The Weekly Newsmagazine of Science

# SCIENCE NEWS

November 7, 1992
Vol. 142, No. 19
Pages 305-320

## Endangered Ecosystem

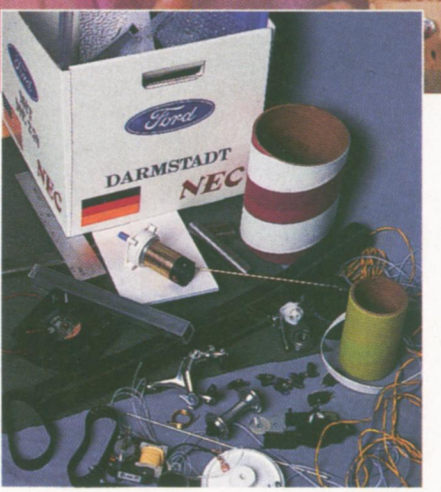
# CREATIVE SOLUTIONS for Improved GLOBAL COMMUNICATIONS

Global communications has led to global economics, global manufacturing and trade. In turn, this global interdependency demands improved communication across cultural and language barriers.

'92 ROBOCON INTERNATIONAL DESIGN CONTEST

Recently, a group of students from around the world gathered at the Massachusetts Institute of Technology to take part in RoBoCon International Design Contest '92, an experiment in cross-cultural communications.

Forty engineering students, 10 each from the U.S., Japan, the United Kingdom and Germany, were given six days to solve an engineering challenge — move table-tennis balls from a platform, down a ramp and into a raised cylinder.




The task had to be accomplished by using robots built by the students from a box of parts which included electric motors, pneumatic actuators, wheels from toy trucks, printed circuit boards, steel bars, welding rods, plastic tubing — more than 100 parts in all. At the end of the sixth day the completed machines would face off in a contest to determine which robot could gather the most ping-pong balls in a minute.

So, what's this got to do with global communications? The students worked in teams of four — each consisting of students from the U.S., Japan, the U.K. and Germany. Solving the engineering problem would be hard enough. The real challenge would be finding ways for team members to communicate among themselves.

"RoBoCon IDC is a microcosm of the future," says Professor Herbert Birkhofer of Technische Hochschule Darmstadt, Germany. "The challenges presented by a global economy will require close cooperation by professionals, not just engineers, from all over the world." His colleague and friend, Professor Masashi Shimuzu, of the Tokyo Institute of Technology, adds, "RoBoCon IDC is more than a mere competition between engineering students; it's an experiment in developing cross-cultural methods of communicating and cooperating."

Shortly after being issued their parts kits, the newly formed teams gathered to plan and discuss strategy.

"Very early on, the students realized that simply talking to one another wasn't going to work," explains Ken Wallace of Cambridge University. Professor Harry West of MIT adds: "But studies have found that in many engineering projects more than half of what engineers do is talk to one another. When they are of the same culture, the culture is transparent. But when they're not from the same culture, it can be near impenetrable. Our students had to find other ways of communicating." In short order talking gave way to sketching and sign language. "There was a lot of drawing and waving of arms," laughs one engineering student from Cambridge.

Primary in the mind of the students, however, was solving the problem. Because of the drop in elevation, developing a ramp system of some kind to roll the table-tennis balls down into the cylinder was irresistible to more than half the teams. "It was the obvious solution, but not the elegant solution," says an MIT student. "We wanted something that was different, creative," added his teammate from the Tokyo Institute of Technology." The team went on to design and build a machine that gathered up the balls, flung them up to a raised platform, and then rolled them off so that they could bounce with a graceful arc into the cylinder.

## Cultural Obstacles and Creative Communication

"Creativity is what RoBoCon IDC is all about," says Professor West. "In this case, there's an added dimension of learning how to communicate. If anyone can come up with creative solutions, it's these students."

An MIT student from Mexico City notes, "Sketching and sign language were very useful for getting our points across, but where we really made progress communicating was during free time. Having a beer at a pub, going to the beach or having dinner together gave us a chance to learn more about each other and the way we think and communicate. Getting to know each other made all the difference. Somehow, we developed our own way of communicating that seemed so perfectly natural."

For six days, the basement shop at MIT was a model of inter-cultural communication with a parade of innovative — and sometimes outrageously clever — designs from some of the best young engineering minds the world has to offer.

"At times I've worried about the future," says Ken Wallace. "Since seeing the way these young people get along, I've been sleeping better than I have in years."


Who won? In the sense, we all did. For at RoBoCon IDC '92, 40 very bright and creative students laid the groundwork for developing improved global communications. NEC, a global leader in computers and communications, strives to help advance societies worldwide toward deepened mutual understanding and fulfillment of human potential. NEC was a proud sponsor of RoBoCon IDC '92 and its quest to foster communication and creativity in our young generation.