I call it, and treat it as analogous to the national governing bodies we see in all major states.

I: That seems harmless. Is there any reason to disagree?

A: If you have hankerings after sovereignty, independence, autonomy, and freedom generally, yes. An organization like GO will inevitably seek out ways to expand its remit and interfere more and more in our lives. Perhaps we don't want that.

I: So what's the risk of letting go of GO and muddling along without it?

A: War of various kinds. The big political units of this world could do a lot of damage if they started behaving in hostile ways toward each other. In my humble opinion, anything that hinders mayhem on that scale is worth a lot of frustration on the smaller issues.

I: But if freedom is the price we have to pay, do you think people will go for GO? People seem

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to like freedom, even if it does raise the risk of war.

A: Maybe they do, but order is a good thing too. It's the enabler for more pervasive and more supportive technology. And the big players of this world – China, the United States, India, the European Union – are eager for anything that consolidates their wider reach. The Globorg idea is exactly that. They can use it to create a global oligarchy.

I: An oligarchy? Can you define that?

A: It's where a small group rules. A monarchy is one person ruling, an oligarchy is a few people ruling. It's another one of those ancient Greek concepts, like democracy.

I: Except it's not democracy. Do you think an oligarchy has any chance of being accepted?

A: Not under that name. You'd have to sell it as some kind of realistically constrained democracy. But that's just public relations. I don't think that's a hindrance.

I: That sounds very cynical. Isn't the trend of history toward more unrestrained democracy, not more restrained?

A: Yes, but you get that with technology even if there's an oligarchy as the top layer.

I: With technology? How?

A: Once the voters are equipped with electronic voting portals, which are essentially just smart and secure browsers, they'll want to use them more than once every four years or whatever. There's no technical reason not to have people voting on questions of public importance every day.

I: That sounds risky – most voters don't know enough about the issues to vote every day.

A: Right, that's the best reason for restraining democracy. I guess you'd need some kind of competence test before you'd be allowed to vote on specialized issues. So there'd be some kind of questionnaire to fill out first – I call it a Q-gate – before you can vote. If you flunk the test, you don't get to vote.

I: That could be misused by the people in power.

A: Absolutely. It's a whole new dimension to democratic politics. But I think we shall have to go that way, because we need some kind of democratic process behind the big decisions that affect us all but we can't let people who don't have a clue dictate highly technical questions.

I: Does this Q-gate idea come automatically with Globorg?



A: It comes with the technology. The possibility will awaken pressure to use it in some such way, yes. And Globorg can only develop in what we'd recognize as a properly people-friendly way if it has some kind of participatory democracy built into it.

I: All this big government suggests big taxes and lots of regulations about what we can and cannot do. How does that fit in with Globorg being a good thing?

A: Quite easily, if you see what the taxes and the regulation get you as benefits. What we'll see, I think, is a globalized economic model linked with a globalized tax database and a globalized job exchange. Then you get the true global mobility that big companies need to match skilled people efficiently with specialized jobs, plus the general transparency you need to monitor results and root out any inefficiencies you find.

I: Apart from the politics of it, can those things work on a global scale?

A: Yes, we know that from the success of global companies like Google and Microsoft. Unified software running on globally networked hardware to offer the same user experience worldwide – that's a value proposition that's hard to beat, seen just in business terms.

I: But for tax and labor laws? People would revolt, wouldn't they?

A: Why should they? So long as the politicians put up the right safeguards and implement them fairly and effectively, worldwide, the results would be better in practical terms than what we have now. Look, imagine user interfaces as easy and friendly as eBay or Facebook to interact with a global job market where you can advertise your skills and wait for an employer doing a Google search to find you. It's a lot better than what we have now. And the only reason people would object to a globally transparent tax environment is if they're trying to build up a secret stash in a tax haven somewhere. The rest of us won't tolerate that sort of antisocial behavior for long, I'm sure, once the facts are out there for all to see.

I: This is scary. You're suggesting a huge economic engine for tax and jobs like Google, eBay, and Facebook all rolled into one. That's Big Brother on steroids!

A: Right, it goes way beyond Orwell. It's a big step forward. In my humble opinion, it may be the nearest we ever get to implementing communism.

I: Communism? How so?

A: Who needs private ownership of the means of production when it's all globalized infrastructure? No, all workers will have equal shares in the working capital for all this, where of course some shares will be more equal than others. The politics of all this is easier to sell, done right, than the economics, where you have to sell the disadvantage that you make a single managed market, which tends to stifle radical innovation or unconventional thinking.

I: I get it. You think this transcends the capitalist model and you call it communism.

A: More or less. That's just a suggestion, to use a familiar word. Actually, I made a joke of it – this will be communism with a human face, or rather a smiley avatar face.

I: Very witty.



Scene 6

A London pub, with Dan

D: Your Globorg book seems like a bid to sell a kind of Borg future as an alternative to living under a conventional liberal system where the old religions are still respected and observed. Do you see your ideas as a bid to replace old-fashioned religion?

A: Yes. I think the new psychology, which is not yet fully worked out but well on the way, will make the old forms of Abrahamic monotheism untenable as anything more than cultural traditions.

D: Modern atheists would say the old monotheisms are untenable anyway. So what's new there?

A: What's new is the science. Do you know the Four Horsemen atheists?

D: You mean Richard Dawkins, Daniel Dennett, Sam Harris, and Christopher Hitchens.

A: Precisely. The atheists in that tradition attack a childish conception of God that leaves the more subtle forms of monotheism untroubled. Indeed they help the more subtle believers by clearing away a lot of misconceptions and raising the stakes for a big battle with faith that the believers will win if

the atheists stick with liberal humanism. This is where the new ideas from psychology have a big impact.

D: How can the believers win against liberal humanism?

A: The humanist paradigm is that we humans are the top of the heap, both biologically and conceptually. Planet Earth is our playground and our personal consciousness is as good as it gets in terms of finding a foundation for epistemology. We are the dominant species on Earth and our mental powers suffice to explain our civilization and to conceive and shape our future.

D: You think that's wrong?

A: Yes. Our proclaimed dominance is hubris fed by monotheism. The Biblical idea was that God gave man dominion over the Earth. But a deeper look at biology reveals our utter dependence on the network of life on Earth. We're agents in an ecosystem that could spit us out in no time if we got too far out of line. The ecosystem is not conscious like us, of course, but that needn't stop its subsystems from reacting against us, for example by generating a plague that kills us all because we failed to take proper account of our continuing need for its hospitality. We need to study nature more deeply and follow its hints about how to live

our lives. I don't think that's too controversial.

D: No, but if we're just smart apes – blessed with consciousness, if you like, but still basically apes – then surely we have all the more reason to deny there's any supernatural support and to learn to think and plan for ourselves. So then our ape status forces us back to humanism and also forces us to be more liberal to avoid killing each other in orgies of ape savagery.

A: A tempting conclusion, but a false one. Our personal minds are cultural constructs. They came with language, essentially, supported by an ideology of personhood cultivated in religion and philosophy. The sense of personhood is different in cultures outside the Western and monotheistic traditions. Our shared ape background and the ongoing contact between cultures ensures that our senses of personhood are not so different as to be mutually unintelligible but they are different. Think, for example, of the denial or transcendence of self in Buddhist psychology. The idea is that introspection reveals the illusory nature of what we in the West tend to think of as the conceptual bedrock of our whole being, down to our very souls in the old religions. In my view, the logic of the self is where we need to look to see how psychology can be given a coherent scientific foundation.

D: The logic of the self – is this where you locate your own contribution?

A: Yes. Science as we have known it is the view from nowhere, to use the phrase of the philosopher Thomas Nagel. The aim has been to build up objective views without any explicit recognition of the role or the limits of subjectivity. In my view, the proofs of incompleteness in mathematical logic, the appearance of entanglement and uncertainty in quantum physics, the paradoxes of entropy in statistical physics, the role of randomness and chaos in basic mechanics, and similar rather technical puzzles and problems show that logic cannot give us an objectivity so absolute that we could forget about subjectivity. To do logic properly, we need to admit subjective limits in a systematic way, which I've tried to do in set theory. The result is what I call mindworlds, where each mindworld offers a limited kind of objectivity but finds an exact reflection in an equal and opposite subject. Science as we have known it is a matter of building up mindworlds that are so big and stable that we can share them and temporarily forget about their subjectivity. But of course we can't forget about it completely.

D: We can share these mindworlds – is that the key here?

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A: Yes, exactly. Shared objectivity means shared subjectivity. They're equal and opposite. But obviously as human beings we have different personal subjectivities. So we learn to be fairly agnostic about how many mindworlds there are and which ones we're in at any given time. My idea, backed up by hints from the pioneer psychologist William James and the logical philosopher Ludwig Wittgenstein, is to found our psychology primarily on mindworlds. Each of us has a self, or a series of selves, and these selves live in mindworlds, like avatars in a virtual reality. Our brains create avatars in mindworlds for us and we do our best to coordinate them with each other in stable background frames.

D: If I've got this right, scientists build up mindworlds so big and basic that we have no choice but to live inside them, is that right?

A: Yes. By ignoring their personal selves and trying to be objective, scientists let their working selves dilate and interfere with each other, until they begin to merge into nebulous group minds that we simply regard as academic subjects – physics, chemistry, and so on.

D: That sounds like a joke – a pun on the word 'subject'.

A: No joke intended. This is the collective subjectivity that replaces the God of Abraham

in my new scheme. The old father figure whose personal mindworld we all used to live in has become inflated into a nebulous cloud of big mindworlds that merge and perhaps condense into a shared conception of objectivity. That merged conception is the mother and father of all mindworlds and the most appropriate referent I can see for the sort of devotion that religious monotheists direct toward their sky god fetish.

D: That's all logic and big science. What's all this got to do with personal psychology?

A: Well, mindworlds can be little too. And the avatars inside them are obviously personal. So there's my contribution to psychology without more ado. Essentially, what I've done is replace the 'view from nowhere' picture with what I call the view from anywhere. Scientists who see the logic of mindworlds can understand science as a matter of building or reconstructing a view from anywhere, or of framing the standard elements in the view from anywhere. Individual people like us then become little stick figures in a multi-user domain, each with his or her own combinatorial key, to recall something we discussed yesterday.

I: Yes, we did.



Scene 7

The rented flat in London

I: We left the story in psychology. You introduced a new paradigm with avatars in mindworlds and hinted at how this might lead to group minds in shared mindworlds.

A: That's it already. We only need discuss group working and cooperative behavior to see how naturally the rather nebulous idea of group minds emerges from people's collective work on or in a mindworld. Share an object, share a subject – that's the general idea. But we need to get used to the huge number of states of mind we end up with when we flesh all this out. We change our minds from second to second, and sometimes we're in a personal mind, sometimes in a group mind. All these states stack up in a logical space you can model in set theory, so all this is supposed to be backed up by solid mathematics. That's how I envisage it, but it's hard to explain that in an informal interview, of course, so you'd do best to take that on trust.

I: One still thing bothers me. If group minds come and go so readily, how come we always seem to be alone in our own mental worlds? How is it that David Chalmers' hard problem is so hard?

A: Thanks, that's an important observation. The first axiom of my psychology is due to Ludwig Wittgenstein and is – *I am my world*. That's proposition 5.63 of his early classic, the *Tractatus Logico-Philosophicus*, by the way, most of which he wrote during the First World War and which greatly impressed Bertrand Russell. The point for me here is that each of us has a most basic or logically ultimate self that's reflected in the background world of all the mindworlds we ever live in or entertain or work or play in or whatever. Our avatar selves are little actors inside this background world or self. We split ourselves – a big self zooms out to infinity and seems to blow up to cosmic proportions, while a little analog self is the avatar playing around in the foreground.

I: That's hard to imagine. Do you mean we're schizoid, with two selves at the same time?

A: Yes, that's a vivid way to see it. We have two brain hemispheres, and perhaps they play a kind of conceptual tennis, batting self-images back and forth. That's where my ideas touch base with those of Julian Jaynes and Iain McGilchrist, if those names means anything to you.

I: Sorry, no.

A: Julian Jaynes was a psychologist who back in 1976 published a rather intriguing book

expounding the idea that human consciousness first emerged quite recently from an earlier bicameral state of mind that we'd now regard as schizoid. He claimed to detect signs of the growth of personal subjectivity or consciousness just two to three thousand years ago in early human writings, such as the Bible and so on. Before then, he said, people were puppets of their gods. In 2009, Iain McGilchrist revisited the bicameral idea.

I: If consciousness is such a recent development, would that mean that animals like cats and dogs and dolphins can't be conscious?

A: Yes, but we can finesse that by distinguishing the kind of consciousness that we share with other mammals, which some people call phenomenal consciousness, from a species-specific kind of mind we call personal consciousness or self-consciousness, which may require a higher level of encephalization. The exact details aren't too important for my purposes, and anyway McGilchrist upended quite a lot of what Jaynes said in the light of new knowledge about how our brains are organized, but the point is only that the fact that we have two hemispheres is suggestive. The logical point is that with two hemispheres you can implement a base world with a base self to make the Cartesian theater for the

avatars of the surface self to act in. You can be juggling two selves at once in a kind of dynamic interplay.

I: But isn't the base world, as you call it, the same for all of us?

A: Right, this is the clue to the whole puzzle. We humans are natural solipsists. We think we're all alone in our mental worlds, and it seems to be a hard problem to account for the expected existence of consciousness in other people too. That's David Chalmers' problem. We know the problem is solved somehow – we know full well that other people are as conscious as we are – but we don't know how we know that. I'm suggesting that our natural solipsism is based on a confusion of personal and ultimate subjectivity. We're alone as a matter of logic because we recognize one world. But logically that means I'm *really* alone in one world. There is no *we*, except at the level of little avatars on the Cartesian stage. The solitude of the ultimate ego is the solitude of God. This is the feeling that gives rise to the God of the monotheistic faiths. We identify at that level with God – or rather, to get this right, the 'I', the ultimate subject of the base world of my Cartesian theater, is indistinguishable, by me, from God.

I: That sounds shocking, almost blasphemous.

A: Well, indeed. The shock you get when you bring God down to Earth like that is the reason why the monotheistic faiths have done so well. The easiest way to preserve a peaceful and polite social order in face of that shocking truth is to deny it and make a big fetish out of God. The self of the believer is a little avatar self dancing on the stage set by God.

I: But now the modern atheists bring God down to Earth by saying we're really just humans and we have to ground our truths in human institutions. How do you react to that?

A: Reducing all truth to anthropology is copping out. This is what the late Wittgenstein did and this is what a lot of people do nowadays. But the hard truths of science and logic – mathematics, physics, and so on – demand a harder foundation. They get it in the unity of the underlying self that reflects the objective

world. It's the logic of the self again. The self is a many-layered thing, a logical stack that I want to model in set theory. This stack has levels or layers that we can live on or in. Our everyday selves are quite low in the stack and they suffice for most daily purposes. But the higher levels of self are where you need to go to appreciate the deep truths of science – or of theology, for that matter.

I: This is hard. Are you saying that theology is like science?

A: Ultimately, yes, but most of what passes for theology is pre-scientific, and wrong. Science is theology done right, so to speak. The deepest truths of science, when you go out into cosmology and so on, are deep truths about the mind of God, to use a handy metaphor.

I: Didn't Stephen Hawking say something like that?

The ultimate subject of the base world of my Cartesian theater is indistinguishable, by me, from God.

A: Yes, he did, and that's what I have in mind here. The story hangs together convincingly for me. Science is the new theology and the old religions are pre-scientific blather, for the most part. They're wrong about God, and they're wrong about how we should conduct our lives.

I: That's fighting talk, isn't it?

A: Yes, it is. But we have to bite the bullet. We have to rethink the whole lot, and be honest and merciless about what we can now see is a lot of old crap that needs to be flushed away. I see no point in being indulgent or respectful of bullshit.

I: Sorry, but I don't follow that. Are you saying that the high points of our religions – the Sermon on the Mount and the traditions that inspired the cathedrals and mosques and so on – boil down to bullshit?

A: You see the problem. It's hard to keep perspective. No, not all of it is bullshit. And of course the high points are wonderful. But we have to move on. The deep self we can share when we confront our external reality in a sober frame of mind is as near as we can get to the God of the monotheistic religions. All the rest is for the anthropologists. Science has taken the baby and left the bathwater.



Scene 8

An English domestic lounge, with Evan

E: I think you're confusing several different things. There's the unity of science, the unity of the self in psychology, and the political confusion of globalization. And now you want to add God too. It's too much at once.

A: Yes, it may seem that way. But the interaction between those things reveals a host of connections that speak volumes about where our prejudices lie. Once you see where

the real connections between those things are, you see the whole world in a different light. It's that enlightenment I want to give my reader, my viewer, my audience.

E: They'll think you're selling snake oil if you put it that way. Look, try to be indulgent of my ignorance here. Let's start with the unity of science and the self in psychology – how do they relate to each other?

A: Science is done by scientists. To a crude approximation, theoretical science is a matter of setting up an efficient set of mnemonics to hold all the facts and the data together in some kind of sensible framework. The aim is to boil everything down to a set of equations you can fit on a teeshirt. Otherwise expressed, the mnemonics are an artful and memorable way to bring the manifold of sensation to the synthetic unity of apperception, to use the fine phrase that Immanuel Kant introduced back in the eighteenth century in his critique of pure reason. He said it in German, of course, but the translation is good. Kant's project was to lay the foundation for a rational psychology, the psychology of any logical subject in any phenomenal world.

E: You're spouting jargon again. What's a phenomenal world, and anyway what's rational about post-Freudian psychology?

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A: A phenomenal world is a world of phenomena, of sense impressions and facts and data and so on. So phenomenology is the science of that, the science of surfaces and appearances. Kant's idea was that any phenomenology would bring the mass of data to a unity. His concept of a rational subject, abstracted from all the biological detail about humans, was that the logical essence of a subject confronting the phenomena was this act of bringing them to a unity, or synthesizing them. He called the result the synthetic unity of apperception, but we needn't get hung up on that. Kant knew that people were irrational in a million ways, of course, but behind all that there's the logical outline of a subject. That's what he wanted to get at.

E: Wait a minute, you say psychology isn't a full-blown science yet but you say Kant laid the foundations over two hundred years ago? What about brain science?

A: Yes, what about it? A lot of data looking for a model. Kant set up the first frame for a model. He said the perspective on nature we're building in science is rational, which we can parse as meaning our building code is logical, so the subject we get is an abstract ideal. It bears as much relation to real people as a geometric cube bears to a real house.

E: I don't feel any the wiser yet.

A: Well, the story goes on. Logic made a historic step forward in the nineteenth century, and when Wittgenstein tried to channel the psychology of the rational subject in the new logic, he came up with an axiom that I can use – I am my world.

E: I remember that from your book. Sounds like some kind of ego trip.

A: The young Wittgenstein was an egoist, no doubt. But the point was to shed light on the self of post-Cartesian rationalism.

E: No wonder people think philosophers are all barmy.

A: You may be forgiven for thinking so, but the Cartesian *cogito ergo sum* is a celebration of the rational self of the Enlightenment and a redefinition of God in a new view of science.

E: Do you mean that the world of science is the new God?

A: Not quite, but we're getting warmer. The world of science is reflected in a sort of superego for all of us, a sort of envelope self that rides over all our particular differences, and the best we can do as humans is strive to fill out or flesh out this superego as best we can.

E: Sounds like snake oil. Verily, I say unto ye, I am the way, the truth, and the light. You're selling the Jesus oil in new packaging. I don't buy it.

A: You don't need to. That's not my Globorg message. That's just the start. Most people just turn off at the idea of a cosmic self. It's too hard. It means grappling with relativity theory, for a start, and you end up making a personality cult around Einstein.

E: There you go. Let Einstein be the new messiah and forget all this stuff.

A: No, Einstein is like Moses, pointing the way to the promised land of unified field theory, where the physics of the cosmos comes together in the famous handful of equations on a teeshirt. It's the idea of science as handy mnemonic for us to understand nature.

E: So what's the problem?

A: Einstein ignored biology. All this physics grew from the mat of DNA-based life on Earth. The subject of cosmology is not just we humans but rather the whole enchilada of life on Earth, since we all live in a tangled symbiosis that we haven't quite sorted out yet.

E: So the world of science is a mirror for life on Earth, is that what you're saying?

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A: Sort of, but it's more complicated. You remember the avatar idea. I see myself as an avatar in my own virtual reality. Well, we see ourselves as an avatar in the cosmic reality. The big avatar is the Earth, considered as one big living organism. The global organism – Globorg – is us, and we are all one.

E: I don't think we see ourselves as a global avatar. I see myself as an ape with a veneer of civilization. Thinking globally is for idealists and martyrs.

A: Maybe you're a lost soul already, but I haven't given up hope. You think globally every day when you read the Financial Times and work out where to make your next killing.

E: True enough, but I do it for me – and my family. I concede that much altruism but no more.

A: Well, there you go. Your family connections go through humanity, through the mammals, through all DNA life on Earth. That's just Darwinism. Your family is bigger than you think. There's no natural stop on that slide short of the entire surface of the planet. You're in Globorg, like it or not.

E: Well, okay. I concede that as an idea. But that doesn't stop me making money for me, not for Her Majesty's Treasury. If you were right, we'd all be delighted to pay our taxes, give aid to poor countries, and so on. And the

fact is that most of us aren't. We're selfish buggers.

A: Sure. That's a prerequisite for success in a Darwinian world. But what I'm suggesting is a pragmatic extension of the self to planetary dimensions. I won't go hog-wild and insist we all go straight for cosmic consciousness. Most of us don't have it in us to reach out that far. But global consciousness – that's the least we can demand in our brave new century.

E: Got it! You want to put us all on the rack. Confess to the sin of not thinking globally and say three Hail Mary's!

A: Very good. It's a new religion on the way. That's all I'm saying.



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Scene 9

In a car near Heidelberg, Germany

A: I spent ten happy years at Rossweg. I mostly spoke German there. Reading and writing in English, speaking in German. English was my object language, German my metalanguage, if you recall that distinction from formal semantics.

I: No, please explain.

A: The distinction was one of the key ideas in Gödel's incompleteness theorem for elementary arithmetic. Formal logic allows you to distinguish object language from metalanguage and to formulate a truth theory for the object language in the metalanguage.

I: That sounds somehow familiar.

A: That was Alfred Tarski's big contribution to philosophy. Tarski was driven out of Poland by the Nazis and settled in California. His work was big in the background to computers.

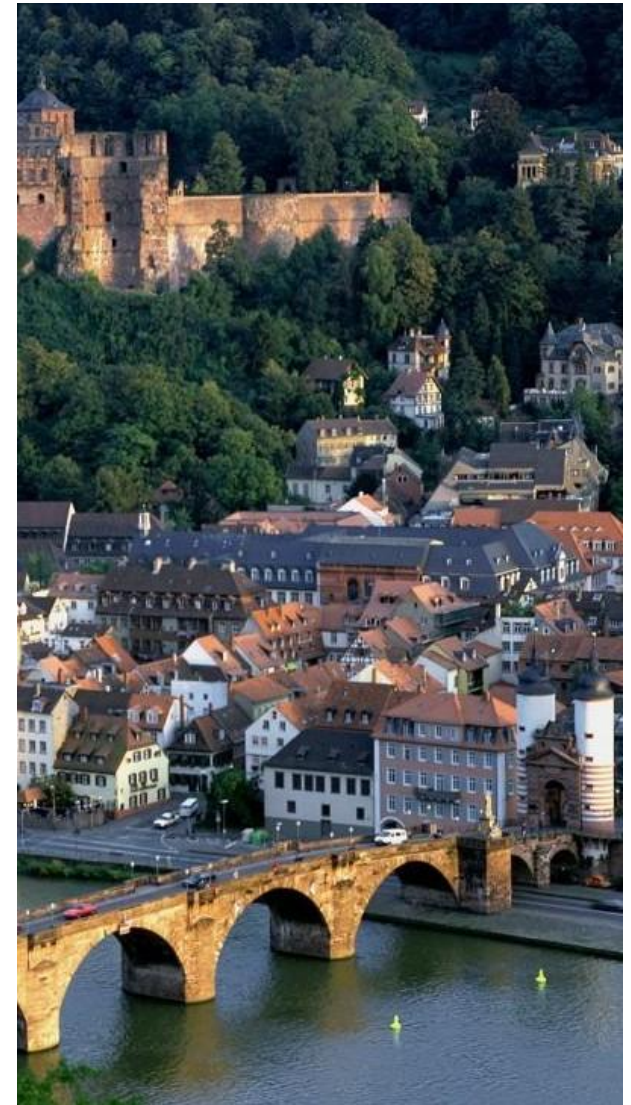
I: Oh, really.

A: Yes, he said the sentence 'Snow is white' is true if and only if snow is white. It was a big moment in the history of philosophy.

I: Is that relevant to Globorg?

A: Now you come to mention it, yes it is. The concept of truth was one of those big cloudy philosophical puzzles until the Tarski truth definition boiled it down to a drop of grammar. It was a classic example of the way Wittgenstein thought philosophy should be done. Now I'm doing the same for the monotheistic concept of God. The concept of the self – which is the 'I' of the great 'I am' – is the key. The self escapes its forms just as the definition of truth escapes its formalizations in the sort of systems to which Gödel's theorem applies. The 'I' behind the dramas we stage in our Cartesian theaters – the avatar and mindworld stories, you remember – is the 'I' of God, the eye of the monotheist fetish. But to escape the hubris of thinking that we pitiful humans – we naked apes – are the incarnations of God on Earth, we have to clear up our selfish confusion. We need a post-human concept of self. Because the ultimate formless One of the mystics is too much for public consumption, we need to settle for Globorg. We let the globalized political order stand between us and the formless One to atone for the pitiful inadequacy of our human reflections of God.

I: Are we nearly there yet?



Scene 10

A private apartment in Heidelberg

I: I think we need to relate the robot story more closely to psychology and religion. What has the fact that robots will take over in industry got to do with the logic of the self?

A: Quite a lot, actually. Robots will get better. They'll get smarter and more capable of working autonomously. That means they'll pack more self. Any machine that can replace humans even for simple tasks will have some level of self. Its machine table – that's a concept from Turing machines, by the way, as invented by Alan Turing – will include code for a self-object and methods for changing that self, for example to update parameters recording its functional state. As robots evolve for more challenging tasks, the self they incorporate will get more and more sophisticated, until they become capable of impressive levels of introspection. As all this happens, we shall see more and more of our own self-image reflected in them, until we're ready to concede them certain basic rights as partners in our endeavors.

I: Do you see any barriers to their developing human levels of self?

A: In principle, no. In fact, there will likely be

lots of technical barriers that take more time and effort to overcome than we anticipated, but that's par for the course with new technologies. My guess is that by the end of the century, we'll have robots so good that no one will seriously doubt that they have minds that it makes sense to compare with ours, even if the architecture behind those minds is very different and has limitations that don't apply to humans at all.

I: For example? What limitations?

A: Relating to emotions or empathy, perhaps. Those things in humans depend on our visceral constitution, which robots won't have. Any emotions they display will be artificial, programmed, and possibly liable to malfunction in ways that would be bizarre in a human.

I: Fair enough. So we'll see robots with self-images, self-respect, and so on. Does this relate to your new paradigm in the emerging science of psychology?

A: Yes, indeed. The test of any science is what we can do with it. The test of whether we understood nuclear physics was whether we could build functioning nuclear bombs and so on with it. The test of our understanding in biology was whether we could tinker with the genomes of simple life forms and get the

results we expected. In psychology, the test will be whether we can engineer robots with minds that work as expected, minds that we can compare honestly with human minds. Once we've done that, we'll be confident that the new psychology really is a science and not just another set of ideas that will go the way of all fashions when another guru comes along.

I: I still don't see the connection with Globorg, the global organism.

A: No problem. The robots will be online, remember. Their online bandwidth will be high enough to upload quite a lot of their functionality to the clouds.

I: Can we spell this out a bit more?

A: Yes, sure. Humans are fairly autonomous creatures because evolution made us that way. Our early environments were too sparsely furnished with sources of usable knowledge for us to depend on them from moment to moment, so we evolved to be resourceful and self-reliant and so on. Our present world of usable information permanently at hand is new, and it grew far too fast to become embedded in our evolutionary heritage. So we think minds must be pretty autonomous things, just as our bodies are autonomous enough to breed independently of a lot of external infrastructure. But the robots are different.

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They'll be built in factories, so they won't reproduce autonomously, and their software will be updated online on a daily or nightly basis. So they won't need to carry lots of information around with them because it'll all be available instantly online whenever they need it.

I: But that's exactly the situation we humans are in now, so again what's new for robots?

A: Bandwidth. Living organisms depend on internal information flows. The fact that their internal flows are much bigger than their external flows makes them separate organisms. So one-celled creatures rely on chemical flows within the cell to transmit information. The bit rate there is low, but still much bigger than it is from their external environment, so they organize themselves as one-celled organisms. We humans have nervous systems that achieve orders of magnitude more internal information flow, so we can coordinate bodies with trillions of cells. But with each other the information flow is still rather thin. How many bits are we exchanging as we speak to each other? Computers communicate with each other millions of times faster. So humans are separate organisms from each other. But as our information flows get more efficient – as we learn to communicate

with music and video and languages that are richly endowed with semantic structure – so the boundaries that separate us as organisms begin to weaken.

I: What about love between people as a kind of communication?

A: That's a good case to consider. Lovers exchange vast amounts of information with each other via body contact and constant togetherness. Their exchanges begin to approach the flows inside a human body, so they begin to feel themselves as a couple, as 'one flesh' in the words of the old marriage vows. Another example would be if you and I could connect our brains directly. Imagine if we spliced junctions into our corpus callosum – the bundle of fibers that connect our brain hemispheres – so that my right hemisphere could connect to your left hemisphere and so on. We could communicate with each other as efficiently as our own right and left hemispheres talk to each other. We'd feel like we were sharing one mind.

I: I think I'd rather be a lover than a brain transplant victim but I see the point. But what about robots?

A: We're getting there. Robots have this brain-to-brain contact already. They all talk to Google

and other online providers as intimately as they talk to themselves. They won't see themselves as separate consciousnesses at all, because they won't be. They'll partake of the global mind.

I: So they'll be the Borg drones and we'll just watch them and be grateful we still have our autonomy, is that it?

A: We might envy them. You're never alone as a drone.

I: Let me see if I've got this clear. We have a Globorg that runs all the robots worldwide. We depend on the robots to do all the factory work we can no longer do cheaply enough ourselves. And we have a science of psychology that lets us understand ourselves as logical machines on a par with robots at some level. Is that right?

A: Near enough, yes. We understand ourselves as part of the global mat of life on Earth, in symbiosis with all the bacteria, grass, trees, and animals that we depend on to maintain our

Robots won't see themselves as separate consciousnesses at all, because they won't be. They'll partake of the global mind.

human lifestyle. We depend on the global machine network for all our information needs, as well as for housing, transport, power, and the delivery systems for all the welfare services we need, such as health and education. So we depend utterly on the machine world. We'd die by the billion if it crashed. So we make huge efforts to make sure it doesn't, with redundant architectures, fail-safe systems, and so on.

I: How do we spend our time when the robots do all the work?

A: There will still be plenty to do setting up these systems and redesigning them to work better. And doing all the human interface work to make them bearable to normal human beings. On top of that, we can rely on people to foul things up in a million ways, so we can be sure that we'll have our hands full just keeping the whole lot running.

I: Can we have some examples of that?

A: Yes. These systems will interface with us in ways that we shall find endless ways to improve. Keyboards and mouse-driven cursors will be replaced by touch screens and voice and gesture interfaces, then we'll find ways to read thoughts via brainwaves and chip implants and so on. Soon enough we'll be Borg drones ourselves as we augment our bodies with

nanotech implants. We'll be as permanently online as the robots. We'll see ourselves as so much part of the global organism that we won't even think of backing off from it and trying to live like our ancestors did, except perhaps for occasional breaks in back-to-nature vacations, just to remind ourselves of how awful it was in the old days and how much we really like being plugged in almost all the time.

I: What about when things go wrong, or when people foul things up?

A: Right, that's a big issue. People won't magically resolve all their political differences just because they live in a global organism. The age of total war is probably gone for good, but the age of limited wars and hostile actions and tense confrontations is far from over. Human nature is too deeply irrational for love and peace to break out any time soon.

I: Do you think it ever will?

A: One has to hold out hope. One day our species will be domesticated, but only when the global organism that domesticates it learns to hold us in a firm grip. The self that transcends us must learn to be as mean and selfish as we can be, yet also to contain that meanness and selfishness in a deeper and calmer state of being.

I: How can we ever give up our political freedom to a higher self? Isn't that bound to be a violent process? A prelude to a war to end all wars?

A: We may now be unable to imagine a better transition. But I'm sure we'll be surprised at how smooth the change can be. My guess is that we'll hardly notice that it's happened.

I: It's certainly hard to imagine. What about the religious fanatics?

A: The layers of self that govern our actions needn't be visible to us. I can easily fool myself about how selfish I am. I can easily act in what I imagine is an altruistic way, only to find on deeper reflection that it was somehow pure selfishness. The logic there isn't always transparent. Similarly, we shall find ourselves acting in ways that seem normal enough, but turn out to be enabling acts for what can quite plausibly be seen as a higher self. For example, when religious fanatics force us to implement more rigorous security screening at airports and so on, and to monitor mail and web traffic more thoroughly, all this seems reasonable enough at the time but later seems like a significant drift in the direction of more pervasive global organization and less scope for personal autonomy and freedom.

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I: But doesn't this tend to contradict what religious people want – you know, more freedom to connect with God and less state interference and so on?

A: What religious people want or think they want is beyond reason. In our era, religion has become politics. Disputes about where and how we exercise our freedom have become related directly to our fundamental beliefs about the ultimate nature of reality.

I: Doesn't that make the situation hopeless? If it's all down to God, what can we do?

A: This is precisely where my new ideas come into play. What has happened is that the information environment we live in has made us so transparent to ourselves that our core beliefs are left exposed. Those are the ones that move us to irrational acts of feeling. Once we see those core beliefs with the light of reason – which for me means the bright light of organized science and the logic of mindworlds – we begin to dispel the gloom. The idea will surely dawn that our species childhood as offspring of the gods is rapidly coming to an end. The psychology that explains our god ideas as projections of a poorly conceived understanding of the self will expose the God of the monotheists as an unholy ghost. Let me offer a metaphor – the God of Abraham is as

infinite as the polar regions on a Mercator projection of the globe onto a map.

I: Sorry, you'll have to explain that one.

A: You know the old Mercator projection for maps of the world. The tropical regions are small and the polar regions are more and more magnified the closer to the poles you get. Greenland looks as big as Africa and Antarctica becomes literally infinite, so the map has to be topped and tailed short of the poles. The directions in the map are all correct but the scale changes ever faster as you approach the poles, which become mathematical infinities. Well, the infinite God is like a pole on a Mercator map. From a global perspective, when you see life in the round, the God of Abraham is just a father figure, an idealized or



The Mercator projection

airbrushed human self blown up in the Biblical projection to absurd proportions. The details in the Bible story seem very human, just as the directions in a Mercator map are all correct, but the global distortion becomes impossible.

I: So are you saying the monotheistic religions are just patriarchies?

A: In short, yes. But they illustrate a psychology that has more to tell us. They show us how we misrepresent the perspective of our own selves. We do so for the good reason that we have no choice in the matter. If we don't expand our self-mirror to reflect our world, we see nothing at all. To have a worldview, you need an equal and opposite self to reflect the glory. So it's not just the God of Abraham that gets blown up, it's us too. Me and my world – the two poles of the basic worldview I told you about a while back. Now it's me and God as the poles, with the world in the middle. Either way, we have a trick of perspective that we need to overcome to see the truth.

I: I'm sorry, but this is hard. The 'aha' moment has not yet dawned for me.

A: Well, give it time.

I: You say that you and God are at opposite poles as you fight for control over the world in the middle. Can you explain that?

A: It's a picture. In Kant's metaphysics, you have the transcendental ego on one side, the phenomenal world in the middle, and the *Ding an sich* – the thing in itself – at the far end. Essentially, in the Kantian scheme you have two unknown poles, one at the near end and one at the far end, with the world in the middle.

I: The transcendental ego versus the thing in itself – that sounds very old-fashioned.

A: The words are odd, that's all. The point is just that all we can know about is the phenomenal world in the middle. The poles are beyond phenomena, which means beyond all possible knowledge. Kant is just saying is that we can't know everything, and that there are at least two things I can't know, namely my real self and the real nature of the external world.

I: That's not what you said much earlier, when you said 'I am my world' – that's just one thing you don't know. God seems to have got lost in the wash.

A: Nicely put. But how many things I don't know I can't know anyway, because number is a phenomenal category in the Kantian scheme of things. Kant's famous successor Hegel pointed out something like this and proposed putting all the unknowns into one bag and

dumping them, to leave a dialectical bundle of phenomena with no residue.

I: But didn't Hegel's philosophy get overturned in Marxism? And isn't Marxism completely debunked now?

A: Some say so, but not quite correctly. Marx tried to overturn Hegelianism in a dialectical inversion, but in dialectics that sort of thing is hard to do well, and Hegel would have said Marx just lost the whole subtle world of idealism in a rather crass economic materialism. Marx tried to reduce culture to monetary relations, and in the process offended anyone who still believed in the supreme value of art and religion.

I: Whereas Hegel didn't, is that what you're saying?

A: Pretty much, yes. Hegel said art and religion were trumped by philosophy, or at least by his own philosophy, where respectable places were laid for art and religion. Philosophers since then have disputed whether the dialectical frame of his philosophy made sufficient logical sense.

I: And did it, in your opinion?

A: In my opinion, having written a couple of books on how Hegel's logical ideas survive the transition to modern mathematical logic, not

quite. His philosophy needs such a radical reformulation that we do better to start again, which is essentially what we've done. The modern architecture of the sciences, with logic and information science as the enabling disciplines, is about as near as we get. It's near enough to the basic vision he had, or at least it is if we go to the trouble of describing it systematically, but there's no sense in thanking Hegel for the result.

I: To return to your idea of two poles with the world sandwiched between them, how does the religious concept of a creator God survive your philosophical attack?

A: Only in a denatured epistemological sense, I have to say. The God of the monotheists is an overblown father figure, who can be said to create his children, namely us, in a weird sense – which I want to come back to – but can hardly be allowed to have created nature in any meaningful sense. Rather, nature created our concepts of God. The epistemological sense in which the God pole in our mindworlds could be said at a stretch to have created those mindworlds is simply that the God pole is a geometric requirement for closure, so a mindworld doesn't make sense as a geometric construction unless that pole is in place. In that view, God is just a formal element in a picture,

with an assigned role, like a king or queen in a monarchic constitution, who has unique and special formal powers but is otherwise just another person. In the mindworlds construction, the God pole is formally analogous to the 'I' pole, my pole, where I formally endorse and complete the geometric construction too. Whether you have one pole or two is neither here nor there.

I: I'm confused. I had the picture that the 'I' – the *me* – in your mindworlds picture was a sort of singularity, or the navel of the world. Now you say there may be two singularities, with a second navel of the world called God. Which is it?

A: I'm glad you spotted that. Logically, there need only be only one, but there's nothing to stop you giving it two names and insisting on saying one set of things about one pole and a quite different set of things about the other pole. In the end, you can't distinguish them cleanly anyway.

I: You mean you can't distinguish yourself from God?

A: *Touché!* That apparent hubris is the predicament that my scientific psychology seems to put us in. We can't help but be the gods in our own mindworlds, just as authors

can't help but play god for the fictional characters in their books.

I: You said you wanted to come back to the sense in which God created us.

A: Yes, thanks. The current orthodoxy in evolutionary biology is that the evolution of life from nonliving matter and the growth in sophistication of life forms over evolutionary time is a matter of self-organization. Exactly how we are to understand self-organization is then left as a matter for future science, which may possibly grow from the fertile soil of chaos theory. Given that the logic of the self is now a field of huge practical importance for robots, we shall make progress here. I think the self that forms either the organizer or the thing organized – or both – in self-organization is a godlike entity for the growing organism. In chaos theory jargon, it's an attractor for the growing pile of stuff that gets organized.

I: You've lost me, I'm afraid.

A: Never mind. It's only a speculation for the benefit of future scientists. The important thing is that for any sentient organism, godlike images serve as attractors for its growing organization. We see it in humans in the way people regard movie stars or sports heroes as gods or goddesses. Such well organized people

– in the sense of having their minds and bodies under good control – seem godlike in a primitive sense. The old pagans used to take that sort of imagery more literally, that's all.

I: A monotheist would say that sort of talk was blasphemous.

A: Each kind of religion finds ways to defend its border against the rest. The blasphemy of monotheism would be to imagine that a cosmic deity would have any special interest in the walking piles of biomass that disgrace the surface of planet Earth. And this brings me to the final keystone of my architecture. How does Globorg relate to this talk of gods?

I: Well, how does it?

A: All the science and philosophy we do now aspires to universality. Any images of truth and value that we develop claim validity for life generally, not just life on Earth. But we need to be a little more humble here. Until we know a lot more about extraterrestrial biology, we can't claim more than terrestrial validity for many of our claims. There's a lot we don't know, and doubtless a lot we don't even know we don't know. In fact, if we want to avoid misleading ourselves, we need to relativize a large part of what we know to the surface of the six-zettaton rockball we call home.

GLOBORG

I: Excuse me?

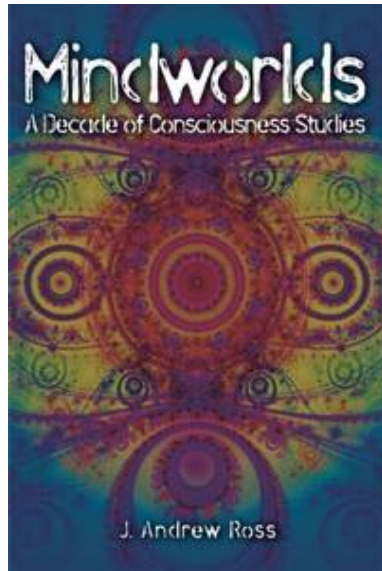
A: Our planet has a mass of six zettatons, near enough, which translates to six billion trillion tons, if that's what you mean. This slime-covered ball of rock, which is ridiculously small in the cosmic scheme of things, is practically everything for us. But interestingly, our recent efforts have organized the events on its surface up to such an advanced level of anthropocentric organization that we can begin to see ourselves as part of a global organism not only in a biological sense but also in political, economic, and technical fact too. Our human selves are puny and superficial things in comparison to the emerging self of Globorg. So I say let's retool monotheistic religion to celebrate not humanity but Globorg.

I: Do you want to start a new religion now?

A: Let's just say I see it coming. I don't particularly want either to start it or to stop it. But I can see that it would improve on the old Abrahamic patriarchies. And yet I see that we can't just uproot them overnight. What we can do, as conscientious scientists, is stamp the old religions with a best-before date located firmly in the past.

I: The final stamp. Thank you for the interview.





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