SOME INTERNATIONAL ASPECTS OF ATOMIC POWER DEVELOPMENT*

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When eighteenth century man—and particularly the Englishman—first developed the ability to utilize coal for the production of steam power, the world entered the initial stages of what we now label The Industrial Revolution. At the beginning of the twentieth century, petroleum made its appearance as a fully feasible energy source and significantly affected that Industrial Revolution. In both instances, the results of these two triumphs in human technological achievement were not merely domestic, however, though national economies, national social relationships, national ideologies, and national political practices were greatly modified to different degrees and at different rates of speed. The entire character of international relationships and activities also underwent tremendous reformation. Certainly no one can contemplate the social revolutionary and anti-colonial forces which presently dominate relations between the industrial and underdeveloped areas of the world without simultaneously according recognition to the formative impact on those relations of these two great modern power sources. Today, we confront another major technological advance in the power field, and those of us who are seriously concerned with its potentialities must necessarily consider its international aspects alongside its domestic implications. For there certainly is little justification for believing that the role of atomic power in international affairs will be much less consequential than that of coal and petroleum. Even if such power does not, of itself, inaugurate a second Industrial Revolution, as some enthusiasts have predicted, its global effects and potentialities still remain considerable.

Americans, in particular, have a vital interest in the nonmilitary aspects of the "international atom." The reasons for this are twofold: on the one hand, our leadership position in international affairs compels attention to any development of the magnitude and possibilities of atomic power; on the other hand, this nation's great reserves of fossil fuels moderate the intensity of our desire for immediate domestic utilization of this new force in whose development we have pioneered and, thereby, promote both governmental and private attention to the ever-louder foreign demands

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for a opportunity to employ this latest technical achievement. The necessities of world leadership thus combine with the benevolence of nature to focus a considerable amount of American attention on the international political and commercial significance of atomic power. In particular, in this age of constant threat to national survival, the advent of atomic power constitutes a special challenge to governmental policy. It, therefore, seems only proper that an exploratory discussion of this type enter the complex and ill-defined arena of international affairs through the passageway afforded by American foreign policy.

I

ATOMIC POWER AND AMERICAN FOREIGN POLICY: PROBLEMS AND POSSIBILITIES

The Nature of the Relationship

The reasons for insisting on the importance of including atomic power as a component of American foreign policy have already been suggested above. Because atomic power provides a new energy source capable of significant and even gigantic socio-economic results, because it offers some answers to important economic problems and aspirations of our major allies as well as of strategically crucial underdeveloped regions, because we are leaders in the atomic energy field as well as the dominant leader of the organized noncommunist world, the potentialities of atomic power must not only be harnessed for peaceful purposes, but in the interest of America's world position and international objectives. If it is important for American foreign policy to contain economic and technical and psychological subpolicies, it is also equally important that there now be added an atomic power facet to our governmentally directed relations with the world.

The justifications for incorporating this new energy source into our foreign policy lead quite logically to some general considerations pertaining to the nature of the role which such a technological development can play. What, in other words, are the requirements for any sound union of atomic power and foreign policy? Much of the answer to this highly important question is to be found in a brief consideration of the basic characteristics of this new force.

To begin with, we must recognize atomic power for what it is in the field of human endeavor: a form of energy which can be employed to generate electricity and, thereby, operate machinery. As such, it has significant potentialities both for industrialism (power and propulsion) and for agriculture (purifying and then pumping irrigation water, and manufacturing fertilizer). The fact, as we know, that such power can be obtained from small quantities of fissionable material, instead of the presently required huge amounts of fossil fuels or falling water, gives it an exceedingly important mobility. From the perspective of foreign policy, however, these basic features of atomic power clearly designate its role as that of an instrumentality, a policy weapon which bridges the economic and technological facets of human affairs. As such, this non-military cousin of the atomic bomb and artillery shell must be incorporated into American foreign economic and technical policy

in just the same way that its explosive relatives have been integrated into national military policy. It is not, in other words, a substitute for any present component in our foreign policy so much as a new dimension which will have conditioning impact on already established programs but will not replace them. Given this fact, any real insight into the nature of atomic power's international role requires some review of the basic objectives of contemporary policy and, particularly, of its economic and technological components.

The foundation of American foreign policy, like the substructure for that of any other nation-state, must be the promotion of national survival, material well-being, and freedom. As a democratic nation-state, America, in its foreign policy, must necessarily interpret these primary goals in terms of the security, well-being, and liberty of the society—of the people—rather than of the government and state. For, quite obviously, the promotion of the greater good and glory of the state can no more characterize democratic foreign than domestic policy. In addition, democracy requires that our policy also be responsive to the moral and ideological aspirations of our society. Since the fundamental goals do no more than chart the broadest of outlines for any course of action, however, American foreign policy also is constructed of a number of narrower medium and short-term objectives intended to give specific content to the national definition of self-interest and self-development. It is these more limited policy objectives—as distinguished from the fundamental goals—which must necessarily be formulated and re-formulated to take into account those major changes in domestic and international conditions which the dynamic quality of human society invariably and unceasingly fosters.

Since 1945, we have witnessed just such reformulations, for contemporary America has undergone a foreign policy revolution in the last ten years.¹ Not only has the United States firmly assumed that position of great power leadership which it began to achieve in World War I and on which it attempted to turn its back between the two world wars, it also has renounced those manifestations of isolationism and neo-isolationism embodied in such previously honored policy guides as “no permanent or entangling alliances,” neutrality, and continentalism (an exclusive preoccupation with North American development). Though public debate has frequently been entered into during the past decade concerning the possibilities and virtues of a return to our traditional policy perspective, there can be no doubt as to the extent of our official rejection of such a reversion to the past. We are now completely entangled in more international arrangements, alliances, and regional collective security systems than perhaps any other country of history, and, therefore, we are about as deeply immersed in the outside world as is possible within the limits of the nation-state system.

Without engaging in any very elaborate discussion of this new formulation of medium and short-term objectives—all of which are primarily a product of our dis-

¹ See WILLIAM G. CARLETON, *THE REVOLUTION IN AMERICAN FOREIGN POLICY* (1954) for an excellent summary of that revolution.

illusionment from 1945 to 1947 with the United Nations' ability to maintain international peace and security in the face of Soviet expansionist challenges as well as of our gradual realization that the old order of pre-1939 could not be restored—it would seem valid to state the following to be our current policy aims: to restrain communist expansion while simultaneously attempting to negotiate some realistic settlement of conflicts in interest which threaten human survival; to promote greater international material well-being in behalf of international peace as well as for our own security and prosperity; and to encourage, where feasible, both national self-determination and democratic government as important contributors toward the above two international objectives. Obviously, this particular policy pattern encompasses not merely a narrow pursuit of American self-interest and power, but some of the idealism and humanitarianism which also are significant characteristics of our society. It is, moreover, compounded of even more specific policy objectives, such as the promotion of West European and North Atlantic integration, economic well-being, democratic orientation, and military strength, and the encouragement of political stability, economic welfare, and ties with the West of other noncommunist areas whose strategic location and/or resources make them vital despite their normally underdeveloped characteristics and civilizational differences.

As a part of the above pattern of contemporary American foreign policy, the role of economic and technological policy objectives and techniques becomes that of bolstering this global effort to restrain communism and strengthen and solidify the noncommunist world. For, in the words of the United States Deputy Assistant Secretary of State for Economic Affairs: "An alliance without economic underpinnings would be inadequate and unreliable."² The primary forms of technique so far devised to actualize these aims³ can be classified as technical assistance, financial investment, loans and other forms of economic assistance, tariff reductions, and trade concessions. It is alongside these established techniques that atomic power must now be placed: a new instrument of significant potentialities which cannot be ignored and must, therefore, be utilized in support of the totality of other techniques and objectives which constitute American foreign policy.

Atomic Power's Potentialities for Underdeveloped Lands

Having outlined the character of the American foreign policy setting within which atomic power must be utilized as an economic and technical instrumentality, it becomes particularly pertinent to face up to the specific implications and potentialities for American relations with the world of this great new form of energy. What, in other words, are the effective uses to which it can be put as a policy instrument?

To begin with, it is important to recognize the extent to which any utilization of atomic power is subject to many of the same cultural problems and limitations as

² THORSTEN V. KALIJARVI, *FOREIGN ECONOMIC POLICY AND THE NATIONAL SECURITY* 5 (U. S. Dep't of State Pub. No. 5640, 1954).

³ For a specification of our foreign economic objectives and their relation to politico-military and psychological policies, see Asher, *The Economics of U. S. Foreign Policy*, 29 DEP'T STATE BULL. 3 (1953).

most other significant technological innovations. For, after all, the application of atomic power does not occur in some huge vacuum devoid of social forces. On the contrary, it is confronted by a complex web of cultural conditions of both ancient and modern origin which vary significantly from one region of the world to another and generate all manner of obstacles to, as well as desires, for, this new energy form. It is, thus, essential to acknowledge the extent to which the international utilization of atomic power is not just a matter of presently limited supply and mounting demand, but also a question of the complex character of the recipient market as well. To assume that the beneficial use of atomic power will occur automatically and that, in the words of Professors Isard and Whitney, "mere availability of atomic power at a relatively low cost will somehow produce the cornucopia of plenty even for the most backward regions of the earth"⁴ is to ignore completely the extent to which the introduction of any technological development of this type is dependent upon "the degree of legitimacy such an innovation possesses in relation to the cultural norms of the area."⁵ As an important recent publication of the United Nations Educational, Scientific, and Cultural Organization points out, technical changes embodying possibilities for great human benefit often encounter all manner of cultural obstacles and resistances generated by important local customs, modes of life, and values.⁶ Some peoples, it is noted, for example, have a "distaste for working for wages" which often is stronger than the "incentive to improve the standard of living" (Puerto Ricans, Spanish-Americans of New Mexico, and some Africans are listed by the UNESCO study);⁷ in "many parts of the world we find that one works as necessity calls,"⁸ while in other lands, like Burma, there exists a strong resistance "against the accumulation of capital" combined with "the tendency to spend much money for religious purposes" which "militate against the creation of capital needed for industrial enterprise of any major scope."⁹

Such examples of cultural impediments to any form of technical change, including a power innovation of the type under consideration, can be elaborated upon endlessly. One does not even have to leave the industrialized Western world itself to find evidences of the way in which cultural resistances have limited the acceptability of primary techniques and tenets of modern technology to the point where peoples desirous of the benefits which they know are available have themselves participated in their restriction. This is the case, for example, of France, whose rugged individualism and family-type business enterprise combine to prevent full tapping of mass production's rewards and have led to a deterioration of what was at one time the highest standard of living on the European continent. Such has been true to an even greater extent in Italy. As the above-mentioned UNESCO study asserts, it thus

⁴ WALTER ISARD AND VINCENT WHITNEY, *ATOMIC POWER* 140-41 (1952).

⁵ *Id.* at 138.

⁶ WORLD FEDERATION FOR MENTAL HEALTH, *CULTURAL PATTERNS AND TECHNICAL CHANGE* 236-42 (Margaret Mead ed. 1953).

⁷ *Id.* at 244.

⁸ *Id.* at 247.

⁹ *Id.* at 246.

"seems painfully evident that the most miserable living conditions (from the viewpoint of the industrial nations) do not of themselves make technical improvements acceptable, nor make disruption and maladjustment less likely once change is introduced."¹⁰ The attainment of economic and technological improvement throughout the world, therefore, obviously cannot be accomplished merely by making available a new power source as complex and with as many ramifications as atomic power. Fissionable material and nuclear reactors cannot just be handed over to non-Western societies with the expectation that gigantic benefits automatically will accrue regardless of the cultural setting.

Unfortunately, the American foreign policy—and international—problem of effectively utilizing the atom in power-deficient areas is not limited to meeting and surmounting various cultural resistances and sociological obstacles. There are, in addition, a wide variety of other complicated social, political, economic, and financial conditions which are crucial determinants of the feasibility and possible effectiveness of atomic power's contribution to a given country's well-being. We find that just about all existing investigations into the problems of presently underdeveloped regions conclude that most of the latter's destitution and material inadequacy is traceable to situations other than the absence of an adequate supply of fuel for power, though such is often a significant handicap. There appears to be general agreement among the authorities on international economic development that, for one thing, the primary requirement for improvement in a country's material well-being is capital available for investment. In their pioneering study of the *Economic Aspects of Atomic Power*, Messrs. Schurr and Marschak thus conclude, for example, that¹¹

. . . the chief limit upon the possible rate of industrialization in most backward areas appears to be the scarcity of capital. This is particularly significant since it is only by means of a rather rapid industrialization that these countries can hope to escape the pressure of a growing population against limited agricultural resources.

Such scarcity of capital, it should be noted, is both a domestic and an international one. Within the underdeveloped countries, the essential developmental capital is unavailable because "the sheer poverty of the bulk of the population is such that the flow of savings is a mere trickle."¹² Therefore, any "launching of a process of cumulative economic growth . . . requires an expansion of the rate of capital accumulation in those countries to something on the order of three times the present level."¹³ With an estimated capacity to provide no more than "about half of the needed increase in net investment,"¹⁴ however, the obtainment of foreign loans or grants to the extent of about 50 per cent of the needed investment

¹⁰ *Id.* at 276.

¹¹ SAM H. SCHURR AND JACOB MARSCHAK, *ECONOMIC ASPECTS OF ATOMIC POWER* 273 (1950).

¹² Higgins and Malenbaum, *Financing Economic Development*, 502 *INTERNATIONAL CONCILIATION* 279 (1955).

¹³ *Id.* at 313.

¹⁴ *Ibid.*

capital is indispensable, it is estimated. But the attraction of these sizable foreign funds is extremely difficult both because of the investment requirements of the great industrial states themselves and because of the hesitations of foreign investors. Underdeveloped countries, therefore, face a situation in which the foreign exchange needed is in just as scarce supply as domestic investment capital.¹⁵ Yet, it is this very investment which provides the means not only for economic development in general, but for the creation of power facilities—atomic or otherwise. In connection with the latter, moreover, though atomic power may provide savings in capital through reduced transportation costs for fuel and perhaps even through reduced fuel costs, the size of the capital investment in the construction of atomic power reactors is much greater than that of traditional installations, while capital requirements for the creation of the standard distributory facilities remain the same.

The importance of investment to economic development is just one factor in the problem of raising material well-being throughout the world. Another major element, which is characteristic of most underdeveloped areas, is excessive population. The initial impact of industrialization increases the size of a populace. Thus, unless such industrialization occurs at a rate in excess of the demographic growth, the introduction of atomic power would not produce much improvement. Inadequate domestic markets, continued low standard of living, and insufficient capital accumulation would continue.¹⁶

Still other major obstacles to economic development in presently underdeveloped lands include such situations as the absence of middle classes to provide the "entrepreneurship" essential to an industrial revolution; mass demands for state-sponsored welfare and immediate increases in consumer goods upon liberation from colonialism regardless of the detrimental impact on economic development of any premature welfare system; the great absence of not only large enough pools of advanced scientists to operate atomic power installations, but even of laborers with the basic skills required by modern industrialism; the frequent inadequacies of governmental bureaucracies and political leadership and their reluctance to engaged in essential, though radical, changes; the resistance to technological innovation of socio-economic upper classes, whose own material well-being is a product of agrarian feudalism; and widespread chauvinism and antforeignism (generated by previous colonial experiences), which enhance the unattractiveness of a country to private foreign investors.¹⁷

¹⁵ See the introduction to the Tenth Annual Report of the U. N. Secretary General, N. Y. Times, Aug. 8, 1955, p. 3, col. 1, for emphasis on the obstacle to economic development presented by the shortage of investment capital.

¹⁶ See Whitney, *Some Sociological Consequences of Atomic Power*, 290 ANNALS 67 (Nov. 1953), for a discussion of this demographic problem.

¹⁷ Argentina provides a case study of anti-foreignism's impact on investment. The country produces 40% of its oil need and spends \$200 million a year of scarce dollars to import the rest, despite having ample domestic resources to meet its entire need. But, lacking capital and technical knowledge, the legislature has, none the less, for purely nationalistic reasons, so far, balked at permitting completion of a contract with Standard Oil of California to develop and exploit the untapped oil reserves.

These are some of the primary causes—above and beyond power shortages—of that economic backwardness which American foreign policy recognizes to be a potential hothouse for communism and, thereby, as well as in its own right, a source of great danger to the United States and the West. When one adds an awareness that many presently underdeveloped lands could significantly increase their power output from existing fossil fuels or through increased hydro-electric installations¹⁸ if they could surmount the obstacles noted above, and when one further notes that full-blown industrialization is not automatically essential to material improvement and that some nations, like Australia, New Zealand, and Denmark, have achieved their extremely high living standards “not by domestic production of heavy industrial goods but by trading their specialized agricultural products with the major industrial countries,”¹⁹ the economic need for and usefulness of atomic power in many backward areas is, thus, open to question. At a minimum, it certainly seems apparent that neither American foreign policy nor international opinion would be justified in viewing atomic power as a key to universal utopia.

Despite the difficulties confronting the promotion of material improvement in the underdeveloped portions of the world, either with or without the assistance of atomic power, however, socio-economic, psychological, and political forces within these lands constitute an outstanding contemporary challenge which must be met. There can be no disinterest in the fate of most of Asia, the Middle East, Africa, and Latin America not only because of humanitarian considerations, but also because of the West's material and strategic dependence upon them. Nonetheless, to date, the Western world's greatest failure—and, consequently, communism's greatest success—has been in its response to the “social politics” of these regions. For we have found it extremely difficult to meet effectively the socio-economic, political, and colonial revolution which has shattered the old order and threatens to undermine both the liberty and the well-being of the West. Given this global uprising of previously subordinate, but still vital, regions, we have no choice but to assist them to achieve a large portion of their primary aspirations in ways which will not be detrimental to our own existence and that of our fellow Westerners. Any permanent failure on our part in this regard may be comparable to committing suicide. American and Western self-interest thus demand—at a minimum—that we ride herd on the revolutionary forces rocking most of the earth in order to assure that their fulfillment will not lead to freedom's destruction. To accomplish this, we must placate the psychologically generated insistence on equality and full recognition of their independence and importance, while simultaneously responding to the need which these underdeveloped lands have of us as sources of capital and technology and as stable markets for their primary exports. At the same time, it is equally vital for the West that the underdeveloped lands do not pursue unattainable and mutually unbeneficial forms of industrialism, but are encouraged, instead, to act “as expanding

¹⁸ See SCHURR AND MARSCHAK, *op. cit. supra* note 11, at 262.

¹⁹ ISARD AND WHITNEY, *op. cit. supra* note 4, at 168.

sources of supply of primary products and as growing markets for [Western] manufactured goods."²⁰ Though important Western-underdeveloped area differences of economic interest do exist, and are accentuated both by the latter's social-psychologically motivated attitudes toward imperialism and nationalism and by the former's frequent longing for a return to the days of world submissiveness to the West, the challenge to both becomes the development of the means of harmonization of such conflict to the advantage of all.

Atomic power may help to promote this necessary harmonization, even if it is not capable of producing instantaneous and gigantic improvements in material conditions throughout the entire world. To those lands which are anxious to harness the atom, the United States and its technologically advanced partners can make available the scientific information, industrial know-how, fissionable materials, and even model reactors to help them to do so. The fact that some underdeveloped lands will not be interested in atomic power, that many others may be interested in it primarily from motivations of nationalism and prestige rather than from need or ability to utilize it effectively, and that, probably, only a minority of the noncommunist underdeveloped nations of the world really are in a position to employ atomic power effectively in the near future should not prevent the formulation of an American and Western atomic power foreign policy. For, it is just as important for the United States and its industrial allies to respond to any officially expressed interest in atomic power by governments of lands motivated by nationalism and prestige politics as it is to help the lesser number whose justifications would really be economic. It is, after all, only by placating the psychological as well as the material drives of newly freed peoples that we can convince them of our good intentions and of the mutuality of interest which exists between them and the American-led West. What is, thus, necessary for American foreign policy is a flexible use of atomic power, not merely as an economic weapon to improve the standards of living of noncommunist states, but also as a symbol of Western understanding of other peoples and sympathy for their aspirations.

The question then arises as to whether atomic power assistance to underdeveloped lands should be handled exclusively in bilateral terms or not. Should the United States and other prospective providers of such aid, like the British and French, engage in uncoordinated and independent distribution of it as each sees fit, and should such atomic power assistance be completely separate from the United Nations' technical assistance activities? Several thoughts suggest themselves in connection with this important matter. The first is that, at a minimum, an atomic power aid program for the underdeveloped areas of the world must involve a collaborative effort by the Western contributors. This makes sense not only because the latter have a great identity of security and economic requirements in relations with the underdeveloped lands, but also because collaborative effort among them can bolster the

²⁰ WILLIAM Y. ELLIOTT (ED.), *THE POLITICAL ECONOMY OF AMERICAN FOREIGN POLICY* 326-27 (1955); and see also, generally, for an excellent discussion of foreign economic policy.

effectiveness of their aid programs. Completely independent action, on the other hand, will introduce an unhealthy national competition destructive of their common and national interests. It would, for example, be ridiculous for the United States, British, and French Governments to engage exclusively in uncoordinated and competitive aid programs, since their real and common competitor for the favor of the underdeveloped regions obviously is Chinese and Soviet communism. In many instances, the most that would be achieved would be for each to undermine the leadership position of the other in areas vital to each as well as to the whole Western cause. The importance of Western cooperation in the peacetime—as in the military—applications of atomic power thus seems essential. Such cooperation probably requires the creation of a coordinating agency among the Western powers which would, in turn, be linked to other still unborn regional economic agencies also vital to the promotion of material well-being throughout the area.

The problem of coordinating Western atomic power foreign policies is more than just a matter of governmental recognition of the political benefits to be derived from so doing, however. For, the field of atomic power also offers very important commercial opportunities for private enterprise. Both American and British firms, in particular, are presently organizing for the purpose of exporting nuclear equipment and technical assistance. The atomic power displays at the Geneva Conference in August 1955 and the vocalized resentment of American businessmen at the greater British preparation for atomic power commerce revealed at that Conference clearly demonstrated the competitive struggle which is in the offing. Undoubtedly, in the future, French and German and possibly other European interests will also enter the struggle for a share of this new export market. It, thus, would appear important that governmental recognition of the pending private international competition be taken in the form of a multilateral effort to develop some agreement which would protect mutual national interests, while yet not frustrating healthy private commercial activity. Guides to such an intergovernmental agreement might possibly be found in comparable and established areas, like petroleum, standard electric power and generation equipment, or even in a field like air transportation. In any event, this would seem to be a problem for American and Western policy whose solution will be extremely important to the successful employment of atomic power as a constructive foreign policy instrument. The pursuit of private and national interests must be coordinated.

In so far as the relationship between Western national atomic foreign policy and the United Nations is concerned, it would appear necessary that at least some—if not a major portion of—atomic power assistance to backward areas be channeled through that organization. The reasons for this include the Western interest in maintaining the United Nations as a force in international relations, even if it cannot be converted into a world government; the fact that the United Nations has done its best work in the social and economic fields where great-power security rivalry is less of an impediment; the additional fact that some means of coordinating

Western with communist efforts in the area of peacetime utilization of atomic energy is vital both for the peace and material improvement of the world and to make clear to the world the peaceful objectives of the West; and, finally, the fact that the United Nations can provide existing and planned technical assistance agencies which are much less provocative to those anti-foreign and anti-colonial sensitivities now rampant in many underdeveloped lands than would be the national assistance agencies of the Western powers. This is particularly pertinent in the field of atomic power development, since the exporters of atomic power plants may have to operate and maintain them until local personnel is trained and may also continue indefinitely as the primary suppliers of fissionable fuels. Moreover, utilization of the United Nations for atomic power development in underdeveloped lands might also be a means of overcoming such important obstacles as the lack of adequate investment capital, a bad international balance of payments situation, and the absence of adequate numbers of skilled scientists and technicians to man nuclear power installations and train increased numbers of their fellow countrymen. For, with the support of the leading nuclear power nations, a United Nations Atomic Energy Agency could conceivably provide interested countries not only with information and assistance in atomic power research and engineering, but could also help to train atomic power scientists and technicians in underdeveloped lands, act as an allocator and transmitter of fissionable materials to needy states, and even perform the vital role of financier of atomic power development where inadequate sums of investment capital are available from private international investment and existing international banking and development funds. Furthermore, it is even possible that the same United Nations agency could contract with private firms for the construction of, and then itself operate, nuclear power plants in underdeveloped countries, with the resultant power being sold at established rates to the benefiting nation. This particular technique would save underdeveloped countries the very difficult and expensive task of manufacturing their own atomic power and, thereby, speed up significantly their utilization of this new energy source. It would also help to assure that nuclear reactors in such lands would be employed exclusively for peaceful purposes. It, thus, seems that an effort to integrate Western atomic power foreign policy with United Nations activity in the field is also extremely important, though the exact nature of the integration must naturally depend on East-West relations in the future and the extent to which nationalism among Western politicians can be tempered to the point of willingness to divert some funds and specialists to United Nations agencies.

Atomic Power's Potentialities for Industrial Lands

A consideration of the many obstacles and deterrents to effective utilization of atomic power in the underdeveloped lands serves to emphasize the likelihood that it will be the already industrialized states—with their sustained leadership interest, social receptivity, and technological ability—which will benefit from nuclear fission earliest and possibly even the most. Among these industrialized states, however,

existing differentials, comparable to those which prevail between them and the backward areas, will often affect the utility and impact of atomic power. Thus, partially industrialized nations which, to date, have been unable to heighten either their level of industrialization or their standard of living for reasons other than just inadequate fuel resources will not suddenly be able to erect utopias with nuclear reactors. Italy, for example, is a case in point in this regard. Though energy resources are in tremendous short supply, this difficulty is compounded considerably by the lack of adequate investment capital, by the retarded views of her dominant socio-economic upper classes with their agrarian feudalistic or monopolistic industrial beliefs, and by inadequate governmental leadership for economic development. When these characteristics are combined with the nation's lack of important minerals and its weak agricultural structure, it is obvious that the availability of atomic power will not, by itself, put an end to all Italian material distress. It may, in fact, make Italy's existence in the world more difficult by enabling already stronger competitors to increase their advantage with a resultant further deterioration of the traditionally unfavorable Italian balance of trade.

In other cases, like that of the French, the application of atomic power undoubtedly will benefit the country considerably by relieving the ever greater pressure on its inadequate coal and oil resources. However, here, too, it probably is not to be expected that the net French gain in the world economy will be startling. It is very possible that France will increase her industrialization and standard of living through use of the atom, but no catching up to Britain or the United States can be expected. As for the last two nations, though the British go over almost completely to atomic power decades before we do, while the United States continues to rely mainly on its still ample fossil fuels, no equalization of British and American industrial might is to be expected.

As for the Soviets, the fact that their scientists have indicated at Geneva that they will employ atomic power primarily in areas presently remote from traditional fuels does not mean that they will not benefit significantly nor does it mean that they will fall farther behind in industrial competition with the West. On the contrary, limited but strategic use of atomic power in a country as poor in transport but as rich in minerals as the Soviets probably will help their industrialization tremendously. It, therefore, seems important to emphasize the fact that not even those nations which benefit earliest and perhaps most from atomic power will do so to the same extent or in such fashion that their economic strength will be equalized. On the other hand, they undoubtedly will increase their edge over most presently underdeveloped lands, at least for the foreseeable future.

Any survey of already existing atomic power development programs documents the degree to which the already industrialized countries, rather than the neediest ones, will take earliest and greatest advantage of nuclear fission. The British, for example, are currently involved in a ten-year plan to construct twelve nuclear power plants, at an estimated cost of £840 million, in order to meet their steadily di-

minishing coal reserves and increased power needs. For, it is estimated that the United Kingdom, which in 1913 supplied half the world's coal trade from its exports, now must buy a ton of doubly expensive West Virginia coal for every ton of its own which it exports. Moreover, it is increasingly harder to obtain miners, since the youth prefers the more pleasant occupational opportunities available in this labor-short economy. At the same time that such severe shortages are being felt, official estimates are that demand for electricity probably will be three and a half times the present level in twenty years and that this obviously will require an impossibly high consumption of coal.²¹ The total capacity of the twelve atomic stations planned, therefore, will be from one and a half to two million kilowatts, while their consumption of fuel will be 500 to 600 tons of fissionable material per year, instead of 5 or 6 million tons of coal. The cost of the resultant electricity will be about 7 mills per kilowatt hour, or about the same cost as coal burning installations. Thus, the British development program is expected to permit a leveling off of the demand for coal in the 1960's and a steady increase of nuclear power station capacity after 1965 until, by 1975, the latter will produce 10 to 15 million kilowatts, or a fourth of the nation's total electric power, while by the year 2000, atomic power will provide most British electricity. The United Kingdom's ability to launch this presently most ambitious of atomic power undertakings is, of course, directly related not only to the seriousness of its motivation, but also to its current degree of industrialization, the availability of investment capital, the existence of all necessary distribution facilities and of the scientific and technological skills required, and the great governmental capacity to direct and energize a program of this type.

On an understandably smaller scale, the French Government is also engaged in a major effort to alleviate its country's steadily diminishing coal supplies and heightened dependence upon the import of fuel by resort to atomic power development. The French, thus, plan to build a 40,000 kilowatt power reactor in the near future to produce plutonium which, in turn, will be fed to other reactors. They have indicated that all attention will henceforth be devoted to such atomic power development, while their large hydro-electric development program and efforts to harness the tides will be restricted. France now has two important experimental reactors in operation and so is able to trade on this know-how plus financial and industrial resources which, though inferior to those of the United States and Britain, nonetheless remain adequate to meet the challenge of atomic energy. Still other examples of West European progress in the field are afforded by the Norwegian concentration on atomic power for ship propulsion—which obviously is related to the country's role as one of the great maritime nations of the world—as well as by the Dutch, Belgian, and Swedish experiments and preparations for atomically generated electricity. Thus, though it is true that one finds comparable interest and even some experimentation and planning for the utilization of atomic power outside of

²¹ See the White Paper, *A Programme of Nuclear Power*, CMD. No. 9389 (1955) (available through the British Information Services).

the West or the Soviet Union—as in the cases of India and Israel—the possibility of early important applications of this power, even in these underdeveloped lands, certainly is nowhere as impressive as in the North Atlantic community.

The advanced character of Western activity and planning in the atomic power field makes particularly pertinent the question as to the proper American role in all of this and the direction which American atomic power foreign policy should take within the Western community. Certainly, a policy other than that pursued toward the non-Western world is required not merely by the differences in our relationship to each, but by the divergencies in atomic power potentiality already noted for each area.

To begin with, it is important to return to the emphasis placed at the outset of this article on the necessity of integrating atomic power policy with that of our general economic and technical foreign policy objectives. In the case of Western Europe, these objectives involve the promotion of regional integration as an essential condition of further European economic progress, political stability, and security. They also include concern for expansion of the region's industrial strength as a crucial ingredient in the furthering of our own political and strategic interest in preserving West Europe's freedom from communism. An analysis of the primary economic difficulties of the Western European industrial states reveals, however, that more is needed than American loans, gifts, and technical assistance in order to promote the necessary plant modernization and expansion and increased trade within the area, though such aid helps considerably. As a recent authoritative analysis emphasizes, Western Europe also requires "closer economic integration with North America."²² Within the limits of American international authority and domestic obstacles, therefore, our economic foreign policy response to Europe's needs must take the course of reducing our own tariffs while simultaneously condoning a certain amount of European protectionism against American competition; of fostering adequate economic demand and stability within the American economy; of assisting domestic producers to adjust to larger imports of European products; of expanding "offshore procurement" and other such means by which Europeans can earn dollars outside the American domestic market; and of engaging in closer institutionalized economic integration with the North Atlantic community members in addition to the military integration represented by NATO.²³ Simultaneously, of course, we and the West European industrial nations must also attempt to achieve that compromising and harmonization of economic interest with the noncommunist underdeveloped lands which will provide satisfaction for the latter's aspirations for material improvement and freedom while still encouraging them to meet basic Western needs for raw materials and for manufactured goods' markets.

Within these over-all policy requirements, the United States can employ its leadership position in nuclear energy to great avail. Since Western Europe probably

²² ELLIOTT, *op. cit.* *supra* note 20, at 290-91.

²³ See *id.* at 295-325 for an excellent discussion of such techniques.

will be the most immediate and most important beneficiary of atomic power in the foreseeable future, American policy must facilitate to the maximum extent possible the ability of the region to tap the industrial atom. This obviously is in our own interest—given the interdependence of Europe and ourselves—as well as in that of our allies. Several components of such an atomic power policy toward the North Atlantic community and its industrial allies elsewhere can be suggested. First, since most of these countries already have varying degrees of atomic power development underway, one important form of assistance can be provided merely by making available necessary information of a scientific and technological character. For, as a trained American observer of Europe's atomic power activities has recently remarked, what is desired from us is "mainly detailed technical knowledge" to enable their highly skilled scientists to speed up their developmental programs and save them unnecessary and fantastically expensive research and testing.²⁴ Certainly, the dissemination of such informational assistance to our allies serves the interest of the entire Western world and cannot jeopardize our security, since the Soviets are already fully able to utilize atomic power as well as make atomic weapons. Moreover, as many American scientists have also commented, their European counterparts have been engaged in forms of atomic research and have gained types of knowledge for which we have not had the time because of our necessary military preoccupation. Dr. Lawrence R. Hafstad, chief of the AEC's reactor development program, thus has been quoted as saying:²⁵

Contrary to the general impression in this country, the Europeans are very sophisticated in the atomic-energy field. . . . Our reservoir of facts is almost dry, and the Europeans have all the technical and scientific knowledge they need to make progress.

Thus, there will be value received from any exchange of information; and an American program of atomic power informational exchange with Western Europe will involve just that: a mutually beneficial exchange rather than a mere unilateral distribution of knowledge.

A second important ingredient in a meaningful American atomic power policy toward our industrial allies would seem to be the lending by us, where requested, of processed fissionable fuel for power. This would speed up Europe's ability to apply atomic power by reducing the necessity to obtain and then process fissionable material at gigantic cost. Though such aid is probably advisable only in the early stages of atomic power development, its stimulative impact can be great. Moreover, in some cases, it could be related to agreements by the recipients to make their crude uranium available to us and, thereby, bolster our own sources of supply.²⁶

Third, the United States can help these nations to purchase reactor and related equipment from private American firms by somewhat unharnessing interested private enterprise within the limits of our own national security and military needs.

²⁴ Hughes, *International Cooperation in Nuclear Power*, Scientific American, April 1955, p. 31.

²⁵ See Newsweek, Nov. 22, 1954, p. 79.

²⁶ See our agreement with Belgium, discussed below, for example.

In this connection, of course, it is important to note the extent to which the dollar exchange resources of these nations would be strained even more than they now are, and so American tariff restrictions on the ability of European firms to compete in this trade would be extremely unwise. If British companies, for example, can capture an important part of the nuclear reactor market, this should not be deplored and fought by American governmental action but, instead, should be considered a contribution to Western economic health and consonant with United States foreign economic policy objectives.

As was suggested in discussing atomic power relations between Western and underdeveloped states, some form of institutionalized atomic power cooperation within the Western community also is essential. It is vital not only to facilitate Western efforts to resolve the problems in its economic and political relations with these backward lands, but also to assure the obtainment of maximum benefit from atomic power within the West. The arguments in behalf of generally closer North Atlantic community economic integration, thus, are particularly impressive when one considers this important new energy source. Rapid utilization of it by most of our allies requires great American assistance. The fundamental character of atomic power's relationship to industry and its governmental sponsorship in all countries, plus the dependence of our allies on governmentally generated development programs, further accentuates the need for intergovernmental cooperative planning for its use. In addition, the intimate connection between industrially usable atomic power and militarily useful nuclear energy compels governmental involvement in its production for national and NATO security reasons. Thus, all important considerations suggest the necessity for the establishment of some North Atlantic community planning, coordination, and regulatory agency which would treat not only atomic power, but related problems of peacetime application of nuclear energy. For greatest effectiveness, it probably must be linked to increased financial integration within the region. All this should be in addition to American atomic power and nuclear energy activity through the United Nations, whose purpose would be primarily to aid underdeveloped areas and promote cooperation with the communist bloc.

II

ATOMIC POWER AND AMERICAN FOREIGN POLICY: THE RECORD TO DATE

A survey of American foreign policy activity, to date, in regard to atomic power can be organized around two broad categories: the legislative framework for action and the actual international activity proposed or engaged in. In each of these areas, we have made some initial progress toward the formulation of a meaningful foreign policy of the contours suggested above. In just about all aspects of these same areas, however, much still remains to be done if we are really to utilize the atom with maximum effectiveness in world affairs.

The Legislative Framework

The initial legislative foundation for post-war American activity—domestically and internationally—in the atomic energy field was, as we know, the McMahon-sponsored Atomic Energy Act of 1946. Quite understandably, this first effort to regularize those activities—which originally had been prompted by the war-time struggle for survival—perpetuated the preoccupation with the military potentialities of the atom. Post-war disillusionment with United Nations' efforts to establish a firm peace and the appearance of "cold war" between the Soviet and Western members of the victorious coalition certainly did not encourage any other emphasis than that of bomb-making. This military perspective, in turn, fostered stringent limitations on the exchange of nuclear information, goods, or services and glorified secrecy in the hope of maintaining an American monopoly in the nuclear field. Moreover, though the Atomic Energy Commission was permitted by the 1946 statute to develop large-scale experimental power reactors, meaningful private participation in the power field was made impossible through a combination of absolute prohibitions and stringent licensing provisions. With the loss of the American monopoly of the atomic bomb and a mounting need for the United States to bolster and help re-arm its Western allies, a 1951 amendment to the McMahon Act allowed some limited transmission of restricted data to friendly powers concerning source material, reactor development, research development, and the production of special nuclear materials. In the particular matter of industrial applications of atomic energy, however, the McMahon Act remained firmly opposed to the exchange of restricted data with other countries and also prohibited any person from engaging in the production of fissionable material outside the United States. One can, therefore, say, with reasonable accuracy, that the first American legislative effort in the nuclear energy field not only concentrated upon the military aspects of the atom and restricted the international exchange of information to a minimum, but it also prevented any effective private activity in atomic power development and ruled out the possibility of meaningful international atomic power commerce.²⁷ No wonder, then, that Atomic Energy Commissioner Smyth could testify in hearings to revise the 1946 Act before the Joint Committee on Atomic Energy of the Congress that, as of June 1954, the American Government itself had spent less than one-tenth of a total expenditure of \$10 billion on the nonmilitary aspects of nuclear energy or on research facilities. Almost all of the funds and energy of the government, operating in a monopolistic position which barred private activity, had thus been devoted to the military atom.

By 1954, however, a number of things had occurred which made obvious the need for statutory changes which would facilitate both atomic power development and a more positive American nuclear energy program in international affairs. For one thing, pressures from interested portions of American industry had been building up, and had been stimulated by the AEC's "industrial participation program."

²⁷ See HERBERT S. MARKS AND GEORGE F. TROWBRIDGE, *FRAMEWORK FOR ATOMIC INDUSTRY* 61 (1955).

The latter had been launched in 1951 by the AEC in cooperation with four industrial groups anxious to investigate the economic feasibility of atomic power. Composed initially of eight electric utility and chemical companies, these private groups expanded steadily as the industrial potentialities of the atom became increasingly apparent. Another pressure in behalf of revision of the 1946 act was generated by the public itself. What information was released concerning possible peacetime uses of nuclear energy was sufficiently challenging to capture the imaginations of even the most unscientific portions of the citizenry. Finally, President Eisenhower provided official support for a liberalized statute when, on February 17, 1954, he recommended to the Congress that it amend the McMahon Act for three important reasons: to permit "widened cooperation with our allies," "improved procedures" for the treatment of nuclear information, and "broadened participation in the development of peacetime uses of atomic energy."²⁸ The ultimate result of this combination of private and presidential pressure was the present Atomic Energy Act of 1954.

Since the presidential initiative in urging Congress to amend our atomic energy legislation resulted primarily from his desire to foster international governmental cooperation in the field, a significant portion of the subsequent changes embodied in the 1954 statute concerned themselves with these aspects of nuclear energy. Focusing just on the question of the existing legislation's adequacy as a statutory framework for an effective American atomic power foreign policy, the following observations seem relevant:

(1) The act enables the United States Government to conduct an atomic power foreign policy with reasonable effectiveness only in certain respects, which, ultimately, may not be the most important ones. The content limitations on such a foreign policy stem primarily from the new emphasis, on the one hand, on private international atomic power commerce, while, simultaneously, such private international activity appears to be either excessively restricted or in need of additional legal clarification. Thus, we find that the Atomic Energy Act of 1954 authorizes the Government in the person of the President to enter into "international arrangements" with any group of nations interested in cooperation in the nonmilitary applications of atomic energy;²⁹ permits the Chief Executive to negotiate bilateral "agreements of cooperation" with other individual countries in order to transmit information and materials in some carefully defined areas of restricted data;³⁰ allows the AEC to make a foreign distribution of certain specified nuclear materials;³¹ and also authorizes the President to permit the AEC or Defense Department to communicate other types of restricted data to foreign nations.³² However, the law, as an effort to promote American private enterprise in the nuclear field, is so designed that atomic power

²⁸ *Atomic Energy Act of 1946—Message from the President of the United States*, 100 CONG. REC. 1921 (1954).

²⁹ §§11(k), 124, 68 STAT. 922, 940, 42 U.S.C.A. §§2014(k), 2154 (Supp. 1954).

³⁰ §§11(b), 123, 68 STAT. 922, 940, 42 U.S.C.A. §§2014(b), 2153 (Supp. 1954).

³¹ §§54, 64, 82(b), 68 STAT. 931, 933, 935, 42 U.S.C.A. §§2074, 2094, 2112(b) (Supp. 1954).

³² §144, 68 STAT. 942, 42 U.S.C.A. §2164 (Supp. 1954).

facilities for the utilization or production of special nuclear material, component parts for power production, source materials, and regular technical services will be channeled abroad primarily through business organizations. The act does not even provide specific authorization to the AEC to make a foreign distribution of utilization or production facilities or component parts. Instead, as recent hearings of the Joint Committee noted, "[i]t is contemplated that with respect to the furnishing of equipment, facilities and materials (other than special nuclear materials), U. S. industry will play a major role in implementing agreements for cooperation."³³

An analysis of the ability of business enterprise to play this export role reveals, though, that a great many legal uncertainties combine with some stringent limitations to make questionable the possibility of full-blown international atomic power commerce. For, each of the principal methods by which business is statutorily authorized to engaged in such commerce is haunted by certain important problems and potential difficulties.³⁴ Thus, private enterprise can engage in international commerce in by-product³⁵ and source³⁶ materials and in component parts of atomic facilities³⁷ without the existence of intergovernmental agreements, provided licenses are obtained from the AEC. But, in the specific case of component parts, the AEC must also determine in each and every instance if export involves an unreasonable risk to our defense and security. Whether regular and extensive trade on this basis is possible is questionable. Moreover, the ability of business to engage in the manufacture or selling of component parts outside the United States is uncertain, as is the applicability of the licensing technique in these instances.

Another example of potential difficulty for private atomic commerce abroad is provided by the statutory requirement that the production of special nuclear materials and all action related "directly" or "indirectly" to such production is subject to a special authorization procedure by the AEC.³⁸ The word "indirectly" raises questions concerning the very ability of private individuals and groups to teach abroad or to provide technical services or parts of facilities, even in unclassified matters, unless they obtain prior Commission authorization. If such specific authorization for activity in unclassified areas is necessary, commerce certainly will be extremely difficult.

Furthermore, one finds that though authorization is obtained, the export of component parts or utilization facilities still must be licensed, and, moreover, neither licensing nor authorization by the AEC can, in itself, permit the export of special

³³ *Hearings before the Joint Committee on Atomic Energy on Development, Growth, and State of the Atomic Energy Industry*, 84th Cong., 1st Sess., pt. 1, at 208 (1955). See also former Joint Committee Chairman Sterling Cole's discussion of congressional interest in the 1954 act, in *The Meaning of the New Atomic Law*, Nucleonics, March 1955, p. 47.

³⁴ For a full discussion of this matter, see Ruebhausen, *New Atomic Problems*, 9 THE RECORD OF THE ASSOCIATION OF THE BAR OF THE CITY OF NEW YORK 368 (1954).

³⁵ §82(c), 68 STAT. 935, 42 U.S.C.A. §2112(c) (Supp. 1954).

³⁶ §62, 68 STAT. 932, 42 U.S.C.A. §2092 (Supp. 1954).

³⁷ §109, 68 STAT. 939, 42 U.S.C.A. §2139 (Supp. 1954).

³⁸ §57(a)(3), 68 STAT. 932, 42 U.S.C.A. §2077(a)(3) (Supp. 1954).

nuclear material, complete production and utilization facilities, or certain restricted data. International traffic in these items depends upon an intergovernmental agreement or some regional defense arrangement.³⁹ Where private commerce is dependent on these "agreements for cooperation," the very elaborate procedures required by law before the agreements can be completed make any regular flow of this type of trade questionable.

Other problems arise, too, from the whole series of prohibitions on things like the export or import of special nuclear materials,⁴⁰ the transfer or receipt of such materials in interstate commerce,⁴¹ and the implied prohibition on private ownership of production facilities abroad, though ownership is permitted within the United States.⁴² Finally, the exact relationship between foreign subsidiaries of American business and the home companies, in so far as the legal limitations on atomic power commerce are concerned, is in need of clarification.

In summary, we, thus, find that despite the liberalization of our atomic legislation in behalf of greater international cooperation and private atomic energy commerce, the amount of data still classified and the elaborateness of statutory restrictions and prohibitions on private activity combine with the many uncertainties in need of clarification to act as major deterrents to any effective American atomic power development program abroad. Though some clarification, interpretation, and declassification of information has been forthcoming from the AEC recently and licensing techniques are being formulated in cooperation with interested American business, the need for additional liberalizing legislation remains.

(2) A second outstanding characteristic of our existing nuclear legislation, as it relates to the conduct of an atomic power foreign policy, is the unusual extent to which Congress and an independent regulatory agency (the AEC) participate in imposing significant limitations on the President's traditional position in foreign policy. This evidence of legislative distrust of the presidency in foreign affairs—and a partial application of the Bricker amendment mentality—raises some question concerning the effectiveness of American governmental organization to formulate and conduct atomic power foreign policy.

To begin with, the 1954 act states that⁴³

The President is authorized to enter into an international arrangement with a group of nations providing for international cooperation in the nonmilitary applications of atomic energy and he may, thereafter, cooperate with that group of nations . . .

provided that this action is in accord with various specified procedures. This provision was Congress' response to Mr. Eisenhower's proposal before the United Nations General Assembly, on December 8, 1953, that some international atomic pool

³⁹ §123, 68 STAT. 940, 42 U.S.C.A. §2153 (Supp. 1954).

⁴⁰ §57(a)(2), 68 STAT. 932, 42 U.S.C.A. §2077 (a)(2) (Supp. 1954).

⁴¹ *Ibid.*

⁴² See §§41(a)(2), 103(d), 104(d), 68 STAT. 928, 936, 937, 42 U.S.C.A. §§2061 (a)(2), 2133(d), 2134(d) (Supp. 1954).

⁴³ §124, 68 STAT. 940, 42 U.S.C.A. §2154 (Supp. 1954).

plan be established. The interesting thing, however, is that the Congress saw fit to *authorize* the President to negotiate such an arrangement; that it stipulated that the arrangement could be either in the form of a treaty or of an executive agreement which must receive the approval of both Houses of Congress; and that the implementation of these arrangements had to be through intergovernmental "agreements for cooperation," which, in turn, are hemmed in by elaborate procedural requirements, including provisions for congressional review and the need to obtain evaluative recommendations by either the AEC or the Defense Department. For one thing, congressional authorization of the President's right to negotiate these arrangements might be labeled presumptuous, since his authority for such foreign policy action stems directly from the Constitution itself. For another, the statutory requirement that an executive agreement receive the approval of both Houses of Congress certainly is a novel limitation on an important presidential foreign policy power which traditionally has not been so limited. Moreover, the additional requirement that executive agreements be implemented only through "agreements for cooperation" with their elaborate procedural restrictions and their legislative definition of proper content areas surely produces an important restriction on the Chief Executive's ability to perform his constitutional role as chief diplomat.

The Atomic Energy Act of 1954 makes "agreements for cooperation" the crucial instrumentality in the conduct of an atomic power foreign policy. Designed to function on a bilateral basis, in contrast to the multilateral "international arrangements," they are both essential to the implementation of the latter and the only legal basis for much private international atomic power commerce as well as the primary means through which the President can provide other countries with American atomic power assistance. Essentially, such agreements are just traditional executive agreements with elaborate and novel legislative strings attached, both content and procedure-wise. In the case of the former, proper subjects for an "agreement for cooperation" are designated throughout the act in discussions of nuclear materials, facilities, and information. The procedural limitations, are the most unusual, however. As Representative Cole has summarized them,⁴⁴ the first stage involves the submission to the President of the negotiated agreement, which must not only meet statutory requirements by specifying its terms, conditions, duration, and scope, but must also contain guarantees by the foreign government to maintain specified security standards, to transfer only that material in accord with the agreement which will not be used militarily, and to transfer no material or restricted data to unauthorized persons except as specified in the agreement.⁴⁵ Together with this proposed agreement, the President must be provided by either the AEC or the Defense Department, as the case may be, with a positive or negative recommendation on it.⁴⁶ The third stage in the processing of this uniquely limited executive agreement in-

⁴⁴ See note 33 *supra*.

⁴⁵ §123(a), 68 STAT. 940, 42 U.S.C.A. §2153(a) (Supp. 1954).

⁴⁶ *Ibid.*

volves the making of a written presidential determination that the agreement in question will promote American defense and security without engaging in any unreasonable risk. The President is statutorily required to file this assurance after receiving and considering the recommendation of the AEC or Defense Department, to which, however, he is no longer compelled to adhere as he was under the McMahon Act.⁴⁷ These three steps having been taken, the President must then return all papers to the Joint Committee so that they are available to it for thirty days while Congress is in session.⁴⁸ Though the Joint Committee has no veto power to exercise, if it decides to oppose the agreement, it can then attempt to persuade the various proposers to reverse their positions, or resort to public criticism of the agreement on the floor of Congress, or introduce legislation to prevent the agreement's consummation, or attach riders to other legislation to prevent the agreement from being executed effectively.

The entire process for effectuating international "agreements for cooperation" is, as Representatives Holifield and Durham forced Secretary of State Dulles to admit during Joint Committee Hearings to amend the 1946 act during June of 1954, questionable constitutional practice.⁴⁹ The same may also be said of the need for congressional approval of "international arrangements," which, as Senator Anderson noted during those same Hearings, reflects the essence of the defeated Bricker amendment "in that it provides that executive agreements in the international area which deal with atomic matters are not binding unless approved by a majority of both Houses."⁵⁰ Quite interestingly, Mr. Dulles actually agreed that this process to which he was consenting was "not drastically different" from the Bricker amendment on executive agreements, as Senator Anderson phrased the situation.⁵¹ Thus, we find that, through such devices as the congressional ratification of "international arrangements," the thirty day proviso, the provision for evaluative recommendations on executive agreements by a subordinate department of the executive branch or by an independent regulatory agency, and the general tone of distrust of the President in foreign affairs, our existing atomic energy legislation serves as a good case study of the tendency during the last few years for Congress to challenge and even attempt to usurp executive authority. It may well be that, in this particular instance in which some unusual congressional success has been recorded, the President may find it necessary to request a liberalization of the statute in order for him to be able to conduct a fully effective atomic power policy abroad.

American Atomic Power Proposals and Actions in International Affairs

To date, the United States has acted on two broad fronts in international atomic politics: the multinational and the bilateral. The major initiative in

⁴⁷ §123(b), 68 STAT. 940, 42 U.S.C.A. §2153(b) (Supp. 1954); cf. Atomic Energy Act of 1946, §10(a)(3)(4), 60 STAT. 766, 42 U.S.C. §1810(a)(3)(4) (1946).

⁴⁸ §123(c), 68 STAT. 940, 42 U.S.C.A. §2153(c) (Supp. 1954).

⁴⁹ See *Hearings before the Joint Committee on Atomic Energy on S. 3323 and H.R. 8862, to amend the Atomic Energy Act of 1946*, 83d Cong., 2d Sess., pt. 2, at 691-92 (1954).

⁵⁰ *Id.* at 700-01.

⁵¹ *Id.* at 701.

launching an atomic power foreign policy was taken by President Eisenhower in an address to the General Assembly of the United Nations on December 8, 1953.⁵² Having just returned from a meeting of the Western Big Three at Bermuda, in which they tackled the problem of coordinating policies in preparation for some effort to reach a settlement with the Soviet Union, Mr. Eisenhower sought to offer the world specific hope that nuclear power could be employed for something better than destruction. After summarizing the developments which launched the atomic age and asserting his refusal "to confirm the hopeless finality of a belief that two atomic colossi are doomed malevolently to eye each other indefinitely across a trembling world . . .," the President then dramatically announced a series of proposals to reverse "the fearful trend of atomic military build-up" by taking "this weapon out of the hands of the soldiers" and putting it "into the hands of those who will know how to strip its military casing and adapt it to the arts of peace." The essence of his proposal to this world forum was that the⁵³

. . . governments principally involved, to the extent permitted by elementary prudence . . . begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials to an international atomic energy agency . . . [which] would be set up under the aegis of the United Nations.

The ratios of contributions of fissionable material, he stated, as well as the procedures and details of such an agency could be determined by private conversations among the interested parties of which "the Soviet Union must, of course, be one."⁵⁴ To this proposed international atomic energy agency, Mr. Eisenhower suggested, could be assigned responsibility "for the impounding, storage and protection of the contributed fissionable and other material . . ." so that the "bank" would be "immune to surprise seizure."⁵⁵ Even more importantly, such an agency could also be assigned the responsibility⁵⁶

. . . to devise methods whereby this fissionable material would be allocated to serve the peaceful pursuits of mankind. Experts would be mobilized to apply atomic energy to the needs of agriculture, medicine and other peaceful activities. A special purpose would be to provide abundant electrical energy in the power-starved areas of the world. Thus the contributing powers would be dedicating some of their strength to serve the needs rather than the fears of mankind.

The world-wide reaction to Mr. Eisenhower's initiative was such as to justify completely the creation of an American atomic power foreign policy. For, the universal enthusiasm accorded the statement demonstrated not only the global interest in the benefits which could be derived from nuclear energy, but the importance to the American leadership position of assuming the initiative in this area. The President's proposal became a primary consideration at the Ninth General Assembly of

⁵² *Atomic Power for Peace*, U.N. GENERAL ASSEMBLY OFF. REC., 8th Sess., Plenary 470 (1953), reprinted in *Hearings*, *supra* note 49, at 4-8.

⁵³ *Id.* at 6, 7.

⁵⁵ *Id.* at 7.

⁵⁴ *Id.* at 8.

⁵⁶ *Id.* at 7-8.

the United Nations, which commenced in September 1954, and it resulted in the unanimous adoption by that Assembly of a resolution in favor of energetic international action to promote atomic energy's peaceful potentialities. The resolution recommended, first, the early establishment of an International Atomic Energy Agency along the lines suggested by the American President and, second, urged the convocation, under United Nations auspices, of an international conference to explore the possibilities for cooperative dissemination of information concerning peaceful atomic technology.⁵⁷ The opening American atomic foreign policy move, thus, had proved successful.

Unfortunately, however, the initial announcement's reinforcement of our claim to leadership in peace as well as war, which so captured the imagination of all those who hoped for some material improvement in their standard of living, was somewhat tempered during the General Assembly discussions in the fall and winter of 1954. This resulted not only from the inability to obtain meaningful Soviet cooperation to implement the American proposal, but also from the restricted interpretation of the proposal's scope applied by the United States itself. For, it soon became apparent that the International Agency really represented no more than a small beginning rather than a full-blown international atomic energy program for peace. What the United States really was suggesting was no more than a type of clearing house for nuclear assistance requests, with much of the energy-giving fissionable material as well as most of the vital related technical and economic developmental assistance to be provided through bilateral negotiations, if at all. The original supranational implications of President Eisenhower's speech apparently were not to be implemented. In addition, the power-hungry underdeveloped countries—though ultimately to be represented on the Agency's executive board—were to be excluded from the "private negotiations" to create the organization. These discussions were to be conducted by just the eight states with major technological and/or raw material resources; namely, the United States, Britain, Canada, France, Australia, Belgium, South Africa, and Portugal plus, if it so desired, the Soviet Union.⁵⁸

The result of such revelations during the 1954 General Assembly session was to take much of the original edge off the enthusiasm of most of the UN members who were, in the words of Ecuador's spokesman, being treated like poor relatives.⁵⁹ With almost all of Africa as well as all of Asia and Latin America to be unrepresented in the establishment of the Agency, and these areas already dominated by a great deal of anti-colonial suspicion of the West, India and Burma, thus, were merely voicing the views of most of the potential beneficiaries of the plan when their delegates emphasized that the fulfillment of the nuclear promise not only appeared to be substantively limited, but smacked of nuclear imperialism.⁶⁰

⁵⁷ U.N. GENERAL ASSEMBLY OFF. REC., 9th Sess., Supp. No. 21 (Doc. No. A/2890) 810(IX) (1954).

⁵⁸ U.N. GENERAL ASSEMBLY OFF. REC., 9th Sess., Agenda Item No. 67, First Committee, 707-724th meeting, Nov. 5-Nov. 22, 1954.

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

Before the conclusion of the General Assembly discussions with the passage of the resolution noted above and an expression of formal approval of negotiations among the eight powers for the purpose of drafting a statute to create the Agency, American policy sought to regain some of its initial attractiveness. Thus, on November 15, 1954, the United States announced the allocation by the AEC of 220 pounds of purified uranium 235 as fuel to be available for experimentation to countries interested in participating in the international program.⁶¹ We were immediately joined by Great Britain, which similarly allocated 44 pounds of fuel.⁶² The Soviet Union, therefore, was challenged to demonstrate its own interest in "atoms for peace." Moreover, after the session, we indicated, through Mr. Eisenhower's special assistant for international atomic energy affairs and U.S. Representative for International Atomic Energy Agency negotiations (Morehead Patterson), that we would consider all the criticisms of the proposed Agency and probably would recommend, eventually at least, that the original nuclear treaty be adhered to by all sixty UN members plus the twenty-four members of the ten specialized UN agencies.⁶³ At this writing, however, no definite result has been achieved in the establishment of such an agency through negotiations among the eight western states. Discussions between the United States and the Soviet Union have taken place only intermittently. A primary obstacle has remained Soviet intransigence. The Soviet Union has continued to adhere to one of the two stipulations it had announced at the time it joined in the unanimous approval of the General Assembly resolution of December 1954—namely, that the proposed international agency be placed under the authority of the Security Council—in which a Great Power veto can be invoked. Moreover, though, it dropped the second condition—that the Geneva nuclear energy conference be open to such non-UN members as Communist China—Moscow also has formulated a network of bilateral atomic agreements with China, Poland, Czechoslovakia, Rumania, East Germany, Hungary, and Bulgaria. This "cold war" response to the American "agreements for cooperation" program recently has been supplemented by Soviet atomic *power* assistance offers to "neutral" states, like Egypt, to whom we have been offering no more than nuclear *research* aid.

The second portion of the United Nation's General Assembly resolution—the calling of an international nuclear science conference—was also a product of American initiative⁶⁴ and has, of course, been fulfilled by the Geneva meeting. Following quickly upon the heels of this authorization to convoke "an international technical conference of governments," Secretary-General Dag Hammarskjöld established a seven-nation advisory committee and an international staff composed of top-flight scientists. This group met in January 1955 and formulated a tentative program which would commence with plenary discussions of world power resources and re-

⁶¹ See N. Y. Times, Nov. 16, 1954, p. 1, col. 1.

⁶² See *id.*, Nov. 17, 1954, p. 1, col. 3.

⁶³ See Frye, *Atoms for Peace: The First Step*, 34 FOREIGN POLICY BULLETIN 82 (1955).

⁶⁴ Secretary Dulles proposed it to the General Assembly on September 23, 1954. See N. Y. Times, Sept. 24, 1954, p. 1, col. 1.

quirements and then proceed to the consideration of exclusively scientific papers on reactor technology, radiation, medical and biological applications of nuclear energy. With a nonpolitical program thus outlined, the Secretary-General then extended invitations on February 1, 1955 to 84 nations to attend the conference and to submit, by July 1, papers which they would like to have read by their delegates. Seventy-two nations eventually accepted this invitation to attend the conference and, in addition, some seventeen countries submitted approximately 1,000 papers to be read. Space in the Palais des Nations for governmental exhibits was also allocated in accord with requests, and a special exhibition hall was arranged for additional commercial exhibits by organizations interested in launching international trade in nuclear equipment. Several pertinent UN specialized agencies like the FAO, WHO, and UNESCO were consulted during the planning of the conference, and they too were invited to send representatives. Thus, the arrangements for this first world conference on the peaceful uses of atomic energy were handled with commendable efficiency and impartiality. President Eisenhower's call, through Admiral Strauss, for a second such conference in the future⁶⁵ serves to demonstrate the extent to which at least this particular American foreign policy initiative in the nuclear field was effectively implemented by the United Nations.

Two things of outstanding interest and value have resulted from the Geneva Conference. First, and perhaps most important, has been the tremendous relaxation of national controls over atomic information. The leading countries actually engaged in what AEC Chairman Strauss said he hoped they would not enter—namely, "A scientific Olympic Games."⁶⁶ All manner of revelations concerning reactor technology and the scientific applications of nuclear fission were presented. Such competition to destroy a good deal of the secrecy which had handicapped international scientific exchange prior to Geneva not only served a useful purpose by partially unfreezing the nuclear "cold war," but also presented scientists from the less advanced countries with a great opportunity to expand their knowledge in a hurry.

The second significant result of Geneva was the formal launching of international atomic trade. For, the full-dress atomic trade fair demonstrated, in most vivid fashion, the preparations to compete for the atomic market which were now being made by business organizations in the United States, Britain, France, Belgium, the Netherlands, Italy, Switzerland, and West Germany. Outstanding in this commercial exposition was the obvious head start of the British, whose national interest in early atomic power had combined with the need to develop more specialized export markets in new fields where a competitive advantage could be achieved over other traders. The result was that, to paraphrase some disgruntled American businessmen on the scene, the British atomic merchants had the most space and the greatest number of specific atomic commodities available for sale, and their order

⁶⁵ See N. Y. Times, Aug. 17, 1955, p. 1, col. 5.

⁶⁶ Stanford, *The Two Genevas: Diplomatic and Atomic*, 34 FOREIGN POLICY BULLETIN 171 (1955).

books were on hand to consummate transactions. American businessmen, on the other hand, were not yet really prepared to compete both because of the governmental limitations under which they had to operate and because of the more leisurely approach taken towards atomic power development in the American nuclear program. Of additional interest in connection with this first commercial exhibition was the absence of Soviet nuclear wares for general sale. Instead of such "sordid" commercialism, Moscow announced that it would supply atomic assistance at cost, but only to its satellites. It is, thus, possible to say that both in terms of the information disclosed and atomic commodities available to interested countries, the Geneva Conference fulfillment of President Eisenhower's policy initiative in the fall of 1954 can be regarded as a Western victory. Everyone knew before Geneva that the Soviets could build bombs; the real question was their preparation to respond to the clamor of power-hungry peoples of the world for atomic assistance. The Geneva Conference revealed that the West was still the primary technological hope for underdeveloped areas. Since then, however, Soviet assistance offers outside the Communist orbit challenge the West to prove its willingness to fulfill this hope of the world's power-needy.

American foreign policy in the field of atomic energy has not only sponsored an International Atomic Energy Agency and the Geneva Conference, it has also engaged in a limited nuclear training program for scientists from friendly countries and has entered into an elaborate program of bilateral agreements with such countries in application of the "agreements for cooperation" portion of the Atomic Energy Act of 1954. The training program, to date, has been of two types: On March 13, 1955, a School of Nuclear Science and Engineering was opened by the AEC at the Argonne National Laboratory with an initial class composed of forty students from twenty countries, including nine representatives of American firms interested in atomic energy.⁶⁷ The curriculum of this school is atomic reactor technology, and its objective, as indicated by Morehead Patterson in his address at its inauguration, is to increase rapidly the "number of reactor engineers . . . in the free world . . . especially in those areas where such specialized skills may most readily be put to work."⁶⁸ The course work is based upon unclassified materials. This, then, is intended to be "the beginning of an extensive, permanent program of international education" to help develop in the noncommunist world an adequate body of "engineers and technicians who know how to design, build, and operate" atomic power plants.⁶⁹ Since its opening, the Argonne school has received a second class in the seven-month course, and President Eisenhower has announced that⁷⁰

⁶⁷ Nations represented were Argentina, Australia, Belgium, Brazil, Egypt, France, Greece, Guatemala, Indonesia, Israel, Japan, Mexico, Pakistan, Philippines, Portugal, Spain, Sweden, Switzerland, and Thailand.

⁶⁸ Patterson, *Man's Benefits from the Atom*, 32 DEP'T STATE BULL. 553 (1955); reprinted in U. S. DEP'T STATE PUB. No. 5830, GENERAL FOREIGN POLICY SERIES 99 (1955).

⁶⁹ *Ibid.*

⁷⁰ *New Atomic Programs*, 4 U. S. DEP'T OF STATE FOREIGN POLICY BRIEFS, No. 24, at 1 (June 17, 1955).

. . . with prudent security considerations, we propose to make available to the peoples of such friendly nations as are prepared to invest their own funds in power reactors, access to and training in the technological processes of construction and operation for peaceful purposes.

The United States, thus, appears to have committed itself to indefinite governmental nuclear training for scientists from noncommunist countries. This educational program undoubtedly will be supplemented increasingly by American universities, themselves. There can be little question that this sort of program is and should be an important component of an atomic power foreign policy and that its attractiveness to technologically less well developed countries is great. Nonetheless, it is to be hoped that such training can at least be related to the activities of the proposed International Atomic Energy Agency, though not necessarily made available to communist country scientists until real international cooperation in nuclear energy is established.

The second type of nuclear training program for foreigners now engaged in by the American Government involves the study of radioisotope techniques. Though such four-week courses have been conducted at Oak Ridge, Tennessee, since 1948, as part of work contracted by the AEC to the Oak Ridge Institute of Nuclear Studies (an educational corporation of thirty-two southern colleges and universities), the first special session for friendly foreigners was inaugurated on May 2, 1955. Thirty-two scientists and technicians from twenty-one nations were accepted for it, with the facilities of the Department of State's Educational Exchange Program and of the Foreign Operations Administration (now ICA) utilized to conclude the arrangements. It can also be noted that the AEC has provided libraries of unclassified nuclear information to a number of countries, including Japan, Italy, and France for use by their scholars at home. This second type of training program should also be related ultimately to the activity of an International Atomic Energy Agency. Moreover, there would seem to be less justification for not including scientists from communist countries than in the reactor school, even if the program is continued under American auspices, since the information transmitted is unclassified and the benefits to be derived are primarily medical.

"Agreements for cooperation" have been entered into with twenty-six countries, as of July 15, 1955, and more undoubtedly will continue to be concluded. The important questions to be asked in connection with this steadily mounting network of bilateral executive agreements is, of course, their real significance. Do they actually represent important assistance to all these countries in the peacetime utilization of nuclear energy, or are they merely gestures devoid of much real meaning for peoples seriously interested in tapping the atom's benefits? Has the "agreements for cooperation" provision of the Atomic Energy Act of 1954 been employed, in other words, in such fashion that it has become the primary atomic foreign policy instrument it was intended to be?

A scrutiny of these agreements reveals that they are of four general types, to date: (1) those with nations which are at the very beginning of nuclear development, in

which agreements are restricted to American provision of unclassified data, a limited amount of fuel, some technical assistance, and access to private American companies for the erection, operation, and experimentation by the foreign nation with non-power research reactors; (2) those with more advanced nations which desire to obtain some specific item to facilitate research reactor programs which already are under way; (3) those with technologically advanced nations which also are leading suppliers to the United States of uranium, like Belgium or Canada, in which the agreement not only permits the exchange of both classified and unclassified information, but deals with power and propulsion reactors as well as research reactors and source materials; (4) those with technologically advanced nations, like the British, where real exchange of information, techniques, and devices on a mutually advantageous basis is possible, and unilateral American technical assistance is not the agreement's orientation.

The prototype for the most common form of our "agreements for cooperation" is the United States-Turkish arrangement.⁷¹ Setting the pattern for the first type of agreement noted above, it contains the following significant provisions: Subject to the stipulation that no restricted data will be communicated and no materials, equipment, or devices transferred or services furnished in the transfer of any such items involving restricted data,⁷² the parties agree to exchange information concerning the "design, construction and operation of research reactors and their use as research, development and engineering tools and in medical therapy" as well as to exchange information on related "health and safety problems" and on "the use of radioactive isotopes in physical and biological research, medical therapy, agriculture and industry."⁷³ Furthermore, the AEC promises to "lease to the Government of the Turkish Republic uranium enriched in the isotope U-235 . . . required as initial and replacement fuel in the operation of research reactors" whenever the Turkish Government either decides to construct them itself with AEC consultation or have them constructed for it by private individuals or groups under its jurisdiction which have been chosen in consultation with the AEC. Such private research reactors and their materials must, "at all times," be under "sufficient control" of the Turkish government. To implement this, the AEC agrees to provide up to six kilograms of uranium enriched up to a maximum of twenty per cent with U-235 and to replace this amount upon the return of fuel elements requiring such replacement.⁷⁴ In addition, the agreement pledges that the AEC "will sell or lease" to the Turkish government or authorized persons, in accord with supply, "such reactor materials, other than special nuclear materials, as are not obtainable on the commercial market and which are required in the construction and operation of research reactors in

⁷¹ Agreement for Cooperation Concerning Civil Uses of Atomic Energy Between the Government of the United States of America and the Government of the Turkish Republic, 101 CONG. REC. 5140 (daily ed. May 11, 1955).

⁷² *Id.*, art. V, at 5141.

⁷³ *Id.*, art. I, at 5141.

⁷⁴ *Id.*, art. II, at 5141.

Turkey.”⁷⁵ Finally, the agreement indicates that “private individuals and private organizations in either the United States or Turkey may deal directly with private individuals and private organizations in the other country” and that the United States “will permit persons under its jurisdiction to transfer and export materials, including equipment and devices, to, and perform services for,” the Turkish Government or authorized private Turkish organizations.⁷⁶ In exchange for the above, the Turkish government agrees to keep certain records of its use of this assistance and provides the guaranties required by the Atomic Energy Act of 1954.⁷⁷ In a concluding article, some definitions of terms are listed, including that of “research reactors,” which are held to mean reactors⁷⁸

. . . designed for the production of neutrons and other radiations for general research and development purposes, medical therapy, or training in nuclear science and engineering. The term does not cover power reactors, power demonstration reactors, or reactors designed primarily for the production of special nuclear materials.

From the above agreement, it is obvious that no more than fundamental technical assistance is involved and that atomic power development is not considered. Agreements of this type, which comprise most of the thirty now negotiated, do no more than imply that atomic power development will some day be possible after the preliminary research reactor experimentation has been engaged in. Possibly in recognition of this material and psychological omission, subsequent agreements of this type now include actual expressions of hope that the particular agreement for cooperation will lead to further cooperation extending to the design, construction, and operation of power-producing reactors. Another recent innovation which has been announced by President Eisenhower is that he will recommend to the Congress that the United States also contribute half the cost of research reactors and, if the technical and material resources of a single country are inadequate for effective utilization of a research reactor, the United States will support a voluntary grouping of resources within a single region to acquire and operate such a reactor in common. It, thus, is possible to say that this form of agreement is one of fundamental nuclear education assistance, but not of atomic power development. Undoubtedly, unless coupled with indications of atomic power assistance at any early date, such agreements will not be as attractive to foreign countries as we would like them to be, particularly after the Geneva Conference and the general relaxation of information secrecy plus the availability for sale by the British of small and medium-sized power reactors and the new Soviet assistance offers.

The second type of agreement for cooperation entered into by the American Government, to date, involves the provision of some specific, but limited, assistance to nations which already have a reactor program of their own under way. Thus,

⁷⁵ *Id.*, art. III, at 5141.

⁷⁶ *Id.*, art. IV, at 5141.

⁷⁷ *Id.*, art. VI, at 5141.

⁷⁸ *Id.*, art. X(c), at 5141.

for example, Washington agreed to sell ten tons of heavy water to both India and Italy, to be delivered during 1955 and 1956, for use as moderators in their first research reactors. During August 1955, the United States also sold to the Swiss Government the research reactor it established at the Geneva Conference for demonstration purposes, and it agreed to allow the Bavarian state government to purchase, in the United States, an atomic pile for research at Munich's Nuclear Physics Institute. Israel has been another customer interested in such types of limited research assistance, and, undoubtedly, many other countries which have advanced beyond the level of fundamental nuclear education will present similar requests, in increasing numbers, in the near future.

The agreement for cooperation between the United States and Belgium provides an example of the third type of understanding entered into under this program. With an introduction which describes the high degree of cooperation in the nuclear field which has prevailed between this country, Belgium, and the United Kingdom since 1940 and the willingness of the Belgian Government throughout this whole period to make its vast uranium ores in the Congo available to the British and ourselves, the agreement then notes our pledge from the outset that Belgium would "participate on equitable terms in the utilization of these ores" for power, once Britain and the United States decided to employ them for such purposes.⁷⁹ In repayment for this friendly and vital cooperation, article 1 of the agreement states that Belgium will receive from the AEC, "in the field of the peaceful uses of atomic energy, information and materials on terms as favorable as any other major uranium-supplying country except Canada." Following this adaptation of the most-favored-nation technique to atomic energy assistance, the agreement proceeds to specify its duration until July 31, 1965,⁸⁰ pledges an exchange of "general information on the over-all progress and economics of power reactor programs,"⁸¹ and authorizes an exchange of "technological information required for the construction of specific reactors for the Belgian power program in Belgium, the Belgian Congo, and Ruanda-Urundi,"⁸² with said exchange including "specifications for reactor materials," "properties of reactor materials," "reactor components," "reactor physics technology," "reactor engineering technology," and "environmental safety considerations."⁸³ The AEC also agrees to "receive selected security-cleared personnel from Belgium to work with and participate in the construction of the PWR reactor at Shippingport, Pennsylvania, and such other reactors as may be agreed . . .,"⁸⁴ to "transmit . . . all essential information . . . making it possible for Belgium to design, construct, and operate a thermal, heterogeneous, pressurized light or heavy water

⁷⁹ Agreement for Cooperation Concerning the Civil Uses of Atomic Energy Between the Government of the United States of America and the Government of Belgium, 101 CONG. REC. 7377 (daily ed. June 20, 1955).

⁸⁰ *Id.*, art. II, at 7377.

⁸¹ *Id.*, art. III(A)(1), at 7378.

⁸² *Id.*, art. III(A)(2), at 7378.

⁸³ *Id.*, art. III(B)(1)(a)-(f), at 7378.

⁸⁴ *Id.*, art. III(B)(2), at 7378.

(boiling or non-boiling) reactor . . . ,”⁸⁵ to “communicate classified technical information required for the construction of any specific reactor” being seriously considered for metropolitan Belgium or the two African territories mentioned above,⁸⁶ and to “communicate classified information pertaining exclusively to any reactor-types, such as submarine, ship, aircraft, and certain package power reactors” when “these types of reactors warrant peacetime application. . . .”⁸⁷ The emphasis on peacetime application, incidentally, is clearly designated in art. III (C) (1), which excludes any exchange of restricted data pertaining primarily to atomic weapons or special nuclear materials. Other provisions of interest in this very elaborate agreement include authorization for private individuals and organizations in both countries to deal directly with the governments involved in implementing the arrangements,⁸⁸ the pledge that the AEC will sell “non-research quantities of materials” to Belgium “for use in research and power reactors” with the AEC reprocessing such fuel as necessary,⁸⁹ and also its promise to sell required quantities of heavy water.⁹⁰

In exchange for all of this extensive American atomic research and power assistance, the Belgian Government undertakes in the agreement to continue to supply American uranium needs through the existing Combined Development Agency and the African Metals Corporation⁹¹ and to obtain American consultation “on the international significance of any proposed transfer of any uranium and thorium ores or special nuclear materials to any country other than the United Kingdom,”⁹² as well as to give the United States “an option to purchase any special nuclear materials produced in Belgium, the Belgian Congo, or Ruanda-Urundi, from materials sold” in accord with the agreement “which are in excess of Belgium’s need . . . in its program for the peacetime use of atomic energy.”⁹³ These undertakings by Belgium, in effect, tie up its vast uranium and thorium resources in an intergovernmentally sponsored and controlled cartel involving Belgium, the United States, and the United Kingdom and make the United States the primary supplier of Belgian nuclear fuel. The mutual benefits from this monopolistic arrangement appear to be very great, however. Nonetheless, when one adds to this agreement a similar one with Canada and Anglo-American arrangements involving access to South Africa’s uranium, it becomes obvious that unless the United States and the United Kingdom are willing to act as suppliers not only of technological assistance but also of fuel, most of the world, under existing conditions, will be unable to operate elaborate atomic power systems either for want of the necessary raw materials or for lack of capacity to process them. The need for both a North Atlantic community coordinating agency and a really effective United Nations Atomic Energy Agency, of the type suggested earlier, thus, seems to have been enhanced by “agree-

⁸⁵ *Id.*, art. III (B) (3), at 7378.

⁸⁷ *Id.*, art. III (C) (2) (b), at 7378.

⁸⁹ *Id.*, art. VII (A) (1) and (2), and art. VII (B), at 7378.

⁹⁰ *Id.*, art. VII (D), at 7379.

⁹² *Id.*, art. VII (C), at 7379.

⁸⁶ *Id.*, art. III (C) (2) (a), at 7378.

⁸⁸ *Id.*, art. VI, at 7378.

⁹¹ *Id.*, art. VII (E), at 7379.

⁹³ *Ibid.*

ments for cooperation" between the United States and such raw material suppliers as Belgium.

The agreement between the United States and the United Kingdom, released by the Atomic Energy Commission on June 20, 1955, which represents the fourth type in the American "agreements-for-cooperation" network, is certainly one of the most important.⁹⁴ It also is a type which is least widely applicable, since it involves truly equal technological exchange between two of the three giants of nuclear energy. Having excluded data primarily concerned with military applications of atomic energy, this very significant agreement specifies an exchange of information between the AEC and the British Atomic Energy Authority involving reactors, extraction of "uranium and thorium," properties of nuclear materials, "technology" for the "production and utilization of materials," "health and safety,"⁹⁵ and "research materials and research facilities"⁹⁶ as well as the transfer of certain "equipment and devices,"⁹⁷ materials and services,⁹⁸ and patent rights⁹⁹ for a period of ten years. Classified information, however, "will be exchanged only when relevant to current or projected programs," while special nuclear material "will be exchanged . . . only for research purposes," even when primarily of a nonmilitary character.¹⁰⁰ Also of interest is a stipulation protecting private patent rights and information¹⁰¹ and the effort made at a number of places to prevent the communication, either prematurely or at all, of restricted data concerning the production and utilization of nuclear material and isotopes.¹⁰² Such things appear to indicate a large measure of caution by each party to avoid providing the other with any commercially useful information before competitive advantage has been derived from it in the international market.

III

WHERE WE STAND IN ATOMIC POWER FOREIGN POLICY

The preceding discussion of atomic power's international implications has emphasized several points in particular. One point has been that atomic power undoubtedly will have a great impact on human affairs but that such impact will be directly related to the present degree of technological development or lack of it found in most countries of the world. Industrially advanced nations are in the best position to employ the new energy source either to stabilize or to enhance their positions; currently underdeveloped lands generally are in the weakest position to utilize atomic power effectively in the very near future. This stems from the fact that the power

⁹⁴ Agreement for Cooperation on the Civil Uses of Atomic Energy Between the Government of the United States of America and the Government of the United Kingdom of Great Britain and Northern Ireland, 101 CONG. REC. 7371 (daily ed. June 20, 1955).

⁹⁵ *Id.*, art. II, at 7371.

⁹⁷ *Id.*, art. V, at 7372.

⁹⁹ *Id.*, art. VII, at 7372.

¹⁰⁰ See the covering letters of Mr. Strauss and President Eisenhower appended to the agreement, as released by the AEC, 101 CONG. REC. 7371, 7373 (daily ed. June 20, 1955), and art. II(A)(3), *id.* at 7373.

¹⁰¹ *Id.*, art. I(D), at 7371.

⁹⁶ *Id.*, art. III, at 7372.

⁹⁸ *Id.*, art. VI, at 7372.

¹⁰² See, e.g., *id.*, art. II(D), at 7371.

derivable from the atom is utilizable only where a particular society is culturally receptive to it, can handle its social by-products, and is technologically prepared for it. Where significant deterrents now exist to technological progress of any type, such deterrents will also restrict the application of atomic power. Though some of the financial and technical obstacles can be alleviated by a really effective and supranational United Nations agency, even the creation of such a body (which is not presently blueprinted by the governments concerned with establishing an International Atomic Energy Agency) would not change the fact that the major industrial countries of the world, under present circumstances, will generally be the earliest and greatest beneficiaries of atomic power for the foreseeable future.

A second point of emphasis has been the necessity for the United States to formulate a full-blown and complex atomic power foreign policy. Such a policy must be well integrated with existing broad international objectives and particularly with our foreign economic, technical, and psychological policies. This integration, in turn, compels the development of programs for our Western allies, on the one hand, and the rest of the world on the other, with full attention accorded to the primary pressures and problems within each area as well as in the vital relations between them. In considering the extent to which we have fulfilled these requirements for a sound atomic power policy abroad, the conclusion reached has been that some accomplishment is apparent, but much remains to be done. The Atomic Energy Act of 1954 probably will have to be amended to facilitate private American atomic activity; it may also have to be amended to improve the President's ability to conduct a complete atomic power foreign policy. Moreover, the "agreements for cooperation" negotiated so far have done little more than offer some limited fundamental education for most of the nations involved. Though many are not yet prepared for more than this, international pressures undoubtedly will compel either early enhanced American assistance or, at least, more definite encouragement in the field of atomic power for power-hungry peoples. Our leadership position in world and nuclear affairs compels such broadening of the current program.

Finally, it has been noted that the United States has done little more than take the first few steps toward the necessary institutionalization of atomic power assistance and cooperation, internationally. Though we have recognized the demands of the situation and the requirements of our own position sufficiently well to play the international role of innovators of cooperation, a virile United Nations agency and a coordinating and regulatory agency for Western atomic activity have not yet been sponsored, though their contribution to world and Western well-being could be tremendous. Work on the skeleton for a sound American atomic power foreign policy, thus, has been commenced. We must now add some real flesh and muscle.