brockman on the edge

DIM-SUM WITH MURRAY "I'm talking about the hooking of minds together, and the hooking of minds and computers together, as well as the evolution of complex adaptive systems elsewhere in the universe, which we don't know about here on earth."

"Anything you say, Murray," I reply, as I guzzle down another dumpling at Harbor House Restaurant in Monterey Park, California. It's Sunday morning and I am having Dim-Sum with physicist and Nobel Laureate Murray Gell-Mann. We are sitting in the midst of about 300 Chinese people, none of whom appears to speak English. This does not deter Murray, who knows smatterings of dozens of languages (including dialects) and is ready to supply an etymological discourse on each of them.

Murray, one of the world's pre-eminent theoretical physicists, discovered the quark, a fundamental building block of the universe. When Murray talks, you listen. And listen. We are discussing the sciences of complexity. "This is how we will reach an understanding of the way the universe works," he says between bites of his spring roll, "from the structure of the galaxies to the generation of a creative thought in the human mind, from prebiotic evolution to the rise and fall of prehistoric societies. Formulating the physical laws of the universe is only the beginning of what we need to know about our world and ourselves. What if we know these laws? What comes next?"

Murray has coined the word "plectics" to describe the next step. "Plectics," he explains, "comes from the Greek word meaning 'twisted' or 'braided.' Thus 'symplectic' comes from the expression meaning 'braided together.'"

"The cognate Latin word *plexus*, 'braided,'" he goes on, "gives rise to 'complex,' originally 'braided together.' The related Latin verb *plicare*, meaning 'to fold,' is connected with *simplex*, originally 'once-folded,' which gives rise to 'simple.'"

Murray hands me a single sheet of paper which proposes a definition for this new science. I read it as he finishes his spare ribs: "Plectics is the study of simplicity and complexity. It includes the various attempts to define complexity; the study of simplicity and complexity and classical and quantum information in the history of the universe; the physics of information; the study of nonlinear dynamics, including chaos, strange attractors, and self-similarity, in complex 'non-adaptive' systems in physical science; the study of adaptive complex systems, including pre-biotic chemical evolution, biological evolution, ecosystems, mammalian immune systems, learning and thinking, the evolution of human languages, and the rise and fall of human cultures; and the study of computers that, in their architecture or programming or both, have some of the features of 'natural' adaptive complex systems."

This resonates with the agenda of the Santa Fe Institute, which Murray co-founded. The Institute, a unique hot spot on the intellectual landscape, gathers together mathematicians, physicists, chemists, anthropologists, linguists, economists, biologists, and computer scientists, among others. The emphasis is on interactive people. Murray has found that many distinguished people yearn to stray outside their own fields, but cannot do it at their own institutions. "We didn't want to locate the Institute near Harvard or MIT," he says, "where there's enormous pressure of received ideas, what the French call *'idées reçues,'* ideas that are accepted by a community and that are then difficult to challenge. In Santa Fe, we can think and converse freely, constrained only by the need to agree with reality."

We continue eating as Murray negotiates his way through the menu and our meal in two Chinese dialects with the non-English speaking staff, talking to me at the same time about elementary particles, linguistics, bird watching, archeology, and Chinese food. Dim Sum with Murray is a dizzying, intellectual tour de force. I sit back, stuffed. It doesn't get any better than this.

"The world of the quark has everything to do with a jaguar circling in the night," Murray says as we get up to leave. He is quoting his friend, poet Arthur Sze. "If we want to see and understand the jaguar circling in the night," Murray continues, "what are we to do? The major insight here is that information about the universe is compressed into models or schemata by complex adaptive systems, systems that evolve or

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learn through interaction with their environment. The theory of complex adaptive systems, towards which we are now beginning to work, should apply to all such systems, wherever they occur in the universe. They are a crucial link between the fundamental physical laws, with their universality and simplicity, and the rich fabric of the universe as it appears, say, in a tropical forest on the earth where the jaguar stalks its prey."

THE BIG WOMBASSA "Johnny, it's 'The Big Wombassa.'" Jack Nicholson was in a dark, Irish mood. It was 20 years ago, and he and I were sitting in the back of a dingy Sunset Strip nightclub, drinking and munching nachos, as he meditated on the problems of success.

"The Big What?," I said.

"The Big Wombassa," he repeated. "What you think you're going to get but don't get when you get what you want."

Sometimes an idea sticks with you for the rest of your life. The Big Wombassa is that kind of idea for me. For Jack, it must be his constant companion. How else can anyone live with being the ultimate oxymoron: a Hollywood intellectual! Forget his acting genius, forget the mythic quality of his personality, this guy is, and always has been, deep and serious. He reads. He thinks. He ruminates. We worked together in the late '60's on Bob Rafelson's first movie, *Head* (Jack's screenplay, my head). I left Beverly Hills after two weeks and returned to New York when I realized that my future in Hollywood would be waiting for the next plane to land to bring me someone to talk to.

"Come to dinner at Marylou's," says Jack. It's 20 years later, and he is in New York to screen his latest acting and directing effort, *The Two Jakes*, a sequel to *Chinatown*. Hollywood Harry (a.k.a. Harry Gittes, the namesake of Jake Gittes in the movie), our mutual friend, tells me that he loves the movie but he's apprehensive because the "word" on the box office potential is lukewarm: no major female lead, no car chases, no climactic scene. So I'm off to Marylou's to eat dinner with Jack and his friends: Kathleen Turner, Mike Nichols, Steve Martin, Harvey Keitel, Art Garfunkel, Julian Schnabel. We talk as I pick at my grilled tuna. He's nervous about the film. It's not going to make it commercially and he obviously knows it. He's created a film-noir, good enough to win him the coveted acting award from the Ministry of Culture in France, but with its sophistication and nuance, inappropriate for the American mass market. His film succeeds within the context of what William Irwin Thompson calls "The Mental Culture" of Europe, and fails in Thompson's post-historical "Integral Culture" of the U.S. I would love to get Jack and Bill together. Bill is another one of those dark, Irish types and what he is thinking about these days pertains to the reception of *The Two Jakes* in the U.S. and in Europe. But I know this will never happen.

Bill, a native of L.A., is now based in Zurich. Like Marshall McLuhan who sat in Toronto and played Man on the Mountain, Bill plays the expatriate thinker to the hilt. Whenever I meditate on the great minds of the 7th century, he always comes to mind. I first met him twenty years ago, when he founded Lindesfarne, a loose association of intellectuals based on the monastic model of the Dark Ages. And can he be dark! We meet at my apartment in New York for a Sunday brunch of bagels and lox and, though mellowed, the passage of time has dimmed neither his feistiness nor his penetrating eye. His vision is that we are entering "the dark age," which I think may (or may not be) his version of "The Big Wombassa."

- "Don't be fooled by intellectual spots like Berkeley in California and Cambridge in Massachusetts. These are hot-houses full of rare and exotic European flowers: here, and only here, one talks of Heiddeger or Habermas, Foucault or Derrida, but just step outside these tenured greenhouses to see what the capitalist climate is really like. Sports stadiums, business schools, engineering labs, medical clinics (meaning bio-medical engineering labs): this is what your normal American university is like.
- "In Europe you do philosophy by performing discourse on another guy's text, and so Derrida will go over Heidegger and Habermas will extend Marx's corpus; but in America you could never get away with that, for you have to generate philosophy from real things, like

computers or television. You need to look at *Omni* magazine to get a feel for this kind of mail-order, popular mechanics, science of mind. It's full of articles about meditation, helmets and downloading the soul into computers so that when your body wears out you can live forever. What is completely missing here in Europe is precisely what you will find over there: namely, an electronic *umwelt* in which history is replaced with entertainment, and nature is replaced with technology. This peculiar wedding of low kitsch and high tech generates a post-historic world that no European literary intellectual can quite fathom.

- "Although literary intellectuals of my ilk may write books in snobbish disgust with this new polity, no book will ever put this electronic cultural transformation into reverse. We will have this polity of mediocracy in which imagineers manipulate images for the electropeasantry as long as we have television as our dominant form of communication. It will do no good to try to create some new Amish Lancaster County in which there is no TV, for that quaint space will only become yet another movie-set of heritage and tradition in the midst of the vast electronic polity. It will only be when television is superceded by some new technology of communication, just as television superceded print, that we will have a new noetic polity created by the new means of communication. When that happens, humanity will probably look back upon the age of television as a Dark Age.
- "The truth is that the dumb know something that the smart do not: namely that the intellect is not an adequate instrument with which to sound the depths of the universe. With more than 100,000 books published a year, no leader or citizen can be responsibly informed, and no literate intellectual can pretend that he is well-read and learned, even were he or she to read 24 hours a day.
- "The transition from the Mental culture of Europe to this new Integral culture of the twenty-first century is clearly a Dark Age, and what these dark shadows black out are us. Small wonder that literary intellectuals become reactionaries, for it is comforting to be a reactionary, as it allows one to feel morally superior as one bears one's 'chalice through a throng of foes.'
- "America's critical role in the planetization of humanity does seem to be that of the catalytic enzyme that breaks down all the traditional cultures of the world, be they Asiatic, Islamic, or European. With Disneyland in Paris and Tokyo, the United States is well on its way to dissolving all the world cultures, and I do not think that any nativistic revolt of Islam will succeed in stopping it any more than Marxist-Leninism did. The present-day nativistic attacks of Islam against the airlines are, like the Ghost Dance of the Plains Indians against the railroads, just simply not powerful enough to stop the electronic spread of Disneyism, Hollywood movies and TV programs, rock and roll, Coca-Cola, and McDonalds."

BIOSPHERE 2 Meanwhile, back in the desert, I drive to mile-marker 96.5 on the highway outside of Tucson, take a right, continue about a mile across barren terrain, cross a ridge, and see a shining structure of glass and steel five stories high and the length of two football fields rising out of nowhere. It's a magnificent sight. The scale of this project is larger than life. I first heard about it from Roy Walford. "Get down there," he said, "it's the most exciting thing on the planet." He wasn't kidding.

The significance of Biosphere 2 is twofold. It can be looked at as a prototype space colony as envisioned by Gerard K. O'Neill. Or, because it will be completely sealed off from outside support and is designed to be fully self-sustaining in terms of food and oxygen, it can be studied as a control model of our own planet Earth, giving us a useful tool to look at our environment.

According to published reports, the project, which is organized as a profit-making venture, is costing anywhere from $30 to $50 million, with most of the funding coming from Texan Ed Bass. Eight "Biospherians," four men and four women, are scheduled to enter the enclosure for a two-year period in December.

Later I have dinner with John Allen, Director of Research and Development of Space Biosphere Ventures, at Le Bistro,

"This peculiar wedding of low kitsch and high tech generates a post-historic world that no European literary intellectual can quite fathom."

"If you design a life system like this, you can start out with the seeds for the habitat and the intensive agriculture that would probably be the first module for a colony on Mars or on the Moon."

Tucson's swankiest Belgian restaurant. John is a founding member of the Institute of Ecotechnics. He is an engineer-ecologist, an entrepreneurial manager, and a philosopher of systems theory. As I eat my *canard a l'orange,* I ask him about the ideas behind Biosphere 2:

• "History is my main interest and today its action concentrates on Space, not only on extraterrestrial expansion, the satellite supervision of human activities on planet Earth, Near Space, Moon, Mars, Solar System expeditions, and search for other intelligence, but also the full discovery and management of planet Earth itself, the world ocean, Antarctica and Arctic, the mantle, plate tectonics, the atmosphere, and the ozone layer. The chief technical block to completing this stage of history is the achievement of biospherics, the ability for complex, stable, enduring, evolutionary life systems to separate from Biosphere 1 and go off on their own.

• "We don't see picking up a biosphere and launching it into outer space. But if you design a life system like this, you can start out with the seeds for the habitat and the intensive agriculture that would probably be the first module for a colony on Mars or on the Moon, and you could take smaller parts of those systems and use them in near Earth orbit as a space station. And then we look to the longer term stability of the longer term colony on Mars or the Moon or in space and then look at the overall biosphere system.

• "You can look at the implications of Biosphere 2 in terms of being a tool to give us further information and understanding about how to manage a number of problems we are having here on this biosphere. The eight biospherians going into Biosphere 2 will be the first products of the biosphere university in terms of being total systems managers. We're going to have to manage the water system because that's the water they are going to drink every night at their dinner tables. So if they are doing something over there in the rainforest or in intensive agriculture, they are going to get a feedback in a very quick time frame. And then we will have the information we're going to gain in having to design out of necessity. This will be the first application, this will be the first time we're closing a total water loop, closing the air loop, having to clean up the atmosphere inside Biosphere 2. It's going tell us a lot about how we manage air quality in our homes in our offices, in cities and countries.

• "We are looking at a five to ten year fallout for industrial and institutional applications, and maybe fifteen for the household. An important part of our corporate planning is to speed up what we refer to as technology transfer. Of course, being a private capital venture, we have every motivation to do it that way."

John's question: "how far, how deep, how complex can we go, and how quick? Biosphere 2 is a very good tool for this exploration."

at the reality club

RECENT TALKS

Howard Gardner
Creators of the Modern Era

Bruce Wilshire
The Moral Collapse of the University

Doyne Farmer
In Pursuit of Artificial Life

edge interview

"demystifying consciousness" a conversation with daniel c. dennett

I can't stand what passes for philosophy today. But I like and admire Dan Dennett. He's really cooking. I went up to see him at his farm in Blue Hill, Maine. He got off his tractor long enough to take me to the Blue Hill Country Club for a Sunday lunch of bacon, lettuce, and tomato sandwiches. We adjourned to the golf course where I videotaped this conversation while he sat cross-legged under a lone pine tree on a piece of land jutting out into the harbor. —JB

BROCKMAN: It seems to me you're drifting away from philosophy, or revisioning what a philosopher is.

DENNETT: I like to think that I'm drifting back to what philosophy used to be, and has been forgotten about in many quarters in the last thirty or forty years when it's become a sometimes ridiculously technical and dry logic-chopping subject for a lot of people—applied logic, applied mathematics. There's always a place for that, but it's nowhere near as big a place as a lot of people think.

If you look at the history of philosophy, you see that all of the really great and influential stuff has been technically full of holes, but utterly memorable and vivid. It consists of what I call "intuition pumps," lovely thought experiments like Plato's Cave, and Descartes' Evil Demon, and Hobbes' The State of Nature and the Social Contract, and even Kant's idea of the categorical imperative. I don't know of any philosopher who thinks any one of those is a logically sound argument for anything. But they are wonderful imagination-grabbers, jungle-gyms for the imagination. They structure the way you think about a problem. These are the real legacy of the history of philosophy. I think a lot of people have forgotten that. I like to make intuition pumps.

BROCKMAN: What are the intuition pumps today? Who is working on them?

DENNETT: When I coined the term, its first use was derogatory. I applied it to John Searle's Chinese Room, which I said wasn't a proper argument; it was just an intuition pump. I went on to say intuition pumps are fine if they're used correctly, but they can also be misused. They are not arguments, they're stories. Instead of having a conclusion, they pump intuition. They get you to say "Aha! Oh, I get it!"

The idea of consciousness as a virtual machine is a nice intuition pump. It takes a while to set up because a lot of the jargon of artificial intelligence and computer science is not familiar to people. But hey! Think about the idea that what we've got in our heads is software. It's a virtual machine, in the same way that a word processor is! This takes some getting used to, but it does let you see things from a slightly different perspective.

BROCKMAN: Some colleagues have called you an "engineer groupie" because of your interest in artificial intelligence. What ideas appeal to you in AI?

DENNETT: Many of the variations on Oliver Selfridge's original Pandemonium idea. Way back in the earliest days of AI, he did a lovely program called Pandemonium, which was well-named, because it was a bunch of demons. Pan-Demonium. In his system there were a lot of semi-independent demons, and when a problem arose, they were all jumping up and down, in effect saying "me! me! me! Let me do it! I can do it!" And there was a struggle, and one of them would win and would get to tackle the problem. If it didn't work, then other demons could take over.

In a way, that was the first connectionist program. And ever since then, there have been waves of enthusiasm in AI for what are, ultimately, evolutionary models. Connectionist models are ultimately evolutionary. They involve the evolution of connection

intellectual graffiti

"Now the figure of Satan has been astounding puzzle in the history of religion: Where did this figure originate? and what is it doing there? Satan is simply not present in classical Jewish sources—and scarcely present in traditional Judaism to this day—not, at any rate, in the form that western Christendom knew him, as the leader of an 'evil empire,' an army of hostile spirits who make war on God and humankind alike. Yet those images *did* develop and proliferate in certain later Jewish sources *not* included in the Hebrew Bible—sources that date to about 160 years before the common era to 100 years after it, especially among 'dissident Jews.'

"The early followers of Jesus—themselves dissident Jews of the same era—adopted and elaborated an image of cosmic war until it became utterly *central* to Christian teaching. In fact, the story of Jesus would make no *sense* without Satan as a primary character, the source of dramatic tension."

Elaine Pagels

"That creative individuals solve problems is not controversial. Indeed most definitions restrict creativity to problem solving, often gerrymandering behaviors in a quite extraordinary way so that they can qualify as examples of problem solving. Quite frequently, however, creative individuals are notable less for the problems that they solve than for the products which they fashion—ranging from heroic symphonies to educated students—or for the new questions which they raise—for example, Einstein's famous query about what a light beam would look like to someone travelling at the speed of light, of John Cage's attempts to incorporate chance elements into the musical compositional process."

Howard Gardner

"My minimalist model for mind suggests that consciousness is primarily a Darwin Machine, using utility estimates to evaluate projected sequences of words/schemas/movements that are formed up off-line in a massively serial neural device. The best candidate becomes what 'one is conscious of' and sometimes acts upon. What's going on in mind isn't really a symphony but is more like a whole rehearsal hall of various melodies being practiced and composed; it is our ability to focus attention upon one well-shaped scenario that allows us to hear a *cerebral symphony* amid all the fantasy."

William Calvin

"Who are you in virtual reality? Inside, you are a form of consciousness, and outside, you are a wave of creative change. You can make up a body, and people typically do. As a beginner you will be given an anthropomorphic body that looks as much like you as possible. You are as representational as you can be. You will find it interesting and surprising how readily you will adapt an alternative body. You may become a lobster, a gazelle, among other things. If you become a gazelle, you look down at yourself, and you see the body of a gazelle, and you find that you have the movement dynamics of a gazelle."

Jaron Lanier

strengths over time. You get lots of things happening in parallel, and what's important about them is that, from a sort of Calvinist perspective, they look wasteful. They look like a crazy way to build anything because there are all these different demons, working on their own little projects, and they start building them, and then they tear them apart. It seems to be very wasteful. But it's also a great way of getting something really good built, to have lots of building going on in a semi-controlled way, and then have competition to see which one makes it through to the finals.

Doug Hofstadter's jumbo architecture is a very nice model that exhibits those features. Steve Wolfram has got some nice models, although they are not really considered AI. These architectures are very different from good-old-fashioned AI models which, you might say, were bureaucratic, with a chain of command, and a boss, and a sub-boss and a bunch of sub-sub-bosses, and delegation of responsibility, and no waste. Doug Hofstadter once commented: "The trouble with those models is that the job descriptions don't leave room for fooling around. There aren't any feather-bedders, there aren't any people just sitting around, or making trouble." Mother Nature doesn't design things that way. When Mother Nature designs a system, it's "the more the merrier, let's all have a big party, and somehow, we'll build this thing." And that's a very different organizational structure. My task, in a way, is to show how if you impose those ideas on the brain, all sorts of things begin to fall into place, and you get a different view of consciousness.

BROCKMAN: You're using sophisticated computer metaphors to talk about the brain. As technology has changed, we change. What's next? As computers evolve, how do you think your philosophical approach to thinking about the brain will evolve?

DENNETT: That's a wonderfully loaded question, because in the history of thinking about the brain, as each new technology has come along, it's been enthusiastically exploited, as you imply: clockwork and wires and pulleys back in Descartes' day, then steam engines and dynamos and electricity came in, and then the telephone switchboard. Actually, I think we should go back earlier. The most pervasive of all of these

technological metaphors that people have used to explain what's going on in the brain is writing, the idea that we think about the things happening in the brain as signals, as messages being passed. You don't have to think about telegraphy or telephones, you just have to think about writing messages. The idea that memory is a storehouse of things written is already a metaphor, and even a bad metaphor. The very idea that there has to be a language of thought doesn't make sense unless you think of it as a written language of thought. A spoken language of thought won't get you much of anything.

BROCKMAN: How did people think of these things before written language?

DENNETT: I don't think they thought of them at all! There really wasn't a mind-body problem, and there weren't any theories of mind, even if you go back to the Ancient Greeks, even Plato and Aristotle. You find nothing much in the way of what looks like theorizing about this. And what they did say was rather bad.

BROCKMAN: Edward T. Hall tells an interesting story about the birth of language. He said that at some point, millions of years ago, a bunch of people were in a cave, and one said to the other, "Hey, Harry, guess what?" "What?" "We're talking!" and Harry said, "What's 'talking'?" Nobody had ever heard of this thing called talking, and they told this guy he was crazy and threw him out of the cave. And that was the birth of talking and language.

DENNETT: I like that. On the topic of the relation between language and consciousness, one of the themes that interests me is the idea of talking before you know that you're talking, before you know what talking is, which we all do. Children do it. And there is a big difference between talking and self-conscious talking, which, if you get clear about it, helps with the theory of language.

I think the basic idea of computation as formulated by Von Neumann and Turing is in a class by itself as a breakthrough idea. It's the only idea that begins to eliminate the middleman. What was wrong with the telephone switchboard idea was that you have these wires that connect what's going on out at the eyeballs into some sort of control panel. But then you still have that clever homonculus sitting at the control panel doing all the work.

If you go back further, Hume theorized about impressions and ideas. Impressions were like slides in a slide show and ideas were faint copies, poor quality xerox copies of the original pictures. And he tried to dream up a sort of chemistry theory, a sort of phony theory of valences which would suggest that one idea could bring the next one along. I explained this idea to a student one day who said Hume was trying to get the ideas to think for themselves. And that's exactly what Hume was trying to do. He was trying to get rid of the thinker. He was trying to get rid of the librarian who otherwise has to push these slides around because he realized that was a dead end. If you still have that middleman in there doing all the work, you haven't made any progress. Hume's idea was to put little valence bonds between the ideas so that each one could think itself and then get the next one to think itself and so forth, getting rid of the middleman. But it didn't work.

The only idea anyone has ever had which really demonstrably does work in getting rid of the middleman is the idea of computers. So homumculi are now ok because we know how to discharge them. We know how to take an homunculus and break it down into smaller and smaller homunculi, eventually getting down to a homunculus that you can replace with a machine very easily. And now we've opened up a huge space of designs, not just von Neumanesque old-fashioned computer designs, but the designs of artificial life, the massive parallel designs. Basically they all come down to systems that have from one perspective lots of little agents, lots of homunculi, but we now see how we can discharge those guys, how we can get rid of the middleman by taking a big middleman and breaking it down into smaller middlemen.

BROCKMAN: You seem very good at entertaining terminology. What else?

DENNETT: The Cartesian theatre—the idea that there is a place in the brain where "it all comes together"—is one I'm hitting on very hard these days. It's turning out to be so fecund as a source of explanation for what's wrong with everybody's thinking that I'm getting a little suspicious of it. It's

"The idea that memory is a storehouse of things written is already a metaphor, and even a bad metaphor."

almost too good to be able to pin so many different confusions and errors on one idea. But it does seem to be quite central. Right now I'm working on how you get rid of the Central Meaner which is one of the worst homunculi.

BROCKMAN: The central what?

DENNETT: The Central Meaner. The one who does the meaning. John Brockman, please repeat the following sentence in a loud clear voice: "Life has no meaning and I'm thinking of killing myself."

BROCKMAN: "Life has no meaning and I'm thinking of killing myself." I say that all the time.

DENNETT: But I don't think you meant it because even though your body uttered the words, the Central Meaner wasn't endorsing it, wasn't in there saying: this is a real speech act.

It's amazing how seductive the idea is that in the heart of us somewhere there is a Central Meaner who does the meaning. I think this is at the heart of Searle's business about the Chinese Room: there's no Central Meaner in there reading those Chinese words when they come out. That's part of the reason his intuition pump is so provocative. I've recently been looking at the literature on psycholinguistics and, sure enough, they have a terrible time dealing with *production* of speech. All the theories are about how people understand speech, how they comprehend it, how they take it in. But there is not much at all about how people actually generate speech. And if you look at the best model that anyone has come up with to date—it's Willem Levelt's model—he's got a "blueprint for a speaker" and in the upper left hand corner of the blueprint, he's got something called the Conceptualizer.

The Conceptualizer gives the orders for the rest of the system. The Conceptualizer figures out what the system has got to say and delegates that job to the guys down in the scene shop who then put the words together and figure out the grammatical relations. The Conceptualizer is the boss who sets the specs for what is going to be said. Levelt writes a whole book showing how to fit all the results into this framework where there's this initial Conceptualizer that gives the rest of the system a preverbal message. The Conceptualizer decides, ok, what we've got to do is insult this guy. Tell this bozo that his feet are too big. So that gives the job to the rest of the team and they put the words together and out it comes: "Your feet are too big."

The problem is: how did the Conceptualizer figure out what to tell the language system to say? The linguists say: "that's not our department" and they finesse the whole problem. They've left the Central Meanor in there and all they've got is somebody who translates the "preverbal message" from Mentalese into English, not a very interesting theory. The way around this once again is to have one of these Pandemonium models where there isn't any Central Meanor, there are all these little bits of language saying "let me do it, let me do it." And most of them lose because they want to say things like "you big meanie" and "have you read any good books lately," and all sorts of other boring things. There is this background struggle of parallel processors and something wins, in this case "your feet are too big!" wins and out it comes.

And what about the *person* who said it? Did he mean it? Well, ask him. And the person who said it will say well, yeah, I meant it. I said it. I didn't correct it. My ears aren't burning. I'm not blushing. I must have meant it. And he really has no more access into whether he really meant it in any deep sense than you do. He heard what he said. As E.M. Forster said, "How do I know what I think until I see what I say?" And so the illusion of the Central Meaner is still there because we listen to ourselves and we endorse what we find ourselves saying. Right now all sorts of words are coming out of my mouth and I'm fairly happy with it, how it's going, every now and then I correct myself a bit, and if you ask me do I mean what I say, sure I do. But not because there's a sub-part of me, a little sub-system which is the Central Meaner which then gives the marching orders to a bunch of lip-flappers. That's a terrible model for language.

BROCKMAN: Pandemonium?

DENNETT: Pandemonium. Right now all my little demons are conspiring: they've formed a coalition, and they're saying "yeah, yeah, basically the big guy is saying the truth."

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