Strategic Arms Limitation (II): "Leveling Up" to Symmetry

The first of these articles on strategic arms limitation dealt with the unsuccessful, and not always earnest, efforts to control nuclear weapons from the end of World War II up to the end of the 1960's. It appeared in the issue of 31 January.

When the Strategic Arms Limitation Talks (SALT) began some 5 years ago, in late 1969, the arms race was already nearly beyond control. Certainly, any early successes in this new effort to control the race would have to be measured in modest terms. The very idea of nuclear disarmament had lost currency by the mid-1950's and had yielded to the concept of arms "control" or limitation. Thus, there was really no prospect that SALT I, which finally would produce the Moscow agreements of 1972, or that SALT II, which may now lead to an agreement under principles established at Vladivostok last November, could do more than mitigate the frustration of all those who had hoped for an end to the threat of nuclear war.

The fact is, however, that the benefits of SALT have been less than what even a sober realist might have hoped for, especially since the talks were undertaken seriously and not used by either the United States or the Soviet Union for propaganda purposes. SALT has involved hundreds of daily meetings between the U.S. and Soviet delegations, to say nothing of innumerable high-level discussions through the diplomatic "back channel." Yet while the results of SALT include an important treaty limiting defensive antiballistic missile systems (ABM's) to low levels of deployment, the agreements on offensive arms have allowed or contemplated high levels and have done anything but mandate net reductions in weapons.

Indeed, the Vladivostok agreement would merely "cap" the arms race at levels that would allow U.S. and Soviet arsenals to bristle and overflow with many more weapons than presently deployed and vastly more than were deployed when SALT began. Such an outcome may be preferable to an open-ended arms race, and it may establish a base point from which future reductions can be made. Even so, it leaves the superpowers dangerously overarmed, and becoming steadily more that way. The purpose of this article is to consider how the Moscow and Vladivostok agreements were reached and what may have gone wrong.

It is useful at the outset to compare the number of strategic weapons deployed at the time SALT began, the number deployed today, and the number that would be allowed by Vladivostok.

In late 1969, when the SALT negotiators first met in Helsinki, the United States had a total of 1710 intercontinental ballistic missiles (ICBM's) and submarine-launched ballistic missiles (SLBM's), plus some 450 B-52 bombers, for a grand total of about 2160 strategic "delivery vehicles." It had no ABM's, and no MIRV's—multiple independently targetable reentry vehicles, or warheads. Taken overall, Soviet forces were at this time considerably smaller than U.S. forces, but they did include slightly more ICBM's and a primitive ABM deployment around Moscow.

Today, the United States has about the same number of delivery vehicles as before, but more than 800 of its missiles are now MIRV'ed. With the MIRV's, the present U.S. strategic arsenal contains some 8000 deliverable nuclear weapons—nearly twice the number available in the late 1960's. Also, approaching operational status in North Dakota is a Safeguard ABM installation that is supposed to protect ICBM sites, but which is actually expected to be of little military value.

The Soviets, by now having long since surpassed the United States in numbers of delivery vehicles, have 2500 of them, all missiles except for 140 obsolete Bear and Bison bombers. But, because it has not yet deployed MIRV's, the Soviet Union has only a third as many deliverable weapons as the United States.

Now, note the cap or ceiling that Vladivostok—if terms of verification are successfully negotiated and an agreement is signed this year—would put on strategic arms. Each superpower would be allowed up to 2400 delivery vehicles and, within that ceiling, up to 1320 MIRV'ed missiles. That would enable the United States to deploy at least 10,500 weapons and enable the Soviet Union to deploy some 6550—or many more if the Soviets catch up in the miniaturization technology necessary to maximize the number of warheads a missile can carry.

Why has the arms race been speeding up even as negotiations have been going on to try to slow it down? Some important driving mechanisms appear to be the following*:

"Leveling up" to symmetry. This has to do with the tendency for each superpower to feel that its security—and its internal politics—requires it to have at least as many weapons as the other. This also refers to a tendency for the leveling to proceed not downward, but upward, encouraged by the superpowers' mutual distrust, the momentum of weapons development and deployment, and the enormous investment that deployed weapons represent.

Bargaining to Consensus

Bargaining for consensus within each government. Given the politician's natural instinct not to get at cross-purposes with potent interests, leaders in power have tended to defer to the military—and, in the U.S. context, to the military's allies in Congress. Certainly on the U.S. side, and probably on the Soviet side as well, this has strongly influenced negotiating positions, not to mention the pursuit of new weapons programs to compensate for limitations on weapons that have been negotiated. It is to be noted in this regard that during part of the recent Vladivostok negotiations, two Soviet generals sat at Brezhnev's elbow.

Bargaining chips. One superpower develops new weapons, trying to warn the other that the arms race will continue its upward spiral if negotiations fail. But, coupled with the leveling-up mechanism and the deference to the military, the bargaining chips themselves make for a continuing arms race.

In the following summary of the com-

* A shrewd analysis of these several mechanisms is contained in *Nuclear Arms Control Agreements: Process and Impact*, written by three former Washington officials with an interest in arms control: G. W. Rathjens, Abram Chayes, and J. P. Ruina. It is available for $1 per copy from the Carnegie Endowment for International Peace, 11 DuPont Circle, NW, Washington, D.C. 20036.

plex and tortuous SALT negotiations, the workings of one or another of the above mechanisms is apparent at nearly every step of the way. These were aggravating factors in negotiations that would have been difficult under the best of circumstances.

SALT I

SALT I opened in November 1969 at Helsinki, with ABM's, MIRV's, and the level of offensive missile deployment as the central issues. The talks might have had a better chance of success had they been opened in 1967 when first proposed by the United States, but still they began under conditions by no means unfavorable. For, although the proliferation of missiles was already a fact, a chance remained for "zero" solutions to the ABM and MIRV problems. No MIRV's had yet been deployed, and the only operational ABM system was the small and militarily insignificant one around Moscow.

Furthermore, ABM's and MIRV's stood in a logical relationship to one another that made it only sensible to get rid of both. MIRV's could overwhelm any conceivable ABM system, and it was for this purpose that the United States had undertaken a big program of MIRV development. At the same time, without ABM's, MIRV's would not be needed, because single warheads would be capable of penetrating to their targets and, thus, of maintaining deterrence.

Although MIRV's had been perceived as a "good" weapon as long as needed to discourage ABM deployment, they now had the look—at least to arms control specialists—of a "bad" weapon. MIRV systems, because of their ability to direct multiple warheads to different targets, were viewed as a potential ICBM-killer and a threat to the land-based deterrent.

Persuasive as was the case for an agreement to prohibit both ABM and MIRV deployments, the negotiators failed to achieve such results.

Instead of forthrightly proposing that both superpowers give up the illusion of missile defense, the United States first proposed—in what now seems to have been a bad blunder—that each side be limited to an ABM deployment around its capital. Already having made such a deployment, the Russians immediately accepted the proposal, whereupon the United States began to have second thoughts, particularly inasmuch as its current plans emphasized defense of Minuteman missile sites in the Western states.

For all its merit, the ABM treaty finally agreed to in SALT I offers a clear-cut example of the leveling-up-to-symmetry phenomenon. Instead of a ban on all ABM's or even a one-for-one solution, each side was allowed a capital-area deployment and a missile-site defense deployment. The extraordinarily high cost and doubtful effectiveness of ABM's would lead the superpowers later, in SALT II, to limit each side to a single deployment. The best chance for a total ban had, however, been lost.

Now consider what was done—or rather not done—about MIRV's. In 1969 and up through the spring of 1970, as SALT was getting started, MIRV's were not quite out of the bag. In the United States, the predeployment testing of MIRV's that had begun during the last year of the Johnson Administration was still under way; there was still time to decide against further testing and against deployment. And, in the Soviet Union, MIRV testing had not even begun, which meant that it would be at least a few more years yet before the SS-9—the huge new ICBM that had the Pentagon worried—could be MIRV'ed. Even today there is no clear evidence that any operational Soviet missile has been MIRV'ed, although testing is now well advanced.

On the other hand, American MIRV programs had gained tremendous momentum. The Air Force was moving to have its first few MIRV'ed Minuteman III missiles become operational in June 1970. Also, the Navy had begun converting Polaris submarines to receive the MIRV'ed Poseidon missile, with the first to go on patrol in March 1971.

There was some effort made in Congress to forestall MIRV deployment, but there was none in the White House, where it counted. Henry Kissinger, then the President's adviser for national security affairs, would later look back and, as newsmen now know, wish that he had taken the pains to think through the implications of a MIRV'ed world.

The upshot was that, in SALT I, the MIRV issue was never really joined. Being behind in MIRV technology and wanting to catch up, the Soviets proposed a ban on MIRV production and deployment—but not on testing. The U.S. proposal for a ban on testing and deployment seemed designed to be unacceptable, as it provided for on-site inspection, to which the Russians had traditionally been opposed.

According to John Newhouse in his book *Cold Dawn: The Story of SALT*, the decision by the White House to include this provision had gone down badly with the larger part of the SALT bureaucracy. The Department of State, the Arms Control and Disarmament Agency, and the Central Intelligence Agency all had regarded on-site inspections as unnecessary, if not even unfeasible.

Newhouse surmises that among the considerations that led President Nixon virtually to strike a MIRV ban from the SALT agenda may have been a desire not to damage relations with the Joint Chiefs of Staff and their congressional allies, to say nothing of relations with his own conservative constituency. After all, with the Soviets still deploying more and more missiles, the only thing the United States had going to expand its own strategic forces was its Minuteman III and Poseidon programs. But what this leaves unsaid is that, if the United States has ever had a bargaining chip to induce the Soviets to dismantle part of their ICBM forces, it may have been its option not to deploy MIRV's.

In fact, with MIRV withdrawn from the bargaining table, the only agreement possible on offensive missiles was a temporary one allowing the Soviets higher numbers of ICBM's and SLBM's in compensation for the U.S. MIRV's and for certain other American advantages, such as its "forward-based systems," or tactical aircraft based in Europe and aboard carriers. The 5-year interim agreement that was reached was in precisely such terms.

The Soviets were allowed a total of 2358 missiles, compared to only 1710 for the United States. A freeze was declared on the numbers of ICBM's, with no more ICBM launchers or silos to be constructed and no "light" ICBM's to be converted to "heavy" ICBM's. The agreement did not cover strategic bombers, in which the United States continued to enjoy a better than three to one advantage.

In light of what came after SALT I, it is a close question whether the interim agreement constrained the arms race or simply stimulated it. The only clearly positive results of SALT I were the ABM treaty and the verification provisions of both that

treaty and the offensive arms agreement —provisions from which on-site inspection was absent.

SALT II

In the United States, one basic, overridingly important guideline for the SALT II negotiations was shaped by the congressional reaction to SALT I. Senator Henry Jackson (D–Wash.), a member of the Armed Services Committee and long identified with the military, warned that, once the Soviets had caught up in MIRV technology, they could take advantage of the higher missile numbers given them in SALT I to achieve military superiority.

At Jackson's urging, Congress amended its resolution approving the 5-year interim agreement by calling upon the President to seek "equality" in strategic forces for the United States at the next round of SALT. The Nixon Administration, though it seemed to regard the Jackson amendment with some ambivalence, did not oppose it.

Indeed, one of its top spokesmen, Secretary of Defense Melvin Laird, told Congress he could not support the agreements unless money was provided for a variety of new weapons and weapons R & D. Laird also emphasized the bargaining chip argument. In his opinion, the Moscow agreements were made possible by the Safeguard ABM system and the MIRV'ed Poseidon and Minuteman III missiles, and future agreements would be encouraged by such new weapons as the Trident submarine, the B-1 bomber, and the submarine-launched cruise missile.

The SALT II negotiations began 6 months after the signing of the Moscow agreements. No one has yet done for SALT II what Newhouse did for SALT I, but, from what can be learned of these negotiations, it seems that they transpired in three phases.

Phase I. Beginning in November 1972 and extending into the fall of 1973, this phase was taken up with a futile attempt to reach a permanent arms limitation agreement. Although each party had pledged in the Moscow agreements to seek such a limitation, neither was able to put aside uncertainties as to future weapons development and verification problems and make a permanent commitment. The paradox was that, for a permanent agreement to be acceptable, it would have required such massive arms reductions as virtually to represent a step toward nuclear disarmament—something both sides regarded as too difficult and extreme, certainly for the moment.

Phase II. From November 1973 through the Nixon-Brezhnev summit of June 1974, the negotiations focused on the possibility of extending the interim agreement for 2 or 3 years beyond its 1977 expiration date, with one crucial addition—a limitation on MIRV's. A simple freeze on MIRV's, which was discussed, would have meant no more MIRV deployment by the United States and no further MIRV testing by the Soviet Union. From the Soviet standpoint, this was unacceptable because the United States already had many MIRV's, whereas the Soviets had none. What the Soviets wanted was to stop or slow down the U.S. deployment

Biomedical Research Panel Named

On 31 January the White House announced the names of the seven members of the President's Biomedical Research Panel. They now have 15 months in which to assess the biomedical and behavioral research supported by the National Institutes of Health (NIH) and the National Institute of Mental Health. In April 1976 they will tell the President what government policy for research ought to be.

Franklin D. Murphy, chairman of the board of the Times Mirror Corporation in Los Angeles, which publishes the Los Angeles *Times*, is chairman of the panel. In the past, he has been dean of the medical school and chancellor at the University of Kansas, and chancellor of the University of California at Los Angeles. Robert H. Ebert, dean of the Harvard Medical School, was named cochairman of the panel.

Murphy, who has kept abreast of issues in biomedical science through reading and through his many friends in medical schools, speculates that "Leonardo Da Vinci himself would be unable to come up with a report on biomedical research that will satisfy everyone." Nevertheless, he hopes to diminish the inevitable criticism by seeking the opinions of as many persons as possible, saying that it is important that the panel do a lot of listening.

Although the panel has yet to set its agenda—its first meeting is on 24 February—it is clear that in one way or another it is going to have to address questions about federal funding of research and the distribution of research scientists in various fields. Ebert is already known as a man who does not look at the issues from the conventional point of view. He has said that the country should consider abandoning its policy of funding research on a categorical basis, disease by disease, or institute by institute, and substituting a single budget for NIH (*Science*, 2 November 1973). The idea is compatible with those of some officials in the Department of Health, Education, and Welfare and is one of the things that has attracted Secretary Caspar Weinberger to Ebert. Weinberger was a strong advocate of the appointment of both Murphy and Ebert to the panel.

Benno C. Schmidt, in his capacity as chairman of the President's Cancer Panel, is, by law, a member of the panel. (Schmidt's appointment to the cancer panel expires in mid-February. At this writing it is not certain whether he will be reappointed, even though Frank C. Rauscher, director of the National Cancer Institute, and others associated with the cancer program are anxious to have Schmidt stay on. As is typical, the White House apparently is not going to let anyone know what its intentions are until the last minute.)

Other members of the biomedical panel are Ewald W. Busse, chairman of the department of psychiatry at Duke University; Albert L. Lehninger, director of the department of physiological chemistry at the Johns Hopkins University Medical School; Paul A. Marks, Vice President in Charge of Medical Affairs, Columbia University College of Physicians and Surgeons; and David B. Skinner, chairman of the department of surgery, University of Chicago Hospitals and Clinics.—B.J.C.

while they carried on the largest deployment program the Soviet Union could mount. So the MIRV issue brought this phase of the negotiations to an impasse.

Phase III. A 10-year limitation agreement was the aim during this phase, which followed the June summit and Richard Nixon's departure from the White House. The idea of another 5-year limitation was discarded because such an agreement would have interfered with completion of on-going U.S.

Pilots Take Unilateral Action on Flying Hazardous Cargo

In November 1973 a Pan American cargo jet carrying 16,000 pounds of acid and flammable chemicals crashed while approaching Boston, killing all three crew members. Improperly packed nitric acid had leaked and caused a fire.

Such a disaster was bound to occur sooner or later, say members of the Air Line Pilots Association (ALPA), the 32,000-member commercial pilots' union. For 4 years now ALPA members have been intensely concerned over the alleged failure of the Department of Transportation (DOT) and the Federal Aviation Administration (FAA) to enforce regulations concerning the carrying of dangerous materials on both cargo and passenger flights. Air transport of hazardous materials—those on a list of some 2000 radioactive substances, acids, flammable materials, biological agents, and explosives—has risen rapidly over the past 10 years. Yet, say ALPA members, enforcement of rules concerning packaging, labeling, and handling of such materials has been so lax that 90 percent of such material has been transported in violation of some regulation. They say that all pilots have to go on concerning the safety of their cargo is a certificate signed by the shipper; yet such documents are worth little, since shippers and packagers are often unaware of proper procedures and penalties for violating them are weak. In the case of the Pan Am crash, for example, the packager was apparently unaware that nitric acid in glass bottles is supposed to be placed in steel cans surrounded by noncombustible bushing material in a wooden crate with protective cushioning. The bottles were instead packed in sawdust. One bottle leaked, and the change in air pressure produced spontaneous combustion. (Also aboard the same flight were large quantites of sulfuric acid illegally labeled as electrical appliances.)

ALPA, after 3½ years of pleas to DOT, FAA, and Congress, finally decided at a board meeting last fall to take matters into its own hands. On 1 February the organization put project STOP (Safe Transportation of People) into action. ALPA members were instructed to refuse to carry any hazardous materials on passenger flights, with three exceptions; radioactive pharmaceuticals —compounds with short half-lives primarily for diagnosis —Dry Ice and liquid nitrogen for refrigeration of perishable cargo, and magnetic materials. After urgent requests from medical organizations, the pilots later agreed to include biological materials such as short-lived viruses and tissue cultures for treatment and research, and packages of molybdenum-99 generators (the isotope has a 67-hour half-life) used for diagnostic examinations. Freighter pilots have been instructed to refuse to carry any hazardous materials that federal regulations prohibit from passenger planes (a nasty-sounding list of gases and acids), and quantities have been sharply reduced—only 50 pounds of such materials are permitted per compartment (which would amount to about 150 pounds per plane).

ALPA has set up a 24-hour communications center to answer questions concerning STOP, most of which have been coming from bewildered manufacturers, shippers, and packagers. Most hard hit by the embargo, say ALPA people, are chemical manufacturers who are used to flying tons of toxic materials hither and yon. STOP will continue, they say, until the DOT has demonstrated its intention to drastically step up enforcement efforts.

The DOT is responding with two sets of public hearings, to be held by the Office of Hazardous Materials, scheduled for 10 and 20 February. The first addressed the potential hazards of materials presently authorized for transport in passenger and cargo planes, and such matters as proper packaging and labeling and the quantities in which materials should be shipped. The second hearing will explore training requirements for all individuals involved in handling dangerous cargo, documentation needs, what the crew should know about what it is carrying, the question of special registration for shippers and manufacturers of hazardous materials, and emergency gear to deal with in-flight accidents.

There is no telling when ALPA will decide STOP has made its point, but according to an official of the Office of Hazardous Materials, DOT thinks the pilots are overreacting to the situation and is even considering legal action to compel pilots to accept cargoes they are now turning down.

ALPA members, however, are very determined. The ALPA board of directors has drawn up a 10-point program, mostly related to tightening the enforcement of existing regulations. Two points, though, would involve significant changes in the rules. First, in passenger planes, the pilots would like to stick pretty much to their STOP guidelines, with perhaps a few additional exceptions. Second, they want hazardous materials to be carried exclusively in all-cargo aircraft, but limited to those commodities and amounts now acceptable (according to federal regulations) for passenger aircraft. This would involve a radical reduction in the quantity of materials carried and would mean, for example, that a chemical company could send samples by air but would have to use surface transportation for bulk shipment. The change would also cut the list of materials accepted by cargo planes by about half, eliminating such materials as nitric acid and nitroglycerin.

It is clear that DOT and ALPA have some profound disagreements to straighten out, but an ALPA official is confident that the information that comes out in the hearings will be appalling enough to change quite a few minds among the bureaucrats.

—Constance Holden

and Soviet programs of weapons development and deployment.

As in previous rounds of SALT, the "options" to be considered in arriving at a U.S. negotiating position ranged from the relatively simple to the highly esoteric. President Ford chose a combination of the simpler options. The biggest single question decided was whether to insist on equality in total numbers of weapons as called for in the Jackson amendment, or whether to try to balance off different kinds of U.S. and Soviet advantages, as had been done in SALT I.

To "Absolute Equality"

Secretary of Defense James Schlesinger and the Joint Chiefs of Staff strongly favored absolute equality. They wanted it not so much for strictly military reasons as for vaguely stated reasons of "perception." That is, they were afraid that if the Soviets kept their superiority in missile numbers and caught up in MIRV's, they might try to push their way around and provoke a crisis. Kissinger favored absolute equality in principle, but did not feel that the principle should be carried to the point of pushing forces to higher and higher levels. President Ford sympathized with the Kissinger viewpoint but decided in favor of absolute equality.

Because of the different mix of forces on the two sides, the only feasible definition of equality the U.S. and Soviet negotiators were able to arrive at was the concept of "equal aggregates." ICBM's, SLBM's, and strategic bombers would be treated alike, with each one counted as a "delivery vehicle." The concept is blind to the fact that some missiles and bombers are more equal than others, but this is what had to be accepted to avoid an impasse over numbers.

The superpowers could have achieved equal aggregates in either of two ways. They could have decided to bring their forces to common levels by adjusting them downward or adjusting them upward. They chose to go upward.

Fixing the ceiling for delivery vehicles at 2400 made it possible for the United States to add more vehicles and for the Soviets to avoid any real sacrifice. Existing Soviet forces exceeded the ceiling slightly, but the Soviets could come under it easily by discarding about 100 of their obsolete bombers. The United States, with an existing aggregate of 2160 missiles and bombers, was short of the ceiling by 240—precisely the number of additional missiles it would have when all ten Trident submarines were operational. As first conceived and promoted by the Navy, the Tridents were to replace ten "aging" Polaris submarines; but, now, in the name of equality, the Polaris boats would be kept in the fleet.

Under the ceiling on delivery vehicles, the United States and the Soviet Union would be free to have whatever mix of forces desired, except that the earlier agreement's prohibitions against new ICBM silos and against more "heavy" ICBM's such as the SS-9 would still apply.

In agreeing that up to 1320 missiles within the 2400 delivery-vehicle limitation could be MIRV'ed, the superpowers again decided that equality would be reached by an increase in forces rather than by reductions. The MIRV ceiling would, for example, permit the Soviets to deploy an average of at least two additional warheads every day for the next 10 years. Furthermore, it would allow each side to deploy at least two or three times the number of warheads the war gamesmen believe necessary (assuming high accuracy) for a successful "counterforce" strike against ICBM's.

The United States actually had proposed lower ceilings for both delivery vehicles and MIRV's. But, once it was clear that the Soviets would not accept numbers low enough to remove the threat to ICBM survivability, the U.S. negotiators went for numbers that would allow, as in the case of the Trident and the B-1 bomber, completion of the additional U.S. forces programmed. U.S. deployment plans had called for 1286 MIRV's, just a bit under the ceiling agreed upon.

Secretary Schlesinger would have held out longer for tighter limitations on Soviet deployments. Kissinger, on the other hand, felt that delay would hurt chances for a good agreement. If the negotiations were not concluded by sometime in 1975, election year politics might interfere in 1976; and, in 1977, the interim agreement would be running out, with the negotiators up against a tight deadline and with perhaps a new man in the White House.

Furthermore, Kissinger felt that Schlesinger wanted more from the Russians than he was willing to give in return. He knew, for instance, that the severe limits Schlesinger wanted placed on missile "throw weight" or payload would work heavily to the relative disadvantage of the Russians. While no U.S. missiles would have gone over these limits, four new models of Soviet missiles would have, and thus been banned. Also, given their heavy past emphasis on throw weight and their lag in warhead miniaturization technology, the Soviets would have been able to deploy only about one-third the number of MIRV's as the United States.

Moreover, Kissinger knew that, in their own eyes at least, the Russians would be making a major concession in giving up their demand for compensation for the American forward-based systems, the British and French nuclear forces, and the Soviet vulnerability to nuclear forces the Chinese would surely deploy. And, in fact, the major break in the negotiations had come last October when, on Kissinger's trip to Moscow, the Russians began to retreat from the demand for compensation and to embrace the principle of equal aggregates.

As one can judge, SALT and the weapons programs of the two superpowers have provided the quintessential example of the leveling-up process, to say nothing of deference to the military point of view and the heavy-handed use of bargaining chips. Not surprisingly, the Vladivostok agreement is supported in a decidedly restrained and guarded way by two of the private groups most dedicated to stopping the arms race—the Arms Control Association and the Federation of American Scientists. For many of their members, the agreement will not make the world any better off, and may make it worse off, unless the superpowers move quickly from SALT II into SALT III and agree to arms reductions.

Vladivostok Principles

There seems little doubt that a SALT II agreement based on the Vladivostok principles would be approved by the Congress. Senator Jackson, a one-time hawk who is now displaying some dove-like feathers, was quick to attack the Vladivostok ceilings as too high, even (in the case of MIRV's) "wantonly high." But in doing so, Jackson, an aspirant for the presidency, may well have had something to do with Kissinger's determination to make the agreement more palatable. A few weeks after Vladivostok, a U.S.-Soviet aide memoire was made to affirm that arms reductions would not, contrary to earlier announcements, have to await the agreement's expiration in 1985 and could be negotiated as soon as possible.

The big questions now, if one can assume that a SALT II agreement will

be signed, is whether both the Ford Administration and Congress will insist on building U.S. forces up to the ceilings. And will they, perhaps in the name of bargaining chips, deploy as replacements for existing weapons such new ones as a more powerful ICBM and a new strategic bomber? And, further, will they insist on deploying, as *additions* to existing forces, new weapons not covered by the agreement —the submarine-launched cruise missile being a prime example?

A resolution introduced in the Senate by Edward Kennedy (D–Mass.), Walter Mondale (D–Minn.), and Charles Mathias (R–Md.) would support the Vladivostok agreement with the implied condition that all new weapons proposals be submitted to Congress strictly on their merits, without regard to the ceilings. But President Ford, the best authority as to U.S. intentions, has said that the United States has an "obligation" to build up to the ceilings. In this, he is clearly influenced by evidence from the Russian side that Soviet weapons programs are surging ahead. As some arms control specialists believe, the Vladivostok ceilings could be merely the floor for a continuing arms race.

The superpowers' mutual fears and distrust, constantly reinforced by the development and deployment of additional weapons, runs in an as yet unbroken circle. The evidence is that the members of the Politburo, the National Security Council, and the U.S. and Soviet military joint staffs all share the psychology of the deeply buried command bunker and the hard silo.

—LUTHER J. CARTER

Subsequent articles will discuss (i) the evolution of arms control verification, together with the verification problems now under negotiation in Geneva as a final step toward a SALT II agreement, and (ii) the uncertain prospects for SALT III.

Energy R & D: New Jurisdiction for Reorganized House Committee

The energy crisis in the headlines these days centers on the conflict between the Ford Administration and congressional Democrats over plans to save energy. The focus of the dispute is the President's proposal to impose a $3-a-barrel tariff on imported oil. The House on 6 February voted a 90-day delay in the increase (Senate action is pending), and separate groups in House and Senate have been working to fashion alternative programs. At the same time, both House and Senate Democrats appear to be mobilizing for a serious effort to influence energy research and development policy not only through a searching critique of Administration energy R & D budget proposals, but also by fashioning a comprehensive program of their own.

A major arena for the effort will be the House Science and Technology Committee, metamorphosed from the Science and Astronautics Committee as a result of a reorganization of House committees last year (*Science*, 25 October 1974). In addition to its inherited sway over the space program and science policy, the Science and Technology Committee will handle virtually all authorization measures for federal energy and environmental R & D, excluding nuclear energy. (A later article will examine the changing politics of nuclear energy in Congress.)

At the start of the session, the Science and Technology Committee sailed serenely through the storm of reform in which four elder committee chairmen foundered,* but the committee now faces some unusual stresses in dealing with the energy R & D legislation. First, new budget control legislation enacted last year sets a strenuous schedule of legislative deadlines. Science committee chairman Olin E. Teague (D–Texas) says that the committee will conform to the timetable; this means subcommittees reporting out authorization legislation by 1 March and the full committee by 15 March. What formerly was done in months would have to be done in weeks.

Second, the committee will be dealing with the new Energy Research and Development Administration (ERDA) for the first time. ERDA director Robert C. Seamans, Jr.'s, top echelon of assistants are still not out of the "clearance" stage with the White House and are therefore still in "acting" status. Some are carry-overs from organizations dismembered to construct ERDA and may not stay long. Understandably, at this point, the new agency has not completely jelled, and what it says to the committee will sound a shade tentative.

Three of Science and Technology's seven subcommittees are assigned specifically to handle energy and environmental R & D. These are the subcommittee on energy research, development, and demonstration (fossil fuels), chaired by Representative Ken Hechler (D–W.Va.); a second subcommittee with the identical title, except with the parenthetical (fossil fuels) deleted, headed by Representative Mike McCormack (D–Wash.); and a subcommittee on environment and the atmosphere chaired by Representative George E. Brown, Jr. (D–Calif.).

Hechler is ranking Democrat on the committee and comes from a coal-mining state, so it is not surprising that he wound up heading the subcommittee dealing with fossil fuel R & D. Until now he has been primarily identified with issues affecting miners and the coal industry. Coal mine safety has been one of his major interests and he has been probably the most vehement congressional proponent of a total ban on strip mining.

Hechler, however, rejects the suggestion that his new subcommittee will concentrate on coal. He notes that some members of his subcommittee come from oil states and says that, as chairman, he intends to see that the panel operates without bias for a particular fuel.

On his priority list for the subcommittee are looking into ways to speed up development of synthetic fuel dem-

* F. Edward Hebert, Armed Services; Wilbur D. Mills, Ways and Means; Wright Patman, Banking and Currency; and W. R. Poage, Agriculture.