29. Multipolar Power Systems and International Stability*

Karl W. Deutsch and J. David Singer combine their talents here to probe the implications of recent changes in the structure of global politics for the stability of the international system. Unlike the previous selection, this one presumes that bipolarity no longer marks systemic structure and that a shift toward multipolarity has occurred. While noting that the short-run implications of this shift may be considerable, Professors Deutsch and Singer are dubious about the proposition that in the long run the shift will result in a more stable world order. [*Reprinted from* World Politics, *XVI (1964), 390–406, by permission of the authors and the publisher.*]

In the classical literature of diplomatic history, the balance-of-power concept occupies a central position. Regardless of one's interpretation of the term or one's preference for or antipathy to it, the international relations scholar cannot escape dealing with it. The model is, of course, a multifaceted one, and it produces a fascinating array of corollaries; among these, the relationship between the number of actors and the stability of the system is one of the most widely accepted and persuasive. That is, as the system moves away from bipolarity toward multipolarity, the frequency and intensity of war should be expected to diminish.

To date, however, that direct correlation has not been subjected to rigorous scrutiny by either abstract or empirical test. For the most part, it has seemed so intuitively reasonable that a few historical illustrations have been accepted as sufficient. This is, on balance, not enough to support a lawful generalization; it must eventually be put to the historical test. This will be done eventually,[1] but in the interim this hypothesis should at least be examined on formal, abstract grounds. The purpose of this article, therefore, is to present two distinct—but related—lines of formal, semi-quantitative, argument as to why the diffusion-stability relationship should turn out as the theoretician has generally assumed and as the historian has often found to be the case.

* Research used in this article has been supported in part by the Carnegie Corporation.

[1] Data-gathering on this topic is currently being carried on by David Singer.

I. A Probabilistic Concept of International Political Stability

Stability may, of course, be considered from the vantage point of both the total system and the individual states comprising it. From the broader, or systemic, point of view, we shall define stability as the probability that the system retains all of its essential characteristics; that no single nation becomes dominant; that most of its members continue to survive; and that large-scale war does not occur. And from the more limited perspective of the individual nations, stability would refer to the probability of their continued political independence and territorial integrity without any significant probability of becoming engaged in a "war for

survival." The acceptable level of this probability—such as 90, or 95, or 99 per cent—seems to be intuitively felt by political decision-makers, without necessarily being made explicit, but it could be inferred by investigators in the analysis of particular cases. A more stringent definition of stability would require also a low probability of the actors' becoming engaged even in limited wars.

This probabilistic concept of political stability differs from the stability concept used by L. F. Richardson, which was that of classical mechanics. Richardson's stability referred simply to any set of conditions under which the system would return to its equilibrium state; instability meant to him any state of affairs that would not so return, but rather would continue to change until reaching some limit or breakdown point of the system. A low rate of exponential growth of arms expenditures, of two competing powers—say, of 2 to 4 per cent a year—would be "unstable" in Richardson's terms, but might be compatible with a political stability for the indefinite future, as long as national per capita income or other indicators of the system's absorption capacity grew at least at the same rate. In that case, of course, the per cent for defense taken from the average per capita income would remain unchanging or might decline, with no untoward effects upon the internal financial or political stability of the states concerned—or upon the stability of the relation between them, as long as both continued to grow at similar rates.[2]

Richardson's essentially non-political stability concept and the political and probabilistic concept proposed here will lead to more closely similar results, however, if we reformulate Richardson's increments of arms expenditure of two rival states not in terms of dollars but in terms of per cent of national income. An arms race proper would then be defined as one in which the rival states stimulate one another to divert *increasing proportions of their national income* to military preparations—a practice with obvious political and economic limits, well before the entire 100 per cent of national income is consumed by military spending. The chief practical case investigated by Richardson, the arms race preceding World War I, was in fact of this nature, since the growth rate of the aggregate arms budget of the two main coalitions was of the order of 15 per cent per year, in contrast to income growth rates of the order of only 5 per cent in the principal countries.

The political definition of equilibrium that we have just proposed is quite compatible with the language used by Morton Kaplan.[3] In Kaplan's formulation, equilibrium and stability can be defined only in terms of particular variables, which must be chosen in advance. Thus, if we focus our attention upon the absolute level of armaments—say, in terms of a constant dollar expenditure at constant prices—the system would be stable, and a system in which the rival powers allocated constant proportions of their gross national products to armaments would appear to be unstable in these terms. If, however, these percentages of GNP themselves were chosen as the critical variables, the system would once again appear as stable.

The rest of this article will be presented in four sections. In the first, we link up the independent variable (number of independent actors) with the dependent one (stability of the system) by means of an emphasis on "interaction opportunity"—our intervening variable. In the second section, the interaction opportunity concept is extended to the point where it impinges on the degree of attention that any nation in the system may allocate to all of the other nations or to possible coalitions of nations. In the third, the multipolar and bipolar models are connected with Richardson's model of arms races and similar kinds of escalating conflicts. In the final section, these arguments are subjected to a new

[2] This argument does not take into account, of course, the effects of any radical changes in the quantity or effectiveness of weapons, or of the quantitative increase of currently available weapons of mass destruction to very high levels.

[3] Morton A. Kaplan, *System and Process in International Relations* (New York, 1957), 6–8. Kaplan has formalized many classic formulations of balance-of-power theory. For outstanding examples of these, see Hans Morgenthau, *Politics Among Nations* (3rd edn., New York, 1960), 167–226; Inis Claude, *Power and International Relations* (New York, 1962), 11–93; Frederick L. Schuman, *International Politics* (6th edn., New York, 1958), 70–72, 275–78, 577–79, 591–92; Arnold Wolfers, *Discord and Collaboration* (Baltimore 1962), 117–32; and Quincy Wright, *A Study of War* (Chicago, 1942), II, 743–46. For other attempts at formalization, see George Liska, *International Equilibrium* (Cambridge, Mass., 1957), 23–56, 187–202; Edward V. Gulick, *Europe's Classical Balance of Power* (Ithaca, 1955); and, for significant recent contributions, Anatol Rapoport, *Fights, Games and Debates* (Ann Arbor, 1960), and Richard Rosecrance, *Action and Reaction in World Politics* (Boston, 1963).

scrutiny, with the time scale introduced as a limiting factor.

II. The Accelerated Rise of Interaction Opportunities

The most obvious effect of an increase in the number of independent actors is an increase in the number of possible pairs or dyads in the total system. This assumes, of course, that the number of independent actors is responsive to the general impact of coalition membership, and that as a nation enters into the standard coalition it is much less of a free agent than it was while non-aligned. That is, its alliance partners now exercise an inhibiting effect—or perhaps even a veto—upon its freedom to interact with non-alliance nations.

This reduction in the number of possible dyadic relations produces, both for any individual nation and for the totality of those in the system, a corresponding diminution in the number of opportunities for interaction with other actors. Although it must be recognized at the outset that, in the international system of the nineteenth and twentieth centuries, such opportunities are as likely to be competitive as they are to be cooperative, the overall effect is nevertheless destabilizing. The argument is nothing more than a special case of the widely employed pluralism model.

In that model, our focus is on the degree to which the system exhibits negative feedback as well as cross-pressuring. By negative—as distinguished from positive or amplifying—feedback, we refer to the phenomenon of self-correction: as stimuli in one particular direction increase, the system exhibits a decreasing response to those stimuli, and increasingly exhibits tendencies that counteract them. This is the self-restraining system, manifested in the automatic pilot, the steam-engine governor, and most integrated social systems, and it stands in contrast to the self-aggravating system as seen in forest fires, compound interest, nuclear fission, runaway inflation or deflation, and drug addiction.[4]

The pluralistic model asserts that the amplifying feedback tendency is strengthened, and the negative feedback tendency is weakened, to the extent that conflict positions are superimposed or reinforcing. Thus, if all clashes and incompatibilities in the system produce the same divisions and coalitions—if all members in class Blue line up *with* one another and *against* all or most of those in class Red—the line of cleavage will be wide and deep, with positive feedback operating both within and between the two classes or clusters. But if some members of class Blue have some incompatible interests with others in their class, and an overlap of interests with some of those in Red, there will be some degree of negative of self-correcting feedback both within and between the two classes.

This notion is analogous to that of cross-cutting pressure familiar to the student of politics. Here we observe that every individual plays a fairly large number of politically relevant roles and that most of these pull him in somewhat different attitudinal, behavioral, and organizational directions. For example, if an individual is (1) a loving parent, (2) a member of a militant veterans' organization, (3) owner of a factory, and (4) a Catholic, the first and third factors will tend to deflect him toward a "coexistence" foreign policy, the second will pull him toward a "holy war" orientation, and his religious affiliation will probably (in the 1960's) produce a deep ambivalence. Likewise, following Ralf Dahrendorf's formulation, if status difference is a major determinant of conflict exacerbation, and an individual is head of a family, a bank teller, and president of the lodge, he will coalesce with and against different people on different issues.[5] In each of these cases, his relatively large number of interaction opportunities produces a set of cross-pressures such as largely to inhibit any superimposition or reinforcement. The consequence would seem to favor social stability and to inhibit social cleavage; increasing differentiation and role specialization in industrial society has, in a sense, counteracted the Marxian expectation of class warfare.

Thus, in any given bilateral relationship, a rather limited range of possible interactions obtains, even if the relationship is highly symbiotic. But as additional actors are brought into the system, the range of possible interactions open to each—and hence to the total system—increases. In economics, this accretion produces the transformation from

[4] For an application of these and related concepts to a range of political questions, see Karl W. Deutsch, *The Nerves of Government* (New York, 1963).

[5] Ralf Dahrendorf, "Toward a Theory of Social Conflict," *Journal of Conflict Resolution*, II (June 1958), 176–77.

barter to market, and in any social setting it produces a comparable increase in the range and flexibility of possible interactions. Traditionally, social scientists have believed—and observed—that as the number of possible exchanges increases, so does the probability that the "invisible hand" of pluralistic interests will be effective. One might say that one of the greatest threats to the stability of any impersonal social system is the shortage of alternative partners.

If we assume, then, that any increase in the number of independent actors *is* conducive to stability, the question remains as to the quantitative nature of this correlation. Is there any particular level at which the system cannot be made more stable by the addition of new actors, or less stable by the loss of existing actors? Is there, furthermore, some critical level at which small changes become crucial? Our response must be based, of course, on the degree to which each single increment or decrement affects the number of possible dyads, or bilateral interaction opportunities, in the system. That effect is found by applying the standard formula for possible pairs: $\frac{N(N-1)}{2}$; thus, in a purely bipolar system, only one dyad or pair is possible, while a tripolar situation produces three pairs, four actors produce six pairs, five produce ten possible pairings, and so on, as shown in Fig. 1.

This figure indicates rather dramatically the degree to which the number of independent actors affects the possible number of dyads, and thus interaction opportunities. Even as we move from bipolarity to a tripolar system, the interaction opportunities within the system triple, and when another single actor is added the possible dyadic relations increase by three, and so on, with each addition in the actor column producing an increment of N−1 in the interaction opportunity column. Intuitively, the student of international politics would note that until N reaches five, there is an insufficient number of possible dyads, and that beyond that level the stability-enhancing increment begins to grow very sharply.

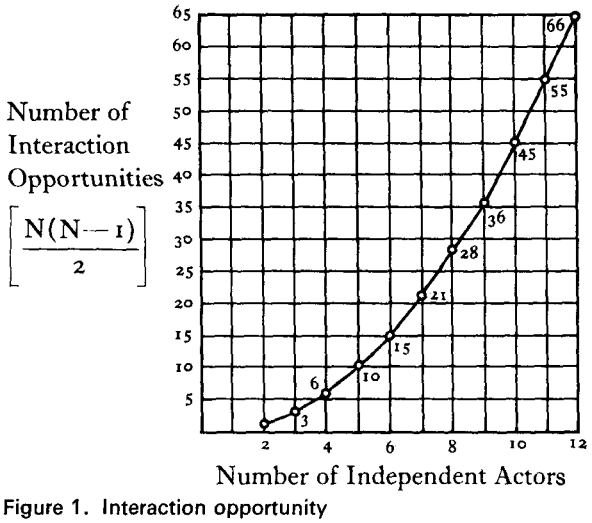

Figure 1. Interaction opportunity

So far, we have operated from the conservative assumption that all nations have identical interests, concerns, and goals, and though we would not want to exaggerate in the opposite direction, one cannot overlook the diversity that does exist. A landlocked nation can hardly offer fishing rights in its coastal waters, an agricultural surplus nation will seldom purchase those same foodstuffs, two underdeveloped nations are most unlikely to exchange machine tools, and a permanent member of the Security Council cannot be expected to give much for assurance of a seat in that organ. Every nation's needs and supplies differ, and the more nations there are, the greater will be the number and diversity of trade-offs available to the total system. As possible trade-offs increase, the greater the possibility for compensatory and stabilizing interactions to occur. That is, in a system characterized by conflict-generating scarcities, each and every increase in opportunities for cooperation (i.e., to engage in a mutually advantageous trade-off) will diminish the tendency to pursue a conflict up to, and over, the threshold of war.

Finally, membership in an alliance not only exercises a negative quantitative impact on a nation's interaction opportunities, but affects the quality of those that do continue to exist. On the one hand, the pattern-maintenance needs of the alliance will be such as to *minimize* (a) the range of issues over which it will conflict with an alliance partner, and (b) the intensity of such intra-alliance conflicts as are permitted. On the other hand, the establishment of such a clear-cut ingroup-outgroup division can only lead to an *increase* in the range and intensity of any conflicts with non-alliance actors.

To summarize, one logical explanation for the correlation between number of independent actors

and the probability of armed conflict lies in the realm of enhanced interaction opportunities, observed in terms of their quantity, diversity, and qualities.

III. The Accelerated Diminution in the Allocation of Attention

A second line of argument that should also support the hypothesized correlation between multipolarity and stability revolves around the notion of attention available for conflict. Here we assume that, as the number of independent actors in the system increases, the share of its attention that any nation can devote to any other must of necessity diminish. The argument need not, of course, postulate that each additional actor will attract an equal share of the attention of each of the other actors, or necessarily attract the same share as those already in the system. That share will be a function of many considerations and may vary rather widely. Let us assume, then, that any nation's total external attention—that is, its information-processing and resource-allocating capabilities—will be distributed among all others in the system according to a normal distribution, as illustrated in Fig. 2.

In this figure, we suggest that a very few of the total number of actors in the system receive very little of A's attention, that most of them receive a moderate share of that attention, and that a very few receive an impressively heavy share of it. But regardless of the shape of this attention distribution curve, the fact is that every actor claims *some*.

If those receiving a minimal share of A's attention were to disappear into a coalition, this would have only a minor impact on the amount of attention now left over for A to redistribute among the remaining independent actors. But if coalition were to occur among some of those receiving a greater share of that original attention, A would then be able to deal with the members of that coalition with fewer demands on its information-processing and energy-allocating capabilities; as a consequence, that remaining for allocation to the other actors in the system would be appreciably increased.

Now the limited attention capability of each nation in the system must be allocated between two different sets of relationships. First priority will tend to go to all of those dyadic relationships in which it is a partner, while the dyads of which it is not a member will receive a lesser, but not insignificant, degree of attention. Some recent illustrations of this latter demand might be found in the attention which the United States has expended on the Soviet-Yugoslavian, British-Egyptian, or Indian-Pakistan dyads, or which the U.S.S.R. devoted to the Arab-Israeli, Cuban-American, or Franco-Algerian pairings. Regardless of membership or non-membership, each nation must spread its attention among most of the dyads in the system.

What, then, is the effect of any trend toward or away from bipolarity upon that distribution of attention? In Fig. 3, we plot that distribution according to the assumption that, with each single addition to the number of independent actors, the total number of dyads in which nation A is a member will also increase by one, following the formula N−1.

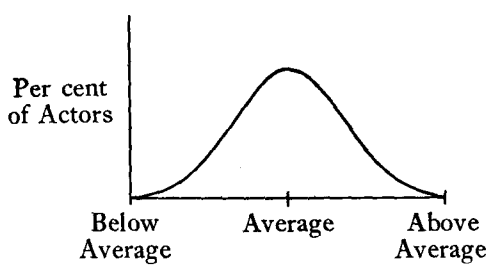

Figure 2. Share of attention

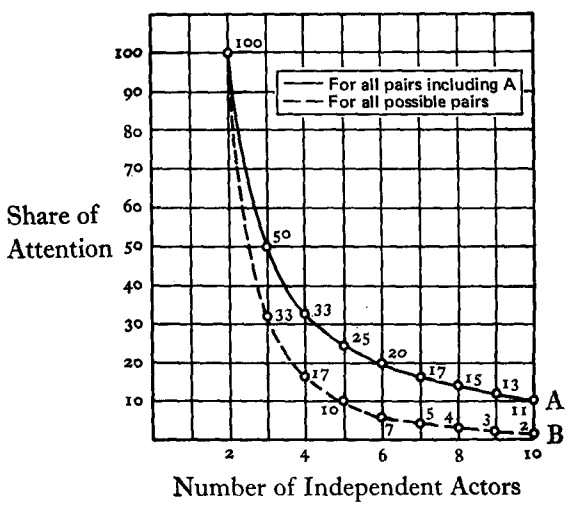

Figure 3. Allocation of attention

With each increment in the number of dyads of which A may be a member, the amount of attention available for any one such pairing will drop, as shown in the upper (solid line) curve. Thus three actors produce two possible dyads that include A, with an average of 50 per cent of A's attention available for each; four actors produce three such pairs and 33 per cent of A's attention for each; and five actors produce four A-inclusive dyads, with only 25 per cent of his attention available to each.

When we drop the condition that only those dyads of which A (any actor) is a member can constitute a drain on A's attention, and assume that *every* possible dyad will make some such demand, the attention curve responds even more rapidly to an increase in the number of independent actors. As the lower (dotted line) curve indicates, each new actor increases the total number of dyads by the $\frac{N(N-1)}{2}$ formula, as already used earlier in Fig. 1, with the percentage of share of attention available to each dyad dropping even more sharply.

Why should these rapid decreases in percentage of available attention exercise any effect upon the stability of the system? In communication theory, it is generally recognized that below a certain signal-to-noise ratio, the signal is essentially undetectable; that is, it loses prominence as its strength vis-à-vis the noise (or random disturbance) in the system diminishes. The same general principle would seem to apply to social interaction; as Rapoport and Schelling have pointed out, interaction between any two nations may be viewed as a special case of the interchange of messages between them.[6] Each state in this case would have to treat the messages from its most prominent adversary of the moment as the signal relevant to this incipient conflict in or before its early stage of escalation; and it would tend to treat all other messages, concerning all other pairs of states, as noise of relatively little relevance to this particular conflict.[7]

The general requirement of at least a minimal signal-to-noise ratio would then hold for this incipient conflict, as it would hold for any other communication process; and we shall assume that it is approximated by the ratio of governmental attention to foreign messages from this particular rival, to all other messages concerning other states or pairs of states. Just what this signal-to-noise ratio—or, here, minimal attention ratio—would have to be is a question of empirical fact. Signal-to-noise ratios of 100:1 are not uncommon in electronic communication systems. It is perhaps not excessive to assume that the minimal attention ratio for an escalating conflict would have to be 1:9, since it does not seem likely that any country could be provoked very far into an escalating conflict with less than 10 per cent of the foreign policy attention of its government devoted to the matter.[8]

If we require a minimal attention of 10 per cent for an escalating conflict, the likelihood of such conflicts thus will decline sharply with the decline of the average attention that any one government has available for any one of the remaining actors in the international system.

The decline of this average available attention with an increasing number of actors in the system has been graphed in curves A and B in Fig. 3, as discussed earlier. We can now show on the same graph the lines of minimal attention ratios required to permit average probabilities of, say, 20, 10, or 5 per cent for an escalating conflict between any two actors in the system. Several such lines, at the 10, 20, 30 ... per cent levels of an assumed minimum attention ratio, have been drawn in Fig. 3. Their intersections with curves A and B show how quickly the increase of the number of actors will remove an international system from the danger zone, or how fast a diminution in the number of actors will increase the average risk of escalating conflict among the remainder.

As far as it goes, this graphic representation confirms the greater stability of multipolar systems, and it suggests some quantitative findings. It shows that the average share of available attention for any one conflict drops sharply as soon as there are more than three power centers in the system, and more gently after there are more than five such centers; and it further suggests that the stability of the system may depend critically on the *critical attention ratio*—that is, on the proneness of countries to enter into

[6] Rapoport, 213–22; Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, Mass., 1960), 83–118.

[7] Cf. Colin Cherry, *On Human Communication: A Review, a Survey, and a Criticism* (Cambridge-New York, 1957), 42 and *passim*.

[8] For an earlier version of a related argument about mass attitudes to quarrels with a foreign country, see Karl W. Deutsch, "Mass Communication and the Loss of Freedom in National Decision-Making," *Journal of Conflict Resolution*, I (July 1957), 200–11.

escalating conflicts even if only a small part of their government's attention is engaged in this particular quarrel.

Thus, if some minimum percentage of a nation's external attention is required for that nation to engage in behavior tending toward armed conflict, and the increase in number of independent actors diminishes the share that any nation can allocate to any other single actor, such an increase is likely to have a stabilizing effect upon the system.

IV. Some Implications for Richardson's Model of Escalating Conflict

The task of this section will be to correlate the propositions concerning the greater stability of multipolar systems in international politics, especially as recently formalized by Morton Kaplan, with the Richardson model of conflict;[9] and to show that the former proposition can be treated as a special case of the general Richardson model.

In the Richardson model of the arms race, or of similar competitive relations, conflict behavior of each of two parties is seen as growing at an exponential rate, similar to the growth of compound interest or to the progress of an explosion. The rate of this growth is described by a pair of differential equations in which one party's increase in armaments—or of other competitive behavior—is perceived as a threat and becomes the motivating input for the corresponding reciprocal or retaliatory response of the other. Thus, if country A had spent in the previous year $90 million on armaments, while its rival B had spent $100 million, and if A now tries to equal B and increases its armaments budgets from $90 million to $100 million, and if country B, which previously had spent $100 million, tries to maintain the previous ratio of arms budgets, then B must now spend $111 million in the following year; whereupon A, if its rulers still aim at parity with B, will now increase its budget accordingly to $111 million, forcing B to defend its old proportionate lead by raising its arms budget by $12.3 million to $123.3 million, so that not only the absolute amounts but also the *increases* in arms spending on both sides are growing in every round, and the arms race will accelerate in ever-growing steps until some limit or breakdown is attained.

This simple model would hold equally for bipolar and multipolar systems. In the latter systems, one might imagine that it could apply to every possible pair of nations in rivalry, and thus to 10 pairs in a five-power system, to 15 pairs in a six-power world, and generally to $N(N-1)/2$ powers in an N-power system. If country A wanted at least to keep its proportionate lead against *each* of its rivals, it would have to maintain its level in an exponentially growing arms race with the most quickly growing of these rivals, because this would automatically increase its lead over all the rest. If all powers followed this type of policy, the total pace of arms competition for all countries would be set by the fastest growing competitor.

This model, however, seems too simple. It may be more reasonable to assume that a country is most likely to respond to an increase in the arms expenditure of a rival only in regard to that part which appears likely to be deployed or directed against itself.

In the case of a bipolar world, this consideration would make very little difference. The strongest country, A, would have to fear almost the full amount of the increment in the strength of the next strongest power, B, since in this bipolar world the third and fourth ranking powers, C and D, and all the lesser powers down to N, are almost negligible in their strength in comparison to A and B. These negligible lesser powers would thus not require any significant allocation of B's resources to ensure against the risk of having to fight them, and practically all of B's strength would remain available for use against A, forcing A in turn to increase its own efforts to the full extent required to maintain its own margin of strength in relation to B's growth.

Matters are quite different, however, in a multipolar world. In a four-power system, C and D, the third and fourth ranking nations, are already nearly as strong as A and B, the top and second-rank powers. Accordingly, B may have to allocate more than one-half of its resources—and of its increment in these—to the possibility of having to fight C or D, and thus B may have left less than one-half of its increment for a credible increase in its threat against A. The effect on A's behavior, according to the Richardson model, would be correspondingly

[9] Kaplan, 21–53; Rapoport, 15–47; and the same author's essay, "L. F. Richardson's Mathematical Theory of War," *Journal of Conflict Resolution*, I (September 1957), 249–99. See also L. F. Richardson, *Arms and Insecurity* (Chicago, 1960).

less, since A would have to raise its arms budget only to the extent needed to hold its proportionate lead in regard to one-half or less of B's increment in arms expenditure. The arms race in a completely rational world would thus tend to be slower under multipolar conditions than under bipolar ones.

A different line of reasoning suggests the same result. Richardson's original model assumed that the motivation for a state to try to maintain its proportionate lead over the arms level of another was autonomously generated within the state itself. Once the national subsystems of the international political system had this motivation, in Richardson's model, then the consequences of an escalating arms race followed under the conditions that he specified. It was the competitive motivations of the national states, in Richardson's thought, that produced the competitive character of the international system. Many writers on international politics, from Machiavelli onward, have taken the opposite view. The larger system, they have maintained, is itself competitive to start with, in that it rewards appropriate competitive behavior and penalizes the failure to compete by the pitiless elimination of the laggards and the weak. Machiavelli's princes, Adam Smith's businessmen, and Charles Darwin's animals all must compete for survival in their respective systems, on pain of being wiped out otherwise, regardless of their subjective motivation. In time, each of these systems is expected to select for survival primarily those subsystems that have responded most adequately to its competitive pressure. Which rival subsystem happened to exercise this competitive pressure at the moment is secondary in each of these theories. If this particular rival had been absent, another would have taken his place and served the same function of offering a compelling challenge to competitive behavior.

This type of thinking has remained familiar in the popular rhetoric of arms competition. The world is such, the argument used to run—or the adversary is such, it has run more recently—that "there is no choice" but arms competition or national doom through surrender or defeat. Regardless of the motivations of its own people, its own political system, and its own decision-makers, any state in such a situation must respond to the challenge of an arms race or else perish.

How strong is this externally derived pressure upon a state to increase its own armaments for the sake of survival, regardless of any other values or motivations produced by its domestic political system? Clearly, it is proportional only to that part of the increment in a rival's armament that is not likely to be balanced by a shift in alliances under a balance-of-power policy. In a bipolar world, a 10 per cent increase in the arms spending of power A must be answered by an equal increment in the arms of B, and the escalation process may then proceed at 10 per cent increments for each cycle. In a world of four approximately equal powers, a rise in the arms level of power A from 100 to 110 would give A's coalition, I—consisting, say, of A plus C—only a strength of 210 against the rival coalition II, consisting of B and D, with a strength of 200. The superiority of coalition I over coalition II would thus be not 10 but only 5 per cent; the offsetting armaments needed by coalition II would only have to be of 5 per cent; the subsequent increments of the escalation would likewise be of this lesser order of magnitude; and escalation would proceed more slowly.

In a similar six-power world, a 10 per cent increase in the armament of one power would compel an increment of only about 3 per cent in the arms spending of the three members of the rival coalition. A ten-power world in the same situation would only be forced to a 2 per cent arms rise for each of five powers. Generally, every increase in the number of powers would slow down the speed of Richardsonian escalation.

If we drop the assumption of approximately equal powers in a multipolar world, the same general result follows. So long as most powers are free to move laterally from one coalition or alignment to another, their self-interest will favor such balance-of-power policies as to produce very nearly evenly matched coalitions, each of them composed quite possibly of members of unequal power. In such a mobile multipolar world, no government needs to fear a moderate decline in national power as potentially disastrous. It can survive as a second-class power as safely or precariously as it did as a first-class one, provided only that it joins in time the appropriate new alliance or alignment. Arms increases by a rival power, which in a bipolar world might pose a fatal threat, might call in a multipolar world for little more than a quick adjustment of alliances.

V. Some Implications for the Diffusion of Nuclear Weapons

If an increase in the number and diplomatic mobility of actors may slow down the process of arms escalation, it would by the same reasoning also slow down any process of de-escalation. Here, too, a one-sided arms reduction in a two-power world may elicit an equal response by the other power, while in a multipolar world the effect of any such unilateral initiative would be much weaker.

If we are chiefly interested in rapid de-escalation —that is, in partial or complete disarmament—a multipolar world may prove more intractable than a bipolar one; and we may view the emergence of French, German, Japanese, or Communist Chinese national power with justified alarm. If we are mainly concerned, on the contrary, with preventing any rapid escalation of the two-power arms competition between the United States and the Soviet Union, a shift toward a multipolar world may appear preferable.

At this point, of course, the bare and abstract arguments pursued thus far become quite insufficient. In our analysis of alternative international power systems we have abstracted from all other qualities of the states, governments, and national political systems within them. At the point of policy choice, however, these hitherto neglected aspects may be the decisive ones. A bipolar system in which each of the two rival powers is likely to be moderate and cautious in its policy initiatives and responses might be a great deal safer than a multipolar world containing one or several well-armed powers whose governments or politically relevant strata were inclined to incompetence or recklessness. As elsewhere, so also in international politics a stable general system could be wrecked by the introduction of unstable components.

At the present time, the importance of this latter point may well be decisive. Each of the present major nuclear powers—the United States, Britain, and the Soviet Union—has been politically stable, in the sense that each has retained its particular type of government for over forty years. None of these three countries has been notable for initiating large and reckless military enterprises. Among the middle-level and smaller powers most likely to press for nuclear weapons during the next decade—which include France, Germany, Japan, Mainland China, Nationalist China, and perhaps Egypt and others—there are several whose recent history lacks any comparable evidence of stability in domestic institutions and caution in international affairs. If this stage should be followed by the dissemination of nuclear weapons among a still larger number of countries, including inevitably at least some with still less stable domestic regimes and less cautious military policies, the instability of the international system would be still more dangerous. For these reasons, any successful efforts by the United States and other powers to slow down the dissemination of nuclear weapons would tend to increase the stability of the international system. In the present article, devoted to an abstract argument, these matters can only be indicated, but they must not be forgotten.

One other problem, however, should be discussed here: the time horizon under which the stability of international systems is evaluated. A multipolar world, though often more stable in the short run than a bipolar one, has its own problem of long-run political stability, and it is to this that we must now turn our attention.

VI. The Long-run Instability of Multipolar Systems

On the basis of these considerations, it might seem that a multipolar system could last forever, or for a very long time, by always opposing the ambitions of its currently top-ranking member; and this is indeed what some writers have claimed as a virtue of the balance-of-power system. In each of the sections above, however, we have dealt with considerations of an essentially short or middle-run nature, with a rather incomplete view as the natural consequence.

There are at least two analytic reasons why this relatively benign long-run outcome cannot be expected. For one thing, if we accept the usual zero-sum assumption of Machiavelli and the classic theory of games—according to which any gain by one contender can occur only through an equal loss by one or more of his rivals—then we must assume that each contending power ordinarily will try to acquire all the territory and population it can at the expense of its rivals, and that it will do nothing

to create new rivals for itself. The model thus provides for the possibility of the destruction of states whose rulers misjudged the precise balance of strength at the moment, or whose economies and populations no longer yielded the increasing increments in arms spending and military effort required by the competition, but this model does not provide for the creation of new states. If the probability of states perishing is small, but larger than zero, and the probability of substantial new powers arising is zero in terms of this model, then the model will predict a diminishing number of effective contenders, leading eventually to a two-power world or to the survival of a single power, as in the case of the reduction of the many governments of classic antiquity to the two-power clash of Rome and Carthage, and of Rome's final long monopoly of power in the Mediterranean world until new forces entered from outside the region.

The second line of reasoning is based on considerations of statistics. Thus far we have taken probabilities only in terms of their central tendencies, rather than in terms of the variance of possible outcomes and their distribution. If we assume these outcomes to be normally distributed around some mean, then the usual outcome of an increment in threat by power A against power B in a multipolar system will consist in both A's and B's finding enough allies, respectively, to match the power of their respective coalitions and to produce the relatively moderate outcomes predicted by the classic balance-of-power model. In rare cases, however, corresponding to one tail of the distribution, state A will find a great preponderance of allies and become able to destroy its current enemy, B, completely; and in other rare cases—corresponding to the other tail of the distribution—A must expect to find itself facing an overwhelming coalition of adversaries that will destroy it. In the short run, only the moderate central tendencies of the distribution of outcomes of the coalition-forming process will be frequent enough to be taken into account, but in the long run the balance-of-power world must be expected to produce eventually dramatic and catastrophic changes, both locally and at last at the system level. The number of years after which long-run rather than short-run phenomena are likely to prevail will depend on the frequency of international crises, and on the shape of the distribution of balanced and unbalanced coalitions, respectively, as outcomes of the coalition-forming process.

This expectation seems in good agreement with the historical data. No balance-of-power system has lasted longer than a few centuries, and most of the original powers contending in such systems have survived as independent powers only for much shorter periods.[10]

The classic descriptive and analytical views of two-power confrontations and of the balance of power among several contenders have been formalized by several writers. The most prominent models, of the tight bipolar and multipolar world, respectively, can be interpreted in terms of the dynamic model of conflict by Lewis F. Richardson. The results suggest that the Richardson model, with very simple assumptions, can be made to include the bipolar and multipolar models as special cases. This combined model then suggests some general inferences in predictions about trends that appear to accord well with historical data. In the long run, according to this model, even multipolar systems operating under the rules of balance-of-power policies are shown to be self-destroying, but both in the short and the long run the instability of tight bipolar systems appears to be substantially greater. It seems plausible that, *if the spread of nuclear weapons could be slowed down or controlled*, a transition from the bipolar international system of the early 1950's to an increasingly multipolar system in the 1960's might buy mankind some valuable time to seek some more dependable bases for world order.

[10] For some historical data, see the discussion of the reduction of Italian city states during the years 1300–1527 from 70 or 80 to 10, in A. J. Toynbee, *A Study of History* (London-New York 1945), III, 355–56; cf. also 301–4, 345–48. In addition, see Wright, II, 762–63 ("The Disappearance of Small States").