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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

(FOUO 5/79)



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WORLDWIDE REPORT
NUCLEAR DEVELOPMENT AND PROLIFERATION

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CONTENTS

PAGE

WORLDWIDE AFFAIRS

Attitudes Toward U.S. Nuclear, Nonproliferation Policy (ENERGIA E MATERIE PRIME, Jul-Aug 79)	1
Polemics With Allies Analyzed, by Karl Kaiser Comments on Kaiser Article	

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WORLDWIDE AFFAIRS

ATTITUDES TOWARD U.S. NUCLEAR, NONPROLIFERATION POLICY

Polemics With Allies Analyzed

Rome ENERGIA E MATERIE PRIME in Italian Jul-Aug 78 pp 11-21

[Article by Karl Kaiser: "Search for a Worldwide Nuclear Order"]

[Text] In the attempt to find an international consensus on the issue of nuclear arms nonproliferation, the world powers do not seem to take into account the fact that there is a precise relationship between the nuclear arms race and proliferation.

Few decisions held such tremendous international importance as those adopted in the nuclear energy field starting during the middle of the seventies. That should not startle us because this is a field in which we find the superposition of two categories of problems that are of vital importance not only to the survival of the economic system but also to the maintenance of international stability: energy supply and nuclear proliferation. We should therefore not be astonished by the confusion and emotion aroused by the controversies between the United States and its allies, giving rise to new coalitions in international policy and creating serious disagreement within the individual countries. But these aspects mean that the real critical points in the search for a worldwide nuclear order are often concealed.

Erosion of Consensus

The international community is trying to channel the ever declining consensus toward those standards and objectives that had regulated the nuclear arms nonproliferation system during the postwar period. Many countries in Western Europe and the Third World were alarmed over what they considered unilateral American measures that threatened the very foundations of the standards in question and that damaged their interests. The Americans on the other hand were amazed at what in their eyes was a dangerous lack of sensitivity on the part of the others with regard to the new developments that demanded a swift adaptation of the postwar nonproliferation system. How did we arrive at that situation?

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We must go back to the efforts made during the sixties to prevent proliferation. The NPT, signed in 1968, produced only a partial consensus because it was subscribed to neither by China, nor by France, nor by any other emerging nuclear powers, including India, Brazil, Argentina, and some countries in the Near East (although France later on did decide to behave as if it likewise was a party to that treaty). Besides, the consensus, implicit in the treaty, was obtained only after lengthy and complex negotiations in which--similar to what is happening today--West Germany came out as the protagonist of the debate concerning Article IV, that is to say, the article guaranteeing access to nuclear technology. In a treaty that proposes to prevent proliferation through control over technology and the renunciation of status as a power having nuclear arms (articles I and II), unlimited access to nuclear technology, with the proper security measures, was considered essential by all countries that did not have nuclear arms.

From these negotiations emerged not only Article IV--which in its definitive section guarantees such access--but also many clarifications and official interpretations on the part of the United States government, clarifications and interpretations which were designed to help overcome the reluctance of numerous governments during the frequently by no means easy ratification procedures.

Talking about the concerns expressed all over the world, Arthur Goldberg, head of the American delegation to the United Nations, said this on 15 May 1968: "There is no reason whatsoever to worry that this treaty might impose prohibitions or limitations upon countries that do not have nuclear arms as regards the possibility of developing their own capabilities in the field of nuclear science and technology. The entire field of nuclear science, tied to electric energy production, is today freely accessible and it will continue to be so even more under this treaty for those who may wish to utilize it. This concerns not only the current generation of electric nuclear power plants but also advanced technology involved in fast breeder reactors, which is now in the development phase."

This statement clashes heavily with American policy after 1975 which was aimed at preventing the reprocessing of spent fuel (that is to say, fuel already used in the reactor and intended for chemical retreatment to extract residual plutonium and uranium) and the development of fast breeder reactors so as to prevent the circulation of plutonium which would be suitable for the manufacture of nuclear arms. As a matter of fact, the laws introduced into the United States Congress in 1977 threatened to interrupt American nuclear assistance and cooperation regarding any country that received or ceded reprocessing or enrichment technology or that would reprocess nuclear fuel furnished by the United States without prior United States approval. That raised the following question: up to what point would one or more countries have the right unilaterally to modify the consensus that was behind a universal treaty?

The consensus on another fundamental element of nonproliferation policy during the sixties vanished for similar reasons: the role and significance

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of safety measures. According to the old system, any technology suitable for the generation of nuclear energy could be acquired or ceded only so long as it remained subject to the safeguards of the inspection system set up by the IAEA which, in the case of unauthorized diversion of nuclear material, would have to sound the alarm and thus alert the international community. Consequently, the safeguards were designed only as an accounting and reporting mechanism. But around 1975 the conviction began to spread both inside and outside the United States that simple surveillance over nuclear technology could have offered many countries an opportunity to make nuclear weapons and this in turn of course would promote the danger of a spread of the "bomb without completely violating the rules"¹. The United States at that time began to exert pressure to move on from the detection of violations to their prevention, thus once again bringing up for discussion the fundamental principles of the norms and institutions in force with respect to nonproliferation.

The erosion of consensus thus spread from nonproliferation policy to the field of energy policy with an almost reciprocally strengthening effect. Indeed, after the 1973-1974 oil crisis, one could observe a general accord on the indispensability of reducing dependence on petroleum coming from the OPEC member nations; but the subsequent speed up in the nuclear programs of many countries only increased the worries about the dissemination of nuclear arms technology. While most of the countries now consider fast breeder reactors and reprocessing as a necessity for efficient energy utilization, others view this as the direct road to the nuclear inferno.

Development of Disagreements

No country has changed its own opinions on the matter of nonproliferation as quickly and as substantially as the United States. First of all in an unsystematic and offhand manner and then with growing resoluteness, American policy changed when the Carter administration came into office; the initiative was transformed into a real attempt at a total revision of nuclear policy once again bringing up for discussion the status quo even at the cost of damaging other American interests.

There are three developments that play a particular role in the genesis of this controversy. First of all, the 1973-1974 oil crisis ushered in the era of raw materials nationalism and a new tendency towards reducing dependence on foreign supply sources. In Europe, in Japan, and in some countries of the Third World--which almost exclusively depend on imports for their petroleum--nuclear energy expansion was the key to everything. The United States also at that time launched the "Project Independence" which comprised a major nuclear component.

Countries poor in raw materials considered enrichment on their own, the reprocessing of spent fuel, as well as fast breeder reactors (which increase the energy potential of uranium by about 50 percent) as measures suitable for increasing the safety of their own supplies. And, without wishing to do so,

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the United States itself consolidated this viewpoint when, in 1973, it unexpectedly stopped sales of enriched uranium, in spite of the fact that Euratom (European Atomic Energy Community), Brazil, and some other countries had already undertaken certain commitments (in some cases this even involved advance payments). It thus appeared evident to everybody that dependence on foreign sources--even if that involved friends and allies--creates problems in long-term energy planning. A temporary ban on the export of reactors and fissile materials, in 1975, ordered by the United States for administrative reasons, had a similar effect.

The explosion of India's first nuclear bomb in May 1974 was the second event that helped strengthen the conviction of the United States that the old nonproliferation system had big gaps in it. That explosion reminded everybody that nuclear energy had come to the Third World and the prospect of nuclear arms in unstable regions became a nightmare. The case of India among other things demonstrated that the partial safeguard system, in countries that did not sign the NPT, could be circumvented without formally violating the rules. It was then that the petition for control over all nuclear activities conducted in the country in question (full scope safeguards) came up as the only possible solution. India asserted that this was a "peaceful" explosion, demonstrating in passing that there is no distinction between peaceful nuclear explosives--whom the NPT had given a certain degree of international legitimacy--and military explosives.

The third event which abruptly altered the international scene was the agreement between West Germany and Brazil under whose provisions West Germany would supply Brazil with nuclear reactors as well as enrichment and reprocessing technology in return for access to future production of uranium in Brazil². This accord led to the most serious disagreement ever recorded in relations between the United States and West Germany since the end of the war and considerably helped speed up efforts aimed at modifying nonproliferation policy. Along with the promise by France to supply reprocessing plants to South Korea and Pakistan, the German-Brazilian agreement for the first time included the transfer of a "sensitive" technology (that is to say, a technology capable of leading to military nuclear developments) to a country in the Third World situated in an area characterized by international instability and rivalry. Thus, toward the end of the eighties, each of these countries would have access to fissile material which in theory could be used to make weapons. Besides, neither Brazil, nor Pakistan had signed the NPT and Brazil had also been rather ambiguous with respect to the right to carry out "peaceful" nuclear explosions.

Although the economic aspect was secondary in connection with the anticipated French supplies going to Pakistan³ and to South Korea and although more than obvious questions were raised as to the possible ulterior motives of a military nature, the German-Brazilian accord attracted most attention in the United States. In the final analysis, the accord was concluded in what was traditionally considered an American sphere of influence. Besides, the United States was not accustomed to insubordination of this kind on the part of

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a close ally who until that moment had generally had the habit of sharing or accepting United States policy. The most severe critics even recalled the past record of the Germans, saying that it was such as to rule out such a policy for moral reasons⁴. In the end, people got the impression that the Germans had thumbed their noses at the Americans in the "nuclear deal of the century" and this entire matter served to recall to mind rather painfully that the United States share of worldwide reactor exports had dropped from two-thirds in 1974 to less than half in 1976.

This means that the United States government opposed the German-Brazilian deal because West Germany was becoming an uncomfortable competitor. In spite of some assertions on this score by the Germans, there is no proof that Washington took its nonproliferation policy as a pretext to protect commercial interests. The objective of American policy was and still is non-proliferation, even at the cost of damaging its own industry. It is of course something entirely different to consider what the significance of this would have been to the German nuclear industry if the United States had managed to stop the deal with Brazil from the very beginning; in that case, it would probably have been driven out of many markets in the Third World for some time.

When the Germans informed the United States government early in 1975 that they were preparing the agreement in question, a United States delegation went to Bonn. Realizing that Germany was determined to go through with the deal, the American negotiators suggested a series of amendments which had to do not only with control agreements with countries that had not joined the NPT but also with the experience in dealing with India. When the tripartite safety agreement was signed between Brazil, the FRG, and the IAEA, it included preventive safeguard and control measures which were more rigorous than those pertaining to any other technology transfer that had taken place earlier to a country that had not joined the NPT. The agreements eliminated the evasion of control standards which is possible under earlier agreements and subjected the only suitable reprocessing system (Purex) to permanent safeguards, also providing a joint management body with combined Brazilian and German personnel, with the implication of further control.

In view of ever more numerous criticisms, the Germans constantly maintained that they acted within the framework of existing agreements. They drew attention not only to the earlier interpretation under the NPT but also to the fact that reprocessing was likewise provided for the lists of nuclear materials suitable for military use, materials which were to be subjected to safeguards; that list by the way was agreed upon on an international level. We know that the German diplomats rather unwillingly let the opportunity for a subtle disquisition of a legal nature get away but that interpretation of the NPT was not in any way a German invention. It had to do with an international agreement that could not be amended through unilateral action on the part of one or more countries.

The deal with Brazil had barely come up in talks on the highest level between the German government and the United States government when both President

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Ford and Secretary of State Kissinger felt that they were in a rather uncomfortable position on this score. The bitter criticisms in Congress and in the press had not encouraged either one of them to oppose the accord actively. When somebody suggested that use be made of American troops stationed in Europe or that joint American-Soviet initiatives be undertaken to exert pressure on the West German government, Kissinger felt duty-bound to reply that this was not the right way to handle a close ally. During a meeting with West German foreign minister Hans-Dietrich Genscher in June 1975, he had to tell him that the amendments introduced into the agreement upon the proposal of the Americans were considered satisfactory and on that basis the West German government then signed the agreement shortly thereafter.

Policy of Rejection and Problem of Legitimacy

Following the Indian nuclear explosion, the United States in autumn 1974 launched confidential talks with the other major supplier countries in this sector, that is to say, Great Britain, France, Japan, West Germany, and the Soviet Union. The group later on was also to include Belgium, Holland, Italy, Sweden, Switzerland, Czechoslovakia, East Germany, and Poland. By November 1975, this group had arrived at an agreement on the directions to be followed in nuclear exports--directives which were almost identical to those published in January 1978, with the exception of some additions and the important "trigger list" (in other words, the list of materials that were capable of increasing nuclear arms proliferation and over which special control had to be exercised).

These directives established that various governments had to furnish guarantees designed to "exclude any utilization that might give rise to any nuclear explosive"; the nuclear material furthermore had to be protected adequately against theft and had to be subjected to strict safety measures. As it latter on happened also to the Carter administration, the United States government at that time did not manage to get the full-scope safeguards accepted for all plants in the country of destination. The most important thing from the policy viewpoint however was the promise by the suppliers to use "moderation in the transfer of plants and sensitive technologies as well as materials suitable for the manufacture of weapons" as well as "caution" in order to prevent the production of any nuclear material not subjected to safeguards.

These clauses were not equivalent to a ban on the export of reprocessing plants, as the United States administration and its supporters had wanted, but they did represent a big step forward in that direction, although the deals with Brazil and Pakistan were not involved (the French-South Korean accord was canceled following American intervention in Seoul). The accord finally underscored the need for a cooperative-type position and committed the supplier countries to consult with each other "so as to make sure that any sale would not increase the danger of conflicts or instability" and together to examine the steps to be adopted in case of violation of the agreements.

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In the discussions leading to the directives in questions, some fundamental disagreements of opinion were also cleared up and problems came up which continue to be of crucial importance in the debate on the international nuclear order. The question of the legitimacy of any amendments in international norms was brought up right away. If the existing system is inadequate, who has the power to change it. On the one hand, the superpowers and the uranium producers (the United States, the Soviet Union, and Canada) sponsored the "cartel" method, if the suppliers were to agree on imposing more severe conditions to watch over nonproliferation and if they were determined not to damage themselves in the process by offering the goods at a lower price, then the addressees would have had no other choice but to accept the modifications which, in the final analysis, were drawn up not in the interest of one country but in the interest of the entire international community.

On the other hand, France and West Germany--with the full although unseen support of Japan and with Great Britain in a midway position--declared that any major amendment in the rules would have to be subjected to the approval of all interested parties. Without a minimum of legitimacy, the new rules would not have had any influence. Consequently, France and West Germany declared that they were in favor of involving all of the major addressees but they ran into Soviet and American resistance. The American position--which was later on sustained by the Carter administration--was this: if some countries did not take upon themselves the responsibility for the rest of the world, then there was little probability that anything big would ever be accomplished.

The second dilemma concerned the right of the supplier countries to refuse nuclear technology to nations that asked for it. The first group, headed by the United States, maintained that, because of past omissions, the biggest problem for the future sprang from the availability of materials suitable for arms manufacture even though it may be subjected to the proper safeguards. This is why it was a good idea not to supply reprocessing and enrichment technologies to those nations that might be tempted to produce explosive devices.

France and West Germany, on the other hand, asserted that, if and when a country had decided to get nuclear arms for itself, it undoubtedly did so for important political reasons and that--among all of the possible approaches to an operation of this kind--the "civilian" route was the one that took the longest time and the most money. Uranium reprocessing and enrichment are very attractive for other reasons: reliable supplies, reduction of dependence on petroleum, environmental protection. If these technologies were not furnished through a system of cooperation and control, then it would nevertheless have been possible to get it some other way--without any controls. In the final analysis, reprocessing was already available in developing countries, including India and Argentina⁵. Pushed too vigorously, a policy of refusal could therefore have caused the collapse of the nonproliferation system on which an agreement had been arrived at.

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In practical terms, however, the disagreement was not as serious as it seemed. There was complete agreement on the fact that no country, run by an aggressive dictator, involved in continuous bitter debates with its own neighbors and with underdeveloped infrastructures at home, should receive technologies capable of being used for nuclear weapons. But where to draw the line? Was it perhaps necessary, for the sake of international stability, to introduce a new distinction between countries that can or cannot benefit from sensitive technologies?

The commitment to "moderation" on the supply of technologies considered here in reality constituted a ban on exports the moment no major country was planning to purchase reprocessing plants. The supplier countries undertook two commitments: the first one permitted the conclusion of the deals with Brazil and Pakistan; the second one was contained in the idea of multinational plants as an alternative to the national efforts aimed at enrichment and reprocessing. The United States and other countries had dug this concept up again and had promoted a broad study on regional fuel cycle centers within the IAEA. The trouble was that, two years later, in the act of publishing this study, the United States assumed a more skeptical position, maintaining that these centers could be sources of dissemination of knowledge on sensitive technologies.

During the last year of the Ford administration, while relations between the United States and other countries were characterized by a rather restless nuclear modus vivendi, several domestic pressure groups pushed for a change in policy. The Congress continued to concern itself with the problem but a decisive change came only when Carter turned nonproliferation into one of the most important points in his presidential campaign and openly criticized both the Ford administration and France as well as West Germany. It was under pressure from his opponent in the presidential race and on the basis of broad interdepartmental research that Ford on 28 October 1976 proposed a three-year moratorium on the issue of authorizations for national reprocessing plants and on the export of such plants, as well as new international agreements for stricter control over plutonium and for the storage of spent nuclear fuel. The central idea was that "it was no longer necessary to consider the reprocessing of spent fuel for the production of plutonium as a necessary and inevitable step in the nuclear fuel cycle."

Outlawing Plutonium

The Carter administration's new nuclear policy began with a program and a stiff dispute. The program was the so-called Ford-Mitre Study--the work of a group of experts who examined the entire issue of the basic choices in the nuclear field⁶. As for the dispute itself, it involved the renewed agreement with West Germany in connection with the Brazilian deal.

The central point of the new policy again brought out the debate where Ford had interrupted it. A complete reexamination led to the decision, made by Carter on 7 April 1977, indefinitely to postpone both reprocessing and the

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fast breeder reactor. This decision furthermore became the basis for new American legislation on exports. The foundation was furnished by the Ford-Mitre study whose authors--who did have a certain degree of authority--in considerable numbers joined the new administration (particularly Joseph Nye who became deputy undersecretary of state for nuclear nonproliferation policy matters). The newly elected President discussed the research results with the authors and the outside world, not without justification, judged the study in question to be the intellectual basis for the new administration's policy.

The report seemed to be slanted toward supporting the light-water reactor technology used for the most part in power reactors both in the United States and in other countries (they use lightly enriched uranium as fuel and they use natural water as coolant). These reactors were presented as being safe and reliable but the administration did not make much of an effort to put into practice what was implicit in the study: to help a national industry, which was having a difficult time following the opposition of the movements for the defense of nature and on account of the orders that were issued. But never since the announcement of Eisenhower's Atoms for Peace Program has a president been so reserved if not implicitly hostile toward nuclear energy. Every time the argument was taken up in public--such as, for example, in the case of the "fireside chat" which the President on 18 April 1977 devoted to energy--it was always presented as a problem and, very rarely, as a potential means for improving the energy supply. When he presented his own energy program on 20 April 1977, Carter created the impression that it was desirable "to reduce any effort in favor of nuclear energy to a minimum."

While American industry was disturbed by these words, foreign governments were frightened by them. Most of them already had to face major domestic opposition to nuclear programs and they were worried by the fact that the biggest petroleum consumer, in a world characterized by ever greater scarcity of crude, seemed to want to overlook the potential of nuclear energy. The signals that arrived from the United States seemed to indicate basic opposition to that energy source. During the months that followed, the United States government had its hands full trying to correct that impression.

The administration concluded that the dissemination of the entire fuel cycle and the fast breeder reactor throughout the world would each year have produced a quantity of materials sufficient to manufacture thousands of nuclear bombs and that the availability of these technologies could have caused dangerous temptations. This danger, it was maintained, could not be counterbalanced by any potential gain. Thus the administration maintained that there would not have been any benefits within any foreseeable period of time and that both reprocessing and the fast breeder reactor therefore were premature. The Ford-Mitre study concluded by asserting that the uranium reserves were sufficient until the end of the century and that it was possible, without any danger, to store spent fuel for a long period of time.

It is not surprising that this position ran into considerable opposition and many criticisms. All of them however can essentially be boiled down to

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the idea that the decisions and proposals of the United States essentially reflected its own positions and interests and did not sufficiently take into account the problems of other countries.

The American thesis, according to which there was enough uranium in the world to justify a postponement of the fast breeder reactor and of reprocessing, was not accepted by the majority of the other countries. In 1977 the thing that was of interest was no longer the existence of worldwide uranium reserves but rather the access to existing reserves. Besides, 80 percent of the uranium reserves of the noncommunist world are in the United States, Australia, Canada, and South Africa. Over the past several years, access to these reserves was limited so seriously as completely to shift the prospects of the uranium consuming countries. In December 1976, Canada could have imposed a total embargo on uranium supplies also in dealing with close allies and stable countries, such as those of Euratom; but a country in the Third World was bound to get only a pessimistic view of the future safety of its own supplies.

The administration's thesis--according to which reprocessing made no sense from the economic viewpoint--was not accepted either. Besides, even American studies supported the opposite viewpoint'. Reprocessing permits a raw material saving (through the reuse of unburned fuel) and reduces the natural uranium requirements by as much as 34 percent and the separation effort by as much as 26 percent (in connection with isotope enrichment). Even at high cost, reprocessing reduces the balance of payments problems. Some countries, including West Germany, are already experimenting with this type of "plutonium savings" and are planning to build bigger plants, such as the United States had been doing until a short time ago at the Barnwell plant, in South Carolina.

The United States government's objection concerning the early sale of breeder reactors was not shared by many countries either. For a country such as the United States, with tremendous conventional energy source reserves, postponement is very easy to take; but one must keep in mind that breeder reactors constitute the only presently known technology which--after the oil runs out--would be capable of furnishing energy to a practically unlimited extent. They therefore are the obvious road to take in the energy field on the basis of responsible planning concerned also with dependence on foreign sources.

The idea according to which, for the moment, there is no need for any technology of this kind, fails to take into account the fact that it takes between 10 and 15 years before a breeder reactor would be ready for commercial use and that experimental plants and investments therefore are necessary today. Countries such as France and West Germany invested huge amounts of money and are in fact building breeder reactors and one cannot ask them now to dismantle those plants. Only for those countries that have not yet made such investments would it perhaps make sense to await the results of international research and discussions currently in progress to find out whether a better alternative might be discovered.

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It will finally be a good idea to point up a disagreement that arouse on the ecological importance of reprocessing. Countries such as Great Britain, France, Japan, and West Germany--and, until a short time ago, the United States--considered reprocessing to be the best method for eliminating the slag. So far, the problem of final storage of spent fuel elements has not yet been resolved in an ecologically satisfactory manner. Research conducted in the Western world on disposal over the past 20 years was concentrated for the most part on reprocessing, on recycling (which consists in burning, in the reactor, the plutonium with its long half-life) and on final storage of highly radioactive waste in solidified form.

Although the intermediate storage of spent fuel can fill the gap until the introduction of reprocessing, there is no guarantee that the American hope of finding an alternative, which will be proliferation-proof, to the current method (which produces plutonium) could be found.

The United States government from the very beginning realized that it was necessary domestically to apply a concept as sceptical as this one with respect to the real possibilities of nuclear energy in order to make sure that it would be successful outside the United States. The adoption of this position--which was quite in keeping with the American viewpoint--however has its limitations and, as a matter of fact, other countries declared that a sacrifice is easier to make for a country that has abundant energy resources than for a country where such resources are scarce.

Test of Strength

After Carter was elected president, worries arose in West Germany regarding the future of the agreement with Brazil. Continuing criticisms of the Congress in the press, Ford's proposal for a moratorium, and the public appeals addressed by Carter to France and West Germany, urging them to renounce the idea of supplying sensitive technologies, created the fear that the issue had been reopened and that the new president would publicly oppose the agreement.

Early in January 1977, the West German government sent an undersecretary of state by the name of Peter Hermes to Washington before the American president was officially inaugurated. According to a high official, the new administration had the impression that it was facing a German ultimatum and reacted extremely harshly in the course of a second meeting during which secretary-of-state-designate Cyrus Vance told Hermes that the United States could not agree to any export of sensitive technology and demanded a postponement. From that moment on, communications on this argument on the official level remained heavily charged with tension.

Shortly after his inauguration, Carter sent Mondale on a "good-will trip" throughout the world, to demonstrate the uninterrupted American commitments toward old friends and allies. But in Bonn, harmony was disturbed by the urgent request of the vice president to drop the idea of passing on

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sensitive technology. Another two rounds of talks, conducted by Deputy Secretary of State Warren Christopher in Bonn and Washington did not lead anywhere and the talks which Christopher held in Brasilia with the other partners to the agreement did not turn anything up either.

Both West Germany and Brazil insisted--and this is not at all surprising--on concluding an agreement that was perfectly in tune with international obligations and to which the preceding American administration had given its approval.

It was this first round of negotiations--carefully followed by everybody--that created the widespread impression of an impatient American administration which was inclined toward unilateral actions, over the heads of the other countries, and which was insufficiently informed on the complexity of the problem.

By an unhappy coincidence, certain steps aimed at the implementation of the German-Brazilian agreement, matured precisely at the moment when the Carter administration was reviewing and drafting its own nuclear policy. Although the American requests to Bonn had the mere purpose of keeping all possibilities open until a review of United States policy could be completed, the Germans got the impression--strengthened by earlier statements from Carter--that, in yielding, they would only have been able to start all over again. The result was that the two countries--which, as partners, had every reason to work toward the improvement of the nonproliferation system--found themselves involved in a bitter controversy.

The situation changed in March 1977 because the two parties agreed that they had the same objective although there was a certain disagreement as to the means to be used in attaining nonproliferation.

The Americans realized that pressuring the Germans on the issue of sensitive technology could seriously have damaged not only relations with an important ally but also their own attempt at reopening the debate on nonproliferation through an international dialogue of a cooperative nature. The West German government, on the other hand, realized that its own credibility was at stake if the deal with Brazil did not go through. Bonn therefore had the feeling that a ban on the supply transactions would have struck a fatal blow at any attempt to improve the nonproliferation system in collaboration with the most important countries of the Third World. West German chancellor Helmut Schmidt therefore communicated to Secretary of State Vance that Bonn was now determined to go ahead with shipping the first units by the required deadline.

On 7 April 1977, the West Germans published an announcement explaining both the closeness and the disagreements between the United States government's position and the German position. After a reference to international agreements on nonproliferation, the announcement underscored the need for any program on the peaceful use of nuclear energy to start from the

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specific circumstances of each individual country and that such programs must conform to the NPT. The West German government tried to involve the largest number of countries possible and especially the emerging countries of the Third World in an attempt to develop nonproliferation policy further.

The two governments had consulted each other on the two statements published on the same day. It was probably this stepped-up dialogue, combined with critical reactions from other countries, that introduced a note of caution into Carter's 7 April statement.

During the press conference following the announcement, the United States President emphasized: "We are not trying to impose our will upon those nations--such as Japan, France, Great Britain, and Germany--who already have reprocessing plants in operation."

After announcing the postponement of the reprocessing program and the breeder reactor in the United States, the United States government in its communique proposed to open an international dialogue to analyze the fuel cycle from the twin viewpoints of energy supply and nonproliferation.

The relaxation of tension between Bonn and Washington came against the background of a certain increasing closeness between the French viewpoint and the American viewpoint. The French government had established a nuclear foreign policy council which, in its first communique, issued on 11 October 1976, launched an urgent appeal in support of strict safety measures and asked all nations not to promote the dissemination of nuclear arms through commercial competition.

On 16 December 1976, the French council made public the suspension of the sale of sensitive technologies "until orders to the contrary are issued."

Although noteworthy differences continued to exist between the French position and the American position, this conciliatory gesture removed France from a position where it was at the focus of American attention and Washington was now able to turn to the main point of attack which was the German-Brazilian deal.

In the beginning of 1977 however the Bonn government followed the example of the French government, establishing a council for peaceful uses of nuclear energy. On many of these issues, the French government and the German government maintained close consultations. To underscore this cooperative effort, the West German government on 17 June 1977, in the course of one of the routine consultations between the German and French governments, disclosed its decision likewise to suspend--"until further orders"--the export of reprocessing technology (there was no mention of enrichment technology either in the French communique or in the German communique).

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New American Export Legislation

When he submitted his new bill on the reduction of the dissemination of nuclear arms on 27 April 1977, Carter explained to the Congress that this measure was intended to increase the effectiveness of the international safety and control system for the peaceful use of nuclear energy, to strengthen controls over exports, to impose more rigorous standards, and to institute penalties in case of violation of agreements. This was furthermore supposed to be a guarantee for fuel supply and an incentive to renounce sensitive technologies. An International Nuclear Fuel Cycle Evaluation Program (INFCE) was then proposed to seek an international consensus on those measures which the United States had tried to introduce unilaterally.

In submitting the new bill, the administration had to accept a difficult dialogue on two fronts: on the one hand, with the forces that were pressing for a rigorous and radical division of export controls and, on the other hand, with a coalition supported by American nuclear industry which was afraid that a radical change would seriously hurt its commercial interests both at home and abroad. Another bill, submitted by Representative Jonathan Bingham (Democrat, New York), already provided the measures which the administration itself considered uselessly restrictive and liable to damage relations with many countries. Some members of the Senate also were pressing for just as severe measures. In the congressional committees, the administration managed to negotiate numerous compromises which permitted more flexible application of new criteria for export policy, thus increasing the government's freedom of action in dealing with other countries.

The law passed in February 1978, after the settlement of some minor differences as compared to the original text, spells out the criteria applicable to new agreements on supplies, making the earlier standards much more rigorous, and it also calls for full-scope safeguards. It also provides for outlawing nuclear explosives and the cutoff of any assistance in case of violation of this ban or in case of cession or reprocessing of nuclear material furnished by the United States without American authorization. The bill gives the President the authority to grant exemption which however may be rejected by the Congress but it does obligate the government to renegotiate all existing agreements with the other countries so as to adjust them to the new criteria. The central nucleus of the new policy is represented by the need for a consensus on the reprocessing or storage of spent fuel and the concept of "timely advance notice," which leaves enough time between a diversion of nuclear material and possible diplomatic countermeasures.

The new legislation however did raise a series of problems that are not easily solved.

First of all, it forces the government to abrogate international agreements which have already been negotiated and which were ratified earlier. Many countries will refuse to accept the repeal of commitments already ratified merely because the Congress and the government of the United States now think differently.

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Secondly, the law governs not only bilateral relations between the United States and its partners but interferes also in relations between third countries. The law, for instance, provides for the suspension, by the United States of any nuclear collaboration, including the supply of uranium, if an addressee country sells the reprocessing technology to another country.

Third, the law forces the United States to benefit from its own position as a nuclear technology and uranium supplier (on a market with an oligopolistic structure and with considerable dependence on American supplies) for the purpose of imposing American ideas on reprocessing upon the other countries. Since the law in this connection calls for prior American approval on all materials supplied by the United States, future administrations will be in a position to prohibit reprocessing in other countries or to subject it to certain mandatory requirements. Many purchasers of American uranium will therefore today have to sign a blank check for the future, in the uncertain hope that, 10 or 20 years from now, their attitude on the matter of energy or environmental protection--which urges them to move toward reprocessing--will be shared by the White House and the Congress. The immediate consequence of this law was that it broke the international uranium market wide open because, as it seems, many consumers are prepared to pay a higher price just to get uranium that will be "veto-proof." Without wishing to do so, furthermore, this requirement becomes one more incentive toward moving toward the fast breeder reactor so as not to have to depend on foreign uranium supplies.

Fourth, the law seeks to resolve the dilemma of drafting norms on the matter of nonproliferation which would not be discriminatory and which would be universally applicable, at the same time remaining sufficiently flexible in dealing with those countries and those regions where there are fundamentally no proliferation problems.

In its present form, the law seeks to be rigorous on principle but flexible in its practical implementation. In the eyes of most of America's allies, however, the norms it contains are not sufficient to offer a reasonable field of action for countries such as those in Euratom or Japan.

Fifth, there is little likelihood that the special clause, authorizing the President to grant exemptions (for instance, in the case where Euratom might declare itself ready to renegotiate the agreement currently in force with the United States), is sufficiently flexible.

Euratom--which has a supranational control system, against proliferation, going far beyond normal legislation--would in effect be asked to abide by the principle of prior American authorization for future reprocessing. This in reality means that the clause in question would apply only to the future German reprocessing plants scheduled to go into operation during the nineties because the French and British plants are excluded by virtue of a special clause. In this way, there would be discrimination against one of the countries that accepted additional commitments by way of nonproliferation, with particular reference to the 1954 renunciation of nuclear arms production.

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The law is definitely oriented toward a technological perspective of the nonproliferation policy. It starts with the assumption that the decisive problem is reprocessing in its current form, to be solved above all through alternatives of a technological character. The redefinition of the only available technical process (Purex) as a "nonpeaceful" technology--merely because it was originally developed for the production of plutonium for the bombs--is a dangerous reinterpretation which could drastically interfere in existing agreements, especially if it were successively imposed through a court verdict.

Rebuilding the International Consensus

The directives of the supplier countries, such as they became known in the course of 1976, were the sources of growing concern among the emerging countries of the Third World. Ford's proposal for a moratorium, Carter's first statement, and the controversy between the Americans and the Germans on the agreement with Brazil gave the impression that unilateral action by one or more countries could significantly change international standards.

The outside world, particularly the Third World, reacted negatively at first to the presentation of the new American policy.

A memorandum drafted jointly by the participants in the nuclear energy conference in Persepolis, Iran (without American participation), reflects this reaction: "The essential point is that almost all countries look upon nuclear energy as the only way leading to energy independence. For those countries that do not have big reserves of uranium, this independence will come only with the breeder reactor. Any observation aimed at considering reprocessing and recycling unacceptable strikes at the very roots of the motivation behind the utilization of nuclear energy and is obviously received with apprehension. Carter's declaration was considered by many as an implicit unilateral abrogation of international accords. This impression, on the one hand, reduces the trust of the other nations in American promises concerning the supply of nuclear fuels; on the other hand it reduces the effectiveness of existing agreements and it could in the end even persuade some signers of the NPT to question their own decision to join in that treaty. Another possibility emerging here is the autonomous development of reprocessing and enrichment plants by the other nations."

This reaction shows how the vigor--with which the United States exerted pressure in order to secure the postponement of reprocessing and the breeder reactor--pushed almost all countries into overlooking the fact that the Americans were not irrevocably opposed to the development of the breeder reactor but were only seeking alternate approaches. Nor was much attention paid to the proposal for an international evaluation of the fuel cycle (INFCE). The American government submitted this proposal to the May 1977 London summit. The discussion brought out the differences in philosophy but at the end a compromise was worked out in the sense that everybody declared themselves to be in agreement on the fact that the only way to modify international

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understandings was to proceed through a real and proper international undertaking that would involve all interested parties.

The INFCE began its activities on 19 October 1977 with the participation of 40 nations, including almost all of the most important emerging nations, with the exception of South Africa and Taiwan (Formosa), as well as the EC, the IAEA, and the NEA of the OECD. All agreed that every interested country could participate in these activities and that nobody was bound by the results of the discussion. The participants then established eight study groups to take up all of the aspects of the fuel cycle, including its multinational dimensions (fuel and heavy water, enrichment, long-term supply, reprocessing, fast breeder reactor, spent fuel, waste treatment and disposal, fuel cycle, and reactor design).

From the political viewpoint, the debate on the possible revision of the fundamental norms of nonproliferation and access to nuclear technology finally developed where it should have been developed for quite some time before that, that is, in an international forum which would include all interested parties. The analysis is a broad undertaking involving many scientific, technical, political, and economic experiments and areas of competence in order thoroughly to examine the entire fuel cycle.

For this reason likewise, the IAEA was assigned a special role in the conduct of this research effort.

It is as yet uncertain as to what results the INFCE will arrive at during the two years scheduled for its existence but some problems can already be perceived. First of all, at the very moment when a mechanism for arriving at an international consensus was set up in the form of the INFCE, some portions of American legislation, such as the implicit positions adopted on reprocessing, anticipated results and introduced unilateral modifications which in reality should be the result of an international accord.

Next, while it was hoped that nonproliferating alternatives would be found for the fuel cycle, one cannot as a matter of fact be sure that such alternatives would also be available not only as scientifically demonstrated option but also--and this would be even more important--as technologically feasible solution. Even if it were possible to translate into practical terms some technologies within a span of time of 10 or 15 years, that would be little help to those countries which--such as West Germany or Japan--are involved in the construction of reprocessing plants.

Tougher Directives

When the Carter administration took over, the American government tried--during the conferences of the London Club of Supplier Countries--to give the agreement a much more rigorous content. But, like the Ford administration before it, it failed to get full-scope safeguards included and to transform the commitment to "moderation" in sensitive technology exports into a total

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ban; instead, it managed to strengthen the clauses pertaining to consultations and penalties.

In the meantime, the position of the supplier countries had remained roughly the same in the autumn of 1977. Not only did the emerging countries object to a procedure of this kind but there were also those among the suppliers who maintained that it was a good idea to involve the most important purchaser countries in the redefinition of the fundamental norms. This was also served by the decision, in October of that year, to launch the international analysis of the nuclear fuel cycle. Some supplier countries then started with the assumption that--in view of the agreement on the list of materials suitable for military use, over which it was necessary to place safeguards--the group's work was finished and that every effort should henceforth be concentrated on the work of the INFCE. To remove any suspicion among third countries as to a possible secret agreement between the supplier countries and to create a connection with the discussions in progress within the INFCE, the directives were published early in 1978 and the IAEA was asked to distribute them among its members.

Nonproliferation Policy Principles and Practice

If we compare the international situation in the nonproliferation field early in 1978 with what it was during the early seventies, we can say that recent events did introduce a change, although with considerable delay. The international nonproliferation system as a matter of fact had become inadequate and it urgently needed additional measures to ensure stability. If the international community had waited a little longer, it would probably have been more difficult to take steps of a constructive character.

The credit for this goes to a great extent to the United States who, in spite of serious and gross mistakes in the implementation of its policy, did modify some outdated concepts that were considered absolutely indispensable. And the United States did so against the united and compact resistance of its own domestic industry. However, America's new policy was transmitted abroad mostly in the form of signals that were not clear and that were often contradictory. On the other hand, the stiff resistance of other countries in some cases prevented American policy from becoming counterproductive. However, the tumultuous battle of principles often concealed the high degree of agreement existing between the most important actors. Some major questions remain as yet unresolved for the future.

An active nonproliferation policy, for the Americans, is in full contradiction with any isolationist tendency; its implementation creates numerous pressures toward active intervention in international politics. The new American legislation provides for the preventive approval, by the United States, every time a purchaser of American uranium wants to subject the uranium later on to reprocessing. This, no more and no less, signifies profound and inevitable interference in the energy, industrial, and environmental policy decisions of the other countries. It remains to be seen whether the United

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States will manage to resist the temptation of benefiting from this kind of relationship for hegemonic purposes. One can already predict right now however that a role of this kind will produce numerous tensions.

None of the most important countries that want to create their own nuclear technology for themselves belongs to the Soviet sphere of influence and some of them are even relatively close to the West. If, to impose principles, one must make use of the stick, then it is easy to alienate friends and potential allies; if, to bring about the kind of behavior that will favor nonproliferation, it is on the other hand necessary to use the carrot, then that will have to come from the West in the form of economic aid, security support, and sometimes downright military assistance.

The controversy presently in progress, to decide who can change the rules, is not yet over. Any substantial change, which does not meet with the approval of the biggest countries involved, could even undermine the foundation of the nonproliferation system. For the time being there is still a noteworthy contradiction between the method of multilateral action pursued by the INFCE and the practically unilateral method pursued in new American legislation. Of course, this construction of the consensus requires some time; it is rather laborious and demands much patience. But a return to unilateral reactions or to the attempt, on the part of a few, to impose rules upon others, could be fatal. That does not exclude the initiative and leadership function of certain countries. Great Britain, France, West Germany, Japan, the United States, and, it is hoped, the Soviet Union also have a particular responsibility in trying to arrive at an improvement of the nonproliferation system and persuading the others to contribute to it.

Technology can lead to proliferation but proliferation also has decisive causes which are not of a technological nature. In reprocessing and in some breeder reactor technologies, there are certainly potential dangerous twilight zones--but that could be do to the fact that we do not have the technical possibilities of closing those gaps. This is why the understanding of countries using "traditional" technology is just as important as the wealth of ideas on boosting the political barriers against proliferation.

Much could be done to strengthen the motivations of countries against the possession of nuclear arms; this would furthermore contribute to the creation of a stable political environment and it would avoid political changes that would threaten the security of the emerging countries. The maintenance of links therefore is an essential instrument in nonproliferation policy. The withdrawal of troops (for example, from South Korea) clashes with the principle of a long-term nonproliferation policy.

The "fuel banks," for which various countries are furnishing funds and to which there is truly free access in times of limitations on supplies, could assure a growing contribution to the safety of supplies and could furthermore provide an incentive for the smallest countries to renounce the search for national solutions that would be difficult to control.

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A policy which is aimed at improving the worldwide nuclear system needs principles and clear ideas on just exactly what is wanted. The strength of the new American policy resides in the definition of objectives and principles and its weak point resides in practical implementation. To prevent proliferation, pragmatism and flexibility, rather than universal rigorous principles, might prove to be more useful. The current policy and legislation of the United States does not sufficiently distinguish--as we said earlier--between countries that constitute a serious risk in terms of proliferation and those countries that do not constitute such a risk.

If we take the nonproliferation policy seriously, then full-scope safeguards will be an indispensable instrument. A country that does not want to develop nuclear arms has nothing to lose by accepting or promoting this principle. The French-German opposition, at the time, to the introduction of full-scope safeguards is in conflict with the foreign policy objectives and traditions of both countries and, by the same token, also with their shared responsibility for a worldwide nuclear order.

Multinational solutions, especially regional fuel cycle centers, constitute one of the most important ways to improve the nonproliferation system. They constitute an alternative to national developments that would be more easily controlled. Multinational solutions furthermore could also improve the accords between West Germany and Brazil and between France and Pakistan. This is why they deserve more attention than they have been getting so far.

On the road toward an agreement on penalties to be instituted in case of a violation of agreements, we have as a matter of fact made progress but even more could still be done on the multilateral level to make it clear to the international community that steps toward the dissemination of nuclear arms can cause serious consequences.

If such a case should arise in the near future and if there were to be no rigorous countermeasures, there would, in the long run, be disastrous consequences to the nonproliferation system.

The world powers do not seem to see any competition between an energy policy of nonproliferation, which involves everybody, and the pursuit of their own nuclear arms race; but the rest of the world does indeed see this.

Although some countries tend to take the absence of disarmament as a pretext for their own inactivity, there is however a long-term relationship between the nuclear arms race and proliferation. The successive gain derived from the SALT Agreements or in other arms control fields could exert positive influence on a nonproliferation policy.

If an oil crisis were to arise, without the availability of alternate energy sources to be used in attenuating the effects of such a crisis, then one would have to take into account the possibility of international panic reactions, if not downright anarchic moves.

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Any form of behavior in energy policy, which speeds up the approach of that oil crisis, would contribute to the creation of a situation which might be resolved through a disorderly race toward nuclear alternatives, a race full of the dangers of proliferation.

One of the most important contributions which the United States--who consumes 30 percent of the world's energy output--can make to the nondissemination of nuclear arms therefore consists of an essential reduction in its energy waste through a rigorous energy policy.

FOOTNOTES

1. Albert Wohlstetter, "Spreading the Bomb without Quite Breaking the Rules," FOREIGN POLICY, 25 Winter, 1976-1977. For a presentation of the United States position, see also Harold B. Curtis and Lawrence Scheinman, "The International Safeguards Problem," ANNUAL REVIEW OF ENERGY, vol. 11, 1977.
2. This argument is analyzed down to the very last detail by Norman Gall, "Atoms for Brazil, Dangerous for All," FOREIGN POLICY, 23, Summer, 1976; William W. Lawrance, "Nuclear Futures for Sale: to Brazil from West Germany, 1975," INTERNATIONAL SECURITY, vol. 1, 2, Autumn, 1976, pp 147-166; Edward Wonder, "Nuclear Commerce and Nuclear Proliferation: Germany and Brazil, 1975," ORBIS, vol XXI, No 2, Summer 1977, pp 277-206.
3. France recently refused to supply Pakistan with the reprocessing plant that had been covered by an agreement between the two countries early in 1976. The purpose of the French government in doing so is to coordinate this agreement with the principles of nonproliferation stated by the government itself on 11 October and 16 November 1976. In this connection the idea was to get the government of Pakistan under Gen Mohammed Zia Ul Haq to accept the modification in the plant so that it could not produce pure plutonium although it could turn out a mixture of plutonium and uranium that would be useless for military purposes; ATOMO E INDUSTRIA, 1 September 1978.
4. See the editorial in THE NEW YORK TIMES, entitled "Nuclear Madness," 13 June 1975.
5. Yugoslavia, for example, moved in that direction by proposing to the Conference of Nonaligned Nations held in New Delhi on 6 April 1977, that the entire fuel cycle be assembled within the area of the nonaligned countries so that the latter could become independent of foreign nuclear suppliers (FRANKFURTER ALLGEMEINE ZEITUNG, 7 April 1977).
6. Nuclear Energy Policy Study Group, "Nuclear Power Issues and Choices," Cambridge, Massachusetts, Ballinger, 1977, commonly referred to as the Ford-Mitre Study.

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7. See Reprocessing-Recycle Economics Group, comp., "Reprocessing-Recycle Economics," Washington, D.C., Atomic Industrial Forum, 10 November 1977.

Comments on Kaiser Article

Rome ENERGIA E MATERIE PRIME in Italian Jan-Feb, Mar-Apr 79 pp 65-76

[Text] The controversies that broke out between the United States and its allies in the energy supply field and in the fight against nuclear proliferation constitute an important and always time point of departure for debate and reflection.

We are publishing here some comments on the article entitled "The Search for an International Nuclear Order" by Karl Kaiser, as we announced in issue No 4 of this magazine. The comments were made by Achille Albonetti, director of foreign relations, CNEN [National Nuclear Energy Center]; Francesco Calogero, theoretical physics professor, University of Rome; the journalist and political commentator Antonio Gambino; Cesare Merlini, director, International Affairs Institute; and Carlo Schaerf, professor of physics, Rome University.

The panorama of comments and observations is such as to furnish an overall approach to the problem complex taken up, both from Kaiser's viewpoint and from a viewpoint critical of him.

Karl Kaiser's article was published in issue No 2 of our magazine. It analyzes the controversies that sprang up between the United States and its allies in the field of energy supply and nuclear proliferation as well as in relation to the decisions adopted in recent years by the United States for the purpose of limiting the danger of proliferation.

Kaiser is particularly critical of the Carter administration and some of its positions adopted on the nuclear activities of some Western countries such as, for example, the agreements between West Germany and Brazil and between France and Pakistan, etc.

According to Kaiser, there are, in the final analysis, contradictions between the nonproliferation policy pursued by the United States and that country's domestic and international energy policy, especially in addition to the continued existence of the nuclear arms race.

Any action that would speed up the approach of the oil crisis, Kaiser concludes, would in the end wind up creating a situation that could deteriorate into a disorderly race toward nuclear energy which therefore would be full of dangers of proliferation. This is why the greatest contribution of the United States--who is the biggest consumer of energy--but also the greatest contribution by other countries, to the battle against nuclear arms proliferation, resides above all in the rationalization of consumption through a rigorous energy policy.

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Comments by Achille Albonetti

The article published in issue No 2 of ENERGIA E MATERIE PRIME, by Karl Kaiser, entitled "Search for an International Nuclear Order," is a rare example of informative synthesis and keen and pertinent comment. The article furthermore examines an essential argument, the argument involving the development of nuclear energy for peaceful purposes within an international context in which every effort should be made to prevent the proliferation of nuclear arms. The author and the contemporary publication of the article in four international political research magazines show that this is an authoritative and semiofficial position on the part of the German government.

Kaiser is quite correct in writing the following at the beginning of his essay:

"Few decisions have held such tremendous international importance as those adopted in the nuclear energy field starting in the middle of the seventies. This is not astonishing because this involves a field in which there are superposed two categories of problems that are of vital importance to the survival of the economic system and to the maintenance of international stability: the supply of energy and nuclear proliferation. We should therefore not be startled by the confusion and emotion aroused by the controversies between the United States and its allies, giving rise to new coalitions in international policy and creating serious disagreements within the individual countries."

We are therefore pleased to accept the invitation extended by the editors of the magazine to take part in the discussion. We will do everything we can to make sure that our contribution will follow the line expressed in the intelligent essay by Karl Kaiser with which we agree to a great extent. In other words, we will try to draw attention to important but scarcely noticed events, deriving material from them for some further considerations.

At the end of November of last year, the first full conference of the INFCE (International Nuclear Fuel Cycle Evaluation) was held in Vienna. It produced little echo among public opinion, even among expert circles, although the conference was attended by delegations from 56 countries and 5 international organizations (UN, IAEA, IAE, NEA, EEC). But, as we said, the argument was worth the trouble.

During the first phase of activities here, there was a review of the development of activities and studies in progress in each of the eight groups created by the preparatory Washington Conference in October 1977, a conference which likewise produced few comments although it was opened at the State Department by President Carter himself with a symptomatic speech and even though it was proceeded by important and keen debates.

The positions that emerged on the occasion of the Washington Conference on the objectives of the INFCE as well as on the expectations of the various

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countries once again came out during the first full conference held in Vienna in the autumn of 1978.

The countries of the EC, Japan, and the majority of the developing countries in particular insisted on the need for making sure that the studies--and, therefore, the final reports of the groups and the summary of the TCC (Technical Coordinating Committee)--be entirely objective and confine themselves to an examination of the facts, avoiding any evaluation of a political nature. They recalled the INFCE is--and must remain--a technical study and not a political deal.

The countries of Eastern Europe, the USSR, the United States, Canada, and Australia instead underscored the need for making sure that--in the light of the studies conducted by the INFCE--we achieve a strengthening of the safeguard systems which would be properly made up of technical-organizational solutions (such as the international plutonium depository, multinational reprocessing centers, etc.) so as to make the nonpeaceful use of nuclear materials more difficult.

Regarding the TCC proposal concerning the drafting of an introductory report on the results of the studies conducted by the various working groups, the same divergence of opinions was likewise observed. Although basically recognizing the validity of the proposal, two opposing tendencies developed concerning the scope to be given to the report itself and the judgment autonomy of the TCC.

The Eastern European countries, the United States, Canada, and Australia would have like to give the TCC broad autonomy in its synthesis effort, even going so far as to allowing it to express evaluations on the results of the studies and to make recommendations during the final conference.

The countries of the EC, Japan, and the developing countries on the other hand stressed that the TCC report should be limited to a synthesis of the studies prepared by the working groups, without including any element of judgment.

The conference then decided that each of the eight study groups would draft a summary of its own final report and that the TCC would draw up a synthesis document, based on the group reports, a document which, objectively and accurately, would have to reflect the conclusions of those groups, without in any way modifying the evaluations contained there.

An initial document draft was to be prepared by the TCC chairman in consultation with the co-chairmen of the study groups and with the assistance of the IAEA.

That draft was then to be passed on to the members of the TCC for their comments and observations.

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The text--with any possible modifications requested by the co-chairmen of the groups--would then be reexamined by the TCC in November 1979 and would be submitted to the final conference.

Other decisions made by the full conference concern procedural questions and, in particular, the date for the start of the final conference of the INFCE, scheduled for February 1980.

Once again, the major concerns of the countries most interested in the new antiproliferation policies of some supplier countries were concentrated on the problem of guaranteeing maximum objectivity in the results of the studies of the working groups and avoiding the practical setup of the entire INFCE problem complex in order to force nonproliferation measures and policies upon governments that could do serious harm to the peaceful development of nuclear energy as well as to international exchanges of nuclear technology and materials.

These concerns appeared not only in the statements of the various delegations but were also included in the conference's final document.

We reported these recent events since they are important and practically unknown.

The challenge to the nuclear plants--which the daily and periodical press often makes itself the spokesman of--as a matter of fact covers other, no less important debates: those that take place at the summit, domestically and above all internationally, and those that take place among experts. Typical here is the dialogue which for a year now has been taking place in many working groups in Vienna among hundreds of technicians from more than 50 countries within the context of INFCE initiative on the first full conference. However, on the success of these investigations could depend the development of the utilization of nuclear energy for peaceful purposes and, in particular, the production of electric energy from nuclear sources. The INFCE definitely is the clear symptom of the fact that we are going through a very delicate period in energy and nuclear evolution--although this is a symptom more of the nuclear challenge and the pause in nuclear power plant orders, which characterized recent years.

The competitive nature of nuclear energy was confirmed at the end of the sixties by orders for dozens of power plants in the United States, Western Europe, Japan, and the USSR, and in the principal industrialized countries of the world. The signing of the NPT in 1968 and above all the quadrupling of oil prices in the winter of 1973-1974 definitely seemed to have affirmed the arrival of this new energy source which, albeit progressively, was to have replaced petroleum, natural gas, coal, and water power resources in electric power generation.

Now we have 600 nuclear power plants either built or under construction; we also have the powerful development of natural uranium prospecting and mining; the construction of extremely expensive, complicated, and gigantic plants for the production of enriched uranium, the fuel destined to

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replace petroleum in electric energy generation; and the extraordinary expansion of the nuclear energy throughout the world; all of these seem to confirm the undisputed rise of a new era.

Over the past three years, however, new tendencies have emerged especially in the United States. And now anything might once again be up for discussion. It is no coincidence, by the way, that--even before new policies have been spelled out and taken shape--we note growing difficulties in the utilization of nuclear energy for electric power generation whereas orders for nuclear power plants have dried up almost everywhere and the nuclear part of energy plans is subjected to repeated examinations.

More than 100 countries signed the NPT and pledged to use the atom exclusively for peaceful purposes, at the same time accepting rigid controls. This is something that has never before been seen in the history of international relations, apart from the treaties that were dictated to others. In spite of that, the United States and other countries began to doubt the effectiveness of this treaty. Hence, in 1975, the initiative of the so-called Club of London, a meeting place for the most important nuclear countries in the world, which led to new understandings to be subjected to further controls and to the restriction on atomic fuel, technology, and plant exports. In his article, Karl Kaiser brilliantly summarizes the story of these past years.

The Club of London and the understandings emerging from it were the first but not the only events here. To counter the statements by Democratic candidate Carter, President Ford in October 1976, in the midst of the presidential campaign, came out with a lengthy statement clearly indicating the new tendencies in American policy. From the controlled development of the atom--which characterized the nuclear world from 1964 onward thanks to the amendment to the Mac Mahon Law and the United States Atoms for Peace Program--emerged the desire for turning toward a policy of bans, at least in certain key sectors, such as the production of enriched uranium and above all the utilization of plutonium; the reprocessing of irradiated nuclear fuel to extract this precious fuel; and, finally, the construction of fast reactors, those reactors which promised to produce more fuel than they consume.

In a series of statements in April 1977, the new American president Carter tried to lend substance to these new restrictive tendencies. He proposed measures which, primarily domestically, were supposed to stop the development and construction of fast reactors and, hence, the extraction and utilization of plutonium for peaceful purposes. These measures were then approved by the Congress with an appropriate law in February 1978.

Karl Kaiser quite correctly points out the following in his previously mentioned essay:

"Never before, since the announcement of Eisenhower's Atoms for Peace Program, has a president been so reserved if not implicitly hostile toward nuclear energy."

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Given the position of the United States and the importance of the American nuclear market, the repercussions on the other countries entail the risk of being quite enormous. The ban on the use of plutonium for the production of electricity, the subsequent stoppage of reprocessing and the indefinite postponement of fast reactors (although limited to the United States) could turn into a heavy burden on the energy and nuclear development of those countries--primarily including Italy, Japan, and also France and West Germany --which, in contrast to the United States, do not have conventional sources (coal, petroleum, natural gas, etc.), and which do not have enough uranium either and must therefore develop the technologies of plutonium and, hence, reprocessing and fast reactors. Only in this way will they be able to get a significant contribution to the solution of their energy problems from nuclear energy. This new nuclear policy could take us 30 years back. It is difficult not to remember the 1946 Mac Mahon law which prohibited almost any peaceful utilization of nuclear energy and any international collaboration.

Opposition to the new United States nuclear policy guidelines was swift in coming; it turned up on the highest level. Schmidt, Giscard d'Estaing, Callaghan and Owen themselves--although Great Britain's energy situation is different, in view of the discoveries of petroleum and natural gas in the North Sea and the coal reserves--the Japanese prime minister and his foreign affairs minister, Andreotti, Forlani, and Donat Cattin clearly indicated in the spring of 1977 that this policy was not acceptable and that it could have compromised the energy future and the economic growth of those countries.

A big debate took place at the Western "Supersummit" which, after those of Puerto Rico and Rambouillet, was held in London in May 1977. The final communique and the statements following it already hinted at the possibility of a compromise. What this boils down to is the reassertion of the indispensability of nuclear energy development, with the reservation that it should take place in the light of the requirement to avoid nuclear proliferation. We are still dealing here with the Atoms for Peace policy concept inaugurated, as we emphasized, by the United States 25 years ago with the amendment to the Mac Mahon Law and the subsequent extraordinary impulse toward bilateral and international collaboration.

The "Supersummit" authorized a group of nuclear experts to draft and formalize a compromise. That happened after a series of meetings held in Paris during the following July. The conclusion of the negotiations above all persuaded the other six Western countries (Canada; France; Japan; Great Britain; Italy and West Germany) to accept the American proposal for an international study on the peaceful uses of nuclear energy, a study which had already be labeled with the abbreviation INFCE.

The United States initiative thus was launched formally by the President of the United States on 7 August 1977. On that date, Carter announced the principles of the new American nuclear policy toward foreign countries. One of these principles (the seventh) consists in the American commitment to continue discussions with supplier and importer countries on a broad

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range of directives and international structures which would permit the attainment of their energy objectives while limiting the dissemination of the capacity to produce nuclear explosives and to explore the possibility of pushing through an international nuclear fuel cycle evaluation program designed to develop alternate cycles and to launch a series of international and American initiatives to guarantee access to nuclear fuel supply and the storage of spent fuel for those nations that pursue the same objectives of nonproliferation as does the United States.

We must remember that, guided by such objectives, the Americans in April 1977 had already launched an International Nuclear Fuel Cycle Evaluation Program (INFCEP).

The resolution of the group of nuclear experts--established by the London "Supersummit" of the seven industrialized countries of the West--was formalized in a document declaring the respective positions in detail: on the one hand, the positions of the United States and Canada; on the other hand, those of France, Japan, Great Britain, Italy and the FRG. The compromise that was worked out here was in particular based on the following understanding--in spite of the two differing starting positions which however were clarified in the final document prepared by the experts. The five countries in the second group (France, Japan, Great Britain, Italy and the FRG) joined in the American INFCE initiative in exchange for the acceptance, by the United States and Canada of the following two points: a) the results of the INFCE--whatever they might turn out to be would not be binding upon national nuclear policies; b) the INFCE must not involve any de facto or de jure moratorium in the nuclear programs of the participating countries, including programs dealing with fast reactors, reprocessing, and plutonium utilization.

The INFCE was then launched by a preparatory conference opened by President Carter in Washington between 19 and 21 October 1977. It was attended by 40 countries--including some of the world's principal industrialized countries--and some important international organizations, such as the IAEA of the UN; the EC; the IEA; the NEA of the OECD. In recent months, the number of 40 countries jumped to 55.

The October 1977 Washington Conference also approved the basic document for the operations of the INFCE which were to be concluded within two years from the start, that is, in February 1980. The initiative was developed within the context of eight study groups, to wit: group 1, fuel and heavy water availability; 2, enrichment availability; 3, long-term technology, fuel, and nuclear services plus heavy water supply guarantees in the interest of national requirements consonant with nonproliferation; 4, reprocessing, plutonium handling, recycling; group 5, fast reactors; 6, irradiated fuel management; group 7, radioactive residue management and storage; group 8, advanced reactors and fuel cycles.

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The study groups as we said earlier were headed by a TCC which consisted of all of the co-chairmen of the individual groups. An intergovernmental conference, consisting of the representatives of the countries participating in the INFCE, represents the summit of this entire effort. The study groups began their activities a year ago in Vienna, in the premises of and with the assistance of the secretariat of the IAEA of the UN. The first full conference as we said earlier took place in November 1978. It is difficult to make any predictions. For the time being, everybody is sticking to his position. The problem is as yet unresolved. The United States has been cautious if not downright opposed to the utilization of plutonium also for thermal reactors, reprocessing, and therefore also the construction of fast reactors. France, Great Britain, Japan, West Germany, Italy, the USSR, and other major industrialized countries are determined to continue on the way they started out on and that of course calls for the utilization of this precious fuel.

The various energy agencies of the countries participating in the INFCE do not work together to coordinate the work being done to develop solutions that would be acceptable to all. The various domestic energy situations, the availabilities of nuclear materials, the status of technological development and the situation concerning the nonproliferation agreements are only the main sectors in which the most obvious diversities appear. We must finally keep in mind that--as we stressed on earlier occasions--it appears rather difficult, for the militarily non-nuclear countries which therefore are deprived of the necessary information, to discuss the proliferating capacities for peaceful applications of nuclear energy which countries that have for quite some time been developing nuclear weapons.

Certain tendencies in present-day American policy--although they seem to have undergone a certain attenuation in recent times--furthermore clash with the policy pursued over the past 25 years and with the way nuclear proliferation itself had been handled. Here is what Karl Kaiser writes in his study:

"No country has changed its opinions on the matter of nonproliferation so quickly and so substantially as the United States." To confirm this statement, he quotes the declaration on the NPT by the head of the American delegation to the United Nations, Arthur Goldberg, on 15 May 1968:

"There is no reason whatsoever to worry that this treaty might impose bans or limitations on countries that do not have nuclear arms regarding the possibility of developing their own capacities in the field of nuclear science and nuclear technology.

"The entire field of nuclear technology, connected with electric energy generation, is today freely accessible and will continue to be even more so as a result of this treaty for anybody who wants to utilize this field. This is true not only as regards the present generation of electric nuclear power plants but also for advanced technology of fast breeder reactors which is still in the development stage."

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And Kaiser adds:

"This declaration heavily clashes with American policy after 1975, aimed at preventing the reprocessing of spent fuel (in other words, fuel already used in the reactor and earmarked for chemical reprocessing for the extraction of plutonium and residual uranium) and the development of fast breeder reactors so as to prevent the circulation of plutonium suitable for the manufacture of nuclear arms. As matter of fact, the laws submitted to the United States Congress in 1977 (and passed in February 1978) threatened to interrupt American nuclear assistance and cooperation toward any country that received or transferred reprocessing or enrichment technology and that reprocesses nuclear fuel supplied by the United States without prior United States approval. This raised the following question: up to what point do one or more countries have the right unilaterally to modify the consensus behind a universal treaty?"

And he also said:

"In a treaty that proposed to prevent proliferation through the control over technology and renunciation of the status of nuclear weapons power (Articles I and II), unlimited access to nuclear technology, with proper safety measures, is considered essential by all countries not having nuclear weapons.

"These negotiations led not only to Article VI which, in its final paragraph, guarantees this access, but also to many clarifications and official interpretations from the United States government, clarifications and interpretations which helped overcome the reluctance of many governments during the frequently by no means easy ratification procedures."

Let us be quite clear on this. The fight against nuclear arms proliferation is sacrosanct. But it is absurd to conduct it through brakes upon peaceful nuclear development. The demand for pledging to refrain from utilizing atomic techniques and materials for utilitarian purposes--such as the demand to verify the compliance with such a pledge--is understandable. But the ban on utilization for peaceful purposes is unacceptable. This is true above all for those countries which, such as Italy, in addition to being characterized by an objective energy necessity, so far complied with the principal agreements on nonproliferation, proving that they were continuously observing all clauses and information principles. On that score likewise we agree with what Kaiser wrote.

A much stronger push towards nuclear proliferation by the way comes from those countries which so far have done little or nothing to reduce their military nuclear arsenal even though they signed the NPT. On the contrary, the nuclear arms race involving the United States, the USSR, China, and also France and Great Britain continues. It would be serious to hinder the peaceful applications of nuclear energy in countries that signed the NPT--such as Italy, the FRG, Japan, and so many others--since this is today the

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only alternate energy source for them. As far as Italy is concerned, this was spelled out clearly in the National Energy Plan approved by the government and parliament in recent months.

As for the rest, the heads of state and of government of the seven principal Western countries at the "Supersummit" held in Bonn last July declared that "the further development of nuclear energy is indispensable and the tendency toward the postponement of nuclear programs must be reversed."

The fundamental problem perhaps is the problem of making the existing international instruments work well and above all implementing the NPT integrally. This weakness is essentially due to two factors: the lack of universality in the treaty and the disparity of treatment among nuclear and non-nuclear countries, further accentuated by the imperfect implementation of the NPT. From the lack of universality therefore springs further discrimination among non-nuclear countries which signed the NPT commitments and non-nuclear countries which, continuing to remain away from the treaty system, practically enjoy greater freedom in developing their own nuclear activity. The militarily nuclear countries--the biggest suppliers, at least potentially, of plants and technologies--are in an excellent position for restoring this situation by doing away with the discrimination inherent in the NPT and above all the discrimination deriving from its partial implementation. They must in other words, although progressively, renounce their respective nuclear arsenals and actively collaborate toward the development of peaceful nuclear industry. If Articles IV and VI of the treaty were implemented fully and completely, this would perhaps put an end to the temptation, on the one hand, to keep open the option of acquiring nuclear arms and, on the other hand, of remaining outside the NPT itself. The next treaty "review" conference might offer an opportunity for examining this problem complex and seeking better solutions in order to make the NPT really effective.

It is certainly essential to prevent nuclear arms proliferation. But, along with the political determination of the non-nuclear countries to refrain from acquiring nuclear arms for themselves, we must also first of all have a political determination on the part of countries that do have nuclear arms to put an end to the nuclear and conventional arms race and rapidly to move toward general and complete disarmament under effective international control, as Article VI of the NPT demands, by the way.

As Karl Kaiser points out so appropriately:

"The world powers do not seem to see the contradiction between a nonproliferation energy policy which involves everybody and the continuation of their own nuclear arms race; but the rest of the world does see it."

The time definitely has come now to concern oneself more with the nuclear arms that exist and that keeps increasing, rather than those that might be built. By the way, over the past 30 years, the only nuclear arms proliferation which we have had came through military nuclear programs, never through civilian programs.

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The IAEA can play an important role in returning the issue to its true limits, preventing the current studies from leading to a stoppage of nuclear developments, a development which by the way is one of the fundamental objectives codified in its charter.

If effectively conducted with strict objectivity and a sense of responsibility, the investigations and activities of the INFCE will constitute useful elements of evaluation in finding the best solutions suitable for meeting the requirements of the exporting countries and the nuclear materials consuming countries. This objective will be attained if we take into account the various domestic situations of the individual countries that may require strategies that differ from one case to the next. A big step would then have been taken toward the restoration of that atmosphere of trust and mutual respect so necessary to peaceful coexistence and the prosperity of humanity.

The debate on nuclear policy has barely begun. The INFCE initiative, which is being seriously considered, is only the tip of the iceberg. We must also remember that we are going to have the second NPT "revision" conference in 1980, as explicitly provided for in the treaty. The ban on plutonium, on fast reactors, and on reprocessing in any case does not constitute a group of correct measures designed to attain the objective of nuclear nonproliferation. It will be a good idea to follow this issue carefully: the vital interests of Italy, Europe, and the free world are at stake. It would be very serious if the new American policy were to contribute to increasing the difficulties encountered in nuclear programs since those programs have become increasingly necessary in view of the deterioration in the petroleum and energy crisis.

We must be grateful to ENERGIA E MATERIE PRIME for having once again called attention to this essential issue by publishing so pertinent and in-depth a study as the one prepared by Karl Kaiser.

Comments by Francesco Calogero

The central thesis in Kaiser's article is that United States policy on the nuclear arms proliferation problem has changed drastically with the advent of the Carter administration. I substantially agree with this evaluation; but I disagree with the judgment which Kaiser presents regarding this change in policy--a judgment which, if not entirely negative, certainly is full of reservations. As I see it, American policy before Carter had seriously underestimated the risks implied in a prospect of nuclear arms dissemination; this even went all the way to rather ill-considered initiatives, such as Kissinger's utilization--during a phase in the Arab-Israeli negotiations--of the offer to supply Egypt and Israel with nuclear reactors as a negotiation element. Current American policy has a rather more realistic perception of the danger implicit in nuclear arms proliferation; although, in my opinion, it still continues to underestimate this risk when it comes to comparing it with those rather less significant risks associated with any possible imbalances in any parameter within the strategic balance among the

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superpowers, it is clear that the overall picture is one of substantial stability, if not American preponderance due to its technological advantage, although with a disproportionate second-strike deterrent capacity guaranteed on either side.

A policy of containing the dissemination of nuclear arms is very difficult and complex and is doomed to failure if it is not accompanied by a clear indication--which must first of all come from the two superpowers--as to a radical change in the nuclear arms race in the sense of a decisive turn toward containment and reduction agreements (and the natural framework for this process is the SALT Treaty). But any evaluation of such a policy presupposes a realistic although unpleasant analysis of the consequences of a failure of the nuclear arms containment policy. After having done this (over a period of time measured in decades and not centuries), we will be able to face the other factors involved, those of an economic and industrial nature, which necessarily will also be affected by any political decision concerning the prospects of nuclear arms proliferation.

In Kaiser's article, which more than anything else seemed to me to be a defense of West Germany's nuclear policy, I did not find this analysis which would seem to me to be fundamental in being able realistically to discuss nuclear arms proliferation. That analysis is missing both from a general, preliminary viewpoint concerning the evaluation of the basic terms of the problem and from a specific viewpoint. For example, while a large portion of the article is devoted to the issue of the sale of the entire nuclear cycle to Brazil by German industry, there is no analysis of the real reasons why Brazil wants to acquire such plants, particularly those that involve reprocessing and enrichment. Might there perhaps be somebody who could doubt that a major motive, perhaps the main motive, was the intention to acquire or at least move closer to the nuclear option? It suffices to ask anybody who has an even superficial knowledge of Brazil and its current ruling class to remove any doubt on that score. And even an only superficial knowledge of the situation in Latin America would enable us to understand what the acquisition of nuclear arms by Brazil would mean (even if it were only to explode such arms demonstratively "for peaceful purposes," as India did) or what perhaps even only a clear step in that direction would signify. Is this not perhaps the yardstick by which to judge the "business deal of the century," rather than considering it a German commercial success? And would not the Carter administration have good reason to expect greater cooperation from its allies? After all, the Carter administration is paying a very stiff political price for the limitation which it is imposing upon American nuclear industry in continuing an anti-proliferation policy which, after all, is in the interest of the entire international community.

This, by the way, is not a matter of suggesting that the European allies of the United States simply adjust to American interests; rather, they should manage now to recognize their own interests, they should correctly evaluate their own priorities, among issues touching essential interests, matters of life and death, and issues which involve commercial advantages and

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disadvantages. We must not forget that a world moving toward nuclear proliferation will be dangerous not only for the United States or the Soviet Union; it will be much more dangerous for all other countries, including our countries in Europe. The greater awareness which the United States and the Soviet Union are today displaying with respect to this point does not spring from the fact that they alone face the risk of proliferation because the opposite is true: it springs from the greater sense of responsibility, regarding the future of the entire international society, which is associated with their role as superpowers.

Considerations similar to those entertained on the sale of technology with a high proliferation potential to Brazil (a country which did not sign the NPT nor, in any effective way, the Tlatelolco Treaty outlawing nuclear arms in Latin America) apply to the attitude of the European countries regarding the INFCE, an attitude full of reservations and essentially preoccupied with blocking the establishment of stiff requirements and restrictions that could interfere with the development of nuclear energy, displaying very little sense of responsibility by not giving a hoot about the prospects of proliferation and as a matter of fact acting in concert with those American industrial forces that are fighting with all means at their command against the Carter administration because it placed restrictions on the development and export of technology with a proliferation potential. In this connection it appears truly captious on the part of Kaiser to cite, in support of the thesis in favor of the immediate economical practicality of plutonium reprocessing, denied by the Carter administration, certain "American studies" which then lead on to the Atomic Industrial Forum--see footnote 7 in the Kaiser article--that is to say, the lobby financed by American nuclear industry precisely in order to fight against the policy of the Carter administration.

But it is often said that the primary blame for the current danger of nuclear proliferation must be placed upon the nuclear military powers and first of all upon the two superpowers for the bad example which they set and continue to set through the development and construction of ever more sophisticated nuclear arms. Precisely. But one must then act coherently, that is to say, one must help those forces that are trying to push through a common-sense policy in this field, against that incrustation of constituted interests and old political-ideological concepts that are opposed to any arms control accord between the United States and the Soviet Union. Such a force consists precisely of the new Carter administration whose advent in this field signified a real quality jump. Nevertheless, the influence of the European allies on the other hand generally ran in the opposite direction, in fact constituting support for the coalition of "hawks" against the "doves" in the new administration. Here we might for example think of two particularly significant developments in terms of their impact on the prospects of nuclear proliferation: the mininukes (this category also includes the so-called "neutron bomb") and the cruise missiles. Both of these innovations have very negative effects stimulating the nuclear arms race, increasing the risk of the use of nuclear arms in

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a war, eliminating any future prospects of nuclear disarmament¹. But with respect to both of these developments, the attitude of the European allies was, to say the least, ambiguous; as a matter of fact: it constituted support for the "hawks" who do not want to hear any talk of limitations, rather than for the "doves" who underscore the risks implied in the introduction of these new strategic-technological elements.

With respect to the SALT negotiations, the attitude of the European allies likewise is full of suspicion, as if the prospects of an accord between the United States and the Soviet Union should be viewed with concern and as if it were not something like the most positive development in international policy, the only kind of development that could arouse some measure of hope as to preventing vast disasters during the next decades.

Finally let me make some remarks on Italy's specific action in this field. Italy fortunately does not have any political force (except, perhaps, for the extreme right) which would push for the acquisition of nuclear arms (only some circles in the high bureaucracy, essentially headed by ambassadors Gaja and Ducci who, respectively, hold the offices of secretary-general and of director of the political affairs division in the foreign affairs ministry, and Dr Albonetti, head of the international affairs division at the CNEN, years ago made some move in this sense and with great determination but without success are fighting to prevent Italy's joining the treaty against nuclear arms proliferation). It would therefore seem logical that Italy--not having any intention to acquire nuclear arms (neither by itself, nor in any European scheme)--should work very hard to make sure that this choice will be shared by the greatest possible number of other countries; in other words, it should decisively support the international design based on nonproliferation for which the NPT is the essential instrument. That could manifest itself in many ways--also by supporting the current effort undertaken along those lines by the Carter administration. We noted earlier that this support however is not being given and, if anything, there is a tendency to support any effort aimed at sabotaging that policy.

But there is worse to come: out of stupidity and insipidness, Italy's policy on more than one occasion was such as to be capable of being interpreted internationally as the manifestation of an inclination toward the maintenance of some kind of nuclear option or rather weak support (to say the least) for the international nonproliferation policy; this obviously constitutes an incentive for further proliferation, if only because it supplies arguments to those groups which, in other countries, perhaps not too far from Italy, are fighting to keep the nuclear option open. I will give two examples here. The first one involves the existence in Italy of a laboratory managed by the military, the CAMEN [Center for Military Applications of Nuclear Energy], which is concerned with nuclear matters and which is not subjected to any kind of international inspection. It would be preferable for this outfit not to exist at all and any nuclear activity carried out there should be switched to the CNEN and should be conducted in an entirely open fashion; but even if the CAMEN were to continue as it is (there may perhaps be some justification for the maintenance of a specific military competence in

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nuclear matters for defensive purposes), it should voluntarily be opened to international controls (IAEA and Euratom).

The second example involves the designation, by Italy, as representative on the IAEA board of governors, of that same Albonetti whom we mentioned earlier as one of the individuals with a clear inclination toward the acquisition of nuclear weapons. In the magazine POLITICA E STRATEGIA, Albonetti managed to publish an article in which he analyzed in detail the possible cost of an Italian military nuclear program; the same issue of that magazine began with an editorial by the managing editor (a man by the name of De Jorio, subsequently indicted on criminal charges in connection with a presumed attempt at a fascist coup), explicitly hoping for an Italian military nuclear program. When this episode came to a head, Albonetti was director of the international affairs division at the CNEN and the article in the magazine POLITICA E STRATEGIA did not even have the standard statement dissociating the CNEN from the ideas presented by the author! A minimum of correctness on his part should have persuaded him to resign and a minimum of backbone on the part of the leaders of the CNEN should have made them appoint somebody else to the job. Not only did nothing of the kind happen but after a short time he was sent to the IAEA board of governors as Italian representative. It is noted that, apart from the above episode, Albonetti was always a determined and declared opponent of the NPT, in other words, he was very much opposed to Italy's joining in that treaty. And the primary mission of the IAEA is to apply the safeguards provided for in the treaty. How otherwise could one interpret the appointment, to the IAEA, by Italy, of a man with such a record, if not as an intention to sabotage the NPT as much as possible?

I do not as a matter of fact believe that this interpretation is correct but I did encounter some difficulty in convincing my international conversation partners of that. The truth is that factors of prestige and power, in the case of CAMEN (and the obsession with secrecy in the military field which makes us look much more like the Russians, rather than the Americans) as well as behind-the-scenes government, in the case of Albonetti (a Christian Democrat) prevailed over any other considerations. We mentioned these episodes here to underscore the very low priority which the Italian ruling class is giving to the problem complex inherent in nuclear arms proliferation. A sense of total irresponsibility on that score prevails here. And it is this very attitude which it seems to me I also found in the article by Kaiser, although in a less commonplace manner.

The explosion of a single nuclear bomb can destroy a city--for example, Rome or Berlin (West and East) or Buenos Aires or Karachi--killing hundreds of thousands of individuals, perhaps even millions, in just a few seconds, and leaving as many people doomed to die within a matter of days or weeks. This is the terrifying risk we must above all keep in mind when we tackle the problem of nuclear arms dissemination or proliferation. But it so happens that recalling those figures is now considered to be in bad taste; anybody who does that runs the risk of being accused of wanting to displace the

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calm analysis of reality with fearful images. The truth is that the problem of nuclear arms proliferation springs precisely from these catastrophic prospects. And this is the situation we must face whether we like it or not; and although it is true that nobody has any easy solutions to propose, it is also true that, by avoiding the substance of the problem, we will not be making a contribution toward clarity.

Comments by Antonio Gambino

The basic problem which Karl Kaiser's article invites us to think about is this: can we indeed slow down nuclear proliferation? And, if we cannot, whose fault is it?

The answer to the first question, it seems to me, is definitely negative. Since the NPT took effect, one country--India--officially joined the nuclear club and another two countries--Israel and South Africa--entered it in fact, while others--primarily Brazil and Argentina--with determination embarked upon the same road and do not conceal their ambitions in this field.

In view of this situation, the problem of possible errors and sudden moves, which might be made, undoubtedly comes up immediately in a preoccupying fashion. And this is indeed true. But we must also keep in mind that, even in the light of the new things that now look so negative, not everything can always be stated in terms of direct responsibility. This is so because there are developments which are a part, if not of the "force of things," then certainly of the logic of a specific world and these are things for which people try to find somebody to blame; above and beyond individual human beings and individual actions, we must go back to the entire basic orientation that sprang up during a certain period of time. Two facts must be kept in mind regarding nuclear proliferation. The first one is that the dissemination of nuclear technology--a dissemination destined to continue because of the progressive rise in oil prices and growing energy difficulties--tends to wipe out the dividing line between the peaceful sector and the military sector and therefore enables a growing number of countries rapidly to acquire atomic devices; at that point, the problem becomes only a problem of political determination. The second fact is that the most recent discoveries showed that building a "bomb," even of a very primitive type (but nevertheless with terrifying destructive force), is an undertaking that is much less complex and expensive than it was considered to be about 10 years ago; this is true to such a point that people are seriously discussing whether, in addition to nations as such, individual terrorist "pressure groups" might not now be in a position to put together some home-made bombs and explode devices of this kind. And once such an explosion takes place--causing "only" a few scores of thousands of dead--nobody could predict what kind of psychological chain reaction might be triggered by that. Against the political-economic background prevailing today, there is, in summary, something which precisely pushes us toward the indiscriminate dissemination of nuclear arms. Having said this, the matter of "responsibility" cannot be considered to be completely closed. Instead, we must shift our attention and the way it was designed and implemented.

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The purpose of this treaty, as we know, was to try to prevent the dissemination of nuclear arms; and this is why its certainly noble ultimate purpose was warmly supported and defended by many. It is however extremely superficial to judge a political initiative only on the basis of the "general" purpose which it has. A more in-depth analysis as a matter of fact will show that the means used can be not only inadequate but counterproductive and that a reality of entirely different nature might be concealed behind the pretty words. Both of these observations appear pertinent in connection with the NPT.

In essence this, as a matter of fact, is an "unequal treaty" (or an iniquitous treaty), as if there had ever been an equitable one, anyhow. It springs from an initiative of the two superpowers which, starting from the entirely too real problem of the new dimension of the danger introduced into the life of the planet by the invention of nuclear arms (and obviously destined to grow with the increase in their number), propose and specifically seek to impose upon all countries not yet having nuclear arms, not only a unilateral pledge to renounce their own construction but a complex system of controls designed specifically to prevent any project of this kind--all of this without in turn accepting, we would not exactly say supernational control over the development of armaments with maximum destructive force, and without even a multilateral discussion on that topic. The process designed to put an end to "horizontal" proliferation, in summary, was not balanced by any attempt to stop or at least slow down the "vertical" proliferation process which in fact is no less dangerous; that was the indispensable requirement in giving the NPT that minimum of internal equilibrium and, hence, of credibility, which would be capable of transforming it from a pice of paper into an instrument with, albeit, limited effectiveness.

The consequences of this state of affairs can be seen the moment the treaty must be effectively signed and implemented. Although it is in fact true that it was signed and ratified by an absolute majority of the countries in the UN, a quick look will show us that this majority reveals entirely peculiar characteristics, being made up almost entirely of the very small countries of the Third World, while very few among the biggest and industrially most advanced countries subscribed to that treaty--to such a point that, if we take as parameter, not the number of countries in the two camps, but their wealth and their dimensions, we find that the countries that signed the NPT but already have an atomic law and those that, in not signing it or not ratifying it, retained their free choice in this sector, involve three-quarters of the inhabitants of the globe and control an identical proportion of the world's available economic resources.

Nor can one say that the original imbalance was eliminated and corrected with the passage of the years. In spite of the various SALT negotiations, the arms race of the two superpowers was continued and still continues at a sustained pace--to the point where the United States is investing 5-6 percent of its GNP for military expenditures while the USSR is spending at least twice that percentage. Besides, as indicated in Kaiser's article, the United

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States is far from having overcome the tendency to impose--instead of negotiating--systems which in its judgment are better when it comes to reducing the dangers of proliferation; the United States appears headed toward a restrictive policy which entails the risk of harming the economic and technological development of friendly countries and allies likewise. The result is that drives in the exact opposite sense have thus been set in motion.

Things being what they are, what conclusions can we derive from that? That atomic arms proliferation is inevitable? That it is therefore necessary quite fatalistically to accept the prospects of a world in which the general dissemination of nuclear devices will permit even the smallest country to unleash a war of global proportions?

Perhaps the solution resides in separating the first of these conclusions from the second one. Because, if in medium-range terms it is probable that humanity will find itself living in a world in which the centers capable of unleashing an atomic war will have doubled or tripled as compared to the current level, the temptation can and must be to avoid a test of strength of this type from actually coming up. In other words, the mistake that was made so far was to concentrate all attention on the attempt physically to prevent nuclear dissemination through imperfect and often hypocritical undertakings. In the future, on the contrary, attention should be devoted to the study of political initiatives capable of removing the danger of a test of strength based on nuclear devices--either through the creation of stronger balances or through the spread of a mentality that would demonstrate the inadequacy of atomic retaliation as a solution to any conflict. This is not an easy road but something can certainly be done. Above all, it is the only realistically possible road.

Comments by Cesare Merlini

Kaiser's analysis of international nuclear development between 1974 and 1978 is complete, competent, and keen. He describes the German-American tension which was at the center of an interesting review that was all the more authoritative since Kaiser kept tabs on it from very close by and often experienced it in person. There is therefore no need to correct any significant aspects. I would instead like to place it within the broader problem complex of nonproliferation and I would like to add some considerations.

1. The problem of nonproliferation or the problem of a "worldwide nuclear order," according to the title of Kaiser's article, is encountered with characteristics of its own in the three "sustaining axes" of international relations, the East-West, the West-West (if that is what we can call the complex of relations between industrialized countries), and the North-South axes.
2. In relations between Washington and Moscow there has for quite some time been a rather complete understanding not only on the principle which precisely

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involves avoiding nuclear arms proliferation in countries that are not nuclear but also on procedures of preventing this sort of thing. The preparation, stipulation, ratification, and verification of the NPT brought the practical implementation of this undertaking. The observation of the inadequacies of the treaty and the need for new measures to compensate for them again produced agreement among the superpowers: the United States and the USSR find themselves together in the "club of exporters" and in the INFCE group. In this entire complex of East-West negotiations, to place limitations on armaments, the chapter of nonproliferation is the easiest. Agreement also seems to continue on the present phase of the crisis of detente and frequent interventions in local conflicts. The truth is that, when it comes to the implementation of the relative policies, the USSR seems to exert itself less than the United States where nonproliferation is one of the central commitments of the government and Congress to the point where they do not hesitate to turn it into an element of tension in relations with allies. Neither of the two superpowers however is thinking of promoting military nuclear capacity while they send out, directly or indirectly, with a certain measure of dissociation, other weapons, soldiers, "technicians," and "advisors." Since there is this understanding, there is little talk about it; but the important thing is that it does exist. The current questions are these: if tension should increase in number and in intensity, is there some possibility that even this link between Washington and Moscow might break? What will be the effect of the "Chinese card" played by the White House (China, as we remember, has always been the declared enemy of non-proliferation policies)?

3. It is difficult to talk of harmony between America and Canada, on the one hand, and Japan and Europe on the other hand (with the English about half-way between). The phase of greater tension however seems to have been overcome. A certain partial accord or at least a certain understanding for mutual positions has been taking hold. It is agreed that an ill-considered export race is dangerous (this is all the more tempting the greater are the internal difficulties of the nuclear market in the democratic countries). The birth of the "club of exporters" in 1975 with the presence also of the Soviet Union, for the reasons given above, is significant in this connection. Senseless contracts, such as those between France and South Korea and with Pakistan, have been canceled for better or worse; others at least as bold, such as those between Germany and Brazil, were surrounded by a certain number of safeguards which reduce the inherent risks. Let us hope that caution will also be present where we do not know what is happening (Kaiser rather shamefacedly does not tell us anything about nuclear developments in South Africa).

The main bone of contention, as we recall, is reprocessing, that is to say, that chemical operation through which plutonium is extracted from used fuel in order to turn it into new fuel for thermal reactors but above all for fast reactors. The Americans obtained the support of the Europeans (and the Japanese) who together are the chief consumers and producers of plutonium in holding this option open which signifies proceeding then with the development

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then of fast reactors; they seem to accept reprocessing although they always try to surround it with limitations and precautions. They must certainly also have noted the reactions produced by their unique procedure of preaching understanding and applying unilateral measures.

The FRG has also changed its position and no longer advocates the idea that everybody can do his own reprocessing at home and, although sticking to the treaty with Brazil, they took upon themselves the pledge of instituting controls over nuclear exports. France, as we know, remained firm on its pledge to go ahead with fast reactors and revealed greater inclination to accept antiproliferation regulations.

The Iranian developments should teach everybody something about the reliability, stability, and profitability of certain markets that are courted with too much carelessness under the impetus of need. Control over nuclear industry must not expose the international situation, which is already subjected to severe tensions, to any further risks. We must realize that there is excessive sensitivity regarding nuclear energy and that any possible mistakes can be seriously counterproductive in dealing with that industry.

4. This brings us to the third "axis," the North-South axis. Some countries in the Southern Hemisphere need nuclear energy because they are poor in resources of their own; others have lots of petroleum or gas but are thinking in long-range terms, when these resources will have run out or when they will be in short supply; others, still, consider nuclear energy an instrument for local power or also only a status symbol, to the extent that these plants are an indication of advanced technology and also a possible (although tough) way to acquire military devices; and then there are those that are found in more than one of these categories. The fact is that the largest number of potentially "proliferating" countries can be found in the Third World. At the same time it is precisely here that we have the greatest possibility for developing alternate energy sources, the so-called soft sources, such as solar heat, wind power, and the movement of the tides; this is true for two reasons: these sources are often abundant in those regions; and the required technologies are more easily accessible and the pertinent industries are of much smaller proportions.

On the other hand, many of those countries not only are juicy markets for a very strong industry but also present some convincing arguments, such as the exchange between technology and raw materials. Thus, for example, the agreement between West Germany and Brazil calls for the transfer of significant quantities of uranium from the latter to the former in exchange for nuclear power plants (and the reprocessing plants).

In summary, while the agreement on self-imposed limitations among exporting countries is necessary and a priority matter, it cannot be sufficient. It is necessary to involve and not to discriminate against the developing countries and those that are on the road of industrialization. Their participating in INFCE, including those that did not sign the NPT, is a positive fact, even though this group has not yet committed itself very much, at least in the current phase.

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5. Among the above-mentioned points, Kaiser mostly covered the third point, the one pertaining to West-West relations. In his article, and in these notes, it is emphasized that these countries have gotten closer to each other in their positions. But the fact remains that the points of departure between Europe (and Japan, on the one hand, and the United States (and Canada), on the other hand, are different; there are two reasons for that. First of all, there are abundant energy sources in North America, as we know, much more so than in Western Europe (Japan almost has none at all) which is why recourse to nuclear energy and especially fast reactors (which do not require much uranium) is considerably less urgent and may not be worth the risk. In second place-- and this is the argument that is less commonly mentioned--the Americans, in terms of their political choices, are primarily guided by considerations of security, must more so than the Europeans (and the Japanese) who are accustomed to being protected by others.

We must keep these two fundamental differences in mind in order to realize that agreement is difficult and that negotiations will be lengthy.

6. To find an agreement which would permit maintaining the nuclear option-- which we cannot renounce--together with the broadest possible conditions of security we must carefully examine the proposed solutions which are of three types.

Political solutions. The important thing is to work on the motivations (that is to say, to facilitate conditions of global and local security, guaranteeing at the same time the broadest access to energy sources), on capacities (assuring and at the same controlling technology transfer), and on consequences (providing for possible countermeasures).

Technical solutions. Selecting and developing the enrichment and reprocessing techniques that would be the safest.

Institutional solutions. Defining cooperation and institutionalized protection both on the level of rules (treaties and pertinent instruments) and on the level of plants (multinational centers, highly protected).

The first of these cannot be the subject of a single negotiation. They constitute a problem which emerges in various places and which entails the entire international atmosphere. The INFCE group discusses the second of these types of problems, encountering much difficulty as we said earlier. But above all we have here a careful examination of the possibilities of working out institutional solutions because they look the most promising.

Comments by Carlo Schaerf

Karl Kaiser's article on the search for a worldwide nuclear order represents a review of the efforts made to prevent nuclear arms proliferation.

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In recent years, major concerns have come up in the United States to the effect that the new push toward nuclear energy, following the 1973 oil crisis, might lead to the acquisition of "sensitive" nuclear technologies by developing countries. The acquisition of such technologies would constitute a noteworthy step forward in terms of the instruments necessary for making a nuclear device and this would appreciably shorten the time between the decision to make a nuclear device and its actual production.

The episodes that most alarmed American public opinion were the Indian "peaceful" nuclear explosion and the agreements on the construction of fuel reprocessing plants between the FRG and Brazil and between France and Pakistan.

The worries about nuclear arms proliferation had some years ago or so led to the NPT. And this result calmed the worries of American circles interested in these problems for a certain period of time. However, although the NPT was faithfully complied with by all non-nuclear countries that signed it and although none of them in fact made any proven efforts to acquire nuclear arms, the same cannot be said about the superpowers regarding the commitments undertaken in Article 6 of the treaty. As a matter of fact, Article 6 committed them to conducting negotiations in good faith in order as quickly as possible to achieve a reduction in nuclear arms and then to move on to complete nuclear disarmament. But no results have been obtained in that direction.

The NPT foresaw a world in which nuclear arms would gradually assume less and less importance due to the progressive reduction of nuclear armaments. In this way, the non-nuclear countries would not have any incentive to make the tremendous financial effort required in order to obtain an instrument for themselves which would be gradually eliminated by those who had it. Instead, in recent years, the superpowers not only failed to achieve any result as hoped for in Article 6 but it is now quite clear that there is a concept prevailing in the United States and in the Soviet Union to the effect that nuclear arms have a fundamental stabilizing effect on the international situations, not only in strategic terms but also in tactical terms, and that the security measures put into effect reduced the risk of nuclear incidents to a politically acceptable level.

In this way it has become increasingly difficult to maintain that possession of nuclear arms can be considered a positive thing for the superpowers and a negative thing for the other countries.

India's nuclear explosion, the preparations made in that direction in South Africa, and the interest displayed in nuclear arms by countries in difficult political situations, such as South Korea and Formosa, alarmed American scientific-political circles which addressed themselves to the problem as to how one can continue to prevent nuclear proliferation effectively if the premises of the NPT are not realized.

The search turned toward solutions of a technical character which, although they do not guarantee nonproliferation, nevertheless make it much more

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difficult to acquire fissile material suitable for making nuclear devices and which in particular enabled the technology and nuclear fuel supplier countries to realize sufficiently in advance that some countries did decide to build the bomb. This is very important since the experience of South Africa demonstrated that political pressures and perhaps also military threats from the superpower can dissuade a medium-sized country from continuing on the road of military armament.

But the road adopted was the road of discouraging the use of plutonium in every possible way, either by postponing the reprocessing of fuel irradiated in the reactors--so that the countries using conventional reactors, that is, reactors with lightly enriched uranium, will never get any plutonium that can be used in making a bomb--or by slowing studies on breeder reactors.

This policy clashed with the decision of some European governments to continue with their planning and construction of fast reactors, since only they make it possible to use a large portion of natural uranium and since only they therefore guarantee vast autonomy with respect to the countries that produce such raw materials.

The compromise which seems to emerge today is substantially the one according to which the most heavily industrialized countries will calmly continue with their nuclear policy but will prevent motives of commercial competition from persuading them to transfer "sensitive" technologies, such as reprocessing and isotope enrichment plants, to the developing and politically most unstable countries.

We are thus moving toward a severe restriction on the dissemination of nuclear technologies also for peaceful purposes, with clear discrimination against the developing countries.

The success of this policy is obviously tied to the energy hunger which will exist in the world during the next several years. While indeed the construction of a large number of nuclear power plants seemed certain in 1974, the prospects of putting up many nuclear power plants appears severely reduced in many countries today. This was promoted not only by the antinuclear campaigns but also by the dedramatization, in part, of the oil crisis and the economic crisis which led to an increase in energy consumption less than what had been anticipated. It therefore seems that the success of the policy desired by the United States will not depend so much on its capacity to convince the other countries to the effect that it is in their interest to remove the specter of nuclear arms, but rather on the energy situation in the next several years and the degree to which the various countries feel threatened in terms of their energy needs.

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