

without serious financing. There must be research on the mechanism involving specialists, not those who will work for nothing, but real experts in each field. We need nuclear physicists, both theoreticians, and experimentalists, and electrophysicists. True, this should belong to the whole world. . . .”

“That’s how it is,” again we allow ourselves a small supplemental remark. “But perhaps, this neutron flow will awaken the government and the Supreme Soviet which are sleeping and dreaming of the future prosperity of Russia, but in their waking hours finance the academy’s science “according to taxes received”?”

Today Kabir Kaliyev affirms that he and his colleagues already are on the verge of solving the problem of controlling an open process. He says that, although no one believes it, in two to three years, they will have made a compact reactor. And then it will begin. . . .

For everyone, including children and youths

And now several words in the spirit of Jules Verne, in the spirit of the boldest, most giddy science fiction being brought to life before our eyes.

We obtain, according to estimates made by engineer L.D. Gudrin already in 1989, a surprisingly small 10-kilowatt source of energy which runs on a battery, comparable to pocket flashlight batteries, on 100 ml of heavy water for three years without interruption. Its cost is 270 rubles in 1989 prices. Every consumer of energy, including each of us in our apartments, acquires total autonomy. Electrical transmission lines will be sent off for scrap metal. Electric power stations of all types will be dismantled. Automobiles will run for years without exhaust and refuelling. Electric locomotives without wires will pull trains. The dreams of D.I. Mendeleev will come true: We will cease “burning assignats [currency],” i.e., the barbaric burning of oil and gas by which, of course, we will improve the condition of the atmosphere and all the whole environment. Global changes will come to pass in world economics and politics. The so-called developing countries, at last, will achieve the level of developed countries. Mankind will unite on the road of creativity and progress.

But perhaps it will not be that way. Why not fantasize with a negative sign? Will the military yet have their say? How about neutron guns, absolutely silent and with splendid sighting qualities—they fire without any recoil?

Kabir Akhtemovich and I are already sorry that we are giving Baikal heavy water to the Japanese for free. What if the 21st century becomes a century of struggle for control over the reserves of this water on a worldwide scale?

But, no, this would be too stupid. Is there really not enough for everyone?

But no small amount of stupidity in history followed along like a stinking, smoky train, behind brilliant explosions of the intellect. So let us live, and we shall see.

The presidium applauded, but so far, only sitting down.

How ‘big science’ stifles discovery

by Giuliano Preparata

Dr. Preparata is a particle physicist from Italy. Subheads have been added.

On March 10 and 11, two hundred journalists and scientists attended a meeting sponsored by the Alessandro Volta Center, on Communication in Science. The topics under discussion were alleged frauds by a number of people, such as David Baltimore, the former president of Rockefeller University. The greatest fraud of all, the veritable inquisition against cold fusion scientists, was not a subject of discussion until I brought it up during the question period.

One of the featured speakers at the conference was the Englishman John Maddox, who edits *Nature* magazine. He kept his entire presentation on the subject of the today-very-much-in-style (who knows for what reason) scientific frauds, and indicated the ethical-scientific problems which his magazine is called on daily to resolve; but during the public question period, John Maddox was confronted by this writer about an exemplary episode that involved the function of one of today’s important scientific institution, namely, *Nature* magazine. Is not the failure of *Nature* magazine to cover any of the positive evidence relating to the phenomena known as cold fusion, a scientific fraud?

My question was related to that chapter of contemporary research which has been given the name of “cold fusion.” The reader will certainly know about the hard and hot polemics that have sprung up around this fascinating field of research, but perhaps not everyone will know that at the source of the discrediting of cold fusion, are the unfounded and false accusations, which were, in particular, published immediately in *Nature*, which was not the treatment accorded to the discoverers of cold fusion, Fleischmann and Pons.

Nature featured a refutation of the experiment by a group from the prestigious University of California, Caltech, who were and remain extremely negative with respect to the reality of the phenomena reported by the two electro-chemists from Utah. However, a detailed analysis of the data reported in the Caltech article, a year and a half later, by a group of experts, revealed the presence of grave errors which, were they to be corrected, might render the experiments of Caltech quite completely compatible with those of Fleischmann and Pons.

One year ago, Melvin H. Miles, a reputable electro-chemist from the U.S. Navy laboratories in China Lake,

Calif., sent a letter (of which I have a copy) to *Nature* magazine, in which this analysis was reported carefully and objectively. Without valid reasons, Maddox refused to publish Miles's letter. When I confronted him with the bias this evidenced in the editorial policy of his magazine, Maddox claimed in public that he did not remember the details of the incident. No need to underline the extreme gravity of such a fact. The reader of good will has some reflecting to do.

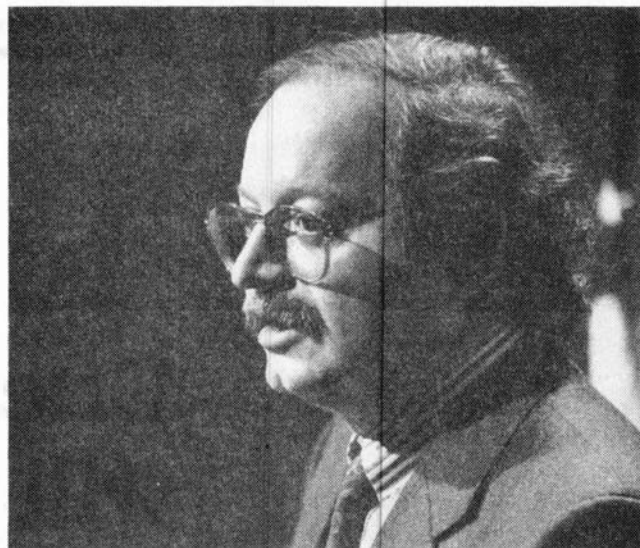
The Aristotelians' weapon

For me the present situation in which cold fusion is blacked out by most of the scientific press, and not discussed at major conferences, is reminiscent of the situation which Galileo faced. Now that the rehabilitation of Galileo by the Roman Church is in progress, this should serve as a lesson to today's Aristotelians, who are trying to repeat the admitted past blunders of the Church, with far less excuse. Today there are no more bonfires nor excommunications: The global village of science knows only one sanction, silence.

Among many aspects of scientific communication that were debated at the Volta Center conference, the one that is most pertinent to my discourse is communication among scientists. This channel of communication among scientists whose research effort is based upon quite a singular method which mixes meticulous observations, with the presentation of these results in a mathematical form, which demands a debilitating logico-mathematical style of argumentation, is, as is known, directed by the big scientific magazines. These include *Nature* and *Science*, as well as the more specialized journals, such as the *Physical Review*, the *Nuovo Cimento*, the *Astrophysical Journal*, etc.

For a scientist to have access to these magazines is absolutely indispensable to him or her, since—in addition lengthening the list of essential publications for his career (chair, financing, recognition, etc.)—an article published in these journals inserts him, at least in principle, in the planetary circuit of science. It is for this reason that the rejection of an article on one's own research, or the publication, without a chance for rebuttal, of an article unfavorable to one's own work, represents enormous damage, not only to the credibility of the scientist, but even to the possibility of realizing his capacities for making his talents useful, and in the final analysis, to contribute to our collective knowledge.

Thus the editorial policies of these magazines (often conducted behind the shield of a group of referees who are comfortably anonymous and often are chosen by capricious criteria), can have the function of controlling the direction of research. Such an ability to select a line of research to be followed in the entire world (which becomes thus the global village of science), affords the oligarchy of science, who operate at the vertices of the different institutions, a power of conditioning the progress of scientific thought similar to that which, at the time of Galileo, controlled the Congregation of the Index.



Giuliano Preparata

Yet there are differences, which might very well give us some hope: The global village can play nasty tricks upon the oligarchs in power, who are often induced by vanity to exit from their comfortable rooms which are well-protected by push-buttons. It seems to me that that is what happened to the very powerful director of the magazine, *Nature*, the Englishman John Maddox, against whom I intervened at the conference mentioned above.

In a recent article (*Il Giornale*, Dec. 28, 1992), I discussed the debate still under way about Galileo, and his rehabilitation by the Roman Church, which has offered me an occasion for comparing the science of that time, with that of today. I concluded in *Il Giornale*, that with the rise of the monopoly of "big science," the thrust of the Galilean revolution has been in effect exhausted, and that the monopoly exercised by the scientific oligarchy has given us a structure of large scientific institutions similar to those which the vanguard led by Galileo was fighting, in a battle which he lost; and which cost Italy, at least for a couple of centuries, a loss in its battle for intellectual freedom.

At that time I was reproved by some friends for not having explained clearly enough in which way "liberal" science of today might, even distantly, be a cousin of the dogmatism of the Counter-Reformation and the Inquisition (which brought Giordano Bruno to the stake, the long imprisonment of Tommaso Campanella, and the humiliating retraction of Galileo Galilei). For that reason among others, I was happy to have the occasion afforded by the recent round-table meeting on scientific communication to be more specific about the recent situation and my thoughts on how those who control science today seek to prevent those people, that is, who in modern society have the job of making advances in our knowledge of natural phenomena, from extorting nature's secrets, and, in the metaphor of Heraclitus, stripping away her veil.