

to impugn the motives of a company like Hoffmann-La Roche, which has pioneered civic, social and scientific innovations [including] the Roche Institute of Molecular Biology."

Public relations alone, however, would hardly justify the massive expenditure. Speaking at the dedication ceremony, the company's president and chief executive officer Robert B. Clarke said that "Many times since we announced plans for the Roche Institute for Molecular Biology 4 years ago, we have been asked 'What's in it for Roche?' . . . Obviously, we hope for products, possibly in the distant future, but what is truly 'in it for Roche' is a renewed dedication to our long-held belief that, as a leader for many years

in pharmaceutical research, we must not be content with the pursuit of the ordinary; we must reach for the stars. This is our interpretation of enlightened corporate citizenship." Clarke went on to discuss the company's social obligations, should "we advance our knowledge into fields such as genetics, antiviral agents, and other areas provocative of social controversy."

Indeed, the belief that entirely new forms of marketable therapy, the eugenics and euphenics mentioned by Stent, may emerge from basic molecular biology, lies at the heart of the Roche approach to basic research. Meanwhile, the company might expect a few incidental payoffs from time to time. Scientists at the Institute are encouraged, though not

obliged, to discuss ideas with the rest of the Hoffmann-La Roche staff, with a view toward practical applications. At the ceremonies, John J. Burns, the company's vice president for research, remarked that "We are most pleased with the warm scientific collaboration which has developed between the scientists in the Institute and those in the Roche research laboratories. Collaborative programs are already under way on new approaches to cancer research and to mechanisms involved in narcotic addiction."

Whether Hoffmann-La Roche will be rewarded with a new Librium or Valium from its support of esoteric research remains to be seen.

—ROBERT J. BAZELL

## ABM Debate: Learned Society Split by Old Grievance

A strange departure from the customary dry diet of academic journals is contained in the current issue of *Operations Research*, a learned quarterly published by the Operations Research Society of America. Instead of anodyne articles on games theory or linear programming, subscribers are presented with a quasi-judicial inquiry into the debate waged 2 years ago over the antiballistic missile system (ABM). The subject of the inquiry is the performance not of the ABM, but of the participants in the debate, in particular the group of MIT-based scientists who argued against the ABM.

The inquiry's verdict is that the critics presented false or misleading arguments to congressional committees, and its implication is that their conduct fell below the professional standards to be expected of an operations researcher. The 8000 members of the Operations Research Society of America (ORSA) have not yet had opportunity to react to the inquiry, which was undertaken by a committee appointed by the ORSA council, but ructions within the society are already apparent. Five of the 13-man council have protested the inquiry, and the society's founder, Philip M.

Morse of MIT, has threatened to resign. The report, Morse said in a letter to the *Boston Globe*, suggests that ORSA "is on the side of ex-Senator Joseph McCarthy, is pro-military, and supports the assumption that the expert always knows best."

The inquiry is the work of a six-man committee appointed by the ORSA council in November 1969. The group, called the ad hoc committee on professional standards, was chaired by Thomas E. Caywood, president of ORSA that year, and had as members five previous presidents, one of whom is editor of *Operations Research*. The committee prepared two documents, one of them a set of professional guidelines for the practice of operations research, and the other, published as an appendix to the first, an analysis of the ABM debate intended to exemplify how the participants in the debate deviated from the guidelines.

The appendix also served a second purpose, found to be compatible with the first, which was to address a complaint laid before the council by Albert Wohlstetter, professor of political science at the University of Chicago. Wohlstetter, who worked for 9 years

with RAND, the Air Force think tank, was one of the few scientists outside the Administration to give evidence in favor of the ABM during the 1969 Senate hearings. In testimony before the Armed Services Committee, Wohlstetter conflicted with an opposing witness, George W. Rathjens, professor of political science at M.I.T., on the percentage of Minuteman missiles that would survive a Russian first strike, Wohlstetter claiming a figure of 5 percent, and Rathjens 24 percent. Argument between the two continued in the pages of the *New York Times* and in correspondence with Senator Stuart Symington (D-Mo.), and was still unresolved when Wohlstetter wrote to Caywood in November 1969 asking that ORSA "appoint a panel to consider some aspects of professional conduct during the ABM debate this spring and summer."

The first and last few paragraphs of Wohlstetter's letter of complaint are printed in *Operations Research*; the bulk of the letter, which is omitted, suggests that the panel should confine its attention to certain narrow areas of the ABM debate, in particular the points of difference between Wohlstetter and Rathjens.

Operations research, a group of techniques originally developed during the World War II, has not entirely outgrown its military heritage, and many members of ORSA necessarily have past or present connections with the military establishment. ORSA is not ideally positioned to adjudicate a debate that directly pitted the Department of Defense against its critics, but its council

nevertheless seems to have had few qualms about acting on Wohlstetter's suggestion, and to have been confident that the expertise of its committee was sufficient guarantee of a fair review. No precautions were taken to screen committee members for conflict of interest, and the inquiry proceeded unchanged, even though Rathjens and two of his colleagues in the ABM debate, Steven Weinberg, professor of physics at M.I.T., and Jerome B. Wiesner, president of M.I.T., declined to participate. The debate could not usefully be judged by the standards of operations research, they said in a letter to Caywood, in part because "there was never any general agreement on the technological facts underlying the debate."

The ORSA committee proceeded without Rathjens's assistance, and 21 months later, in May 1971, it came up with the verdict that arguments of the ABM critics on the points considered were "often inappropriate, misleading, or factually in error. . . . Elementary standards for proper presentation of results to permit verification and meaningful dialogue were not met. . . . Quite often the misleading nature of an analysis is not apparent on a superficial reading. Because of this, poor analyses can be quite effective in public debate."

The committee devotes much of its report to the points of difference between Rathjens and Wohlstetter, deciding almost every point in favor of Wohlstetter and finding it necessary to assure the reader that "the list of abuses may seem one-sided, since most of them were committed by only one of the participants in the debate. However, we have assiduously attempted to be balanced."

Wohlstetter also suggested that the committee look into the calculations by Wiesner and Weinberg on the probability of a Soviet warhead being able to destroy a Minuteman in its silo; Wiesner and Weinberg erred, the committee concludes, by misinterpreting Defense Department data. Wohlstetter in his letter cited the problem of coordinating simultaneous attacks on missiles and bombers since "some of the men speaking on these issues used an authority acquired in other fields than operational research to gain credence for dicta about such matters. . . . However, experience in high energy physics and electrical engineering, etc., is not enough." The ORSA committee examined the statements on this issue made by Wolfgang K. H. Panofsky, director

of the Stanford Linear Accelerator Center, and by Wiesner, who is an electrical engineer, and concludes that they were wrong and the Department of Defense is right.

Whatever the validity of the ORSA committee's judgments, there is an unhappy appearance of one-sidedness, not only in the committee's composition and lack of access to the arguments of those supposedly on trial, but even in the phrasing of the report. The shortcomings of the Administration's arguments, the committee states at one point, "nowhere equalled the cumulative mass of inadequacies compiled by the opposition. This is as one might expect. Official Administration spokesmen are paid professionals whose function it is to perform or direct such analyses."

Lack of evident fairness would not be serious in a critique signed by individual authors, but the ORSA committee has set itself up as a body competent to deliver upon the M.I.T. scientists the judgment of their peers. Those judged guilty by the ORSA tribunal are vexed both by the conduct of the prosecution, and by its virtual restriction to the brief outlined by Wohlstetter, whose actions the M.I.T. scientists regard as amounting to a personal vendetta. (Wohlstetter denies there is any personal feeling in his disagreement with Rathjens—"I have almost zero interest in Rathjens as a person—how could there be any vendetta between us?" he said last week.)

The committee's report was accepted by the council of ORSA at its meeting in May and a decision was taken to publish it as a special issue of *Operations Research*. Several members of the council were under the impression that the report would be subject to the same refereeing process as any other paper submitted to the journal. When this turned out not to be the intention of the journal's editor, Hugh J. Miser, or of the current president of ORSA, Robert E. Machol, five of the council members signed a statement protesting the quasi-judicial nature of the inquiry, its lack of access to all relevant data required for an impartial review, and the omission of the refereeing process.

The minority statement is printed in the current issue of *Operations Research*, along with a reply by Machol which argues that refereeing would "not have been meaningful for this report." The six-man committee, Machol notes, represented "over a century of experi-

ence in operations research and systems analysis."

It is too early to comment on the substance of the committee's verdict since few apart from those directly involved have seen copies of the report. A commentary prepared by Rathjens, Weinberg, and Wiesner, however, offers rebuttals to many of the report's detailed criticisms, and charges that the committee was improperly constituted since one of its members, Howard M. Berger, had been relieved by Rathjens of responsibility while both were employed by the Institute for Defense Analyses and had subsequently resigned from the institute.

Members of the ORSA council were not aware of this incident until recently, but Machol said last week that "other members of the committee assure me that Berger was not the most critical."

Whatever the merits of the ORSA committee's findings, the way they have approached their task is less than a complete guarantee of impartiality, particularly since the subject matter of the inquiry is one that touches old wounds, many of them incurred before the ABM debate in opposition to the Vietnam war. The ORSA council seems to have believed, perhaps simplistically, that for Rathjens and Wohlstetter to have arrived at different conclusions from the same facts, one of them must have presented the facts incorrectly. Yet as Rathjens and his colleagues pointed out in their initial letter to ORSA, there was not always agreement even on the facts underlying the ABM debate, since some of the relevant information was classified and much that was unclassified was incomplete. The issue of the inquiry cuts across an ideological divide between those who have continued to work with the defense establishment and those who have ceased to do so.

"The minority group and Professor Morse are all associated with MIT," says a majority member of the ORSA council. "This whole MIT group turned dove at the time Kennedy died; in the ABM debate they allowed themselves to do certain things that would be proper for a lawyer to do but improper for an analyst—some of their errors were deliberate and some arose because they were amateurs." The ORSA report has confirmed the ORSA side of this gulf, but has both divided its council and rendered its impartiality open to question by its idiosyncratic method of procedure—NICHOLAS WADE