

# Carl Sagan Takes Questions More From His 'Wonder and Skepticism' CSICOP 1994 Keynote

*When Carl Sagan delivered his keynote address "Wonder and Skepticism" before a large audience at the CSICOP Conference in Seattle, Washington, June 23–26, 1994, a lively question-and-answer session followed. We published Sagan's adaption of his talk as the cover article in the first bimonthly, magazine-format issue of the SKEPTICAL INQUIRER, January/February 1995. (We republished it after Sagan's December 1996 death as the lead chapter in the last of four general SI anthologies I edited, Encounters with the Paranormal: Science, Knowledge, and Belief, Prometheus 1998, with my two-page epilogue.) The Q/A session had been transcribed at the time along with the talk but put away and never published. A few months ago it was relocated, and Carl's wife and collaborator, Ann Druyan, readily agreed that it should be published in the SKEPTICAL INQUIRER. It appears here, with omission of only a few nonsubstantive exchanges. If some of the specifics discussed seem dated, others are as topical as today's news. And the general themes remain current. We then publish on page 37 a passionately felt postscript, "The Great Turning Away," written specially for this issue by Ann Druyan.*

—KENDRICK FRAZIER, Editor

**Q**UESTION: Dr. Sagan, you mentioned in your talk that one of the most important functions in science is to reward those who disprove our most closely held beliefs. Sir, if you were to look ahead two or three or four generations, which of our most closely held beliefs today do you think are the most likely candidates for disproof?

SAGAN: Maybe the belief that challenges our most closely held beliefs. Prophecy is a lost art. I have no way of doing that. If I could do that, think of the enormous effort we could save. The question flies in the very face of what I was just saying about how the most obvious points, the things we're absolutely sure of, may turn out to be wrong. So I am not immune to that fallibility and frailty. Let me give

another example. It's the middle of the nineteenth century. The leading futurologist—although the word didn't exist then; it's a terrible word—was Jules Verne. He was asked to project a century ahead. What would be the means of transportation, the most exotic means of transportation, in the middle of the twentieth century? He then did whatever he did, looked into his crystal ball metaphorically speaking, and then gave the following conclusion: by 1950 there would be Victorian living rooms with lots of red velvet plush, I imagine, in the gondolas of great airships (they were called, but essentially dirigibles) which would cross the Atlantic Ocean in no more than a week. And people said, "Whew! That Jules Verne, he sure is far-seeing. Who could have thought of that?" And he was grossly off. Why was he off? Was he stupid? Was he not a good futurologist? No. He didn't foresee heavier-than-air aircraft, nor did anybody else. The view in the middle of the nineteenth century was that it was impossible. And in just the same way, whatever I would tell you, where we would be in space or something like that, is bound to be, unless we destroy ourselves, overtaken by scientific ideas and technological developments that I haven't a ghost of a chance of foreseeing. So forgive me for not being able to answer your question.

QUESTION: Thank you for your talk.

I just wanted to challenge the idea that the reward system in science is essentially different from any other system. A person who successfully challenges the emperor gets the greatest rewards. An entrepreneur who successfully displaces some other technology or some other entrepreneur gets the greatest rewards. And a scientist who fails to successfully challenge the head of his discipline can see his head rolling, professionally, just as quickly, I think, as the unsuccessful coup d'état. Thank you.

SAGAN: Thank you. I think you raise a good point; permit me to disagree. There are certainly similarities along the lines that you say and, for example, maybe you remember the novel and television series, *Shogun*, in which the English sailor, washed ashore in Japan, is brought to meet Tokanaga, the future Shogun, who is very autocratic and authoritarian, hierarchical, as of course all military leaders are. And when he discovers that the Dutch were revolting from their Spanish overlords, he immediately identifies with the Spanish. He never met a Spaniard in his life, but they were in charge, and anybody challenging them must be doing something wrong. The hero then says, "The only mitigating condition is that the upstarts win." And Tokanaga says "Yes, yes, very true," and then they are friends. That's the point you just made. But that doesn't mean that there's a reward structure that encouraged the Dutch to revolt against the Spanish. It just means that if they succeed, then they succeed. It's a tautology. Whereas in science, there is a reward structure from the beginning. It doesn't mean that if somebody challenges Newton he is immediately rewarded. Einstein had some difficulties with

special relativity. His Nobel prize was not even for relativity, it was for the photoelectric effect, because relativity was considered to be worrisome. Nevertheless, there were many scientists who recognized the value of what Einstein said. He was not challenging Isaac Newton; Isaac Newton was dead. The value of what Einstein said was there plain for anyone to see; nobody had thought of it before. As soon as people had worked through the arguments on the idea that simultaneity was a nonsensical idea, many were converted on the spot. I don't say that everybody was; I don't say that there weren't some problems with it, but there is a reward structure built in. And Einstein, just a few years after his 1905 relativity paper, was Full Professor and at the top of his profession.

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QUESTION: Did you really say billions and billions of — (Laughter)

SAGAN: Never. Johnny Carson said it. I once saw him put on a wig and a corduroy jacket and pretend to be me, but I no more said it than Sherlock Holmes, in any of the writings of Arthur Conan Doyle, said "Elementary, my dear Watson."

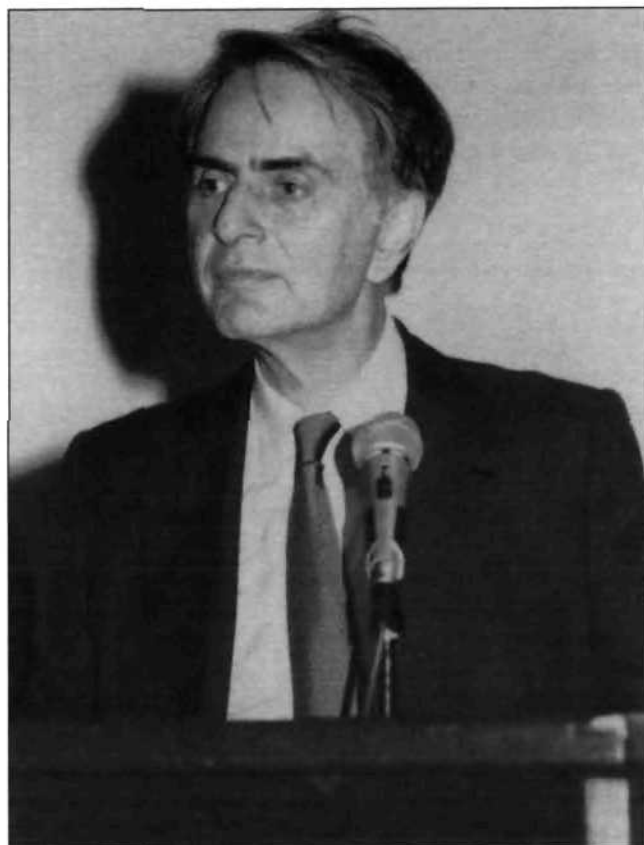
QUESTION: I find it a little surprising that you use the words "science" and "truth" together in the same sentence. You said that science doesn't seek absolute truths, but asymptotically tries to approach truth. I find truth is something that is very anthropocentric, relative to human being at a given time and a given place. I usually think of science more as seeking asymptotically a better understanding of reality, not of truth.

SAGAN: I won't quibble on words. There are as many people who argue about the existence of reality as about the existence of truth. I encourage them to debate each other. (Laughter)

QUESTION: If I understand the theory of relativity, the space/time viewpoint, a causal violation should not be able to create a paradox. Do you think we may ever have as much control over space/time geometry as we do over electricity?

SAGAN: That's an awfully good question and I don't know the answer. But yes, a topic that is being hotly debated these days in the gravitational physics community is whether producing a paradox is a contradiction, or whether a paradox of the sort you referred to is just something we are going to have to live with. Can effects precede causes, for example. We have

a tendency just to throw up our hands in amazement and despair: "What are you talking about? It's nonsense!" But there are certain sciences that seem to be in a funny way internally consistent with what else we know about physics and which may say effect can precede causes. I don't guarantee it's true, but if it is true it's just another one of those cases where our common sense doesn't apply everywhere.



Carl Sagan takes questions at his CSICOP keynote address in Seattle, Washington, on June 26, 1994.

**QUESTION:** Richard Hoagland has recently got hold of some pictures, Hasselblad pictures from NASA, which were taken some twenty years ago of the moon, and he has been describing those in great detail. He gave a talk at Ohio State University a couple of weeks ago and he had video cameras on and they were supposed to have videos available. I wonder if you've heard about this and had previous knowledge of . . .

**SAGAN:** You forgot to mention what is on those videos.

**QUESTION:** Structures on the moon.

**SAGAN:** Richard Hoagland is a fabulist. By the way, it's not difficult getting hold of the hand-held Hasselblad camera pictures; NASA freely releases them to everybody. These are in the public domain, they're available to anybody. You don't have to do something remarkable to get the pictures. The aspect of this story I know best has to do with the so-called Face on Mars. There is a place on Mars called Sidonia, which was photographed in a mission I was deeply involved in, the Viking mission to Mars in 1976. And there is one picture in which along a range of hulking mesas and hillocks, there is

what looks very much like a face, about three kilometers across at the base and a kilometer high. It's flat on the ground, looking up. It has a helmet or a hair-do, depending on how you look at it, it has a nose, a forehead, one eye—the other half is in shadow—pretty eerie looking. You could almost imagine it was done by Praxiteles on a monumental scale. And this gentleman deduces from this that there was a race of ancient Martians. He has dated them, he purports to have deduced when they were around, and it was 500,000 years ago or something like that, when our ancestors were certainly not able to do space flights, and then all sorts of wonderful conclusions are deduced and "we came from Mars" or "guys from other star systems came here and left a statue on Mars and left some of them on Earth." By the way, all of which fails to explain how it is that humans share 99.6 percent of their active genes with chimpanzees. If we were just dropped here, how come we're so closely related to them? What is the basis of the argument? How good is it? My standard way of approaching this is to point out that there is an eggplant that looks exactly like former President Richard Nixon. The eggplant has this ski nose and, "that's Richard Nixon, I'd know him anywhere."

What shall we deduce from this eggplant phenomenon? Extraterrestrials messing with our eggplants? A miracle? God is talking to us through the eggplant? Or, that there have been tens, hundreds of thousands, millions of eggplants in history, and they all have funny little knobs, and every now and then there is going to be one that by accident looks like a human face. Humans are very good at recognizing human faces. I think clearly the latter. Now let's go to Mars. Thousands of low, hilly mesas have all sorts of features. Here's one that looks a little like a human face. When you bring out the contrast in the shadowed area it doesn't look as good. Now, we're very good at picking out human faces. We have so many of these blocky mesas. Is it really a compelling sign of extraterrestrial intelligence that there's one that looks a little like a human face? I think not. But I don't blame people who are going into the NASA archives and trying to find things there; that is in the scientific spirit. I don't blame people who are trying to find signs of extraterrestrial intelligence—I think it's a good idea, in fact. But I do object to people who consider shoddy and insufficient evidence as compelling.

**QUESTION:** May we hear your opinion on the canceling of the Superconducting Supercollider in Texas?

**SAGAN:** Yes. There are many physicists who think that that latter was a great tragedy. My own view is that it was not nearly explained well enough. We're talking about eight, ten, twelve, fourteen billion dollars to do very arcane experiments—and I don't think physicists did a good job at all in explaining to Congress why at a time of many pressures on the discretionary federal budget so much money should go to this. It doesn't build weapons, it doesn't cure diseases, it isn't generally known or understood. What is it about and why should we spend money on it? I think the physicists have, not altogether but to a significant degree, themselves to blame.

**QUESTION:** A question concerning the search for extraterrestrial intelligence. It seems that we as skeptics, there's



an argument that seems very disappointing and maybe a bit persuasive in the Fermi paradox, the idea that if civilizations were to arise at any significant level, that even given a very extremely slow rate of expansion in the galaxy, that there's been more than enough time for them to have populated the galaxy several times over. What's your view on the Fermi paradox?

SAGAN: The Fermi paradox essentially says, as you said, that if there's extraterrestrial high technology intelligence anywhere they should have been here because if they travel at the speed of light, the galaxy is 100,000 light-years across, it takes you 100,000 years to cross the galaxy. The galaxy is 10 billion years old, they should be here. And if you say you can't travel at the speed of light, take a tenth of the speed of light, a hundredth of the speed of light, still much less than the age of the galaxy. William Newman and I published a paper on this very point, in which we point out: Imagine there is a civilization that has capable interstellar spacecraft and now they start exploring. What are we talking about? That they're sending out 400 billion spacecraft, all at once, simultaneously, to every star in the galaxy? Not at all. Interstellar space flight is going to be hard, you're going to go slow, you're going to go to the nearest star systems first, you're going to explore those stars. It is not a straight line but a diffusion question. And when you do the diffusion physics with the appropriate diffusivity, that is, the time to random walk, there are many cases in which the time for an advanced civilization to fully explore the galaxy in the sense of visiting every star system is considerably longer than the age of the galaxy. It's just a bad model, we claim, the straight line, dedicated exploration of every star in the galaxy.

QUESTION: Dr. Sagan, you've spoken about the need to, as you say, be defenders of science, or to spread the wonders of science and the value of science among those who are perhaps less well educated or have less of an appreciation of it. It seems to be quite a challenge, and I was wondering, in particular, there are many people, of course, plus the people in this room, perhaps a fairly large portion have some background in science. Amongst people who have what is called a liberal education, who may be in the arts or in the humanities, science has among many of them something of a bad name. I wonder if you have any thought on what path might be taken to remedy that situation.

SAGAN: I think one, perhaps, is to present science as it is, as something dazzling, as something tremendously exciting, as something eliciting feelings of reverence and awe, as something that our lives depend on. If it isn't presented that way, if it's presented in very dull textbook fashion, then of course people will be turned off. If the chemistry teacher is the basketball coach, if the school boards are unable to get support for the new school bond issue, if teachers' salaries, especially in science, are very low, if very little is demanded of our students in terms of homework and original class time, if virtually every newspaper in the country has a daily astrology column and hardly any of them has a weekly science column, if the Sunday morning pundit shows never discuss science, if every one of the commercial television networks has somebody designated as a science reporter but he (it's always he) never presents any

science, it's all technology and medicine, if an intelligent remark on science has never been uttered in living memory by a President of the United States, if in all of television there are no action-adventure series in which the hero or heroine is someone devoted to finding out how the universe works, if spiffy jackets attractive to the opposite sex are given to students who do well in football, basketball, and baseball but none in chemistry, physics, and mathematics, if we do all of that, then it is not surprising that a lot of people come out of the American educational system turned off, or having never experienced, science. That was a very long sentence.

QUESTION: Good evening, Dr. Sagan. Just one point first. Both the Canadian Broadcasting Corporation and the CTV private network have female science reporters.

SAGAN: Excellent. I was only talking about the U.S. and I recognize that you are within range of Canadian broadcasting here in Seattle.

SAME QUESTIONER: I'm a Canadian myself.

SAGAN: I'm very glad to hear it. David Suzuki has done for many years an excellent job on Canadian television.

SAME QUESTIONER: Absolutely. With the debacle of cold fusion, which may be said to be the ultimate proof of the scientific method with its peer review and its replicability or lack of same, if you were a person who is interested in the question of developing energy sources that would be both safer than the ones we use now and less expensive, would you continue to work in the area of fusion, and if not where would you work?

SAGAN: Cold fusion or hot fusion?

SAME QUESTIONER: I understand that hot fusion takes up a lot more energy than it ultimately produces.

SAGAN: But the margin is shrinking. If it were up to me, there's nothing in the way of compelling evidence for cold fusion, but if there were such a thing as cold fusion—you know, desktop conversion into enormous energy—we need that. So I can understand why there are companies, especially abroad, that are devoting small resources to it. I don't think that's cause for apoplexy. It'll probably come to nothing, but if there are scientists who want to spend their time on that, let them do it. Maybe they'll find something else that's interesting. On hot fusion, the margin, as I said, is shrinking, but the predicted, even optimistic estimates when commercial, large-scale, worldwide hot fusion would be available is too far into the twenty-first century to solve the energy problems we have today.

The energy problems I'm talking about are in particular global warming, the burning of fossil fuels. So what I would encourage is first of all, much greater emphasis on efficient use of fossil fuels—fluorescent rather than incandescent bulbs, you save a factor of several, or to put it another way, with the same amount of photons you put three or four or five times fewer carbon dioxide molecules into the atmosphere from the coal-burning power plant that provides the electricity. And I would put the money into forcing the automobile companies to produce cars that get 75, 85, 95 miles a gallon. Why are we satisfied with 25 miles a gallon when it is commercially perfectly possible to have safe, quick acceleration, spunky-looking cars

that are efficient in their burning of petroleum? And then the other area where I would put emphasis is in non-nuclear alternatives to fossil fuel, of which I would stress biomass conversion, solar-electric power, and wind turbines, all of which are technologies that are coming along very swiftly despite, until recently, real hostility in the U.S. government. Let me give you just one political story. There was once a president of the United States recently in the news named Jimmy Carter. He thought that there was an energy problem and he gave, in effect, talks to the nation in his cardigan sweater saying about how you should save electricity. He put into the roof of the White House a solar thermal converter which circulated cold water to the roof, and on sunny days in Washington sunlight heated this water and in repeated passes it made it very hot, and when it was time for a Presidential shower, here was hot water that did not rely on a power plant. He was succeeded by

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a President named Ronald Reagan. One of the first acts in office of President Reagan was to rip out the solar thermal converter from the roof of the White House at considerable cost—after all, it was in there and working—because he was ideologically opposed to alternatives to fossil fuels. We lost twelve years in research into these alternatives during the Reagan-Bush administration.

QUESTION: The dapper gentleman there, Bill Nye, his work on television bodes well for science education; he's to be applauded. I also want to thank you for answering all my questions about Richard Nixon; it explains a lot. You expressed some encouragement about the age mixture represented here in this audience. I wonder if you would comment on the conspicuous lack of racial diversity and the implications for science education in general.

SAGAN: Thank you. We also might ask how it is that of the first ten or twelve questioners only one was a woman in an audience in which women are much more strongly represented. These are wide-ranging, difficult questions. I don't claim to have the answers except to say that I know of no evidence that women and what in the United States are called racial minorities are not as competent as anybody else in doing science. It has to do, I think, entirely, or almost entirely, with the built-in biases and prejudices of the educational system and the way the society trains people. Nothing more than that. Women, for example, who are told that they're too stupid for

science, that science isn't for them, that science is a male thing, are turned off. And women who despite that try to go into science and then find hostility from the high school math teacher—"What are you doing in my class?"—find hostility from the 95 percent male science classes, with the kind of raucous male culture in which they find themselves excluded, those are powerful social pressures to leave science. It is amazing that there are any women in science as a result of this. I wrote a novel once, *Contact*, in which I tried to describe what women dedicated to science have to face, that men don't, in order to make a career in science.

QUESTIONER: I would like to challenge you to answer the questions without ridicule....

SAGAN: Fire away.

SAME QUESTIONER: ...whether they be about crop circles, Richard Hoagland, or the abductees.

SAGAN: I didn't think I had any ridicule there.

SAME QUESTIONER: I think you had quite a lot. I was quite offended.

SAGAN: Which one particularly?

SAME QUESTIONER: The crop circles, the jokes you started with, the answer about Richard Hoagland offended me.

SAGAN: Okay, let's take one. Let's take Richard Hoagland —

SAME QUESTIONER: I would like to ask you in general to watch the ridicule. There are so many people here that think such ideas are worthy of ridicule. You have

spoken about the need for compassion. I would like to see you model that here.

SAGAN: I appreciate that remark, and if I had not done what I preached I apologize. However, you must recognize —

SAME QUESTIONER: I accept your apology.

SAGAN: There was an "if" in front of the apology: However, you must recognize that vigorous debate is an essential aspect of getting to the truth, and the fact that Mr. Hoagland, for example, is not here—unless he is somewhere—I had nothing to do with it. Someone asked me a question about Richard Hoagland; I said what I thought. I happen to know that when Mr. Hoagland is asked questions and I'm not present, he says things about me, that I sometimes wish I had a chance to —

SAME QUESTIONER (interrupting): Are you capable of modeling him?

SAGAN: I don't understand the question. What do you mean "modeling?"

SAME QUESTIONER: Modeling. Modeling compassion.

SAGAN: I've known Richard Hoagland for many, many years. I think I have just the right measure of compassion. (Laughter)

QUESTIONER: After the lady's question I don't know if mine is appropriate. I was going to ask you: We have Scott Peck, psychiatrist, Dr. [Brian] Weiss, he wrote *Many Lives*, *Many Masters*, Dr. [John] Mack [the Harvard psychiatrist who

contended patients who say they were abducted by aliens are describing real events, and who spoke at the conference], we saw him yesterday, Dr. [Raymond] Moody—they're all mighty good thinkers. How do you think they went wrong?

SAGAN: I'm being asked to speculate offering psychiatric matters—hard to do. Some of those people I know very well, some I have never met. I don't think it would be right for me to guess why it is that they don't agree with me. I think that's all I want to say about it. I tried to stress before that it doesn't matter what the character of the debater is, it doesn't matter what reservations we have about him or her, what matters is the quality of the argument presented. For each of these people, I think the issue is: is there evidence? Yes, Dr. Moody has an M.D. but he uses, as I said, my own memories of my parents speaking to me as evidence of life after death. I know that's not a good argument. I know better than he what those voices are about, and so, by extrapolation, I think maybe the rest of his argument isn't so good. To the extent that I have some way of hooking onto the arguments I try to use what I know and see if there's a good case or not. I want to stress that there are some claims in the areas of parascience or pseudoscience that may well turn out to be right. And I don't think that is a reason for us not to demand the highest standards of argument about it.

For example, one thing I didn't mention to the last questioner: when Mars Observer was on its way to Mars with the high-resolution camera that might photograph things about the size of this, I thought that among the many other targets, it ought to take a look at the so-called face and settle the issue. If it's just some odd aspect of eolian abrasion on Mars, let's find that out. If it's something else, let's find that out. The fact that I think I understand, via the Richard Nixon eggplant, what the face on Mars is, doesn't mean that I don't want anyone to check it out. I could be wrong. If we have the tool to, with a few pictures, find out what the answer is, for heaven's sake let's do it. So each of these cases. In Johnny Mack's case I would say: "Never mind anecdotes, let's ask about physical evidence."

The claim is that many abductees have probes inserted up their nostrils, into their sinuses, which are, who knows, monitoring devices telling about where they've been and what's happening to their bodies. I say—and I've said to Mack a number of times—you give me one of those and we'll give it a really close scrutiny, and let's see if we can find evidence of alien manufacture. Are there principles of physical laws we don't understand? Are there isotopic ratios or the immiscibility of metals that we don't know about on Earth? Are there elements from the so-called island of stability, heavy elements, transuranic elements that are thought to be stable but we don't have any of them on Earth? There are many possibilities and you've certainly guessed that in some way an object of manufacture by aliens of extremely advanced capability—they travel from interstellar space, they effortlessly slither through walls,

those guys really have powerful technology. Let's look at this. Never has there been one made available. There's always one about to be made available, there's always one that is going to be given to a laboratory, but it never happens.

What is that standard story that I get from Mack and others about the implants? It's that the abductees, going about his or her everyday life, and in many cases like this it is alleged the implant dropped out, clunk. The abductee picks it up, looks at it incuriously, and throws it in the garbage. Never once—and as a rule, this may prove my case—does he give it to some chemist or physicist, a chemist or physicist who could demonstrate the existence of alien technology. They'd give their eye teeth for that. They would be crawling all over each other to be able to examine the artifact. How come we've never had one case like that which really works out? I think that is a telling counterargument to all the anecdotal claims.

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QUESTION: Dr. Sagan, we are fourteen years into the AIDS epidemic, HIV epidemic right now in this country, and apparently scientifically we are not coming any closer to finding a cure, creating a vaccine, even though there's lots of money being expended. And apparently also now there are new superbugs or new strains of bacteria that are becoming resistant to many of the antibiotics. You spoke about a concern for your children and your grandchildren in terms of what's happening. I'm just curious; what implications you see with these newfound illnesses, viruses, that are all of a sudden coming to us who believe that we were conquering everything in this day and age.

SAGAN: This is natural selection in action. If we overdose ourselves with antibiotics, we wipe out all the microorganisms not resistant to antibiotics and preferentially amplify the ones that are resistant. Eventually we arrange things, very cleverly, so that the entire population of microorganisms inside our bodies—including the disease-causing ones—are resistant to antibiotics. So overdosing antibiotics, which physicians have done routinely for reasons that are not hard to understand, is a mistake. Part of the answer is of course not to overdose anymore, and also to develop new strains of antibiotics. There ought to be major efforts to do that. On AIDS, my impression is that while there is nothing like a vaccine or a cure, there are substantial advances in the molecular biology of the HIV virus, and I take that to be a sign of significant hope, but of course



not on the time scale of someone who is dying of AIDS. It's very slow in that respect. I don't think this is a money-driven situation. I don't think there just isn't enough money. I think there is enough money and some things maybe are not supported well enough, but in general there is, and it's a matter of not enough wisdom, not the right experiments, not having progressed far enough, not having done it swiftly enough. There's nothing magical about the HIV virus. It will succumb eventually to the ministrations of molecular biology. And I hope, for the reasons you mentioned, that that time will come soon.

QUESTION: Dr. Sagan, my question is in regard to the future of the skeptical movement.

SAGAN: Thank you. That's a good thing to end on.

SAME QUESTIONER: The responsibility that we have now, I feel, is as great as ever. The skeptical movement has

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been around for a number of years, perhaps thousands. First of all, I'd like to applaud the leadership of the skeptical movement we have here with you and the panel of speakers we have this weekend. But also important is the grassroots movements, the consensus of opinion of those that do adhere to the tenet, logic, reason, skeptical inquiry. We're at a point in time now that it's very important, and after having read the SKEPTICAL INQUIRER over a number of years and other articles and books and so forth, I find it somewhat amusing to see some of the investigations on a number of subjects like Paul Kurtz mentioned, we have hundreds of them—crystal power, pyramid power, a Loch Ness monster, whatever, I could go on and on. To be most effective in the long run I would think that would be something we would need to look at.

SAGAN: What would be?

SAME QUESTIONER: To be effective in fostering the logic and reason in skeptical thinking. I have found these various subject matters to be interesting and yet probably a greater area we could look at is the investigation into the major religions of the world.

SAGAN: Now we're to it. Okay.

SAME QUESTIONER: There are billions and billions of people that adhere to the tenets of these religions and I would imagine that we could spend more time in the skeptical movement—

SAGAN: In essence your question is: Should the skeptical movement devote some of its attention to religion?

SAME QUESTIONER: Well said.

SAGAN: This is a really good question, and I know that Richard Dawkins talked about this a year or so ago, and drew

the conclusion that many religious beliefs were not noticeably different from any of the parasciences or pseudosciences beliefs, and why one of them is the object of our attention and the other is off-limits, and he urged that we be, if I may use the expression, more ecumenical in our hostility. I will answer in the following way: first, that there is no human culture without religion. That being the case, that immediately says that religion provides some essential meat, and if that's the case shouldn't we be a little careful about condemning something that it desperately needed? For example, if I am with someone who has just lost a loved one, I do not think it is appropriate for me to say, "You know, there's no scientific evidence for life after death." If that person is gaining some degree of support, stability, from the thought that the loved one has gone to heaven and that they will be joined after the person I'm talking to, himself

or herself, dies. That would be uncompassionate and foolish. Science provides a great deal, but there are some things that it doesn't provide. Religion is an attempt to provide, whether truly or falsely, some solutions to those problems. Human mortality is one of those where there isn't a smidgeon of help from science. Yes, it's a grand and glorious universe, yes it's amazing to be part of it, yes we weren't alive before we were born (not much before we were born) so we hope

we're alive after we're dead. We won't know about it. It's a big deal. But that's not too reassuring, at least to many people.

Take the issue of the Bible. The Bible is in my view a magnificent work of poetry, has some good history in it, has some good ethical and moral scriptures—but by no means everywhere, the book of Joshua is a horror, for example—and on those grounds is well worth our respect. But on the other hand, the Book of Genesis was written in the sixth century B.C. during the Babylonian captivity of the Jews. The Babylonians were the chief scientists of the time. The Jews picked up the best science available and put it in the book of Genesis, but we have learned something in the intervening two and a half millennia, and to believe in the literal truth of the attempted science in the Bible, is to believe too much. I know there are Biblical literalists who believe that every jot and tittle in the Bible is the direct word of God, given to a scrupulous and flawless stenographer, and with no attempt to use the understanding of the time, or metaphor or allegory, but just straight-out truth. I know there are people who think that. That seems to me highly unlikely. I think the way to approach the Bible is with some critical wits about us, but not dismissing it out of hand. There's a lot of good stuff in the Bible. Case-by-case basis is what I'm saying. Where religion does not pretend to do science, I think we should be open within the boundaries of good sense. I think that you cannot extract an "ought" from an "is," and therefore science per se does not tell us how we should behave, although it can certainly shed considerable light on the consequences of alternative kinds of behavior. From that we can decide how to arrange our legal codes and



what to do. So the idea of an all-out attack on religion I think on many grounds would be foolish, but the idea of treating Biblical literalism, for example, with some skeptical scrutiny is an excellent idea. But it is being done, has been done for the last century by Biblical scholars themselves. I don't think there's any particular expertise in this movement for a critical examination of the Bible. There are other people who are doing it just fine.

I hope that sort of middle ground is not too different from

what you were asking about, but I certainly don't think that religion should be off-limits. I don't think anything should be off limits. We should feel free to discuss and debate everything. That's what the Bill of Rights is about. And in that sense, and many other senses, the constitution of the United States, particularly the Bill of Rights, particularly the First Amendment, and the scientific method are very mutually supportive approaches to knowledge. Both of them recognize the extreme dangers of having to pay attention to and do whatever the authority says. □



## The Great Turning Away

Ann Druyan

I vividly recall the Seattle CSICOP conference. It was my first visit to that beautiful city. Humanism seemed on the ascendant then.

Science and reason had a remarkably effective champion in Carl Sagan, who was known and respected in every country on earth. At that conference we had no idea that Carl was ill and that Seattle was about to become our home for the next two years. Carl endured three bone marrow transplants at a cancer research hospital there before dying in that city in 1996.

How I miss that voice with its mesmerizing blend of passion, brilliance, warmth, humor, and honesty. Carl spoke and wrote with equal measures of skepticism and wonder; never one at the expense of the other. He managed to maintain an exquisite balance between these two competing values. His life's work to awaken us to the *wonders* of the universe revealed by rigorous, *skeptical* science was a joyful labor of love.

Here we are, a mere ten years later in a radically different cultural atmosphere. Now, we seem to be engaged in a great turning away from reality. The engine of science continues to churn out discoveries at an astonishing rate, and yet our culture seems to have lost the ability to translate these insights into a grander perspective. It's as if our first forays into the immensity of the universe have sent us flying into a panic. The dawning reality of our tiny portion of space and time has been too much for us to bear. We turn away, seeking refuge in the discredited myths of our centrality.

Evidence of this failure of nerve is plentiful: Public school science educators shrink from teaching the fundamentals of biology. Science museums in the South feel the need to shield their visitors from ImaX films that give the true age of volcanoes. Our president declares himself an instrument of God and with impunity makes illegal and baseless unprovoked war. An unctuous piety suffuses every public utterance. Radical religious fundamentalists have seized the national conversation. The rest of us are left to re-fight battles and arguments won decades ago.

Most worrisome is the steady erosion of the Bill of Rights made acceptable by the fearful attacks of September 11, 2001. Our precious constitution is in danger of being tainted with religious-based homophobia, the so-called "defense of marriage" amendment. More and more frequently we are told that we live in a Christian country. In the frightening logic of this moment, the separation of church and state which was the founding source of our national genius is seen as nothing more than an obstacle to a proper commitment to God.

It's enough to make you long for the days when skeptics could afford the luxury of sparring with mild-mannered Harvard psychiatrists who claimed feebly that their patients had been abducted by aliens. And for countless reasons, I do. However, my overall sense about our future is cautiously optimistic.

My hunch is that we are living during the twilight of the magical thinking phase of human history. Lest you think this is mere faith, I offer some evidence: Consider all the futures depicted in science fiction that you have ever seen or read; *whether of life on this world or any other. How many of them imagine a future in which the dominant religious traditions and beliefs of the present survive? Remember: This is the output of countless independent imaginations of every conceivable point of view. Yet, when we imagine the future, the gods of our childhood are long gone.*

As the man said, "Prophecy is a lost art." And yet, I'm happy to venture one. I believe that new Carl Sagans will emerge to uplift us once again with the beauty and truth of natural reality. We will overcome our fears and turn back to look unflinchingly at the vastness. We will find our home in the cosmos. It is only a matter of time.

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