Unexpected Challenges to a Sustainable World

Participants in this session, moderated by Paul MacCready, included Gregory Benford, Leroy Hood, John Hopfield, and science-fiction writer Gentry Lee, currently on leave from his position as chief engineer for the Galileo project at the Jet Propulsion Laboratory.

The central question to emerge from the panel’s impressive demonstration of the rapidly dissolving boundary between science fact and science fiction in the late 20th century was this: Do humans have the will and the vision to constructively shape a future that, constructively or not, is bound to reshape them? Not without a fundamental commitment to addressing some extremely sensitive and divisive issues, said Gentry Lee. Asking, “How can we bring the things we’ve talked about at this panel into the vision of a sustainable world and actually implement them?” Lee went on to say, “I expected some of the earlier panels to cover the need for changed attitudes toward the following subjects: money, knowledge, and even the preferred or desired models of life embodied in such diverse minicultures as religion and entertainment. For the most part, they didn’t. Somewhere along the way, we’ve got to confront the real issue, which is that human values are based upon attitudes toward those subjects. You can’t just change these attitudes by changing institutions. You have to come to grips with a reorientation of what’s important.”

Lee’s comments were seconded by panel chairman Paul MacCready, who noted that “social, governmental, political, and religious institutions that were honed by the pressures of the past are often completely inappropriate for the rapid changes that are going on now and which we have every reason to expect will continue into the future.”

With regard to sustainability and securing Earth’s future, said Lee, a key stumbling block is the enormous discrepancy between the urgency of the issues that need attention and the number of people actually concerned about addressing them. He called on scientists to make some attempt to bridge the gap. “The problem is that the group at this conference represents the high end of awareness and concern about what happens in the future, and that the great majority of people have such low awareness and interest by comparison. If there is one task that is necessary to overcome the challenges that have been discussed here, it’s that all of us who are scientists and technologists must in one way or another become preachers. I mean that literally and figuratively. There are two problems that beset scientists and technologists in the United States today. The first is that most scientists have no idea whatsoever how to communicate, and the second is that most reporters know nothing at all about science. So you put scientists who don’t understand how to communicate together with reporters who know nothing about science, and the public returns to Roseanne night after night after night. You want to do something about the future, to handle the unexpected, to have a sustainable world? You structure society in such a way that its focus is on education—a lifetime of education. Every human being must know upon his or her first moment of sentiency that his or her life is to be dedicated to constantly learning things. We must recognize that the single greatest gift that we can give to those who come after us is not the individual discovery or invention, but rather the understanding of how to spread that discovery or invention through society, so that those of us who are concerned about a sustainable world are joined by a scientifically, technologically literate population who also understand. In the absence of that global education we are kidding ourselves.”

Both Gregory Benford and MacCready commented that the talks by Lee Hood and John Hopfield threw into sharp focus the question of how a world already ill-prepared to deal with pressing issues of planetary sustainability and survival would be able to cope with a future marked by the power to redraw the human genetic blueprint on the one hand, and the emergence of a powerful and conceivably competitive artificial intelligence on the other. Said MacCready, “I think it’s obvious that the tremendous potential powers in genetics and computers will be controlled, or maybe not controlled, by regular humans with all our frailties. It is frightening to consider this and to try to figure out what can realistically be done to make the transition a positive experience. The only possi-
If you find the set of genes associated with intelligence, I guarantee you that somebody's going to figure out how to use that information in a way to produce a more intelligent member of the species.