Karl Hess: Technology with a Human Face

Karl Hess is a man with a vision of a better society, one in which science and technology would be shaped more directly and humanely to the community's needs. Unlike most visionaries, he is actively concerned with putting his ideas into practice. In a disused warehouse in part of Washington's urban ghetto, he and his colleagues are trying to develop a number of "soft" technologies with which people in the neighborhood can feed, heat, and transport themselves on a community basis.

The importance of Hess's experiment to the scientific world goes considerably beyond the success or failure of Community Technology, as his project is named. Hess has drawn upon many of the most salient discontents that fuel the anti-science movement and shaped them into an approach that makes science and technology its passe-partout, not its scapegoat. "Some people blame Sir Isaac Newton for capitalism," he remarks. "I get the chilly notion that this is a new form of Luddism that doesn't know where the machines are. What it's going to end up smashing is the human head."

---

*[Community Technology] offers at least one small alternative path for those who, while working at high skills or science, question the current corporate organization and deployment of those resources. It enables scientists, engineers, technicians and craftpeople to re-think the roles of their skills and talents while actively or, you could say, scientifically testing the material possibilities of new ways of work.**

One of the goals at Community Technology is to tell people that they don't have to go around hating science and technology. "The thing they have to hate," Hess adds, "is the organization."

These may seem surprising sentiments from a man who served on the White House staff under Eisenhower, helped write two Republican national platforms (in 1960 and 1964), and was Senator Barry Goldwater's chief speechwriter in his 1964 presidential campaign. But the right wing politics of yesterday and today's countercultural view of society are linked by a consistent theme—antipathy for the disutility of large organizations such as government—which enables Hess to remain perfectly at ease with the past. "Goldwater is still a good guy. Except that there's no power, he would like it here," Hess says with a gesture to the cluttered workshop floor of the Community Technology warehouse.

The purposes of Community Technology, according to its own description, are "to de-mystify technology, to challenge all of the claimed economies of scale, and to push as far as possible practical demonstrations of high technology in the direct service of human needs and imagination in an urban community." The group, according to Hess, is one of about six organizations in the world (though most of the others are rural, not urban) engaged in developing "soft" or "intermediate" technology.

There is no precise demarcation between hard and soft technology, but the distinguishing features of soft technology, as defined by Hess's group, are that it is physically contained within the community so that the people themselves, not some functionary in Detroit, can determine its impact on the neighborhood. Soft technology does not place stresses on the environment, is low in its capital demands, frugal in its use of resources, and decentralizing or centrifugal in its social impact.

Hess sketched out an admittedly utopian vision of how neighborhood life might be made different through the medium of soft technology in a recent article in the Potomac section of the *Washington Post*. Urban neighborhoods, organizing themselves by "town meetings," would produce much of their own food by raising fish in tanks in basements and growing vegetables in hydroponic gardens on the rooftops. Solar collectors would provide half the city's heating requirements in winter and much of the energy for cooling in summer. Sewage, collected on a local basis, would be converted odorlessly into fertilizer and into methane, used as an almost complete substitute for cooking gas. Recognizing that production is a social, not just economic, activity, neighborhoods would seize further control over their civic lives—and reduce local unemployment—by setting up light manufacturing industries turning out furniture, fabrics, bicycles, and even electric cars. A later step toward self-reliance would be to substitute locally produced fuels, as far as possible, for petroleum. Methanol, for example, would be brewed from organic garbage, and hydrogen gas produced by wind generators set atop buildings.

Science is the way we understand the natural world. Technology is the way we do work. Both are seen as necessary. It is the organization of both, and not the existence of either, that the Community Technology group questions.

Community Technology is attempting to develop some of the techniques envisaged in this urban utopia, with emphasis on rooftop gardening, basement fish farming, and solar heating. Apart from a single grant of $2500 from a friend and free lease of a warehouse from the Children's Hospital of Washington, the project is supported entirely by its members, who operate it when not working on their other jobs.

Much of the time since the project was founded nearly two years ago has been spent in fixing up the warehouse, located in a clinic at 2320 17th Street NW in the Adams-Morgan district of Washington, D.C. The major project to date is a system for raising rainbow trout in tanks that can be operated in the basement of a house. Designed by a chemist in the group, Fern Wood Mitchell, the system employs a bacteriological technique for purifying and recirculating the tank water, thereby reducing its water consumption to less than a thousandth of that of commercial, through-flow fish farms.

In a prototype system in Mitchell's basement the trout were grown at a density of 5 pounds per cubic foot of water and at a cost in energy and feed of less than $1 per edible pound. (The fish retail locally at about $2.25 a pound.) A second system has been constructed at the Community Technology warehouse by Jeff Woodside, a

---

* This and the following quotation are from an article by Hess in *Spark*, issue of fall 1974; the next two from interview; the last from the *Encyclopedia of Social Reconstruction*.

theoretical physicist, and Therese Hess, Karl's wife, and the first fish were installed last month. The next stage, when design problems have been solved, will be to help people in the neighborhood set up their own tanks.

Another project is the "solar kitchen," a parabolic reflector that converts the sun's energy into heat for cooking. The prototype put together in the Community Technology warehouse was designed by C. J. Swet, a group member who until recently was with the Applied Physics Laboratory of Johns Hopkins. Swet, formerly the senior design engineer for the Atlas missile propulsion system, is also working on flat-plate solar collectors for home water heating. The collectors are to be easy and cheap to build, so that they can be made by local individuals or cooperatives. A workable solar device would soon pay for itself against the $180 Swet estimates the average family will pay this year for heating home water by electricity.

The group's workshop is operated by Karl Hess who, among other trades, is a professional welder. The Hesses maintained a rooftop garden during the summer and another member, Gil Friend, is designing a pilot rooftop greenhouse to study the feasibility of year-round hydroponic gardening. (Friend is also a member of another neighborhood organization, the Institute for Self-Reliance.)

Wind speeds in Washington are generally too low for windmills. The group's efforts in this area have so far been confined to a search for unusually windy locations in the community.

I can't believe that such bright people [as scientists and engineers] will forever misconstrue their place in society, which is to be the finest craftsmen in the neighborhood.

Besides the development of suitable techniques, Community Technology seeks to encourage their adoption in the neighborhood. Adams-Morgan is a community of some 30,000 people, with about equal numbers of blacks, Latins, and whites. It has a self-elected council, the Adams-Morgan Organization, with which Community Technology is affiliated. The group keeps in touch with its community by means of a newsletter, *Science in the Neighborhood*, and weekly meetings open to all comers.*

At one meeting last month, 22 people were present, including neighbors, a cab driver, a builder, as well as the project leaders. Discussion mostly concerned status reports on current projects and requests for labor and materials, most of which were satisfied from within the group present. No major cooperative project has yet been accomplished, but most of the techniques are still under development. First reactions in the community, Hess reports, are "enthusiastic but not terribly active."

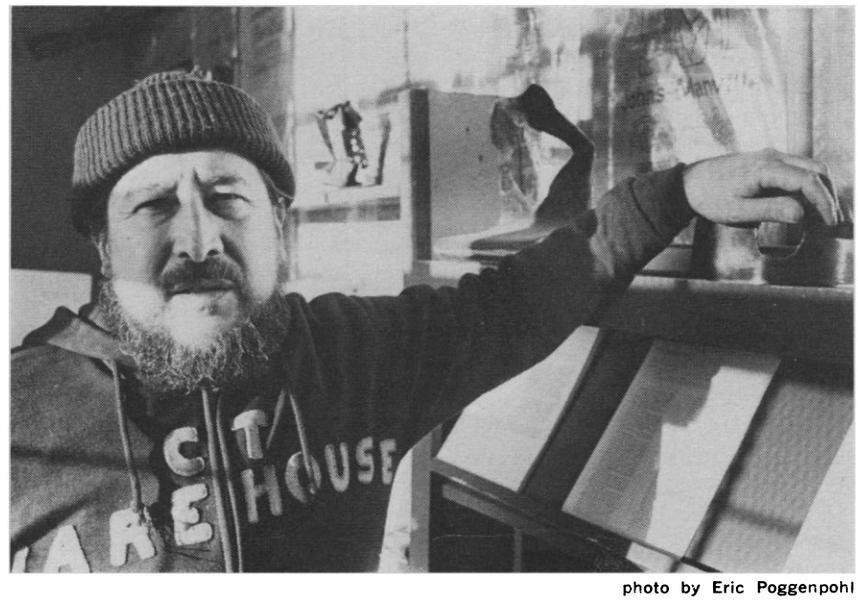

photo by Eric Poggenpohl

Karl Hess

A lot of foundations actively dislike what we are doing because we are saying that people can take their lives absolutely into their own hands. Foundations resent that because it seems very anti-elitist. Elitists think that the great engine of progress, science and technology, can only be grasped by a very few hands.

For an operation that is run almost literally on a shoestring, and in the spare time of a handful of members, the achievements to date may seem impressive rather than otherwise. Shortage of money has been a handicap, indeed a continuing crisis. Attempts to solicit foundation support have been fruitless. Foundations, Hess wryly says, prefer projects which, rather than emphasizing work, emphasize welfare; "It is the conventional wisdom that inner city neighborhoods are doomed to the most demeaning sort of dependency and that, therefore, the best thing to do for them is just try to make life bearable. It is also said that inner-city people cannot deal with scientific concepts or with technological terms and tools. While Community Technology cannot claim to have disproven that absolutely, its members feel there is no reason to accept it as a fact, either."

The idea for Community Technology grew out of a project sponsored by the Institute for Policy Studies, a new left think-tank based in Washington, D.C. The institute, of which Hess is a fellow, is compiling an encyclopedia of social reconstruction which aims to codify the ground rules of the new society as thoroughly as Diderot and the French encyclopedists laid out a framework for the rational enlightenment of the 18th century. The draft prospectus of the encyclopedia, in its section on agriculture, notes that

> The last ten years have been marked by an accelerating disenchantment with the dominance of Western science and technology, which for more than 300 years have been synonymous with the "progress" of civilization. The depth of this disenchantment suggests that it is more than a passing phase and may represent an important turning point in human history. It is wrong, however, to see this disenchantment as an anti-science movement. Rather, its impulse seems more to be aimed at rethinking the purposes of science and the interests that it supports. . . .

Hess was assigned to write the encyclopedia's section on tools and technology and decided to make a practical demonstration of the ideas he was ad-

* At 7:30 p.m. on Thursdays. The warehouse, at 2320 17th Street NW, is in a large white building at the cross of 17th Street and Kalorama. Community Technology welcomes ideas, skills, time, or money from scientists, engineers, and craftspeople in the Washington neighborhood or elsewhere. Hess can be reached through the Institute for Policy Studies, 1520 New Hampshire Avenue NW, Washington, D.C. 20036. Phone 202 AD-4 9382.

vocating. Hence Community Technology was conceived. Hess describes himself as "project coordinator"—the group is run on a nonhierarchical basis—but he is also resident guru, anchorman, and chief enthusiast. His purpose is serious, but his conversation always urbane and amusing. He has a knack of discussing abstractions in crisp metaphors. Ask an average political scientist to explain how Republican and Communist conceptions of capitalism differ from each other and from the present-day reality, and you will be lucky to get an answer in less than ten paragraphs. Hess's formulation: "Republicans think capitalism is the shop on the corner. Communists think it is the factory. But really it's the telephone company."

Hess's objection to the modern industrial estate is that it is shaped by the dictates of "capitalist bookkeeping," which reward profit at the expense of all other criteria. "All capitalist economics is founded on the fact that production is secondary. Profits are primary. The assumption that capitalist bookkeeping and the world of nature are reflections of one another is absolutely crazy. The world of nature suggests that fossil chemicals can be formed into almost permanent plastics; capitalism says it is preferable to burn oil."

[The scientific] method arose in the great challenging of ideology embodied in church and then state. It has been debased to the defense and enlargement of institutions, corporation and state. Its reconstruction would restore it as simply a method of human thought, rather than human domination. . . .

Hess blames capitalist bookkeeping for the disutility of large organizations, for their growth to beyond a size at which they can either be controlled by the people they most affect, or can even make efficient use of their means of production. "Corporations are lousy users of technology, and they are using up all our resources." Asked what should replace them, Hess prescribes "small, knowledge-intensive production groups. In a neighborhood like this it would be much more effective to grow food closer to where it is eaten, with no profligate waste of packaging and transport. Political wisdom says big, science and technology say small."

Community self-help is a tradition with deep roots in American history. An urban setting may prove difficult ground on which to resurrect it, but the tide of the times may be moving in favor of many of the things that Hess is trying to do. "It's like asking if there is going to be a flood, and building something that will float with it," Hess remarks. "People say you are a damn fool wasting your time. Maybe. But that is a small investment."

—NICHOLAS WADE

Abortion and Manslaughter: A Boston Doctor Goes on Trial

Boston, Massachusetts. The manslaughter trial of Kenneth C. Edelin of Boston City Hospital (BCH), in progress now in Suffolk County Superior Court here, promises to be a lengthy and complex affair. The trial began on 6 January and is expected to last a month or more. Its outcome may affect the practice of abortion throughout the country, as well as the definition of when a fetus legally becomes a person.

On 3 October 1973, Edelin performed an abortion by hysterotomy, described to the jury as a miniature cesarian, on a 17-year-old girl. The abortion was perfectly legal. The patient survived; the fetus did not (*Science*, 25 October 1974). When all the evidence—and opinion—in the case is in, the jury will have to decide whether that fetus, whose disputed gestational age was somewhere between 18 and 24 weeks, was viable at the time of the abortion.

According to Assistant District Attorney Newman A. Flanagan, chief prosecutor in the case, the fetus was, indeed, old enough to be viable—capable of sustaining life outside of its mother's uterus. In his opening statement to the jury, Flanagan declared that he would prove that Edelin suffocated the fetus, to which he refers as "baby boy," by deliberately preventing it from getting oxygen. Through the testimony of witnesses for the prosecution, Flanagan hopes to convince the jury that what Edelin did during the course of the hysterotomy was not consistent with medical practice but was, rather, manslaughter.

The defense will argue that there could be no manslaughter because the fetus never lived and, therefore, could not have been killed. Defense attorney William P. Homans, Jr., disputes Flanagan's contention that the fetus could have been as old as 24 weeks and, later in the trial, will present evidence, based on pathological examination of its lungs, that it never breathed.

The first few days of the trial were spent in jury selection. Six of the 13 men and 3 women, who were chosen from a field of 69 persons questioned, said they have no opinion about abortion. Three jurors said they definitely favor abortion; one is adamantly opposed, although he admits that he does not know much about it. The other jurors said their feelings about abortion depended upon the circumstances under which it was performed.

The first witness for the prosecution was Mildred Jefferson, a general surgeon on the staff of Boston University Medical Center and an ardent opponent of abortion. Flanagan called her as an "expert" witness to establish the meaning of certain terms, such as abortion, for the jury. She defined abortion as the ending of pregnancy of up to "20 weeks" of gestation and admitted under questioning by Homans that, "from time to time," she also defines abortion as "an interruption of pregnancy to prevent the birth of a living child."

During Jefferson's testimony, and subsequently, there was considerable emphasis on the connotative language of witnesses and attorneys. Where Jefferson used words like "womb," "child," "offspring," and "mother," Homans insisted on words such as "uterus," "fetus," "products of conception," and "patient."

Homans tried to show the jury that Jefferson was not really an expert witness because she had had no personal