



CIGL

Foreword

*Dedicated to
the memory of
Harrison Brown
(1917–1986)*

The mouth of the Betsiboka River, on Madagascar's west coast, runs reddish brown from its cargo of Madagascar mud. Extensive deforestation has left many hills denuded. Without the network of tree roots to hold the topsoil in place, it washes out to sea with every rainfall. This photo was taken from the space shuttle *Discovery*.

The *Visions of a Sustainable World* symposium, held October 27–30, 1991 in Caltech's Beckman Auditorium, was dedicated to the memory of Harrison Brown (1917–1986), professor of geochemistry and professor of science and government. As symposium co-organizer Murray Gell-Mann, Millikan Professor of Theoretical Physics and Nobel laureate, reminded the audience, Brown "was a pioneer in trying to organize efforts, especially in the world scientific community, to do something about the interlinked problems of poverty, environmental degradation, rapid population growth, and threats to world peace. In 1957, he and two Caltech colleagues, James Bonner and John Weir, organized a workshop on 'The Next Hundred Years.' Tonight, Bonner, now emeritus professor of biology, is with us as one of the organizers of this meeting."

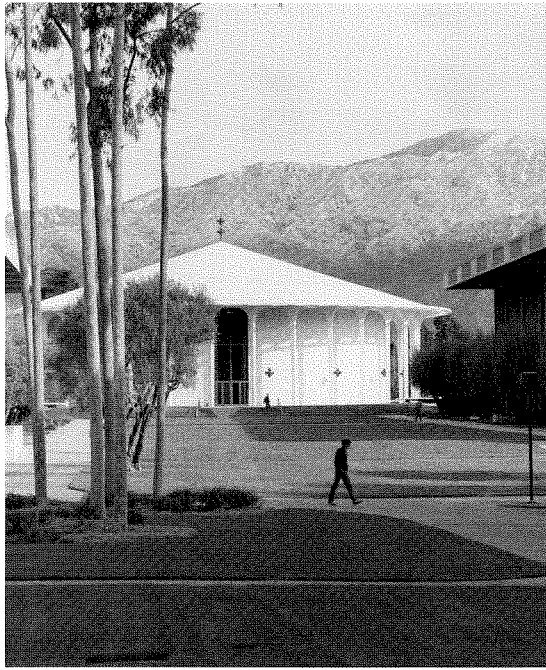
The organizers—Bonner (PhD '34); Norman Brooks (PhD '54), Irvine Professor of Environmental and Civil Engineering; Sunney Chan, Hoag Professor of biophysical chemistry; Gell-Mann; Paul MacCready (MS '48, PhD '52), president of AeroVironment, Inc.; and Bruce Murray, professor of planetary science—divided the conference up into eleven sessions. The first day's sessions dealt with the intertwined problems of development, technology, population control, economics, and managing the "global commons"—those parts of the globe (the atmosphere, the ocean, and Antarctica) that belong to everyone and thus to no one. The second day covered what might be called "people problems"—the roles of culture and ideology, how global government might work, and from what quarters

unexpected developments might come that could throw the other sessions' prognostications into a cocked hat. The third day was devoted to California and its problems. Ever the trend-setter, California's experiences—be they with smog or property taxes—are often relived elsewhere in the years that follow. Thus California, with its burgeoning population and the world's seventh largest economy (as of 1984), is not only a microcosm of the world but a window on its future. (Excerpts from the California sessions will appear in a future edition of *Engineering & Science*.)

The symposium's program notes stated, "Our objective is to stimulate broad thinking and intuition regarding how the Earth's rapidly growing and changing human population and its diverse cultures can, over the next one hundred years, approach an equilibrium with Earth's finite environment and resources within a comparatively peaceful world order [in which] major catastrophes, including disastrous environmental degradation, world conflicts, and widespread tyranny would become unlikely.

"The future, of course, cannot be predicted, and often not even anticipated. Nevertheless, it is useful to try to identify key transitions that appear to be required for an approach to sustainability. An obvious one is a demographic transition to a relatively stable global population. Another is a technological transition to a situation in which there is a great reduction in the environmental impact per person necessary to maintain a given standard of living. That in turn seems to depend on an economic transition to a market system in which prices of goods and services bet-

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ter reflect their true cost to society—present and future. Sustainability will probably require a transition to large-scale patterns of human relationships that foster comparative political stability, as well as ideological transitions to value systems that are conducive to sustainability. Finally, there would have to be a governance transition to a world with adequate arrangements to deal with major global problems, including those arising from enduring ethnic conflicts."

The idea, Gell-Mann instructed the participants, was not "to *forecast* the events or trends of the next 50 to 100 years, but rather to ask whether there is any prospect of the world's history turning in certain directions, vaguely described by the very approximate term 'sustainability,' and, if so, how such changes could come about." Harlan Cleveland, professor of public affairs and planning, emeritus, of the University of Minnesota, applauded this. "I've noticed that there are two kinds of future. There's the kind that gets confidently forecast, and the kind that actually happens. Extrapolations using the original statistical sin of mistaking current trends for human destiny have the great virtue of selling books. *The Limits to Growth* sold 3 million copies in 16 languages, despite the fact that it was wrong on most counts and failed to notice, in trying to project the availability of resources, that information and knowledge were likely to become the main resource as they now are. So naturally the authors thought we were running out of resources. And I'm glad that [Gell-Mann] threw a certain amount of dust in the eyes of the word 'sustainable,' because I came here partly to suggest

that maybe we should find some other word. I don't know quite what the other word is yet, but 'sustainable' is much too status-quoing a word for my taste. There's too much implication that if we can just keep things, particularly the physical environment, about the way they are and not let them degrade any further, that it will be an enormous victory. I don't think that's good enough."

Most conferencegoers were conscious of the irony, pointed out by Robert Gillespie of Population Communications, that "having a conference on sustainability in the United States is somewhat like tribal chiefs, each with 40 children, talking about achieving the one-child family. I don't live a sustainable life. I doubt seriously whether anybody in this room lives a sustainable life." The organizers did their best to run a sustainable conference—even going to great lengths to find a caterer who'd recycle the coffee cups—although, as National Public Radio's Daniel Schorr observed at the wrap-up session, "it was interesting at lunch yesterday to go wandering around and see the beautifully arranged receptacles for drink cans and for Styrofoam. And interesting also how much Styrofoam I saw in the can compartments and how many cans I saw where the Styrofoam should have been." There may be a metaphor here for the gap between good intentions and making people become aware of their actions to the point of changing their habits.

In 1954, when Harold Brown wrote *The Challenge of Man's Future* in an attempt to get a grip on the problems inherent in a world of growing population and fixed resources, his was a voice crying in the wilderness. Since then, the wilderness has gotten considerably noisier. Maurice Van Arsdel of USC's Population Laboratory noted, "We can look at what we're involved with this afternoon as part of the life history of a social movement. In the 1950s a good deal of academic concern started to develop about whether or not we lived in a sustainable world. Some of that concern came out of this institution. In the 1960s the environmental movement developed in the U.S. as part of the unrest at that time. Some of you will remember very clearly the first Earth Day in 1970. The environmental movement, however, did not really take hold in the United States. It fizzled during the 1970s, then after governments failed to deal with the problem, the social movement began to reemerge. Perhaps what we are now witnessing is another attempt to jump-start the connection between population and environmental problems, and to make people aware of this connection." To further that attempt, this issue of *Engineering & Science* is devoted to the highlights of the symposium. □