THE APPLICATION OF CYBERNETIC ANALYSIS TO THE STUDY OF INTERNATIONAL POLITICS

The Application of Cybernetic Analysis to the Study of International Politics

by

STEPHEN DAVID BRYEN

Department of Government,
Lehigh University, Bethlehem

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DEDICATION

Dr. Walter Gerhardt, Jr.
late Associate Professor of Religion at
Rutgers University

. . . a friend and scholar who knew civilization – ancient and modern. He appreciated what the former achieved and what the latter lacked.

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Having spoken of the generation form and power of commonwealth. I am in order to speak next of the parts thereof. And first of systems which resemble the similar parts, or muscles of a body natural. By SYSTEMS, I understand any numbers of men joined in one interest, or one business. Of which, some are *regular,* and some *irregular. Regular* are those where one man, or assembly of men, is constituted representative of the whole number. All other are *irregular.*

Thomas Hobbes
Leviathan, 1651

PREFACE

This study could not have been written before Professor Karl Deutsch made his great contribution to political science in his book, *The Nerves of Government*. In applying the concepts elaborated in that work to the study of international politics it has been necessary to interpret and, occasionally, add to the concepts developed by Professor Deutsch. I do not know whether Deutsch would accept these changes, modifications and interpretations. Here I can only say that I have attempted to stay in the same spirit that I think motivated Professor Deutsch's pioneering study. That spirit is expressed throughout his work. It is that "all studies of politics, and all techniques and models suggested as instrument of political analysis, have this purpose: that men should be more able to act in politics with their eyes open."

In completing this work I owe much to many. Mrs. Susan Schellenberg aided me in identifying sections of an earlier draft that were unclear and helped me test some of the ideas I added to Deutsch's work. Mr. Frederick Slutsky did some preliminary testing of the action system formulations employed in the third chapter by using quantitative methods.

Particular gratitude is due to the committee who saw this manuscript as a dissertation at Tulane University. This committee, led by Professor Henry L. Mason, consisted of Professor Warren Roberts, Jr.; Professor James D. Cochrane; Professor Jean M. Danielson and Professor John. S. Gillespie. I thank Professor Mason for his tolerance and faith – and for his unique ability to know and somehow communicate to me the feeling that he understood even when I was not at all so certain of my direction.

The Lehigh University Institute of Research has kindly provided me with financial aid so that I could concentrate on this effort. I would like to thank Mr. George Jenkins, Director of the Institute, and Dr. A. C. Zettlemoyer, Provost of the University, for their kindness and assistance.

S. D. B.

Powder Valley, Pennsylvania
Summer, 1970

CHAPTER I

CYBERNETIC ANALYSIS AND POLITICAL STUDY

INTRODUCTION

This study is conceived of as an effort to apply the systems approach developed by Karl Deutsch in his *Nerves of Government* [1] to the study of international politics. When work was started on this project, Deutsch's general statement about political processes found in *Nerves of Government* appeared to this author as a most unique and important theoretical initiative in political science. Deutsch's work was an effort to respond to the increasingly complex style of modern life. He attempted to develop a new approach to politics that would combine traditional scholarship with the more modern findings of science. The product of his effort, *Nerves of Government,* was not a completed study. Instead it was an "interim report" that Deutsch hoped would eventually lead to a "theory of politics, both national and international." [2]

The emphasis of Deutsch's report was decisively contemporary. Getting beyond the traditional focus on political power as a theoretical mainstay of national and international political theory, Deutsch suggested a different emphasis. As he put it:

> . . . it might be profitable to look upon government somewhat less as a problem of power and somewhat more as a problem of steering; and [this study] tries to show that steering is decisively a matter of communication. It tries to suggest some of the implications of this viewpoint for the analysis of governmental institutions, of political behavior, and of political ideas, and it points to some areas of empirical research on politics that might deserve a higher priority of attention than they have often received in the past.[3]

Deutsch did not claim that his study reached the limits suggested in the above statement. However, Deutsch makes clear that significant work must

[1] Karl W. Deutsch, *The Nerves of Government: Models of Political Communication and Control* (New York: Free Press, 1966).

[2] *Ibid.,* p. 25

[3] *Ibid.,* p. 27.

follow the initiative of *Nerves of Government*. According to him, one task would be to relate the approach he has elaborated to what he calls the "great classic body of political theory."[4] Insofar as international politics are concerned, he has in mind here writers such as Hans Morgenthau, George Kennan, and William T. R. Fox. A second task would be to further expand the communications and control approach, building on the findings of Norbert Wiener, John von Neumann and Oscar Morgenstern, as well as on the work of Anatol Rapoport, Thomas C. Schelling and Martin Shubik. A third task would be to probe what Deutsch calls the "methodologically mature research on international communications" done by Paul Lazarsfield, Daniel Lerner, Charles E. Osgood, Ithiel de Sola Pool, and Hans Spier.[5]

While these tasks are merely recommendations as developed by Deutsch, they do suggest meaningful and relatively distinctive departures for developing a literature of international politics around a model held in common by all the theorists combined. Deutsch does not mean to suggest that the model he has elaborated is "once and for all" or absolute. One proponent, Boulding, has described the approach as a set of "generalized ears." Instead of a strict or completely formalized model, it is a model in development. Its virtue is that, even though imperfectly developed, it is very helpful. Deutsch believes that the model he has promoted already has a body of adherents in political science. What is needed now is more research and investigation that is related to other ongoing research.

GOALS OF THE STUDY

Of the three taskselaborated by Deutsch, the first is examined in this study, although with some revision. It will be recalled that Deutsch indicates that his model emphasizing steering and communications should be related to writers such as Morgenthau, Kennan, and Fox in international politics. After all, these are among the "classic theorists" of international politics. However, it can be added that since the Morgenthau, Kennan, Fox period (that is, from about 1955) significant developments in international political study have taken place which cannot be disregarded.[6] Thus the first task Deutsch describes might be expanded somewhat – to look at the theorists of

[4] *Ibid.*, p. 28.

[5] *Ibid.*, pp. 28-29.

[6] A good description of these changes is given by Charles A. McClelland, *Theory and the International System*. (New York: Macmillan and Company, 1966), pp. 63-88.

international politics in recent times and compare and contrast their works with the approach developed by Deutsch.

There are a number of ways such an investigation can be launched and organized. One might select "typical" authors (authors who represent distinctive and original viewpoints) and relate Deutsch's work to these authors. Another method would be to try to extend Deutsch's theory directly to the study of international politics and then see how recent writers in the sub-discipline support or contrast with Deutsch's theory. This latter organizational method has two advantages: it permits rather linear development and elaboration of Deutsch's approach instead of a round-about inclusion of the cybernetic viewpoint with many other disjointed theories; it helps single out and expand upon themes that are central to the Deutschian approach.

This second method of organization is adopted in this study. An important reason for this decision is the incompleteness of Deutsch's investigation vis-à-vis international politics. It is more expeditious to explore the consequences of Deutsch's approach for international politics directly. This does not preclude the inclusion of many scholars of international politics in the analysis – it merely changes the order and emphasis of the presentation.

Before beginning the discussion of Deutsch's work in relation to international politics, the reader should be made cognizant of a development that has taken place since the publication of *Nerves of Government*. Professor Deutsch certainly has not retired as an active student of politics or in any way slackened in his writing habits. In 1968 Deutsch published a new work entitled *The Analysis of International Relations*.[7] Here it might be assumed would be found precisely what Deutsch himself recommended in his *Nerves of Government*, that is, an application of the model developed in that book to the study of international politics. If this indeed was accomplished there would be no need to contemplate an application of the Deutschian model in *Nerves of Government* to the study of international politics.

The Analysis of International Relations does not turn out to be a major theoretical probe into international politics. While some of the interests that produced the *Nerves of Government* are present in this newer work, they do not result in the same quality of production. Deutsch is deeply concerned with the "art and science of the survival of mankind" as he makes clear at the beginning of his work,[8] and he does spend some time in

[7] Karl W. Deutsch, *The Analysis of International Relations* (Englewood Cliffs: Prentice-Hall, 1968).

[8] *Ibid.*, p. 5.

scattered segments of the study with his model of steering and communication.[9] But no theory of depth or consequence emerges. *The Analysis of International Relations* is more of an introduction to the sub-discipline of international politics.

While *The Analysis of International Relations* is not ignored, this study proceeds directly from the ideas and concepts developed in *Nerves of Government.* It is to this work that we must turn for the optimal statement of Deutsch's views on government and politics.

DEUTSCH'S CYBERNETIC-SYSTEMS APPROACH

The Nerves of Government is essentially a study of political activity from a specialized systems analysis point of view.[10] It is important to indicate that this approach to political activity, while sharing many features of the systems approaches common in political science, differs in its primary focus. Deutsch focuses on communication as the main way in which organizations "of all kinds" can be understood. As Deutsch puts it, "every organization is held together by communication." [11] Because Deutsch believes that communications are the "cement" by which organizations exist, it follows that an understanding of the communicative process leads to, and in Deutsch's view is complimentary to, an understanding of the steering and control of organizations. As he puts it, "steering or governing is one of the most interesting and significant processes in the world . . ." [12]

The combination of the ideas of communication, steering, and control is at the heart of an approach known in science as cybernetics.[13] Cybernetics, as Deutsch points out, is an idea developed in a number of sciences. In general, cybernetic models are believed to replace the classical analogues

[9] *Ibid.,* pp. 74-86.

[10] Deutsch clearly identifies cybernetics in this way. As he said: "Some specific concepts and models widely used in general systems theory – such as cybernetic models and the feedback concept – are at the heart of some recent efforts by contemporary political theorists." Cybernetic models "stress not only systems but also processes, particularly the process of communication and control." in James C. Charlesworth, ed., *A Design for Political Science: Scope, Objective, and Methods* (Philadelphia: American Association of Political and Social Science, 1966), pp. 170-171.

[11] *Nerves of Government,* p. 77.

[12] *Ibid.*

[13] For a brief description of the cybernetic approach, see Norbert Wiener, "Cybernetics in History," in *Modern Systems Research for the Behavioral Scientist,* Walter Buckley, ed., (Chicago: Aldine Publishing Company, 1968), pp. 31-38. For the most important works by Wiener on Cybernetics see: N. Wiener, *Cybernetics* (New York: John Wiley and Sons and the Technology Press, 1948); N. Wiener, *The Human Use of Human Beings* (New York: Doubleday and Company, 1954).

or models employed by scientists and social scientists alike. Three such traditional analogues are indentified by Deutsch – the model of mechanism, the model of organism, and the model of process. The mechanistic model is based on the development of clockwork. Primitive clockworks were operative by the thirteenth century and were used for a variety of tasks requiring precision timing. The mechanistic model was very persuasive and in the next centuries it was applied by Newton to describe the movement of stars in the solar system, by Hobbes, Locke, and Montesquieu to describe the working of government, by La Mettrie to describe the working of the human body. Deutsch notes that the clockwork model was "extended to God as the 'first mechanic' by Tom Paine; and to joy in Schiller's lyric, 'Ode to Joy,' as the 'watchspring of the universe.'" [14] The classic model, as it was understood,

> . . . implied the notion of a whole which was completely equal to the sum of its parts: which could be run in reverse; and which would behave in exactly identical fashion no matter how often those parts were disassembled and put together again, and irrespective of the sequence in which the reassembly would take place.[15]

In Deutsch's view the mechanistic approach is a "strictly metaphysical concept."

> No thing completely fulfilling these conditions has ever been on land or sea, not even, as our cosmologists have told us, among the stars. The more complicated a modern mechanical device becomes in practice, the more important becomes the interdependence and mutual interaction of its parts through wear and friction, and the interdependence of all those parts with their environment, as to temperature, moisture, magnetic and electrical influences, etc. The more exactly we made the standards for the performance of a real "mechanism," the less "mechanical" in the classic sense does it become.[16]

Deutsch believes that the mechanistic model was discredited, particularly in the political writings of Edmund Burke. It also received a setback by the growth of biological science that emphasized wholeness, interrelatedness, growth, and evolution. This was a nineteenth century development. It was based on the idea of organism. An organism, in this view, "cannot be taken apart and put together without damage." [17] Each of the parts of the organism perform specific functions, and these functions cannot be altered or changed. According to Deutsch,

[14] Karl W. Deutsch, "Toward a Cybernetic Model of Man and Society," in Buckley, *op. cit.*, p. 388.
[15] *Ibid.*
[16] *Ibid.*, p. 389.
[17] *Ibid.*

The classic organism's behavior is irreversible. It has a significant past and a history – two things which the classicial mechanism lacks – but it is only half historical because it was believed to follow its own peculiar "organic law" which governs its birth, maturity, and death and cannot be analyzed in terms of clearly identifiable "mechanical" causes.[18]

This model, in Deutsch's view, has never successfully been applied to human society. In particular, no significant predictions or experiments have been derived from the organismic approach, although it should yield both predictions and experiments if it is the "whole" thing it is claimed to be.[19]

Perhaps the most severe restriction of the organism model was the

... postulate that certain parts of the organism could never be known: the "imponderables," routed from physics and chemistry during the eighteenth century, reappeared as "vital force" or "vital spirit" in the later "organismic" thinking.[20]

The model of process is, in Deutsch's opinion, mainly concerned with growth and development. "It was the approach of history, particularly after history became thought of as not a mere cycle of events, but as a succession of steps in a pattern leading in a discoverable direction." [21] In Deutsch's view, "proponents of theories of process often fell back into mechanical analogies." Some process approaches were philosophical, almost all were qualitative,[22] and many were highly moralistic in content. According tot Deutsch, "All three of these models have long been felt to be inadequate. Mechanism and the equilibrium concept cannot represent growth and evolution. Organisms are incapable of both accurate analysis and internal rearrangement; and models of historical process lacked inner structure and quantitative predictability." [23] In replacing these models, the development of the cybernetic analogue produces an image of "an array of self-controlling machines that react to their environment, as well as to the results of their own behavior; that store, process, and apply information, and that have, in some cases, a limited capacity to learn." [24]

It is Deutsch's contention that the scientific cybernetic model is highly suggestive for a political science based on the cybernetic analogue. If the basic ideas of cybernetics can be absorbed, it should be possible to expand the notion for political analysis. Such an extention is not at all inappropriate,

[18] *Ibid.*
[19] *Ibid.*
[20] *Nerves of Government,* p. 32.
[21] *Ibid.,* p. 36.
[22] *Ibid.,* pp. 37-38.
[23] *Ibid.,* p. 79.
[24] *Ibid.,* p. 80.

Deutsch thinks, because cybernetics is a model of organization – and organization is perhaps the dominant problem facing modern man. Organization is of interest in the positive sense that many people have not yet developed the ability to construct worthwhile and sensitive political organizations and feel a need to do so. Organization is also of interest in the negative sense where people feel deeply threatened by overbearing, highly powerful political organizations. In short – whatever our attitude – the matter of organizations is on our minds today.

The importance of organizations cannot be overemphasized. A further probe of what the concept of organization involves may tell us something more about the values Deutsch is attempting to develop and support. As was mentioned above, the extension of cybernetics to political study is important either because of the lack of good organization or the need to deal effectively with powerful, ongoing organization. It should be emphasized that the cybernetic viewpoint does not stress the need to circumvent in any way the model of organization. There is no suggestion that organization can or should be avoided. The central reality of the cybernetic approach is organization.

The acceptance of the importance of organization seems imbedded in the whole systems approach movement, both in the hard sciences and in social science as well. In this acceptance one may assume there is a message: since we all live in organizations whether we like them or not, we should learn to make organizations more responsive to ourselves as human beings. But the message may go even further than this statement: not only must organization be made tolerable because it is unavoidable, but organization itself, – or system, or order – is basic and good.

A radical, but explicit, statement of this point of view is to be found in an address given to an assembly of systems scientists by Dr. Stafford Beer.[25] He sees system and organization as central to our own thought processes and he further believes that modern discoveries must challenge the traditional Western thought process that still dominates today. As Beer insists, we have to live according to the realities of the world. Understanding the realities of the world involves understanding the difference between what order is and what chaos is. Beer challenges the "conventional position" on order and chaos which, because of its Christian bias, sees chaos as the dominant mode.

"System," Beer writes, "is one of the names of order, the antonym of chaos." [26] Our modern understanding of system, according to Beer, should

[25] Stafford Beer, "Below the Twilight Arch: A Mythology of Systems," *General System Yearbook,* VI (1961), pp. 9-29.

[26] *Ibid.,* p. 9.

help challenge our ingrained understanding of order. This understanding is based on what Beer calls a "fourfold myth." This myth may be described as follows:

> . . . that the raw state of nature is chaotic; that order is something introduced into chaos and imposed therein as a monolithic structure to be weathered by random noise; that within this structure a second-order chaos lies invisible; and that once the energy necessary to maintain this order ceases to be available all reverts to chaos once again.[27]

Beer does not accept this "mythologic" argument. He believes that the focus on chaos is an inheritance from ancient Greek thinking – what he labels as the "ghost of Epicurus," "Chaos," Beer writes, "which the Greeks taught is more natural than order, is back again." [28] The problem is, according to Beer, that the concept of an ephemeral order within a greater chaos is dangerous in the modern day. With such a concept, he observes in his own linguistic fashion, "the thermodynamic heat death is upon us." [29] Outside of the structured social arena where such a concept may turn out to be passive and unimportant, the concept of natural chaos is intellectually self-defeating and self-destructive. Beer wants to replace it and he suggests a formula from St. John: "In the beginning was the Logos." This to Beer is the idea of imminent organization.[30]

Beer believes that scientists have not generally subscribed to this idea mainly because they had no proof of imminent organization. Beer suggests that the "proof" need not come from "existential fact" but rather from the way man perceives things. It is how we actually perceive things that is essential. As Beer insists:

> What after all *is* order, or something systemic? I suppose it is a pattern: and a pattern has no objective existence anyway. A pattern is a pattern because some *one* declares a *concatenation* of items to be more meaningful or cohesive. The onus for detecting systems and for deciding how to describe them, is very much on ourselves. I do not think that we can adequately regard a system as a fact of nature, truths about which can be gradually revealed by patient analytical research. A viable system is something we detect and understand when it is mapped into our brains, and I suppose the inevitable result in that our brains themselves actually impose a structure on reality.[31]

This approach is not restricted to Beer alone. It is reflected in science, in social science, and in political science. As Eugense Mehan says, a system

[27] *Ibid.*
[28] *Ibid.*, p. 11.
[29] *Ibid.*
[30] *Ibid.*
[31] *Ibid.*, p. 12.

"... is defined as a formal logical structure, an abstract calculus that is totally unrelated to anything in the empirical world." [32]

While systems may be made in our minds and may be unrelated to empirical conditions, we can learn something about how we think in systems terms and apply this learning to larger or grander systems. In part this is what Deutsch tries to achieve. Rather than dwell on the workings of the human mind – which is still only poorly understood – Deutsch is sensitive to the development of "thinking machines" or cybernetic machinery. If the operation of cybernetic machinery can be described and evaluated, that knowledge can perhaps be applied to more complicated systems. While the question of what systems are and how they are to be identified is interesting, it is not treated too seriously by Deutsch. Deutsch's focus, instead, is on the operation of a "thinking machine" as an analogy to the operation of other systems. Unlike Beer, he does not see systems as automatically creating order. Instead, he believes that systems can create either order or chaos. For this reason, Deutsch believes it is necessary "... to get to the business of how systems actually operate." He closely follows Wiener in this respect. Wiener says that "while human and social communication are extremely complicated in comparison to the existing patterns of Machine communication, they are [minimally] subject to the same grammar . . ." [33]

Like Beer, Deutsch is deeply concerned with the problem of order. He sees order resulting, in part, from political activity. But Deutsch also sees that political systems can create grave disorder in the world unless such systems can learn to better deal with the environments they service. Successful political systems cannot merely assert their power and expect to bring about results, however. In his definition of politics Deutsch distinguishes between what he calls "domination" and "compliance." Viable political organizations rest on some degree of voluntary compliance and some degree of domination. However, organization cannot be based on domination alone. "The centralized use of threats or force," Deutsch says, "rarely creates . . . a durable community . . ." [34] Because of his approach to politics, Deutsch looks at organization somewhat differently than does Beer. While Beer sees organization as something that our brains actually create and substantiate, Deutsch distinguishes between organizations that we individualy observe, and organizations that others accept. Organizations that we alone observe may be of analytical interest, but they have no practical

[32] Eugene J. Meehan, *Explanation in Social Science: A System Paradigm* (Homewood, Illinois: The Dorsey Press, 1968), p. 48.

[33] Quoted in *Nerves of Government*, p. 77.

[34] *The Analysis of International Relations*, p. 20.

impact. Deutsch is a practical, policy oriented theorist. To be worthwhile, political organizations have to be accepted. This attitude permits Deutsch to be flexible in his assessment of political organizations. Some organizations will be good – or in Deutsch's language "viable," some organizations will not be good, or in Deutsch's language, "pathological." [35]

CYBERNETIC THEMES

At this point it is important to turn and look more closely at how cybernetic systems operate and how they are understood. Here we will not be concerned with the details of cybernetics as a discipline, but rather with some of the basic ideas that make up what is known as cybernetics and Deutsch's use of these ideas.

A convenient way to explain the cybernetic approach is by reference to a device familiar to many people living in colder climates – the household heater.[36] Where environmental temperatures are low it is necessary to raise the temperature within homes for proper comfort. A variety of heating devices are used to accomplish this end. Basically, a heater is a system whereby a fuel of some kind is converted into another form, and in the process of conversion heat is produced. (In electric heaters, the warming effect is not a byproduct of a conversion process but rather a direct result raise the temperature within homes for proper comfort. A variety of heating unit. When the temperature of the house rises to an acceptable level, one stops the operation of the heating unit.

Very few heating units operate this way today. It is annoying to have to manually stop and start the heating unit. It also is not economical, since human operators must rely on their own sensitiveness to determine the proper level of heat. Human sensory discrimination varies greatly and accuracy is difficult to achieve.

The objective of a cybernetic system of a simple kind is to correctly control the operation of the heating system. To work properly such a system must respond to changes created by the external environment, changes created in the internal environment, and changes in the heating system itself. All of this is accomplished by an automatic switching device (a thermostat or servomechanism) equipped with one or more sensors. When temperatures go down the heating system will respond. A schematic illustration is shown in Figure 1 : 1.

[35] *Nerves of Government*, pp. 247-250.

[36] I find this example mose useful because of the variation in environments and goal choices. This example is mentioned by Deutsch, pp. 183, 195.

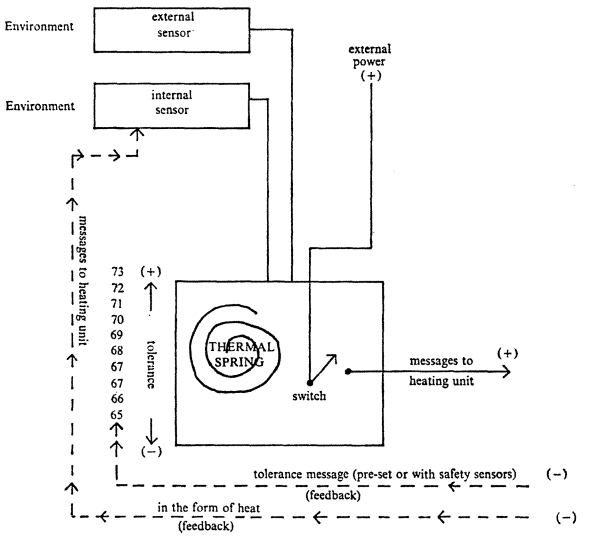

Figure 1 : 1
A Thermostat Servo-Mechanism with Two Feedback Channels

But this is not as simple as it would appear, since if the system responded to every temperature fluctuation, the heater would be switched off and on all of the time, soon destroying the mechanical equipment within the heathing system – or at least using a great deal of fuel since frequent starting requires the use of more fuel proportionately than does sustained operation.

To prevent this problem from occurring, a range of tolerance in the servomechanism is established. What the cybernetic switching unit allows is that the heating unit overshoots its heating mark somewhat, warming the house slightly more than necessary. As the house cools down, the heating system will be switched on again at an "undershoot" of its fixed level. For example, if the temperature in the house is set on the thermostat at 70 degrees (f), the heater will warm the house until 73 degrees (f), and will not reactivate again until 67 degrees (f).

Such an automatic switching device is not very complicated in design. This is because the basic desired temperature is chosen by those living within the dwelling. But in some human environments even this choice left to individuals could be dangerous. In medical laboratories a balance between humidity and temperature might be required. In such cases, the choice of temperature setting is made dependent upon humidity conditions. The goal of the system may still be to warm an area, but the decision as to the best way to accomplish the warming effect may be left to other instruments.

What is the point of this model? A switching device whether automatic or manual may not appear to be very impressive. Yet the task carried out by the switching device is of great interest. What the servo-mechanism does is to give "orders." Such orders may be understood as a kind of "information" that is received and acted upon by the heating machine. The information may be very simple – closing an uncompleted electrical circuit – yet this simplicity can be deceiving. While a pulse of electrical energy (in the case of electrical automatic switches) is all that can be observed as the "message" to the heater, the "message" represents a reasonably sophisticated response to a number of environments (internal and external climactic, possibly the environment of the heating system because over switching will destroy it, human preference systems concerning optimal temperature).

In making the heating unit warm us automatically, information is sent to it. The information is not sent on directly to the heater, but is held for a while. This, as has been noted, is what is accomplished by providing the tolerance range of response in the servo-mechanism. What is to be observed here, in reality, is really a primitive "memory bank." Information is stored for a time before being acted upon. This storage is accomplished in a variety of ways – electrically, mechanically, etc. In the case of the servo-mechanism described, storage is accomplished mainly through the use of a "weak" mechanical design. (A thermal "spring" is slow in responding to changes in temperature.)

The system may be made more sophisticated if feedback loops are built in. For example, suppose the servo-mechanism must also be sensitive to the friction occurring in the heating mechanism itself, and suppose also that the servo-mechanism must be sensitive to the fuel level in the system. Such an automatic mechanism would then have to make further choices as to its operation by being aware of the friction in the heating unit (so that the heating unit may have to remain idle for periods, which would then require an adjustment in the overshoot range so as to keep the house warm and the heater idle at the same time) and also aware of the fuel level (if fuel is dangerously low, ways to conserve it and still maintain reasonable temperatures must be found). The servo-mechanism in this case must be capable of what Deutsch calls a "critical process." [37] This is accomplished through feedback.

Deutsch attaches great importance to the idea of feedback. He says:

> This notion of feedback – and its application in practice – is at the heart of much of modern control engineering. It is a more sophisticated concept

[37] *Nerves of Government*, p. 86.

than the simple mechanical notion of equilibrium, and it promises to become a more powerful tool in the social sciences than the traditional equilibrium, analysis.[38]

"In the world of equilibrium theory," according to Deutsch, "there is no growth, no evolution; there are no sudden changes; and there is no efficient prediction of the consequences of 'friction' over time." [39] A notion of feedback, however, overcomes these problems by permitting an examination of the ways in which a system responds to its environment. It was pointed out that cybernetic systems do this by overshooting and undershooting their goal. In scientific language this is called "lag" and "gain."

Through responding to feedback, the system "learns" about its environment as well as about the state of its own subunits and responds in some fashion. The response is made so that either one or a number of goals can be achieved. Even in the simple thermostat a number of goals are involved. They include:

(1) heating the house to the correct temperature;
(2) operating the heating unit efficiently;
(3) preserving the heating unit from damage;
(4) making life more enjoyable for the house occupants.

Some goals are more paramount than others. Goal three is essential for goals one, two, and four to be carried forward. Yet the "house occupants" may, because they have differing standards than the servo-mechanism, decide to "take a chance" and risk damage to the heating system so as to achieve any or all of the other goals.

In this case a "goal changing" task is performed by the house occupants. In more complicated systems, goal changing may be essential to survival of the whole system, or some part of the system. Thus in a household system, survival of that system in cold weather may be more important than the long term survival of the heating subsystem.

Risk, awareness, consciousness

In this conflict of goals between the servo-mechanism and the house occupants an interesting observation can be made. Man made instruments, whether they are simple thermostats or highly complicated and responsive computer systems, are constructed along standards considered relevant by design engineers. Design engineers assign a high value to the mechanisms

[38] *Ibid.*, p. 89.
[39] *Ibid.*, pp. 89-90.

they create. Thus a higher value is placed on the heater than on the people who have to try and survive the winter in the house. A servo-mechanism of this kind is shown in Figure 1 : 2A. Human systems, on the other hand, are more accustomed to taking risks of varying kinds. A heater will be pushed beyond its means to satisfy a condition of cold weather. An automobile will be run at a speed greater than it is designed to operate at. An army will be ordered to march farther than it is believed armies can march. A human mechanism is illustrated in Figure 1 : 2B.

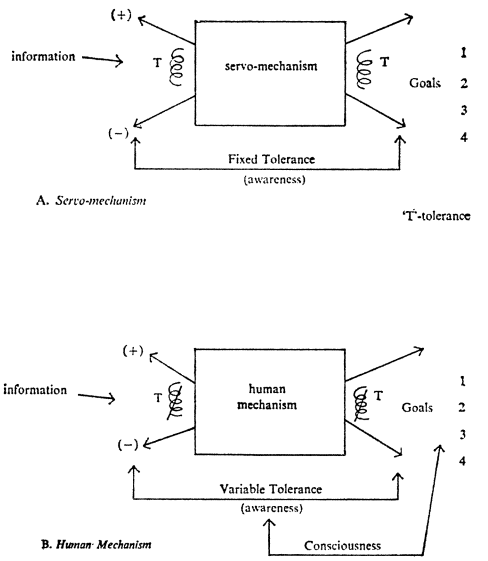

Figure 1 : 2, A & B
Servo-mechanism and Human Mechanism Response

Risks can be considered as either foolish efforts to go beyond the limits of any one system with only occasional successes, or risks can be understood as decisions by complex systems that other conditions will help offset the risk anticipated. For example, it may be believed that an army can march only ten hours at a time. This belief is based on information about the marching time of armies – that is "x" numbers of armies have been able to march only ten hours at a time. But a General may dispute this information if he believes that his soldiers are willing to try to exceed the ten hour maximum, or if he sees advantages in the terrain he must traverse, or if he believes his data is based on armies not as well equipped or managed as is his own army. Consequently, he takes a risk in the hope that the information he has about his own

force, however incomplete, is more relevant than the data he has received about other armies.

The General in the case above may be said to be "aware" of the capacities of his soldiers and the task they face together. "Awareness" is based on a superior amount of information. As the army begins its march, the General can watch very carefully the progress the army makes, and attempt to take account of that progress against the original awareness he had. In cybernetic terms, the General "scans" the former information – his awareness and the risk he has taken – with the incoming flow of results. At some stage he should become "conscious" of the real possibilities – whether to continue, or to modify the goal of the march in some way. In effect, by becoming "conscious" of alternatives he can make sensible decisions about future strategy.[40]

Risk, in this case, has promoted knowledge and opportunities for action that did not exist previously. Moreover, risk has made the General "conscious" of the capacities of the military system to move across terrain. He would have not known this had he used only the information that he had at the start (that is, that armies could move along at only ten hours per day).

Consciousness of the potentials of a system at any one time involves certain "costs" to the system.[41] In the case of the General the decision to try to exceed the known capacities of the system involved committing the system to a policy that could have been dangerous. The General had to demonstrate not only the courage to make the decision, but he also had to be willing to continuously sample the new information he was gathering in order to adjust his decision if necessary. As the discussion of cybernetic analysis unfolds, the importance of consciousness in systems will be expanded.

DEUTSCH'S APPROACH APPLIED TO POLITICAL STUDY

With the examples given in the last pages it should be possible now to pursue the notion of cybernetic systems somewhat further and see what these systems can suggest about political activity.

Sophisticated systems do more than merely receive and transmit information. They also discriminate between different kinds of information and make decisions that result in the transmission of another form of information within the system and beyond it as well.

The example of a Post Office is often used to illustrate this discriminatory

[40] *Ibid.*, pp. 98-105.
[41] *Ibid.*, p. 202.

ability. The Post Office is a processor and carrier of information. It receives huge volumes of messages which it treats according to pre-determined rules (i.e .,first class mail, or air mail, parcel post, etc.). The postal authorities are not aware of any one message, but only of classes of messages. But if a message sender desires that the post office be especially aware of an important message, a request is entered with the Postal Service for a special classification, such as registered mail. The sender now is certain that special attention will be given to his message during its transfer through the postal system.

Some systems are not only "aware" of special cases, but can be "conscious" of what to do when special cases arise. Consciousness can be understood in informational terms, according to Deutsch. Most messages – or information – are primary,[42] that is, they are information coming into a system. The system classifies this information according to what information appears to be most important. In effect, the classifications may be thought of as secondary messages in the system – an abstraction of the primary message.[43] Such abstractions are quite specialized. A historian might add a revolutionary event to a list of revolutionary events without reaching any special conclusion about the event he has classified. But a government might classify a revolution in relation to a structure of policies toward a particular country, or a number of countries. This information would be of great importance and proper classification would be essential to the structure of decisions that the government might have to make about the country or countries in question. The information about the revolution, then, becomes attached to other information. It is symbolized in a special way, and this kind of symbolization Deutsch calls a "secondary message."

It should be stressed that the government's classification needs to be more than merely filing information. A whole body of prior decisions has to be "scanned" and some evaluatory processes instigated. All of this, as Deutsch says, is essentially a feedback process consisting of "structures, circuits, channels, switching relationships . . ." [44] We may, Deutsch thinks, be able to identify such structures and circuits, but this is not always possible. Nonetheless, if a critical process appears to be taking place, then the presence of these circuits and structures in political systems can be said to exist in a functional sense. What is certain is that if consciousness in any system is to take place, the system must be capable of receiving and classifying information.

[42] *Ibid.*, pp. 101-102.
[43] *Ibid.*, pp. 98, 200, 202.
[44] *Ibid.*, p. 104.

Storage, memory, will

Consciousness cannot take place, according to Deutsch, unless the system can store information. The storage of information as well as the recall of information, involves "memory." Memory is not a neutral function and thus must be considered separately from storage. Memory involves what might be called "loaded storage" – that is, data that is remembered is not remembered merely as a "fact" but instead in the fact is contained an idea of what kinds of action the fact implies. This kind of memory is never "stable" since new information may modify the "fact-action" memory.

No system can function successfully if the fact-action memory is completely opened. Some pattern of values has to dominate the fact-action memory process. If a system is always analyzing and up-dating all external information, it will never be in a position to act on the information it has. In order that a system will operate, it must have what Deutsch calls "will." Deutsch defines will "in any sufficiently complex net, nervous system or social group" as

> the set of internal labels attached to various stages of certain channels within the (information-memory) net, which are represented by these labels as relatively unchanging, so that we merely trip the purpose and the reaction follows automatically.
>
> . . . . . .
>
> . . . Will may be called the set of *internally labeled decisions and anticipated results, proposed by the application of data from the system's past and by the blocking of incompatible impulses or data from the system's present or future.*[45]

Deutsch's description of "will" as internal labels and anticipated results is different from the common understanding of "will" or "free will." Will or free will is often understood as a kind of independence in making a decision occurring at some point in the decision making process. Will in this latter sense is the opposite of determinism, as Ludwig Von Bertalanffy, the pioneering general systems' theorist, has observed. Will for Bertalanffy is an "arbitrary" deviation from the "normal curve." [46] While Bertalanffy does not think the existence of will can be objectively demonstrated, he believes that there is proof of determinism, at least in small scale models.[47] If determinism is an automatic decision, as Bertalanffy indicates, then will appears

[45] *Ibid.*, p. 105.

[46] Ludwig von Bertalanffy, "General System Theory – A Critical Review," in *Modern System Research for the Behavioral Scientist,* p. 28.

[47] *Ibid.*

to be a "rational decision for the better, the higher moral value, or even enlightened self-interest." [48] It is his contention that will of this kind is an infrequently observed phenomenon in the world.[49]

Deutsch's identification of will obviously appears closer to the standard notion of determinism than it does to will (at least if Bertalanffy's description is followed). By will Deutsch means something that happens because of the nature of the system, rather than a decision that is made in spite of or independently of the built in responses of the system. This does not exclude the standard idea of will in Deutsch's writing. This appears in Deutsch under the label of "inner freedom of will." This inner freedom refers specifically to the idea of rational choice. It is described in more detail in the next chapter.[50]

Will in a system may be thought of as a kind of "imprinting system." Fact-action memories are stabilized in the system over long periods of time. This is what gives "will" to the system. An example might be given in the area of military defense. Atomic weapons systems exist and have been equipped with the "will" to respond to missile attacks from outside by unleashing nuclear missiles on the attackers. The system is willed to respond in this way. A fact-action memory cell and its scanning and response tolerances is shown in Fugure 1 : 3.

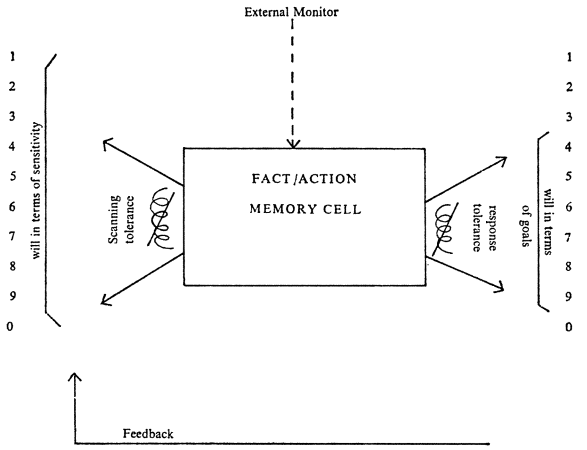

Figure 1 : 3
A Memory Unit Within A System
The scanning tolerance is always wider than the response tolerance, although the width of scan cannot cover the entire scale because the system does not have the resources to consider all possibilities.

[48] *Ibid.*, p. 29.
[49] *Ibid.*
[50] See Chapter II, pp. 65-71.

Such imprinting of will may be monitored.[51] This can be shown by reference to the missile example above. While the presumption is that nuclear attack will result in nuclear response, the committment of the system – its will – is interfaced [52] by a monitoring unit. In the United States the monitor is the President of the United States. He decides whether the will of the missile system should be implemented. He is not constrained by rigid past memories in the same way that the nuclear missile system is. Nor is he limited in the same way that other individuals living in the country are. Other individuals have decided that they neither wish to make "on the spot" decisions concerning nuclear policy nor do they want to consider and debate the issue of what an appropriate response is to missile attack. Consequently they cut themselves off from the issue by automating the missile system response. However, because the possibility of revision and/or debate may become necessary, the monitor to the system exists. The monitor of an automated system prevents the system from becoming independent or isolated from other systems and from being responsive only to a highly limited environmental fact, as in a nuclear missile system. Such a system is very dangerous since it possesses a very narrow range of choice.[53] To help reduce the danger, the system has to be linked to more sophisticated systems that are able to discriminate effectively, based on a broader spectrum of evidence. In this manner, the missile system is made *responsible* to other systems. Responsibility, here, may be understood as making one system answerable to another.

In the case of the nuclear missile system, the missile system was made responsible by relating it to the political system through a monitor. The task of the monitor was to check the will of the missile system. This made the missile system responsible to the political system. Responsibility can come about not only by monitoring or checking the will of a system, but also by maintaining and stabilizing will in a system. This may appear to be paradoxical, but it is not. Let us return to the nuclear missile analogy. It was said that a decision about nuclear weapons response had been taken, will was put into the system, and a monitor for that will created. This decision was not made independently of the rest of the world. It involved the existence of missile attack systems elsewhere and their maintenance and use. In the case of the United States vis à vis the Soviet Union it created a relationship of responsibility. Both nations devised what they called "defensive" nuclear

[51] *Ibid.*, p. 183. This Wiener's concept which Deutsch does not employ.

[52] "Interface" is the systems analysis term for the formal zone of interaction between two or more systems, or between sub-systems.

[53] A perfect example in the nuclear age would be a fully automatic "doomesday" machine.

missile systems and, for the most part, articulated the existence of the systems as automatic in nature. Both systems were described as monitored and in at least one fail safe case, the defensive nature of the system was illustrated.[54] So important to both states was the defensive purpose of the system that when a threat had been perceived by the system and the President reacted to it, the case was highly publicized. In the publicity surrounding the decision made by President Kennedy and his subordinates, information about the standards of the monitoring process was spelled out so that the U.S.S.R. would understand not only the intentions of the United States, but also would understand what would be an appropriate monitoring standard that might be followed. The result, one would hope, would be a specialized consciousness surrounding a fixed will. Such a specialized consciousness would insure that the setting of will was deliberate and structured toward truly defensive goals.

Decision making

The focus of the cybernetic approach as developed by Deutsch is upon the process of decision making. Decision making is assessed, in cybernetic study, not by focusing specifically on existing institutions within a political system but rather in searching for the mechanisms that cybernetic analysis believes permit sound decisions to be made. Decision can be divided into two types – routine decisions that involve only a minimum amount of the energies of the system and unusual decisions that involve most of the energy and resources of the system. For the most part cybernetic analysis is concerned with the making of unusual decisions.[55]

The concept of awareness, which is added here as a stage prior to conscious decision making, and the idea of consciousness developed by Deutsch, are important ideas in the cybernetic framework. These concepts help establish the cybernetic approach to decision making as unique. These ideas will be explored in the following paragraphs and in subsequent chapters of this study as well.

Here we begin with the idea of awareness in a cybernetic system. There are a number of reasons why the idea of awareness is useful. First, a system has to sense that it must make an unusual decision. In a servo-mechanism the possibility of making an unusual decision is precluded by the pre-established tolerances in the system. While some of the information needed for awareness

[54] See "The Strangelove Case," in Roger Hilsman. *To Move A Nation* (New York: Dell Publishers, 1967), pp. 222-223.

[55] Deutsch expresses this thought throughout his work and it may be summed up in his belief that "politics is . . . a decisive instrumentality." *Nerves of Government*, p. 243.

might reach the mechanism, no meaningful storage or response to such information is possible. Being aware does not mean that an effective decision will be reached, but it does set up the possibility for such a decisional process to go forward. Second, consciousness involves an extraordinary initiative taken either to protect the system, or to change the relationships that actually constitute the system. Many systems must react to unusual circumstances, must use resources hitherto untapped, but may not change themselves in any visible or permanent fashion. The resources of the system are galvanized [56] and the system may be said to be aware of its difficulty.

Perhaps the most familiar form of awareness process is when a mobilization of armed forces is called for by the Government. In 1962, during the Cuban missile dispute, President Kennedy ordered a partial mobilization of air, land, and sea forces. This was done not to make a fundamental change in the international relations of the United States, but to prevent such a change from taking place. A more far-reaching and, in the language of cybernetics, conscious decision was reached later on when the precise series of responses to the U.S.S.R. had to be decided. As Roger Hilsman has indicated, the vital character of these later decisions was the constant monitoring of the interaction with the Soviet Union coupled to a decision to modify or even change the response if deemed necessary.[57]

The Cuban missile dispute may tend to suggest that it was natural to pass from a systemic condition of awareness to one of consciousness. In fact, it was not obvious at all. The United States could have launched either a ground, air, or naval offensive against the state of Cuba. While a great deal of controversy still surrounds the decision not to launch a military offensive, there is little reason to suppose that it would not have been successful. But the President of the United States wanted to pursue goals that were more far reaching than destroying the Cuban missile facilities, or even occupying the state of Cuba. It can be conjectured that the decision to achieve a rather different set of goals occurred after the confrontation had begun, after military forces were activated, and after all the relevant segments of the government were consulted. It seems accurate to say that as communications began between the adversaries, the possibility for a different order of decisions ap-

[56] "Galvanization" is an increase in tension within a system. Often the word "polarization" is used, but polarization suggests that actors in a system align with different sides to any question; such a characterization is avoided somewhat by the term "galvanization."

[57] Hilsman, *op. cit.*, p. 228. See also, Graham T. Allison, *Bureaucracy and Policy: Conceptual Models and the Cuban Missile Crisis* (forthcoming); A. Horelick, "The Cuban missile Crisis: An Analysis of Soviet Calculations and Behavior," *World Politics* (April, 1964).

peared. While monitoring of the original series of decisions continued, through the use of naval and aerial surveillance (U-2 overflights), a change of monitors was decided so that a new communications network could operate more naturally. An effort to use the United Nations was unsuccessfully attempted.[58]

This whole process went forward with far more risk than may seem to some as necessary. Would there not have been less risk in a swift, though limited military response to missiles in Cuba? No doubt a military solution would involve some costs – the loss of American as well as Cuban lives. But the dangers would have been less severe since at the start of the confrontation the seriousness of the Soviet decision to protect Cuba was far from certain. An "antispetic" military approach seemed preferable to many – and it would have been antiseptic in the sense that a political decision would be precluded. The decision to withhold military confrontation was dangerous – it helped make the military and nuclear threats of the U.S.S.R. more credible.

Instead of a purely military posture, the U.S. government assumed a political approach, not only towards the U.S.S.R. but to Cuba as well. The sovereignty of Cuba was respected except for U-2 overflights – no major public challenge toward the Cuban regime was considered even though anti-Castro organizations in the United States pressured for such an approach.

The delay in overt military action because of the missile threat created major changes in the decision making structure in the United States, and in the relationship of the United States with its allies, and between the United States and the Union of Soviet Socialist Republics. In the United States there was a shift from an anti-Communist ideology toward a more pragmatic foreign policy. Between the United States and its European allies communications broke down and fragmentation occurred, due mainly to the independent United States initiative toward the U.S.S.R. But the most important change of all took place between the United States and the U.S.S.R. This change was brought about through a policy making effort that was very well managed. It is described in a magnificent paragraph in Roger Hilsman's *To Move a Nation*:

> The keynote of the United States response was flexibility and self-disciplined restraint – a graduated effort which avoided trying to achieve too much and which stopped short of confronting an adversary with stark and imperative choices. Out of the basic policy flowed the precedents – restraint in the use of power; flexibility in developing a solution; the pacing of events to give the other side time to think and to obviate "spasm reactions"; the making of a "little international law" outlawing secret and rapid deployment of nu-

[58] Hilsman, *op. cit.*

clear weapons; the deliberate regard for precedent and the effect of present action on the longer future; and, finally, the relevancy to that longer future of moral integrity – a point on which both the President and the Attorney General so strongly insisted.[59]

If the arrangement between the U.S. and U.S.S.R. was most successful it can also be considered as an excellent model of conscious policy making. Yet if it is argued that the U.S. decision was an example of conscious policy making, it must also be stated that the responses by the U.S.S.R. were appropriate and evidently coincided with those anticipated by the United States.

Steering and control

Effective decision making permits the system to steer and control itself. Steering involves the ability of the system to deal with its environment – even if the environment is disorganized and merely disturbs the system. Control involves the ability of the system to make use of its human and physical resources without creating undue fragmentation in the system. In general, cybernetic theorists use these terms together – one speaks of "steering and control." One cannot steer a system unless one has control over the resources of the system; one cannot control a system, at least over a long period of time, unless the system can be steered. In order to have successful steering, it is clear that a decision as to goals pursuit must be made. Once such a decision is made, whether the decision is implicit or explicit, the methods to attain the goals can be decided. As Haberstroh says:

> The existence of stable organization implies a degree of harmony and coordination among the participants, a sharing of intention. In order to secure this, participants communicate with each other and in doing so construct a common symbolic picture of the goals they have set for the organization and the means by which they intend to attain the goals.[60]

Routine decisions, in a political system, are made with great ease because a "common symbolic picture" of goals exists and is not questioned. Where difficult decisions must be made, no such symbolic picture exists – at least in finished quality – and thus to obtain a decision of this kind the process of awareness and the process of consciousness are of great importance. However, even if it is assumed that the system is able to make conscious decisions, it is not clear that it will be able to steer and control itself. Sir Geoffrey Vickers says that while

[59] *Ibid.*

[60] Chadwick J. Haberstroh, "Control as an Organizational Process," *Management Science,* 6 (1960), p. 165.

it is true and welcome that the degree of our *control* is slowly extending . . . the assumptions based on this extension are false and dangerous. Not everything can be fixed; and fixing is never just know-how. It is always a decision, made at the cost of not fixing something else. Until both governors and governed have a common and realistic view of what can be *controlled* and how far and at what *cost,* the relations between them are bound to be disturbed; and these disturbances may be as dangerous to the system as any.[61]

The problem with political systems trying to control themselves and steer in the environment is that the institutions of political systems "are not free to grow and develop, as business undertakings are." [62]

The areas of their [political institutions] authority and the scope of their power can be enlarged only by legislation, requiring particularly difficult agreements. Their budgets are voted annually. Their efficiency is not readily measured in terms of value for money; so their enlargement is viewed with suspicion in the climate of Western democratic thought.[63]

In order to achieve some modicum of steering and control, Vickers sees three possible processes for political systems to be involved in. A system that is overloaded (and in Vickers' and Deutsch's view all political systems are overloaded) may, first, respond by seeking to improve its regulatory machinery. It may, second, seek to control the rate of change "so as to keep the load within its capacity." Or, third, a political system "may lower and change its governing expectations and thus alter what it is trying to be." [64] Vickers is the first cybernetic theorist to articulate these alternatives. What he says compliments, and in some cases, expands upon Deutsch's own views.

The improvement of the systems' "regulatory machinery" is the solution Deutsch is directly concerned with. If a more profound understanding of how the system operates is achieved, it may be possible, in the future, to make better use of existing machinery in the system, or add to the system. How this is to be achieved – and what the program for the development of systems is to be – is not made clear either by Vickers or Deutsch. At least in its preliminary stages one would suspect that educating political leaders about the system they work in, making available trained personnel to aid them in achieving decisions, and providing modern information retrieval equipment, might be first steps. In reading Deutsch one would expect that this would be a "directive" process – that is, it would be done openly and cooperatively with

[61] Geoffrey Vickers, "Is Adaptability Enough?" *Modern Systems Research for the Behavioral Scientist,* p. 470. For another approach to "Adaptability" see John W. Burton, *Conflict and Communication: The Use of Controlled Communication in International Relations* (New York: The Free Press, 1969).

[62] *Ibid.*

[63] *Ibid.*

[64] *Ibid.*

the political leadership. However, some cybernetic analysts, such as McClelland, see this process occurring without the cooperation or knowledge of the political leadership. This is considered in greater detail in Chapter IV of this study.[65]

Vickers places more faith in the second alternative – controlling the rate of change so that the system can make decisions according to its current ability – as compared to the first alternative. Vickers thinks that the rate of change can be controlled, although he does not know exactly how. He does believe that there is a growing trend in this direction. He states that:

> In every Western country . . . the sector of activity which is collectively managed grows steadily larger, both absolutely and relatively. One effective measure of it is the proportion of the national income which is collectively spent. To members of a society where industrialization was born of individualism, it may seem anomalous that it should lead to collectivism; but in some clearly definable senses it is clear that it must do.
>
> In an expanding society numbers increase and every individual claims to take up more room, both directly for living space and mobility and indirectly, through the space needed to accommodate all the services on which he calls. Since the surface of the planet does not expand, it is inescapable that people should become more thick on the ground. Moreover, the extension of economic and other relationships in space and time increase the interdependence of each on all, of the live *or* the dead and unborn. In such a process the field of activity which a man can regard as his own business and no one else's must shrink to the vanishing point.
>
> It does not follow that in such a process freedom and variety must disappear. The problem for Western democracies is to socialize their individualist ethic without losing its essential values.[66]

The third alternative proposed by Vickers may seem "defeatist" in perspective, but it need not be. Vickers suggests that a political system "may lower or change its governing expectations . . ." This might be understood as "Government should do less than it is now doing." Or, this statement could mean, "Nation-state governments, acting on their own, cannot now achieve what they are trying to do." This latter point of view applies equally well to industrialized states and developing states. The industrialized states are attempting to re-allocate severely depleted resources to an expanding and affluent population. These states also face the problem of significant population segments who are not adjusted to the post-industrial system. The developing states are attempting to achieve some level of industrial growth and wealth. At the same time they must try to deal with the post-industrial

[65] See Chapter IV, pp. 100-108.
[66] Vickers, *op. cit.*, p. 472.

states. These processes lead to conflicts that no nation-state government can resolve.

A solution could be to work out problems in organizations or systems that span more than one nation. While there are some regional and universal organizations, today, there is great disagreement about their usefulness or adequacy. Haas is a particularly strong critic of efforts by the United States at steering and control through universal or regional systems. Speaking of the United Nations, Haas says:

> The development programs presently favored by American and United Nations initiatives tend to increase unbalances, disharmony, and internal unrest; they are more likely to produce the fuel for new wars and revolution than results in a universal pursuit of welfare and progress based on democratic participation, and thus incidentally produce world peace.[67]

Haas had similar opinions about regional organizations. In his view the only appropriate policy, especially for the United States, is to

> practice a prudential withdrawal from *both* regional and universal organizations and in addition cut back unilateral and bilateral policies. Then, after stock-taking and an examination of the national conscience, we must selectively recommit *both* at the regional *and* universal level.[68]

Action and Sustaining systems

The facts of the Cuban missile dispute, the exchange of information between the U.S. and the U.S.S.R., and the subsequent accommodation between the two powers – in the form of *détente* and a Test Ban treaty – might be viewed as a result of a balance of power between the two states.[69] But the decisions reached by the two parties may also be understood as a decision consequent upon a convergence of some goals. In Deutschian terms, this cannot be understood institutionally because the institutions spanning the two nations were weak and generally incapable of bearing the stress generated by the missile confrontation. Moreover, the agreement that was reached cannot be understood along conventional systems lines, since the two systems were postured in a negative manner toward each other with only highly informal interfaces between the systems. The agreement can be seen, however, in terms of communications processes, since such processes may go on not only within well developed systems, but also between such systems. The communications

[67] Ernest B. Haas, *Tangle of Hopes: American Commitments and World Order* (Englewood Cliffs: Prentice-Hall, 1969), p. 239.

[68] *Ibid.*, p. 241.

[69] It might be asked that *if* this was a balance of power, why had not such an agreement been made before the Cuban conflict?

relationship that developed in the Cuban missile case was based partly on formal communications chains between the two major states involved, and partly on unofficial carriers of information.[70] All the communications between the two states may be characterized as a special kind of system – what I call an "action system." An action system is a temporary, *ad hoc* system. While it can be called a system, it lacks its own structures and facilities and must borrow them from other systems. Some decisions are made by action systems – many other decisions are made through conventional procedures, or within what might be called "sustaining systems."

Action systems and sustaining systems are not terms that necessarily refer to established political institutions, domestic or international. Of course it is presumed that most decisions occur through formal relationships between sustaining systems. Nonetheless special systems are created to tackle important problems, within the nation state as well as between nation states, and these can be considered as action systems.

This distinction between action and sustaining system is an important one, but it is also somewhat complicated. Deutsch does not employ this terminology in discussing national political systems, but the concept is needed in the discussion of international politics if Deutsch's approach to politics is to be employed. If it can be asserted that the channels, switches, will and memories that Deutsch speaks of belong only to structured systems, then it would be difficult or impossible to speak of such systems existing between nation-states. Yet there are non-institutional, or informal, systems that do make international decisions. Even within nation-states decision making cannot be explained simply by reference to formal decisional channels. Yet somehow decisions are made even when formal networks are bypassed: for this reason the distinction between action systems and sustaining systems is made.

Action systems do not come about through mysterious processes and exist independently. Action systems must always be related to sustaining systems. For example, if in a national government a problem arises that is unconventional, a special group of individuals and facilities might be commandeered to appraise the problem. This is common enough and if after the appraisal is completed the special group disbands, nothing more is thought of it. But if a desire exists to maintain the existence of the special group, major adjustments may have to be made in the formal decision making system. If the special group can actually make a decision for the system and help carry

[70] Such as John Scali, a TV news reporter for the American Broadcasting System who carried many messages between the State Department and Soviet diplomatic officials. Hilsman, *Ibid.*

out the decision, then it is appropriate to speak of an action system. If the special group becomes permanent within the formal system, then the action system "disappears" as an action system, although the effect of the action system continues within the sustaining system.

While it would be improper to believe that all decisions within governments occur along pre-established institutional lines, it would be equally improper to believe that all informal decision making processes involve action systems. Decision making is not so rigid a process as to obey all institutional configurations. As Deutsch says in reference to political parties and underground organizations – but in a mood more far reaching that applies to government in general:

> . . . the essence of a political party, or of an underground organization, consists in its functioning as a network of . . . face-to-face contacts. These face-to-face contacts determine to a large degree what in fact will be transmitted most effectively and who will be the "insiders" in the organization, that is, those persons who receive both information and attention on highly preferred terms.[71]

Action systems between states are efforts by more than one national actor to make decisions for the international system, or parts of the international system. Sometimes the action system will be contained within a more formal international organization, be it an organization such as the United Nations, NATO, or an alliance agreement.[72] But an international action system may also be unrelated to international institutions – although the actors in the action system and the facilities of action systems come from the participating national actors.

The use of the action system concept helps make it possible to ascertain the making of conscious international decisions, just as Deutsch's delineation of governmental systems helps explain what conscious decision making is at the national level. While not observed frequently, decision making at the international level can be conscious in the Deutschian sense. An action system can select goals, can change or modify its goals, and can even make an effort to modify the international system proper. Action systems of this type will be explored in the chapters that follow, after greater information about the operation of action systems is detailed in the next chapter. What should be stressed here is that the notion of action systems permits the cybernetic analogue developed by Deutsch to be applied to international politics: hopefully this will produce results similar to those that Deutsch's *Nerves of Government* has produced for the study of national politics – a rethinking of how

[71] *Nerves of Government*, p. 152.
[72] Alliances are discussed in greater detail in Chapter III.

political systems decide questions of great importance, as well as how political systems should decide such questions.

THE DYNAMIC QUALITY OF DEUTSCH'S CYBERNETIC APPROACH

The cybernetic analogue is not just a clever model being applied to political science. As Deutsch emphasizes, cybernetics is important because of its use in the problems of communications, steering and control. This interest has been transferred from the hard sciences to social science. Deutsch isolates three reasons why this has occurred.

First, the social sciences have come face-to-face with modern electronic computer technology.[73] Computers can correlate vast amounts of data which, hitherto, could only be qualitatively assessed by political scientists. While qualitative analysis is of great importance, mistakes have been made by scholars in analyzing data because they did not have the means to develop accurate tests for the information samples they had. Now, with computer devices available, political information can be collected and correlated accurately.

Not only can computers be used for scholarly analysis, they can be – and are – used by government as an aid to making decisions. Political scientists, in their effort to understand how government functions and makes decisions, must now understand ehe electronic computer facilities that government makes use of in the process of making decisions. While it might have been possible to hold back from computer applications in political analysis, it is no longer possible to not come to terms with the computer if government activity is to be understood.[74] Computer operators within government claim to be able to steer and control government better than ever before. Political scientists, if they want to seriously dispute this expertise, must comprehend what is involved in the application of this technology to government.

According to Deutsch, the second reason why communication and control theory has become interesting to social science is that the social sciences have been confronted "with many problems for which the traditional mechanistic, organismic, historical or literary forms of thinking (which include, in Deutsch's view, moral theory) have proven inadequate." [75] To a certain extent political activity has been explained more or less in moral and mechanistic terms by traditional political science. This was sufficient so long as

[73] *Nerves of Government*, p. 15.

[74] For a traditionalist argument for adopting the computer, see Ernst B. Haas, "Toward Controlling International Change: A Personal Plea," *World Politics*, XVII (1964), pp. 1-12.

[75] *Nerves of Government*, p. 15.

the pressures on political systems were relatively modest – and so long as the dangers to societies were never so extensive as to be irreparable. Political scientists could identify certain "normal" relationships in society which performed their tasks reasonably well. Now, however, what was exceptional behavior in the past has become normal. Political systems are under very great stress and the decisions that they must make are very far reaching. The old explanatory forms are not instructive as to how political systems are to respond to these new pressures. The cybernetic emphasis on steering and control might serve as a means to upgrade political systems to deal with the problems that confront them.

This second reason for the adoption of the cybernetic approach ties in with the third explanation for the adoption of this approach in social science offered by Deutsch. The third reason for an interest in the cybernetic approach has been a change in social and historical circumstances. "We know or feel," Deutsch says,

> that we are near the end of a long period of human history, and in transition to a very different one. Accelerating processes of change, we feel, have been carrying us ever closer to the edge of the area in which our traditional intellectual equipment has been adequate . . .
>
> Coming up toward this edge of our past understanding, we must either accept intellectual impotence and probable defeat, or we must trust in irrationality, blind luck, and "muddling through" (which did not work well at Hiroshima), or else we must increase substantially our powers of thought and perception, in terms of our ability to feel for others and to act competently and effectively to help them. We must increase, therefore, the capacities of our intellectual equipment by a substantial amount.[76]

The cybernetic approach is a way not only to understand the character and *modus operandi* of our existing intellectual equipment, but a knowledge of the cybernetic process may also help us improve this equipment.

This claim is indeed far reaching. By examining how "thinking machines" function, these machines will become not only an adjunct to our own human intellectual apparatus but also a means by which we can train our own minds to function at a higher level. Instead of the thought process developing naturally in the human being, methods for streamlining and extending the potential development of the human mind may be found. Electronic equipment and computer languages are already being applied to this task.

Electronic media can also be coordinated for human use. Instead of the sporadic application of computer techniques, interfaces between computers will develop, permitting a problem to be processed through a multitude of special environments instantaneously. Computers will not only provide in-

[76] *Ibid.*, p. 16.

formation in this case – they will become integrated sensors expanding the common capabilities of the human mind acting independently.

Deutsch's vision of the changing world we live in invites speculation more extensive than even this. There is in his work an important political theme involving the whole goal selection process – and consequently involving political theory as it is known today. In stating that political systems must learn to more efficiently select their goals and more sensibly manage the pursuit of these goals, Deutsch is saying that political systems must become more competent than they now are. At the present time political systems are just getting by or "muddling through." [77] In Deutsch's view this is unacceptable. But to make political systems more acute in this day and age involves changing the leadership of contemporary political systems – or at least changing the nature of the institutions that collectively compose political systems. At the present time the leaders and institutions at the national political level are not sufficiently sensitive to problems, and the way problems are related. In reading Deutsch's work one can imagine that an overlay to existing leadership and institutions is required – this overlay would consist of modern information gathering apparatus. The equipment and the managers of the equipment would, minimally, help identify important problems, reflect on past efforts to solve the problems, and even indicate what techniques and initiatives might be required. This will help them in their central task which is to select appropriate goals for the system. Findings of this kind should help constrain decision makers in the choices they have before them. If the existence of this kind of management personnel and equipment becomes commonplace then it can be asserted that a major revolution in the design of political systems has taken place, perhaps as profound as that proposed by theorists such as Locke and Montesquieu in the seventeenth and eighteenth centuries. If this is true then Deutsch's observations may involve a major reworking of political theory.[78]

If Deutsch's work suggests major changes at the national political level, the logic of the approach suggests major changes at the international level. Decision making techniques of the kind proposed by Deutsch are not ideological in character – they can be used at any political level in almost any place. There is no reason not to suppose that cooperative efforts by groups of nation-states will make use of these new methods. In fact, it may even be easier to use the newer techniques at the international level because decision

[77] *Ibid.*

[78] This I speculate as a possibility. Deutsch only barely hints at the implications in *Nerves of Government*, pp. 242-244.

making at this level usually takes place in action systems which do not persist for long periods.

There is every reason to believe that a higher quality of international decision making is needed today. Johan Galtung separates international politics into two forms, which he calls "dissociative" politics and "associative" politics.[79] Dissociative politics "consists in keeping groups apart, e.g. by balance of power principles or any kind of polarizing or isolating measures." Associative politics involves bringing groups together "by various ways of integrating them by any kind of depolarizing and unifying measures." [80] According to Galtung "the general communication revolution works against all kinds of dissociative politics, making them look artificial and counterproductive." [81] If associative politics can be encouraged at the international level, systems organized along these lines coud have "high conflict-absorbing and conflict-solving capacities." [82] While Galtung considers a great number of factors in his analysis, basically what he is saying is that associative politics must be a politics of high sensitivity to international problems, whether those problems involve differences in armaments, in wealth, in power and control or in ideology.

Political development of the kind envisioned by Deutsch, and echoed in Galtung's work, is probably a long way off. Perhaps it is possible now only to speculate about the implications of cybernetics upon national and international politics. But the fact that the cybernetic revolution should stimulate this kind of thinking may suggest that not only can the cybernetic ways of thinking affect national and international politics, as it already does, but in addition it can be harnessed to existing political systems and used productively.

SUMMARY

Deutsch's cybernetic system is a system that has the capacity to steer and control itself. If it is operating correctly, it is a viable system. If its operation is erratic, the system is in danger of becoming pathological. The basis of a cybernetic system is the reception of "information" and the processing of that information within the system. A sophisticated system is able to "learn" as new information comes into the system; it can become "aware' 'of the problems it faces and, sometimes, can make conscious policy choices. This

[79] Johan Galtung, "On the Future of the International System," *Journal of Peace Research,* IV (1967), p. 306.

[80] *Ibid.*

[81] *Ibid.*

[82] *Ibid.,* p. 307.

can be accomplished through memory, storage and feedback mechanisms within the system. The system has another important feature: it is able to choose between goals or it may actually change its goals if they become unrealistic. The processes of learning and goal changing are controlled by the "will"facilities of the system.

In political analysis, the cybernetic approach focuses mainly on decision making. Of interest to Deutsch is how political systems can make difficult decisions. Here the cybernetic approach, as used by Deutsch, is policy oriented, although no specific scenario is recommended.

The Deutschian model has been modified by the inclusion of two systems types: action systems and sustaining systems. Sustaining systems are the systems in which decisions are normally made. Action systems, on the other hand, are *ad hoc* systems that focus around specific problems or events.

It must be emphasized that the cybernetic model is a model in development. Its final formulation – if there is to be one – cannot be predicted. At the present time the model, essentially, is a "way of thinking." Aspects of the model, eventually, may have analysis capabilities that are quantitative. At the present, as this chapter has illustrated, the model still remains qualitative in form.

CHAPTER II

THE CYBERNETIC APPROACH AND INTERNATIONAL POLITICS

INTRODUCTION

This chapter seeks to apply Deutsch's cybernetic approach to the study of international politics. Studies that help develop the cybernetic approach in international politics will be used in much the same way that Deutsch applies findinges by other theorists in his own work.

The cybernetic approach may provide an unusual benefit to the sub-discipline of international politics. An important problem within the sub-discipline is in finding a means of organizing a great variety of new theories and findings. Just as there has been an escalation of information and an expansion of perspectives in political science, so the sub-discipline of international politics has also expanded. The cybernetic approach has the capability of providing an organizing language for the modern study of international politics, as well as stimulating a policy oriented approach to international politics. This is due to the unique combination of themes in the cybernetic approach itself – that is, the combination of a scientific rationale of how systems operate with a concommitant focus on the goals systems seek and should seek.

In international politics as in political science there is continuing dispute about the purpose of gathering information and building knowledge. Some scholars feel that the social sciences perform the task of collecting and assessing social and political information for intellectual rather than practical reasons. Others, such as Lasswell,[1] see political and social investigations as "policy sciences" having an actual effect on those processes that are being analyzed. What is needed is an approach to the study of political and social phenomena that can combine both the academic and policy interests.

[1] See Harold Lasswell, *Politics: Who Gets What, When, How* (Cleveland: World Publishing Company, 1958), pp. 7-8. For a dated summary of Lasswell's views, see H. D. Lasswell, *The Political Writings of Harold D. Lasswell* (Glencoe: Free Press, 1951).

The cybernetic approach may provide the combination that is now needed. This can be illustrated by considering some of the immediate background of the sub-discipline itself. Beginning after the second World War, the study of international politics expanded greatly in the United States. Scholars perceived the need to develop cogent theories describing the international milieu. At hand were only "legal" explanations of the international arena, "One World" concepts, historical arguments, or pragmatic assessments of specific policy problems. The only fully developed *theory* of international politics was that developed by the German *Realpolitik* school – but given the ideological division between the United States and Germany, *Realpolitik* in its original formulation would not have been acceptable.[2]

The first thrust of theory development in the United States was designed to achieve two goals: to provide a coherent approach to understanding international events and to offset the moral and idealistic quality of much popular, as well as academic, thinking about international politics. The new approaches, in order to carry out these goals, declared themselves to be "scientific" theories of international politics. In the United States the most important scientific theorist was Hans Morgenthau: [3] in England perhaps the most important theorist was Georg Schwarzenberger.[4] If the theories developed appeared to be scientific, they remained political in intent and impact. No effort was made to discourage the public use of these new approaches – in fact many of these new scholars lent their services to government in an effort to remake the assumptions governing American foreign policy.

It may be that the high level of public involvement by the post-war scholars had something to do with their tendency not to explore further the theories they initially produced. Politically speaking they became advocates of the certitude of the theories they offered at the close of the war. For a

[2] There is no comprehensive study of *Realpolitik*. It is treated in some detail in A. Dorpalen, *Heinrich von Treitschke* (New Haven: Yale University Press, 1957); A. Hausrath, *Treitschke: His Doctrine of German Destiny and of International Relations* (New York: G. P. Putnam and Sons, 1914); R. Sterling, *Ethics in a World of Power: The Political Ideas of Frederick Meinecke* (Princeton: Princeton University Press, 1958); T. H. Von Laue, *Leopold Ranke, The Formative Years* (Princeton: Princeton University Press, 1950); S. D. Bryen, "A New View of Morgenthau's Realism," unpublished M. A. thesis, Tulane University, 1966.

[3] Hans J. Morgenthau, *Politics Among Nations* (3rd ed. New York: Random House, 1959). This work, originally published in 1949, contradicted in part H. J. Morgenthau, *Scientific Man vrs Power Politics* (Chicago: University of Chicago Press, 1946).

[4] G. Schwarzenberger, *Power Politics: A Study of International Society* (New York: Frederick A. Praeger, 1951).

while, anyway, the study of international politics stabilized around the post-war formulations and developed no further.

The stabilization in the sub-discipline was not very long lasting, however. Changes were taking place in two important areas. First, a broad based change in the emphasis of American education was underway. A thrust toward scientific learning, the training of engineers and technologists, was of great importance well before the first Sputnik tumbled around the globe in 1957. Students of the "liberal arts" became increasingly fascinated by the seemingly greater expertise and methodological sophistication possessed by scientists and engineers. Symposiums and seminars began to take place that involved the physical and natural sciences with the social sciences.

At almost the same time a second development occurred. This was a shift of perspective in political science itself, away from the traditional emphasis on legalistic, historical and moralistic interpretations. What was politics really about? How did things get done in political systems? This change of attitude created major changes in the study of politics in the United States – challenging the traditional basis of the discipline.[5]

Similar challenges and changes occurred in international politics, even with the "scientific" claims of some of its dominant theorists. It was argued that the post-war theories were weak and imprecise. How do you measure power? How do you gauge the real intentions of international actors? What do you mean by the "national interest?" [6] A new departure in the sub-discipline was underway and it carried with it different values than those possessed by the immediate post-war generation.

If the scholars immediately following the war tended to be cynical about the possibility of change at the international level and conservative in relation to the promoters of idealistic or world-Federalist goals, the students of these scholars were cynical and conservative in a different way. They expressed their conservatism methodologically, rather than ideologically. Instead of the application of theory in government, what was needed was more theory building. If international politics is to become scientific, then more attention has to be paid to the cannons of science [7] – even the hardware of science has to be brought to bear on problems of international politics. "Hard" data

[5] See A. Somit and J. Tannenhaus, *The Development of Political Science: From Burgess to Behavioralism* (Boston: Allyn and Bacon, 1967), pp. 183-194.

[6] See Ernst B. Haas, "The Balance of Power: Prescription, Concept, or Propaganda?" *World Politics,* V (1953), pp. 442-477; M. A. Kaplan, "The New Great Debate: Traditionalism vs. Science in International Relations", *World Politics,* XIX (1966), pp. 1-20; B. Wasserman, "The Scientific Pretensions of Professor Morgenthau's Theory of Power Politics" *Australian Outlook,* XIII (1959), pp. 55-70.

[7] Wasserman, p. 70.

needs to be collected and collated, rather than merely speculating about the facts that exist. Supplemental techniques have to be developed where data gathering cannot be applied.

This second thrust fragmented the sub-discipline but did not produce consensus on a new approach to international politics. It was unable to do so for two reasons: the discovery of new approaches escalated so rapidly that it became impossible even to take time to identify the common elements involved in all the new efforts; international politics changed so rapidly after 1960, that many of the old assumptions about post-war politics had to be reworked. The second thrust in theory making did manage to produce some common themes – systems analysis being perhaps the most important [8] – but these themes remained little developed and often changing.

What is important about the second thrust was not its conceptual result in a unified approach, but in the intra-sub-discipline demands it has generated. It seems now to be established that a requisite to good theory in international politics is attention to modern scientific findings.

Events may have established a second requisite to any theory of international politics. The invasions of Cuba and the Dominican Republic, the war in Vietnam, the crisis in the Middle East, the dilemmas of armaments expansion, the development of new nations – all of these events challenge our traditional opinions about American behavior in the world.[9] As Deutsch argues, no longer can we get by on blind luck in our foreign policy. No longer can the United States conduct its foreign policy with a poorly fashioned structure of goals in mind.

This observation by Deutsch is suggestive of a third thrust of theory making in international politics. It is a movement that is only now underway and is far from completed. It involves, in the words of Galtung, "the idea of rejecting the traditional division of labor between *ideologists* who establish the values, *scientists* who establish the trends, and *politicians* who try to adjust the means to ends ... and substituting a more unified approach to the three fields." [10] It is a combination of this kind that is permitted by Deutsch's cybernetic approach. His ideas take great advantage of scientific development, particularly the cybernetic revolution and the evolution of

[8] The importance of systems analysis is supported in a presidential address to the American Political Science Association. See D. B. Truman, "Disillusion and Regeneration: The Quest for a Discipline," *American Political Science Review* LIX (1965), pp. 863-873.

[9] See as one example among many, L. J. Halle, *Dream and Reality: Aspects of American Foreign Policy* (New York: Harper and Brothers, 1954). Also see Lewin, L. C. (ed), *Report from Iron Mountain on the Possibility and Desirability of Peace.* (London: Macdonald, 1967).

[10] Galtung, *op. cit.*, p. 305.

what has been called "general systems theory," [11] while rejecting the skepticism that has pervaded the "scientists" within the social sciences. As a supplement to the scientific "diet" he recommends, Deutsch suggests that great attention be directed to the need of political systems to form sensible and viable policy goals. In this way, Deutsch believes, the study of politics and of international politics can become a unified effort, sensitive to the changes that are taking place and able to deal with these changes. The cybernetic approach, Deutsch believes, is a way that "we in political science shall not end up combining the skepticism of an old discipline with the ignorance of a new one." [12]

CONCEPTS OF INTERNATIONAL POLITICS

Deutsch's approach may be a unifying medium, but it should be pointed out that there are many confusions and weaknesses that have to be overcome before any approach can claim to better organize the study of international politics. At the top of the list is the need for some clarity about what international politics in fact is. To use Deutsch's approach – or any other approach based on the idea of systems – it must be presumed that international politics occurs in a system. The word system connotes many things, ranging from the most general ideas about how factors are related, to specific relationships and interactions. The systems approach to international politics – however well developed, implies that international politics are not decentralized, unstructured, or purposeless.

State of Nature concept

The idea of international affairs organized in systems form runs up against one of the most popular images of the international realm. This image is that the international realm is really similar to a state of nature – that the international milieu is unorganized, ungoverned, dominated only by force and brutality. In this view, at the international level there is no sense of community, no undergirding of a shared morality to control activity. In the state

[11] See Ludwig von Bertalanffy, "General System Theory," *General System Yearbook,* I (1956), pp. 1-10; Kenneth E. Boulding, "Political Implications of General Systems Research," *General System Yearbook* VI (1961), pp. 1-7; R. C. Buck, "On the logic of General Behavior Systems Theory," *Minnesota Studies in the Philosophy of Science,* J. Feigel and M. Scriver (eds.), (Minneapolis: University of Minnesota Press, 1956), pp. 223-238; O. R. Young, "The Impact of General Systems Theory on Political Science," *General System Yearbook* IX (1964), pp. 239-253.

[12] Charlesworth, *op. cit., p. 215.*

of nature image there is only one form of controlling medium at the international level, this being that the free movement of nation-states is limited only by the free movement of other nation-states. This sometimes leads to stability –or, in the language more commonly applied, to a balance of power between states.

Moderate, and even some systems oriented, political scientists share this state of nature attitude. Stanley Hoffmann, for example, contrasts domestic to international politics in the light of state of nature principles. According to Hoffmann:

> "Domestic" political science and sociology are based on a model of the integrated society – a Community (a basic, if imprecise, consensus among the members, a fairly elaborate division of labor, and belief in a common good that is more or less broadly and clearly defined) endowed with power (a monopoly of the legitimate use of force which the state exerts directly on the citizens).[13]

Contrary to domestic political science and sociology, the study of international politics begins with a model of a

> decentralized milieu divided into separate units. It is not Community, but at best it is a society with limited and conditional cooperation among its members, whose primary allegiance is to the constituent parts and not to the body formed by their sum total; at worst, it is a battle field. It has no central Power – hence, resort to violence by each unit is legitimate, and the institutions established among the units have no direct authority over individuals within the units.[14]

It may appear that the description offered by Hoffmann is adequate. There can be no doubt that decentralization and fragmentation are often greater at the international level than at the domestic level. Spatially, the linkage between interests is considerably wider at the international level. However, this is not sufficient reason to automatically separate domestic or nation-state politics from international politics. To make this separation *a priori* involves the assumption that the political relationships at the international level are always something "less" than what occurs at the national level. It is well known that historically such an assumption cannot be sustained – some international systems of the past have been at least as effective as are many national states today. Even if we prefer to think of only the present moment, it can be asserted that at least segments of the international system may be operating more effectively than many national governments.

[13] Stanley Hoffmann, *The State of War: Essays on the Theory and Practice of International Politics* (New York: Frederick A. Praeger, 1965), p. 14.
[14] *Ibid.*

There is another reason why one should not automatically distinguish between international and domestic political systems. We may come to believe that politics must always be based on territorial confinement, particularly on confinements configurated in the form of nation-states. If this belief becomes entrenched, we may not be sensitive to some of the important political trends that are taking place. One of these trends is described by Galtung. Speaking about the more developed part of the world, he says in part:

> Characteristic of this part of the world, now, is the manner in which the societies with increasing development are *growing out of* their nation-states which even become like strait-jackets for them. A consequence of this is a certain general erosion of the nation-state, since it is perceived as being of decreasing relevance for an increasing fraction of the members of the nation. But there is a double process taking place: on the one hand, some layers of the population become identified with neo-modern societies and grow out of the nation-state; while at the same time, formerly traditional, peripheral segments become more modern, and hence arrive at a level of social identification compatible with the nation-state. But the net result will nevertheless be a decrease in loyalty, a decrease in nationalism, because the 'leavers' are on the top and the 'joiners' come from the bottom.[15]

Finally, even if we do not accept Galtung's trend as consequential, it would be a mistake to regard the international milieu as one big, monolithic, hellish labyrith. Even if international politics involve warfare and brutality, so do national politics. Even if international governing is decentralized and sporadic, so, often, is national governing. What is important is that, like national political environments, the international environment is rich in differences not only historically, but even at the present moment. It is impossible to characterize the prevailing international system in only one, simple way just as it is impossible to characterize nation-states as the only effective political units in the world.

Systems concept

A systems approach to international politics helps release us from the bounds of a state of nature approach by conceding that there must be some order at the international level. It may be that this order is based only on power, as state of nature theorists may agree; but at least power is seen as relating to some semblance of international control. Some systems approaches, however, go much further than this. Deutsch, for example, in his ideas of steering and control, says something more about political systems of any kind. If the

[15] Galtung, *op. cit.*, p. 312.

international political system can be imagined as a system that achieves a certain amount of steering through a decision making process, then it is possible to go further than this image and identify how steering and control occur at the international level. Not only can the analysis identify how steering and control does occur at the international level, it may also be possible to determine when steering and control are successful and when and where steering and control fail.

By using Deutsch's perspective we begin, as Beer believes we should, with order rather than with chaos. Because we begin optimistically we can be sensitive to what compliments the order we think we perceive, and what disturbs that order. To use Deutsch's language, with the concept of system goes an identification of two main system's states. On the one hand are "viable" systems. Viable systems are able to process problems that confront the system, receive new information – symbolize the information – and respond to the information. Viable systems are able to respond to outside events while, at the same time, maintaining their autonomy and integrity as systems. Because the system contains memory and decoding units, viable systems are systems that are capable of making conscious decisions.

The second system state Deutsch describes is the "pathological" system. A pathological system cannot rearrange its inner structure or make decisions that will increase its chances of future successful functioning. Pathological systems become rigid – behavior patterns that have persisted over a period of time are maintained regardless of changed conditions.[16]

Viable and pathological systems are possible at any level. International systems can be regarded as viable if, for example, the major political actors are able to perceive new disturbances in the system, isolate and control the disturbances, and deal with them effectively. International systems can become pathological if old mentalities prevail when new circumstances arise. For example, the development of nuclear weapons imposed major changes in the range of decisions possible at the international level. Yet it has required some time before this difference in decision making options has been "sensed" at the international level. During this period of "lag" it might be asserted that the system was pathological, or on the road to becoming pathological, vis à vis this range of problems.[17]

It may be asked, how can the international system be equated with a domestic system in Deutsch's approach? Where are the memory banks located? Where is the decision making unit? As has been said, the cybernetic approach does not suppose that there is an automatic convergence between

[16] *Nerves of Government*, p. 169.
[17] *Ibid.*, pp. 187-188.

the existence of institutions and the process of decision making. At the nation-state level most decisions are processed through institutions, although there are exceptions to this as previously mentioned. At the international level, most decisions are not made by the few international institutions that persist, but instead decisions are made "between" institutions, both domestic and international. The lack of institutional centralization does not mean that it is impossible to make decisions – because institutional centralization and communications centralization are not always related phenomena.

It may be said that international systems make decisions in a variety of ways – some decisions made by individual national actors become decisions for the whole international system by reason of the influence of the national actor. Some decision making is a result of a convergence of similar national decisions for the international system. Some decision making develops out of the existing international sustaining systems (such as the United Nations). Finally, some of the most important and positive international decision making emerges from international action systems. This is not only because the international world is increasingly characterized by "associative" politics as Galtung says, but because associative politics is naturally a part of the international system, even though its extent will vary.

Galtung's notion of associative politics may help us characterize the potential of the international system. In its potential form, presuming that nation-states will persist for some indefinite time, the international system might be characterized as one great possible action system. Beneath this potential capacity, there exist working action systems. Next in importance in the systemic chain are domestic sustaining systems. Finally there are the international sustaining "subsystems" – so identified here because they are more subsystems of nation-states than they are independent from nation-states and directly related to a greater international political system. This is shown in diagram 2 : 1. Action systems are responsible for many of the important decisions for the international system. The more normal political activities of the international system are carried on by various sustaining subsystems. These subsystems make possible the continuous exchange of political and social information. A most familiar subsystem of this kind consists of the permanent exchanges of nation-state representatives – diplomatic corps, consular services, etc. – who not only serve the immediate interests of nation-states but who also provide for the maintenance of communications between nation-states.[18]

[18] On the development and importance of diplomacy, see: H. Nicholson, *The Evolution of Diplomatic Method* (New York: The MacMillan Company, 1954), pp. 99-106.

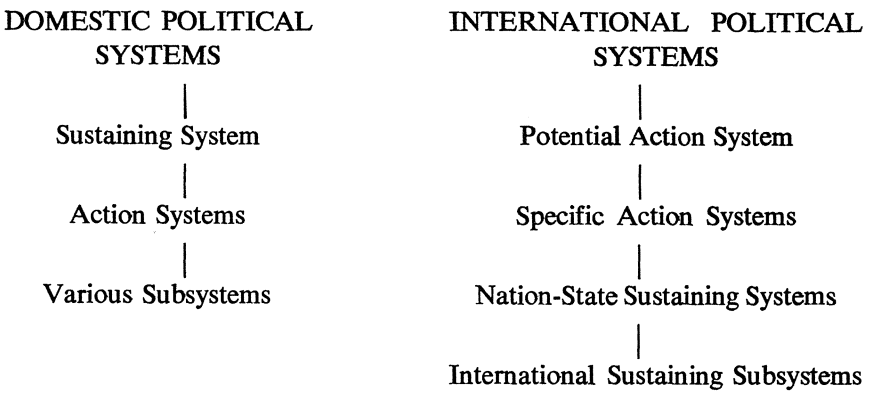

Figure 2 : 1
Domestic and International Political Systems

The existence of permanent nation-state representatives in other nations should be examined somewhat further since the maintenance of the custom of diplomatic representation is more important today than ever before. This may appear paradoxical because the authority once possessed at least by the top ranking diplomatic representatives of nation-states is not so great today as it was in the past. Perhaps this is due to the ideologization of politics – diplomats from Communist nations rarely are given any freedom of action – or to the intensification of interaction and the speed-up in communication which together have made the grant of authority to the diplomats less necessary than in the past. What is important is that the diplomatic services are maintained not because they possess independent bargaining capacities, but because their main role is to act as sophisticated sensors of the political feelings of the host nation's leadership, as well as expert collectors of vast quantities of information about the host nation.[19]

The maintenance of this "intrusion" in the host nations invites still further comment. Why do nation-states put up with such formalized "spying?" Would it not be better to strictly regulate what diplomatic representatives can do within host states? Is it even fair to exempt, for the most part, the representatives of other nations from most of the laws that affect the nation-state citizenry? It appears that such intrusion is not only tolerated but considered necessary. It might be asserted that there is a specialized decision that has been made by most of the actors in the international system. This de-

[19] In recent years with the expansion of data gathering techniques, the importance of diplomatic missions abroad is no doubt increased.

cision is that the diplomatic subsystem permits nation-states to maintain themselves as nation-states. If there is no contact or cooperation, nation-states might not be able to cope with the policies and proposals made by other states. They might misinterpret the actions of other states. The diplomatic system helps prevent this from happening, and thus aids in protecting the nation-state system. Furthermore, the diplomatic system not only helps nation-states anticipate policies from outside and respond to them, but the existence of diplomatic subsystems also creates a legitimization of the boundaries and sovereignty of nation-states. It is axiomatic that where there is no system of representation one would expect to find intense disagreement about the maintenance of national boundaries and pathological political behavior. This is the case in the Middle East, where the various Arab states are at loggerheads with the State of Israel.[20]

It can be said that we have a sketch of what the international political system can achieve, both in presuming how it can make important decisions and in how it processes normal problems. At this point there is only a sketch, nothing more. What has now to be done is to add substance to this sketch. To achieve this involves a consideration of some recent findings about the international political system. To make sense of these findings the cybernetic approach thus far described will act as a critical motif. After some of the more important and interesting efforts in appraising the international system are examined, we will return with more precision to the cybernetic position proper and elaborate it in greater detail.

Before we proceed to the findings that have been made in international politics and their bearing on the cybernetic approach, it is necessary to add further to the language that has already been developed describing international politics. The reason for doing this relates to the problems of concept formation about the international system reviewed in this chapter. Some of the research that we will examine makes important observations about the international system in a "dissociative" rather than "associative" fashion. Dissociative politics cannot be discounted altogether since even dissociative relationships contribute to the maintenance of order in the international milieu. In some instances it may be more profitable to keep nations apart,[21] particularly when no grounds for cooperation exist but at least an agreement not to conflict at the moment can be secured. Dissociative politics can also be unconscious phenomenon – certainly the lack of conflict can not always

[20] A key political issue at the present time involves whether there will be direct negotiations between Israel and the Arab states. It is Israel's position that no political agreement is possible unless there are direct negotiations. (1968)

[21] The isolationist movement within the United States was aimed at keeping this country out of foreign affairs, particularly European affairs.

be explained only by *decisions* not to conflict. Many nations do not pay serious attention to each other simply because they perceive no particular or compelling reason why they should be interested in one another.[22] This "apathy" contributes to stability at the international level.

For these reasons it may be a convenience to refer to relationships that are political – that is, that involve communicative and decisional interactions between states – and relationships that are not political, that is, where nations get along by keeping away from each other. Here we might speak of international *political* systems and international *environmental* systems. In environmental systems nations keep apart, perhaps for the reasons mentioned above, or for other reasons. In the language of this study, when an international system is referred to, no distinction between international environmental systems and international political systems is made. Some scholars, as will be seen, believe that the international system is mainly environmental in character; some see the international system as political; some are not particularly clear what the system is. In evaluating the findings of modern scholarship on international relations, these distinctions should be helpful.

DETERMINING THE CHARACTER OF INTERNATIONAL SYSTEMS

This section seeks to identify the character of the international system as revealed by modern research in international politics, and disciplined inquiry related to the study of international politics. The importance of these findings will be assessed by the use of the sketch of the cybernetic approach thus far presented and, moreover, these elaborations will help develop the cybernetic approach for international political study. This is in line with Deutsch's desire to integrate the cybernetic approach with the classic theories of international politics, as discussed and expanded upon in Chapter I.

The research discussed in the following pages that attempts to characterize the international system is only an imperfect sample of the great wealth of new findings that have surfaced in the sub-discipline in recent years. The selections that have been made are chosen because they help emphasize certain features of the international system. Other examples might as well have been selected – still others may be considered by some as better investigations. No special claim is made here for that which is included or not included. The author has only attempted to select those works that have a high and immediate relevancy to the cybernetic approach. The characteri-

[22] For an interesting analysis of transactions in the international system, see: Steven J. Brams, "Transaction Flows in the International System," *American Political Science Review* LX (1966), pp. 880-898.

zations of the international system discussed are divided into three categories: historical comparison approaches, non-historical comparative approaches, futuristic approaches.

Historical comparison

Do historical models of international politics provide us with better information about the present international system? Has our analysis of international systems been affected by a Western intellectual bias?

Modelski's approach

It is the view of some scholars that historical information about international systems is required if we are to understand the international system correctly. Stanley Hoffmann has urged that one major task in building a theory of international systems is the development of historical models. Raymond Aron, in his recent work, has spent considerable time in evaluating historical international systems.[23] But Professor George Modelski has gone farther than most in his argument for a historical perspective. He believes that our approach to international affairs has been bounded by our attention to Western standards. If we are to develop a comprehensive understanding of the international system we have to understand segments of the international system that are not Western in their behavior patterns. Only by broadening our understanding will we be able to develop a worthwhile comparative approach to international study. According to Modelski:

> Until recently the discipline of international relations has been preoccupied almost exclusively with the international system which emerged in Western Europe at the end of the Middle Ages and which has persisted in its essential features until the very recent past. Brief textbook reference to earlier, "exotic," international systems such as the Near Eastern or the Chinese have been insufficient to awaken the student to the wealth of experience in the management of international relations which was a valuable property in earlier ages. Yet, because of this lack of comparative data, some crucial features of even the contemporary international system have remained obscure.
>
> It is assumed that the proper object of the study of international relations is the universe of international systems, past, present, future and hypothetical.[24]

[23] Hoffmann, *op. cit.,;* Raymond Aron, *Peace and War: A Theory of International Relations,* Richard Howard and Annette Baker Fox, trans. (New York: Doubleday, 1966).

[24] G. Modelski, "Comparative International Systems," in *The International System: Theoretical Essays,* K. Knorr and S. Verba (eds.), (Princeton: Princeton University Press, 1961), pp. 120-121.

As a major theme, Modelski argues that international systems change over time. This theme may be supported by an observation of nation-states. Modelski thinks that nation-state organization has changed significantly in the modern period. In the past there was little need for government to perform very many functions and, in fact, some Western concepts of government saw governing as a "negative" rather than a positive activity. Government did, however, become increasingly positive with the advent of the industrial period. Similarly, in Modelski's view, international systems have changed in the modern period.

YEAR	POPULATION (in millions)
700	27
1000	40.5
1328	59
1450	60
1550	81
1650	130
1750	207
1850	875
1961	3000

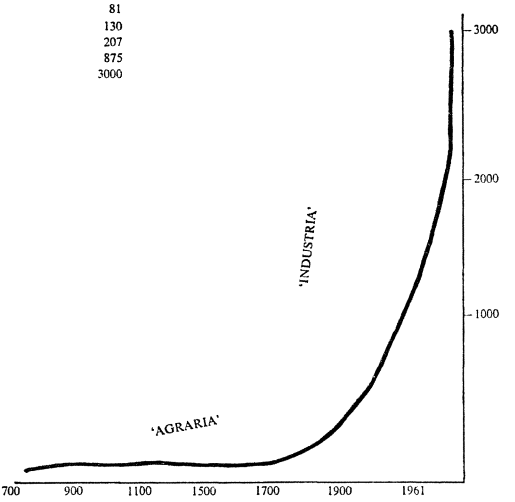

Figure 2 : 2
Population Expansion of the Western International System, 700-1961
(based on Modelski)

Modelski tries to illustrate this conclusion by dividing history into two periods – the agrarian period and the industrial period. This is shown in Modelski's diagram of the Western International System (as modified) in Figure 2 : 2. International systems can be characterized as different for each of these periods. International systems in the industrial period Modelski calls the "Industria system." International systems in the agrarian period Modelski calls the "Agraria system." The agrarian and industrial international systems, Modelski finds, performed the task of holding together the inter-

national system in a different way. The holding together of the system, it should be noted, Modelski calls "maintenance." Maintenance involves the continuation of international communication and the continuation of culture, in Modelski's analysis. The focus on communication, and perhaps culture as well, is a critical idea in Deutsch's analysis.

Cultural maintenance in Agraria, according to Modelski, "was achieved in the cities and principally by the courts which function, not only as foreign offices, but also as agencies of integration." [25] Relationships between agents of foreign governments were simple and far more personal in quality than they are today. The culture maintained was mainly the culture of a small, international elite. An important objective of the international system was to permit conflicts and differences to be played out without seriously disturbing the cultural ethic of the participants in these conflicts.

In the Industria system cultural maintenance involves problems of a different nature. Cultural maintenance today does not mean the maintenance of a "specific" culture, or of a specific cultural leadership. Instead cultural maintenance is involved in conveying and perpetuating certain customs of nation-state behavior that are considered acceptable by the nation-states in the system. The idea is to maintain certain customs – this being considered as of great importance particularly by the more developed nations.[26]

Such customs and understandings in Industria may involve the maintenance of the integrity of nation-state boundaries. Or the maintenance of culture in Industria may involve following certain procedures for handling international problems. An example of this latter case can be given. In the Industria system the U.S.S.R. might feel a need to try to better control its "satellite" states. At the same time the U.S.S.R. is interested in pursuing certain mutually shared policies between itself and the United States. But the U.S.S.R. must somehow try to show the United States that its behavior in one area does not render it a dangerous or unreliable political actor in another area. To some extent there must exist, therefore, certain communications channels that permit the U.S.S.R. to convey its intentions to the United States. If certain standards are met, it is assumed that the U.S.S.R. will be "permitted" to pursue its satellite policies and still pursue joint political goals with the United States. These standards, in the case mentioned, involve the kind of behavior the Soviet Union may acceptably use in its performance in the satellite nations. This might be illustrated by Czechoslovakia where the U.S.S.R. used techniques quite different from those used in Hungary in 1956.

[25] *Ibid.*
[26] *Ibid.*

Modelski's study suggests, in part, that the Industria system performs very differently than did the Agraria system. The Industria system is concerned to maintain a highly complex series of relationships between states which lack the common leadership and common culture that made international politics more natural and manageable in the past. The problem today is not only how this specialized maintenance task can be performed, but how information about the procedures maintained can be learned by those states approaching industrial maturity.

Riggs' historical comparison

While Modelski's division between Agraria and Industria serves to illustrate major changes that appear to have taken place, there is also the suggestion that the industrial model of international politics – as is known today – is the end point of development of the international system. Are there not intervening forms between an agrarian and an industrial system? Can the international system be characterized as a fully industrial system? Will the future be no more than a repetition of the present system? Is the "industrial" factor the only important distinction between international systems over time?

To attempt answers to questions of this kind, Fred Riggs has developed a somewhat more sophisticated model than that employed by Modelski.[27] To describe Riggs' entire effort is a massive task, but a cursory presentation of his ideas may help indicate the path he is following.

To begin with, Riggs separates models of social systems from models of political systems. A distinction of this kind is not present in Modelski's work, although Deutsch – at least in practice – accepts this distinction. According to Riggs, social systems can be broken down into three major types – the "fused social system," the "prismatic social system," and the "diffracted social system." (The term "diffracted" is not found in the essay on international systems quoted in these pages, but appears in Riggs' more recent works. In his earlier work the term "refracted" was used. The difference in terms has nothing to do with the meaning Riggs attaches to the idea, but is only a response on his part to the discovery that the proper scientific term for light waves after they have passed through a prism is "diffracted" rather than "refracted".) In a fused society "a single structure performs all the necessary functions" for that society. The family unit, for example, serves to maintain law and order, educate the children, and provide

[27] Fred W. Riggs, "International Relations as a Prismatic System," in Knorr and Verba, *op. cit.*, pp. 598-620.

employment or work for its children. In a fused *international* society, the interconnection of families may serve to perform a variety of functions, in a manner not dissimilar to the performance of a family in any other fused society.[28]

A diffracted society is quite different in character from the fused model. In diffracted societies, "for every function, a corresponding structure exists." Thus if the international social system were diffracted, specific structures (or institutions) would exist to carry out specialized tasks. Thus education would be carried out by an international educational structure of some kind; world agriculture would be regulated by some supra-national institution that would set standards for land use and exploitation.[29] Nation-state governments would manage only internal problems under such circumstances, and this would be quite restricted because of the spillover of problems and issues beyond nation-state boundaries.

A prismatic social system, domestic and international, is a kind of half way house between these two models discussed above. Some of the elements of a fused society persist – some of the elements of a diffracted society exist. Thus families may continue to provide at least some of the functions they carried out in the fused societies. International elites, although weakened and "infiltrated," may still exist and carry on as before. At the same time specialized institutions are visible. Educational institutions, rather than families, train the young. International trade organizations create standards for interstate commerce and receive some degree of acceptance of these standards. Riggs is careful to point out that there is no necessary reason why the prismatic nature of social systems is a temporary condition. Systems may or may not become diffracted – or they may even retreat to a fused condition. There is no automatic process connected with this analytical division of social systems. For example, it is argued today that some nations that are considered diffracted will be able to maintain that position, while others that are attempting to modernize will slip backwards and not be able to maintain even the few changes that have occurred within their boundaries. Similarly it might be hypothesized that the few international social institutions that exist might fragment, and the international system could again become a fused system.

What happens in social systems is not exactly the same thing that happens in political systems although the two systems are related. By political system Riggs means the governing process. Government in the nation-state Riggs calls a "rule." Government at the international level Riggs calls "macro-

[28] *Ibid.*, p. 599.
[29] *Ibid.*

rule." Rules can be subdivided by the *distribution of authority* within them. Similarly, macro-rules can also be subdivided. Rules, in Riggs' language, rule people: macro-rules rule rules.[30]

Riggs believes that there are differences in macro-rules. He distinguishes macro-rules by territory or geography. For example, if a macro-rule is highly segmented territorially, it is "polypolar." If a macrorule is not highly segmented, but instead is focused upon one territory (even if that territory is all of the world) it is "polar." All other cases are intermediate in Riggs' opinion and are identified as "oli-polar." [31] For example, if we want to talk about the European international political system, we might call it polar – at least until the seventeenth century. After that time, as colonial expansion got underway, the system became oli-polar. But we might also take a different approach with the same language. It can be argued that as nationalism developed in Europe, the boundaries of nation-states became rigid and passage across such boundaries was monitored by agents of the nation-state governments. In this characterization the international system of Europe became a polypolar macro-rule, even while its fused social character was still maintained.

Riggs' identifications of the international social and international political system can be adapted somewhat and can be useful in the cybernetic approach. To achieve this, the distinction between political and social systems Riggs makes has to be changed somewhat, at least in the manner these distinctions are expressed.

Instead of speaking of social systems in the broad sense – because the idea of social systems is so complicated that it would be difficult to include all the variables involved directly in a model of international systems – this idea can be simplified into Deutsch's notion of systems goals. The goals pursued by the system, their character and range, should alert us to the kind or kinds of social systems that exist and influence the political system.
Goals can be indicated in terms of decision making systems by their range: short range goals if they are viable should be present in relatively balanced international systems; the need to pursue long range goals should indicate that there are serious weaknesses in the international system that at least some actors want to remedy. See Figure 2 : 3. If a system that appears to be pathological is able to pursue goals of only the minimal consequence for the system (short range), or oscillates radically between unreal long range goals, then one can suspect serious difficulties within the social system. What these difficulties are can be explored, perhaps in the framework that

[30] *Ibid.*, p. 601.
[31] *Ibid.*

Riggs proposes. From the point of view of attempting to understand the international system it can be asserted here that identifying the goal structure of the system is a reasonable first step that can, subsequently, be followed up with more detailed analysis.

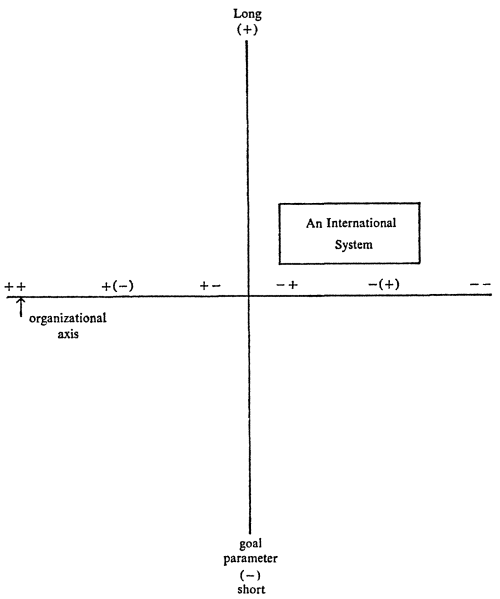

Figure 2 :3
A Diagramatic Presentation of an International System

If Riggs' identification of social systems can be used to form one "axis" of the analysis of international systems, his effort to distinguish the "distribution of authority" might be helpful in *developing* a second "axis" of the analysis of international systems. The term "authority" as employed by Riggs is, however, in need of clarification. By authority Riggs means the capacity and range that is possessed by a political system. For example, a fragmented political system would have only a limited range and capacity. It might not be effective. Authority, therefore, depends on the structural qualities of the political system; that is, on the "organization" of the political system.

It is of more immediate value to speak of the parameters of political organization, than of the effectiveness or distribution of authority. For example, if a nation-state political organization was highly fragmented, it would be identified as organizationally weak. However, the system might still be authoritative. This would be discovered by referring to the goals the

system is pursuing and determining if the goals were realistic vis à vis the organization available to pursue the goals. The authority of the system, as Riggs uses the term, partly involves a mixture of the organizational level of the system and the range of goals pursued by the system.

The dual axis of organization and goals is diagramed in Figure 2 : 3. The organizational linear run is expressed in a series of minus and plus signs with the use of parentheses to help express the value of the signs employed. This is not unlike the scheme employed by Schubert.[32] The international system represented on the dual axis is not detailed in any way – how international systems can be characterized in a diagram of this kind is discussed and illustrated in Chapter III. The illustration employed here is flexible – the kind of international system found may be represented in the illustration (Figure 2 : 3). It is shown at this point to sensitize the reader to two dimensions of the international system – the level of organization and the dimension of the goals of the system.

Non-historical comparison

If historical investigation can reveal the changes undergone by the international political system, other forms of comparison might reveal other important information about international affairs. Comparative approaches of various kinds are being used today in political science with excellent results.

Master's primitive society

Roger Masters has made significant advances in using a comparative approach to explain the operation of the international system. Masters believes that international political systems and primitive political systems are similar in many ways and our detailed knowledge of one system may help to explain how the other system operates. In Masters' view, primitive societies are more easily studied than international systems, yet there are sufficient resemblances between primitive and international systems to warrant the study of one to gain information about the other.[33]

Masters believes that political scientists have not developed a deep enough

[32] See the various scales used in Glendon Schubert, *Judicial Decision Making* (New York: The Free Press, 1963).

[33] Roger D. Masters, "World Politics as a Primitive Political System," *World Politics* XVI (1964), p. 605. For an expansion of Masters' point of view see Michael Barkun, *Law Without Sanctions: Order in Primitive Societies and the World Community* (New Haven: Yale University Press, 1968).

interest in the nature and working of primitive societies. The term "primitive" tends to leave political scientists lukewarm about the prospects of such an investigation. Yet, in Masters' view, this disinterest has hidden some very important political facts from view.

According to Masters there are two kinds of primitive society – *stateless* and *governed*. Masters is not interested in the governed type of primitive society, since that is a forerunner of modern governmental systems. He is, however, interested in stateless primitive societies, since one might expect that maintaining order in stateless societies would be extremely difficult. But, Masters says, one does find order in stateless societies and ways have been found in such societies to prevent violence from becoming self-perpetuating. According to Masters:

> Whatever the logical merits of Hobbes's conception of "state of nature," it does not seem to follow, at least among primitive peoples, that the anarchy of social life without a government produces a violent war of all against all.[34]

Stateless primitive societies lacking governmental units have evolved varied ways to maintain order. The most basic of these has been "self help" and "deterrence." Self help may be visualized as a kind of action system – individuals band together to prevent a disruption of the prevailing order. Self-help may also be positive – individuals band together to pursue a policy they feel will be beneficial to all of them. Deterrence is connected to self-help. "Where there is no government," says Masters, "retaliation and the threat of violence serve to unite social groups and maintain legal or moral criteria of right and wrong." [35] Both self-help and deterrence (the two complimentary to Galtung's "associative" and "dissociative" forms) are to be understood, according to Masters, as political functions "in the broadest sense."

Self-help and deterrence develop best in societies that are relatively homogeneous. In a homogeneous society a bond of social identity helps to make warfare limited in nature. Yet even in cases where social homogeneity is not present, self-limiting behavior develops. Self-imposed limitations do not necessarily involve the elimination of violence between groups or even within social groups, but violence is at least moderated.

Masters believes that it is useful to distinguish between two types of violence. One kind of violence he calls "warfare." Warfare is the condition of an "all out" conflict, with the winner take all strategy and psychology.

[34] *Ibid.*
[35] *Ibid.*

Warfare may involve unlimited violence and brutality – the goal is the actual elimination of the opponent.

The other kind of violence manifestation Masters calls "feuds." Feuds are different than warfare, although feuding involves a certain amount of brutality. In a feuding relationship there is a feeling among the adversaries that the feud can be settled through some kind of discussion or arbitration. The opponents maneuver to get into the best position for a settlement, rather than maneuver for the total destruction of each other. Feuding, according to Masters, is very common between primitive societies, much more so than warfare.

This distinction between types of violence can also be applied to international politics, in Masters' view. He holds that:

> In both primitive and international systems, there is a range of social relationships which is relatively exempt from self-perpetuating violence; within the "nuclear groups" composing both systems the procedures for settling disputes of atoning for crimes are terminal, at least in principle. In both types of system, intermittent, violent conflict between the nuclear groups can be temporarily settled without removing the potentiality of further attacks.[36]

In primitive society, limitations of violence are often related to "social distance." Social distance is often the same thing as geographical separation, although there are exceptions to this rule. The greater the social distance there is, the greater the likelihood that violence, should it occur, will not be limited. "This spatial distinction between those who are 'far' and those who are 'near,'" Masters says, "tends to produce a series of concentric zones around each group in many primitive worlds." These zones help characterize what will be feuding and what will be warfare. Similar "concentric zones" may be visualized at the international level.[37]

Masters' idea of feuds and social distance raises some interesting questions about international political systems. Can feuds occur at the level of the international system between protagonists separated by vast social distance?[38] It is difficult to know what Masters would say about this question, although his formulation does tend to rule out feuding relationships between the modern major international adversaries. His spatial distance formula can be adapted, however, to the modern scene if we include factors such as the increase of communication and the identification of interests that transcend geography alone.

[36] *Ibid.*, p. 604.

[37] *Ibid.*, pp. 603-604.

[38] This theme is developed by M. H. Halperin in a detailed study of the Korean conflict. See M. H. Halperin "The Limiting Process in the Korean War," *Political Science Quarterly* LXXVIII (1963), pp. 13-39.

Masters' analysis is helpful in applying the cybernetic approach to international politics. Masters' concepts of warfare and feuding are based on the exchange of different kinds of information. Warfare occurs where there is a breakdown or absence of information. Feuding, however, occurs where at least some values are shared – and where there is some continuous exchange of information. Where there is feuding, rather than warfare, the possibility of learning continues. The participants can change or adjust their goals; they can bargain with one another. Each side is aware of and somewhat responsive to the other; thus the possibility for successful decision making is present. To some extent, feuding is a condition that allows the system to remain viable for, while costly, the individual systems do survive.

While useful, is it necessary to further refine the distinction between warfare and feuds developed by Masters? Are there situations where there is intensive competition and stress, where communications continue to some degree, but where there is not a feeling that the competition is to be settled, either by negotiations or by classical warfare? Is this the situation that today prevails between the United States and the Soviet Union? If it is, how can it be described?

Kissinger and limited warfare

Some political theorists distinguish between all out warfare and "limited" warfare. Limited warfare is not the same thing as a feud since there is no obligation of settlement. How then can such warfare be limited? According to Henry Kissinger:

> A limited war among major powers can be kept limited only by the conscious choice of the protagonists. Either side has the physical power to expand it, and to the extend that each side is willing to increase its commitment in preference either to a stalemate or to a defeat, that war will gradually become an all out one. The restraint which keeps a war limited is a psychological one: the consequences of a limited victory or a limited defeat or a stalemate – the three possible outcomes of a limited war – must seem preferable to the consequence of an all out war.[39]

The psychology of limitation is not generated of itself. A certain degree of communication between adversaries is necessary so as to prevent limited warfare from becoming all out war. As Kissinger says in his discussion of United States – Soviet relationships:

[39] Henry Kissinger, *Nuclear Weapons and Foreign Policy* (New York: Harper and Brothers, 1957), p. 140.

> Provided our military policy equips us with a wide spectrum of capabilities, the task of our diplomacy will be to convey to the Soviet bloc what we mean by limited war. This is important, because Soviet reaction to what we do will depend not on what we intend but what the Soviet leaders think we intend. The power and speed of modern weapons makes too much obscurity dangerous. Unless there has been at least some degree of comprehension of the nature of limited war on both sides, it may be impossible to improvise it in the confusion of battle . . . Diplomacy should strive to insure that the opponent has the information he requires to make correct appraisals . . . .[40]

The problem of limited warfare is miscalculation. The "promise" of such warfare, if one reads Kissinger correctly, is that it is a substitute for all out war. According to Kissinger, limited warfare does not, however, generate more stable kinds of international relations. Kissinger believes that either one nation or the other will dominate or try to dominate the world. He suggests that the United States must persuade the rest of the world of its place as a valid world leader – and he also believes that the United States must prevent the Soviet Union from a similar kind of domination. To achieve its goals, the United States cannot run head on into the Soviet Union because of the technology and power possessed by each. What has to be done, according to Kissinger, is to "run the end," to employ football language. Going around the end involves taking risks of various kinds with states not directly dominated by either the United States or the Soviet Union. This is a way the Soviet Unon can be challenged. Such risks in other states include involvement in "situations of extraordinary ambiguity, such as civil wars or cosmetic coups." [41] Moreover, risks include in Kissinger's opinion using weaponry technology of a very advanced kind – in particular the use of "limited" or "tactical" nuclear weapons.

If Kissinger's theory is an accurate description of international affairs, the outlook is indeed bleak. The international system while perhaps not a pure state of nature, runs close to that at the minimum. What is most interesting about Kissinger's approach is that he does not treat this kind of interactional pattern as peculiar or unusual, but as a normal state of affairs in the nuclear age. In these times, according to Kissinger, it is impossible to develop relationships with other states based on "good will." The United States, or any other nation, cannot entrust itself to the "goodwill of another sovereign."

Some might regard Kissinger's approach as mature and sophisticated, some might dispute it. Wherever one might stand it does seem clear that Kissinger's approach cannot be disregarded. He is suggesting that nation-states become *aware* of their interests. "A power can survive," he says,

[40] *Ibid.*, p. 142
[41] *Ibid.*, p. 243.

"only if it is willing to fight for its interpretations of justice and its conception of vital interests." The test for the national actor "comes in its awareness of where to draw the line and for what issues to control." [42]

It is also clear that Kissinger's view of international relations cannot be typified as a description of an international *political* system. Kissinger is showing us a system that might be called an international environmental system. The environment he describes is hostile, characterized only by minimal communications and no real bargaining or good will. The message of Kissinger's study is that it is this quality that nation-states, particularly the United States, must understand.

Is this the same idea of awareness that Deutsch refers to? In part it is, it seems, if the goal of this awareness by the system is limitation upon warfare activity. Kissinger is an advocate of limited conflict, not of massive confrontations between nation-states. But such an awareness can lead to a "false consciousness," to make use of another Deutschian term. While there is an awareness of the opportunities to limit warfare, the Kissinger approach does not suggest – even in principle – that the state of warfare can be converted into something else, not even a condition of feuding as Masters has described. The idea of limited warfare is an interesting and useful distinction in a typology of kinds of international violence – but it should not be believed that limited warfare is the only way that decisions in the international system can be achieved.

Futuristic comparison

While we may have to await the unfolding of events to make a *final* determination of the capacities of the international system in the nuclear age, we certainly are not unable to think about the shape of the international system as it now is and as it will be in the future. Certainly it is not necessary to accept Kissinger's unilateral vision of the international system in the nuclear age.

Kaplan's systems

Kaplan's approach goes beyond Kissinger's although it is ideologically related to Kissingers image of the international system. In Kaplan's view the system is environmental or, in his language, a "null political system." In Kaplan's words:

[42] *Ibid.*, p. 244.

> No political system exists in the functional area which is subject to jurisdictional dispute. Since no arbiter is available to keep jurisdictional disputes within any given bouds, the system lacks full political status. In the present international system, the nation states have political systems, but the international system itself lacks one. Alternatively, the international system may be characterized as a null political system.[43]

What Kaplan appears to be claiming is that the international system lacks a centralized government and hence cannot be regarded as a political system. Whatever is thought of this view – and the position of this study is that the international system is able to make decisions and hence it is political – Kaplan is still able to generate some interesting descriptions of the international system.

Kaplan begins his argument by disclaiming the importance of the traditional balance of power international system. Such a system does not exist today, in his view, and a return to balance of power politics is not possible. In his view, balance of power politics involved a standing agreement that warfare was acceptable. Given the development of modern technology, Kaplan does not believe that warfare is acceptable any longer. The balance of power system also presumed, in Kaplan's view, that the status of the major international actors would be safegarded. Such safeguards do not exist any longer in his view, because modern techniques of conquest and control make it possible in principle to control whole nation-states. With these changes there has also been a shift in ideology. Modern ideologies all seem to presume that one approach to governing and social control is superior to all others.

If we live in an age dominated by power and ideology, then the whole process of international interactions changes. Kaplan views the international system as currently subsystem dominant – that is, many states share power in the system – with an ongoing contest to make the international system system-dominant – that is, one state or organization of states controlling the international system. Once the system becomes system-dominant, in Kaplan's view, it becomes a political international system. In the contest of moving the international system from a subsystem dominant to a system-dominant status, a number of possible international systems "configurations" may appear. The objective, for the political scientist, is to identify how these configurations operate, determine how stable they are, and seek ways to deal

[43] M. A. Kaplan, *System and Process in International Politics* (New York: John Wiley and Sons, 1957), p. 13. For the "philosophical" basis of Kaplan's approach, see: M. A. Kaplan, *Macropolitics: Essays on the Philosophy and Science of Politics* (Chicago: Aldine Press, 1968).

with them as they appear. In Kaplan's approach, whatever system we are faced with we must live with. Even if the system is pathological, people can still survive within the system. Kaplan defines pathology in much the same way as does Deutsch, as a failure to operate "under existing or possible future conditions." [44]

Given Kaplan's null political approach, what are the international systems he identifies? He argues that we are currently living in a "loose bipolar international system," which developed out of a "balance of power" system. Future system states include any of four other systems, although other possibilities are not excluded. These four systems are: (1) the tight bipolar system; (2) the universal international system; (3) the hierarchical international system and (4), the unit veto international system.

International systems are identified by the relative power of the actors in the system, and what the actors control. In a loose bipolar system two actors dominate the system, but other actors also exist that are not under the direct control of the two dominant actors. Supranational actors also exist in the loose bipolar system.

What is it that holds the loose bipolar system together, or any other system for that matter? According to Kaplan, some actors may perform "integrative role functions" in a system. Integrative role functions are those that "communicate to the various actors within the system the 'oughtness' of the rules applying both to their respective role functions within the system and the general rules of the system. That is, the actors must internalize the rules applying to them and have a tolerance for the rules applying to the other actors." [45] The integrative role functionaries in a loose bipolar system are those actors who are "non-member national actors, and universal actors." Non-member national actors are unconnected politically with the major powers. Universal actors are international organizations, such as the United Nations, which are at least in part independent of the wills of either of the major actors.

In the loose bipolar system it might appear that a political international system exists. However, Kaplan believes that this is not the case because non-member states have to be *independent* of the major two powers to perform their integrative tasks. Would the system be an international *political* system if actors could perform integrative tasks and yet to some degree be dependent upon either of the major powers? Kaplan does not answer this question, yet it is a very important consideration in the light of his description of the current international system as a "null political system." If member nation-

[44] *System and Process*, p. 276.
[45] *Ibid.*, p. 39.

states perform integrative tasks then the current system may be thought of as a political system since real interchanges of information and bargaining would be taking place in the system, and the system would even be making firm decisions.

This assumption can be described to some extent. In the current international system it does appear that member nations, rather than states independent of the two major powers, do much to communicate rules of conduct between the major powers. No major example of a non-member state illustrates this, but it does appear that at least some member nations have a great deal of flexibility, even given their bloc alignments, and can be effective communicators to the powers. Great Britain may serve as an example of this ability to act as an effective inter-bloc communicator. Britain's ability to play the role of communicator is based on her traditions of diplomacy, her liberality in the form of international recognition and exchange with states, and the freedom of movement afforded to British citizens and guests of Britain. Factors such as this help establish Britain as a credible member of the international system. This credibility has been emphasized on a number of occasions. Recently, on a state visit by Chairman Kosygin to England, an effort was made by the Chairman and the British Prime Minister to arbitrate the Vietnam conflict. This involved serving, for a time, as a communications center – calls went out to the principal adversaries, President Johnson of the United States and President Ho of Vietnam. Other interested parties were contacted and urged to pressure both the United States and North Vietnam. Prime Minister Wilson and Chairman Kosygin worked together on this for long hours, although they failed to secure the relaxation of tension they sought. Here the main point is the unusual role that Great Britain played in attempting to resolve what was, in part, an East-West conflict.

International organizations, while provisionally more independent than states such as Great Britain, have been less successful in communicating rules of the game to the two blocs in the loose bipolar system. For example, the United Nations is not considered important as a way that relations between the two superpowers should be processed. What the United Nations apparently has achieved – and this view has been articulated by the Secretary General – has been to present the interests of the non-member states to the two powers, and to suggest to the major powers what kinds of behavior by them are acceptable. Because the United Nations serves the major powers in their relations with the non-member states, they do take some interest in the articulations of the United Nations. Moreover, when the great powers find themselves involved in disputes with non-member nations that threaten to get out of hand, the United Nations serves as a kind of "shock absorber."

Both the United States and the Soviet Union have found the United Nations useful as a means to "keep the lid on" in the Middle East, although both have pursued counter policies in past years. But recently a move outside of United Nations channels has been made by the major powers because of the growing feeling between them that the United Nations as a legal organization does not have sufficient power to bring about a Middle Eastern settlement. Thus the great powers have worked together to achieve a solution, involving multilateral talks and, possibly, a formal summit conference on the issue. In this way the powers hope to be able to force a policy on this high conflict area.

What Kaplan's analysis of bipolarity does not recognize as clearly as seems appropriate is that the major powers in a bipolar system are capable of signalling each other directly, or through third parties – that they are even capable of some common policy making.

While other weaknesses in Kaplan's description might be noted, here we can move on to a consideration of the future systems proposed by Kaplan. Kaplan has an interesting logic to explain how future systems come about. Suppose, says Kaplan, that the uncommitted actors disappear from the international system (that is, become attached to one or the other bloc). What will the international system then be like? If the loose bipolar system changes in form, will we be left with only one block conflicting with another? In Kaplan's view the future international system's stability will be determined by the organizational form of each of the power-blocs.

Kaplan explains that if there are two blocs but neither is hierarchically organized (that is, dominated by one major power), then the international system will be highly unstable and the system "will tend to devolve into a loose bipolar form." [46] On the other hand, if one bloc is hierarchically organized "the other bloc will tend to develop increasing tendencies in this direction." [47] If this happens the blocs will stand each other off with thermonuclear weapons. This is a more dangerous situation than a stand off in the loose bipolar system because no longer do intermediaries exist in the system. Even if the system works at this point as an international system, exceptionally harsh intrabloc politics will prevail, leading to the use of enforcement or police forces within blocs.

Kaplan is unsure if the loose bipolar system will become tight. Given the potential of nation-states such as China and India, it appears unlikely that they will permit a tight bipolar system to emerge. Nonetheless, there is still some interest in the tight bipolar model. Certainly we may experience efforts

[46] *Ibid.*, p. 43.
[47] *Ibid.*

at temporary tight bipolar status as both the United States and the Soviet Union respond to the emergence of new, powerful actors such as China. The Soviet Union may already have tightened up its bloc relationships because of a felt threat by China. Similarly the United States has re-oriented its European policies, is making efforts at adjusting its Vietnam and Asian policies, and is also currently contemplating an anti-ballistic missile system which, at least initially, was justified because of the growth of Chinese military capabilities. The result is not a tight bipolar system as Kaplan describes it, but symptoms of tight bipolarity are recognizable. In such a system, instabilities do increase because the tightening process is traumatic. Moreover, withdrawing from this tightened condition, even after the reasons for the tightening process are no longer pertinent, is difficult – since the tightening procedure is often based on psychological changes among the national actors.

From the stage of tight bipolar systems, other systems can develop in Kaplan's view. Each one demands careful attention, which is not possible in these pages. Here only the most dramatic future international system Kaplan describes can be discussed. This is what Kaplan calls the "unit veto international system." The unit veto system is the product of technological development. It is a system in which all the national actors – or at least those that still survive the total technological revolution – possess nuclear weapons systems. Each actor, additionally, must be "capable of destroying any other actor that attacks even though it cannot prevent its own destruction." According to Kaplan, "the unit veto system requires that a surprise knockout blow be technically impossible." The danger in such a system is that "as the destructive power of weapons permits the success of such surprise attacks, the rules of the system will counsel military action rather than the refusal to resort to force." Consequently, "this system will be non-integrated and non-solitary to a fascinating degree." [48]

The unit veto system described by Kaplan is the first international system of an environmental sort that has no political capacity. If nations all possess nuclear weapons and delivery systems to the "*n*th" extent, and if all perceive danger in the form of successful first strikes, then only two courses of action are meaningful in the system. One alternative would be the elimination of nation-states altogether, since all would perceive the meaninglessness of trying to maintain nation-states under such dangerous conditions. No intermediate step would be possible due to the psychology of suspicion that would develop in such a system – no nation would ever trust in a cooperative

[48] *Ibid.*, p. 50.

reduction of armaments since each would suspect that the other was cheating, as Kissinger has already suggested of the prevailing system. The only way to eliminate suspicion is to eliminate the units that permit suspicion to develop: namely, the elimination of national boundaries.

A second alternative would probably be more likely than the former. It would be a decision by all nations to take the only sensible step in protecting themselves from each other. This alternative would be for all nations to withdraw from contact with one another. Nations would become complete fortresses – they would know that they could continue to exist as nations only by shutting down all communications with each other, so that it would be impossible for any interstate events to trigger a nuclear holocaust. Given the ideological capacities of modern states, it might even be that individual states would attempt to convince their citizenry that beyond the borders of the nation-state, nothing of any value exists.

In the case of dissolution of nation-states, no international system as it is now known, would exist. Nor would an international system with a central government necessarily be possible, since the decision to eliminate nation-state systems would not be based on a political belief that a central governing system would be better, but only on the understanding that survival required the elimination of the nation-state system. One might imagine that there would be a disorganized world that would result, lacking any identifiable governing units, filled with technological pirates of one kind or another.

Neither would there be an international system if communications ceased between nation-states. People would be closed in within the nations they live in, major changes would take place in national economies and in the distribution of resources (because all modern nations are grossly imbalanced and most import large quantities of crude materials and manufactured materials). Politics would become intensive and internally destabilized due to the necessity for reallocation and readjustment. Freedom itself would be limited because the naturalness by which man can move from place to place, even the psychological freedom to think about other places, would no longer be present. Because such a change would result in such an intensification of living, the decision to maintain the fortress might be radically broken: one nation-state, under severe strain, might take the option to attack its neighbors in the hope of offsetting internal threats. Such an attack, in the unit veto system, would be fatal for everyone.

In practice the unit veto system may never be a possibility. But thinking about the possibility of no international communications helps dramatize in an exceptional fashion the real values produced by an ongoing international political system. Such a system involves communications and de-

cision making at the international level. It remains now to formulate in cybernetic terms, how such decision making might take place.

Cybernetic view of international politics

The cybernetic approach to political systems, as pointed out in previous discussions, emphasizes the ability of systems to face problems and solve problems. This is mainly represented by the effort of a system to make decisions. Decision making involves the ability of the system to select and, if necessary, modify its goals in response to the problems confronting it. The ability to modify goals raises, in turn, a whole series of questions – how the system becomes aware of the real problems it faces, how the system can retrieve knowledge about its past behavior to increase its chances of dealing with the problems so recognized, and how the system can adjust itself internally to deal with problems of a serious nature.

Systems theorists have not discussed in great detail how systems adjust to changed circumstances. While many systems analysts consider that change is important, often this change is appraised as an unwilled process. Kaplan's analysis would appear to point in this direction. There can be no doubt, of course, that important unwilled changes do take place – less powerful nations become more powerful. populations spiral and masses of people move across national boundaries, groups of states may switch their international allegiances. Factors of this kind bring about change in the international system which becomes politically recognizable as states begin to respond to these changes.

But what happens when national actors make plans for part, or all of the international system. This does happen – responsibility is taken for what the system is to be like and how it is to perform its tasks. Who possesses such responsibility and how is it exercised? The cybernetic approach may be helpful in producing answers to this and related questions.

If we are to understand "willed" as opposed to "unwilled" decision making, we should return to Deutsch's *Nerves of Government*. Deutsch develops his idea of will by observing the behavior of political units. Modern nations, governments or political parties, according to Deutsch, "strive to perpetuate their policies by blocking all incompatible experiences from the life of their community through all means at their disposal . . ." [49] When this is observed it can be said that government has developed a "will." According to Deutsch:

[49] *Nerves of Government*, p. 107.

In government and politics, will is a pattern of relatively *consolidated preferences and inhibitions, derived from the past* experiences of a social group, *consciously labeled* for a relevant portion of its members, *and applied* to guide the actions, to restrict the subsequent experiences of that group and its members.[50]

Will of this kind is necessary for the survival of the system. A system must be able to regularize its experiences in some way in order to maintain itself. In this context it becomes possible to speak of "free will." Will is free, according to Deutsch, "when it is free from the pressures of the outside world at any one moment, since it represents the stored outcome of the [memory] net's past now being fed back into the making of present decisions." [51] In making present decisions choice is directly involved. (In digital computers the storage-system memory is constructed by weaving "nets" out of particles of magnetic material. In the most modern computers the "net" is supplemented by magnetic tape and disk storage.) It is free will, according to Deutsch, that permits a system to steer itself correctly. Steering cannot take place on an instantaneous basis – time for reflection and examination is required.

The reader might feel that a system cannot really reflect and examine problems if its will is already established in the system. Certainly it would appear that eliminating outside pressures would only permit a predetermined set of ideas to dominate the decisional process. The Deutschian approach to will, in consequence, can appear to run against democratic theory in the sense that it counsels shutting out information and dialogue from outside, and in the sense that it supposes that the existing will of the system is to dominate. The danger in permitting the existing will to dominate is that it might not be well formed, or adjusted to the events going on at the moment.

If this impression is conveyed, it would be a misunderstanding of Deutsch's analysis and intentions. Will, in Deutsch's approach, is only temporarily fixed within the system. It can be reviewed and examined. Without will the system could not work. With a will that becomes completely dominant, the sensitivity of the system to changed circumstances would radically drop, and the system would be less able to cope with its environment. Moreover, it should be stressed that reference to will does not destroy reception of information or engagement in dialogue. What reference to will achieves is to turn the system inward to already gathered information, for reflection and decision. Mechanisms within systems provide the dialogue possibility at this stage – and dialogue here involves scanning stored information, screening

[50] *Ibid.*
[15] *Ibid.*

out dated ideas and concepts, and restating the goals of the system. A principle of operation is involved in the concept of will: a resting stage from the outside world (internal and external) is required if sensitivity to the outside world is to be expected. This resting stage provides another kind of free will – what Deutsch calls the "inner freedom of will." This inner freedom is present when past experiences of the system can be compared and contrasted to present experiences.[52] The objective is to free the system from the immediate demands placed upon it. Deutsch believes that the modern world is highly demanding – events are taking place at a pace so rapid that some means to permit a system to reflect are required.

Speaking in terms of systems mechanisms, the inner freedom of will can be protected only by isolating it in some fashion. A variety of institutions in government and society might serve as isolating devices. Private clubs, for example, have often been havens of isolation for decision makers. Likewise, people might provide a psychological contrast that amounts to isolation: the "keepers of the realm" might be consulted to provide wider opinions not related to the immediate day to day problems faced by decision makers. Historians, philosophers – even political scientists – might fulfill such a role.

If an "inner freedom of the will" is required, this inner freedom must be tied in with the feedback networks of the system. The feedback networks compare examples from the past, developed by the inner freedom of the will with actions of the present. The assessments of the feedback process help decide whether pursuit of goals can continue, whether delays in the pursuit of goals are called for, or whether changes in goals have to take place.

Because delay often occurs, not as a rational choice but as a failure to make a choice, the performance of the feedback system becomes crucial in a system. It is much easier to resort to delay, rely on old policies in the time interval, and wait for another opportunity to pursue the policy goal. The alignment of the original goals is not tested in any way, and the system has no way of knowing whether such goals will any longer be appropriate. In any system, the testing of goals is important. Feedback processes are essential.

What concerns Deutsch is that in many cases little examinaion of goals takes place, or the examination is superficial and nothing of qualitative importance results. He illustrates this by reference to a chess playing machine. Suppose, Deutsch says, we construct a chess playing machine

[52] *Ibid.*, p. 108.

that would rapidly compute all admissible moves on both sides for two or three moves ahead, and choose the ones more profitable for its side, according to a schedule derived from the rules of the game. It would play mediocre chess.[53]

will, in consequence, can appear to run against democratic theory in the the game on the basis of experience." If the circuitry would be added so that experience could be evaluated, the machine's ability to play a game of chess of high quality would come to depend on experience. In such a case, the nature of experience influences the quality of the game:

If all its past opponents were mediocre, the machine might never learn to play brilliantly. It would remain imprisoned by the limitations of its past. But it could be aided to play better by building into it a device to break or sometimes override the patterns learned from its past, giving the machine a chance for initiative and creativity.[54]

Deutsch is saying that if experience is of low quality, the machine game still can be improved by building a device which artificially stimulates initiative and creativity. Such a device produces what Deutsch calls "spontaneous impulses." [55]

The spontaneous impulse device Deutsch envisions is not unregulated. What it would do "would be to replace an old or highly probable configuration by a new or less probable one, *provided that the elements for the new configuration were already present in the net* at the critical moment . . . ." [56]

If it can be said that spontaneous impulses form a part of political systems, as Deutsch thinks, they are difficult to identify. In a machine it is far simpler to place or locate such a device, since it will be at a fixed place within the system. In a machine, information comes into the system, it is compared to stored responses, it may respond to experience, and then the spontaneous impulse mechanism intercedes in the process of producing a response to information. If it is said that a spontaneous impulse mechanism is to be found in a political system, then one would expect it to be found at the output side of the system. However, because a political system, or any human dominated system, is far looser than an operating machine, what may appear as a spontaneous impulse can occur on the input side of the system as well as on the output side. In theory, an impulse of this kind would be unregulated rather than spontaneous if it were at the input side of the system because it

[53] *Ibid.*
[54] *Ibid.*
[55] *Ibid.*, p. 109
[56] *Ibid.*

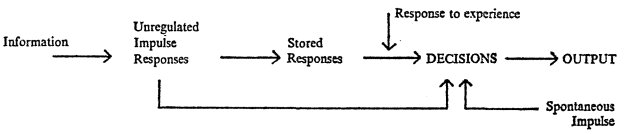

Figure 2 : 4
Spontaneous Impulse in a Machine

bypasses the procedure of reference to stored responses, or to experience, or both and directly feeds into the decision making sector of the system. In practice it is almost impossible to identify such unregulated impulses because, since they are carried by persons, these persons will no doubt claim association with the stored memories of the system, and claim experience as well. An unregulated impulse might induce randomness in the system and could, conceivably, bring benefit to the system. But it is more likely that unregulated impulses disrupt the system, by supporting impossible programs for example. Since systems "know" of this danger, they protect themselves by excluding the random impulses. When this is done, the more important spontaneous impulse – which in conventional language is the creative element in the system – is also eliminated.

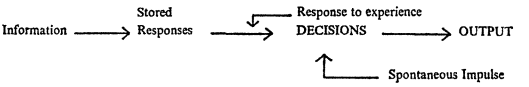

Figure 2 : 5
Spontaneous Impulse in a Political System

These concepts, as developed by Deutsch, can be used to help illustrate how international systems operate. Here we can make use of the distinction between international environmental systems and international political systems that contain action systems. The environmental system can be imagined as a system in which the participant make decisions independently of each other for the system. This is similar to some of Kaplan's and Kissinger's formulations, except that the environmental system is not a "steady state" system – that is, independent action is never really possible but instead the independence quality of the system on the part of the actors might be thought of as a "posturing" of the participants in the system. Such a posturing would contrast to an international action system where at least some of the states make an effort to solve problems in concert.

In an environmental system the actors are tied to their will facilities. As was pointed out, domestic political systems in making decisions have three

alternatives – either to continue the pursuit or existing goals, change the goals, or delay making a decision. The least likely choice is to make a change, because domestic systems filter out the creative initiatives that would stimulate such goals. In an international environmental system, if two states faced each other in relation to a problem or event, given the possible alternative decisions available, there would be nine possible policy configurations emerging out of a two state interaction. However, if it is assumed that the change option is not realistic for either system due to the lack of a spontaneous impulse mechanism in both systems, then the nine potential policy configurations reduce to only four possible configurations.

In an environmental system, then, change is unlikely as a policy. This would lead us to believe that an environmental system can be a very stable system since the change option is precluded. This is true so long as it is realized that stability can refer only to the existing goals of the system. If, however, the existing goal patterns are productive of great tensions within the environmental system, with a very low potential for a policy of change in the system, the environmental system will have great difficulty in eliminating tension and controlling the system. The only creative alternative in an environmental system is delay – which may involve a process of sublimation of tension.[57] This will work for a time, it may be hypothesized, but communicating the need to delay may be politically difficult within nation-states. In turn, delay and sublimation and the consequent political problems

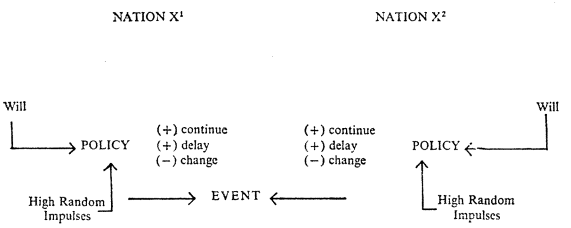

Figure 2 : 6
Environment International System*

[57] See Kaplan, *System and Process*, pp. 253-270.

* The plus-minus signs are designed only to indicate gross difference in probable choices in policy decisions. It should be possible to assign more specific values to each of these policy choices in any given system by assigning values to any known series of responses to an event and then extrapolating probabilities for decisional possibilities on the basis of these "ideal" probabilities. Patterns should emerge for any given environmental international system. Simulations might also be used to determine how the options and probability for options are perceived over a series of policy responses to various problems.

resulting from such a policy, will heighten the chances of random impulses affecting the national system. Random, unregulated impulses in "do nothing" national systems can gain credibility in the national political system, forcing the system to "do something." This might result in policies that approach pursuit or change of goals unwillingly, resulting in mismanaged, even aimless policy efforts in the international system. It can be seen that environmental systems are stable systems only if the problems the national units confront are not too serious and if the delay option can be effectively employed. An environmental system consisting of two national actors is illustrated in figure 2 : 6.

International action systems

International action systems would work differently than environmental systems. Action systems, it will be recalled from previous discussions, draw their memory channels and wills from sustaining systems. Since the international system lacks sustaining systems of its own, the memory facilities and will subsystems of these facilities must come from the nation-states participating in an action system. It can also be recalled that in the Deutschian theory the spontaneous impulse mechanism is placed on the output, or decisional center of the system, but not on the input side of the system. Thus, although an action system will make use of memory units from outside of the action system proper, spontaneous impulses can still be effective since they exist within the action system itself, rather than in the borrowed facilities. Because the action system can be said, in theory, to have spontaneous impulse capacities, it can be asserted that such a system will at least have a greater opportunity to produce change policies in the system than an environmental system.

With this in mind it can be said that an action system, because of its greater opportunity to change the goals of a system and pursue new policies, can potentially steer the international system better than can an environmental system. But action systems are not without problems.

An important problem that an action system faces is that the delay option is not realistic. The national actors form an action system to pursue a policy, not to countenance delay. Even if delay in a "run" of policies is required, an action system lacks facilities through which it can communicate the need for delay and convince its constituent units to remain in an action system, yet withhold pursuing a policy. If the action system cannot form a policy to solve a problem, it will quickly be abandoned and the action system will dissolve.

If change and delay work somewhat differently in an action system, so too does continuation as a policy. Continuation in an international action system involves a decision that certain changes taking place in the world have to be stabilized. Something like this might be visualized in the great powers' Middle East policy now emerging which, apparently, will make an effort to maintain most of the prevailing relationships in the Middle East while reducing the tensions in that area so there are no further explosions. In some cases, a policy of continuation may involve the use of enforcement by the powers. Even if the action system works well at the point of basic policy decision, it can be hypothesized that great difficulties will occur when supplemental enforcement procedure decisions are considered. Often weak enforcement practices appear to be the rule: the use of the United Nations or of regulatory states (such as the International Control Commission in Vietnam) may serve as examples.

If action systems are to pursue change as a policy, it must be remembered that there must be more interest overlap than the pursuit of a policy of continuation requires. Change policies involve commitment of resources and an agreement by the participating states to accept the political responsibility incurred for the change decision. In an ideologically divided time, the action systems that do develop may be unlikely to pursue policies of change because of the unwillingness of the actors to accept extensive joint responsibilities. This is not to say that they may not eventually assume responsibilities for a policy of continuation – but continuation type policies often are more accepted and less visible as an intrusion on the international system than are change policies.

Consciousness and risk in policy choice

As reviewed in the first chapter of this study, consciousness occurs in a system after some risk is taken. Any policy involves some degree of risk, of course, so that it should be emphasized that the participant in a decision must sense that some alternatives involve more risk than do others, and the participants likewise must be prepared to evaluate what happens after one policy is initiated or they will be unable to adjust the policy and their effort might be wasted.

It might be useful to separate kinds of risk in decision making. To make such a separation, the concept of awareness becomes important. If any policy potentially involves some risk, awareness of all policy alternatives also creates risk in a political system. Alerting individuals involved in making decisions about the possible alternatives cannot be accomplished

through the dispersal of "antispetic" information. For example, if a policy alternative is "nuclear war," then the decision makers must consider this as a possibility if they are to be really aware of the potentials of a decision. The alternative cannot be excluded *a priori* nor can it be treated merely as one piece of information. Indeed, the full impact of the meaning of "nuclear war" has to be felt in the political system and the system has to "think about the unthinkable," as Herman Kahn suggests governments needs do.[58] This incurs risk in the political system since it sets the individuals in the system against one another. In the main, however, such risk is productive if it is dramatic. But if the information becomes "antiseptic," that is, if it is received and no special attention is given to it, then the unthinkable becomes a possibility to be treated like any other possibility. The process of awareness assumes that meaningful distinctions between the policy choices are brought to the surface, along with the policy choices themselves.

If the first kind of risk involves the need for awareness, the second kind of risk relates to the intensity generated by the awareness in conscious selection of policy. A system can make a policy choice that is a conscious selection, but the selection will not necessarily be meaningful. Some risk has to be incurred in any policy choice. Risk, in this sense, relates to the *intensity* of the choice. The intensity of the choice is important, because if the policy is selected but is weak in forcefulness, either nothing will happen or, because of the selection, the system might stimulate reaction but not be prepared to handle the reaction, mainly because it thought that by a weak selection it would prevent feedback. Moreover, there is yet another reason why the intensity of the policy has to be reasonably high. The system must be able to review the results of what it does if it is to be a successful system. To get "focused" feedback, the policy has to be clear enough to elicit clear responses.

The intensity of choice relates to the type of system making choices. A sustaining system possesses the facilities and sensors to sample its policies in a reasonably careful fashion. Thus the initiatives of a sustaining system might be of somewhat less intensity than in a system that lacked developed sensing apparatus. An action system because it lacks developed sensing facilities will have to make policy choices of higher intensity than a sustaining system. Thus an action system will involve more risk to itself and to the rest of the system because in order that it pursue conscious policy the intensity of that pursuit must be high. This is shown in Figure 2 : 7.

[58] Herman Kahn, *Thinking About the Unthinkable* (New York: Horizon Books, 1962), Chapter I.

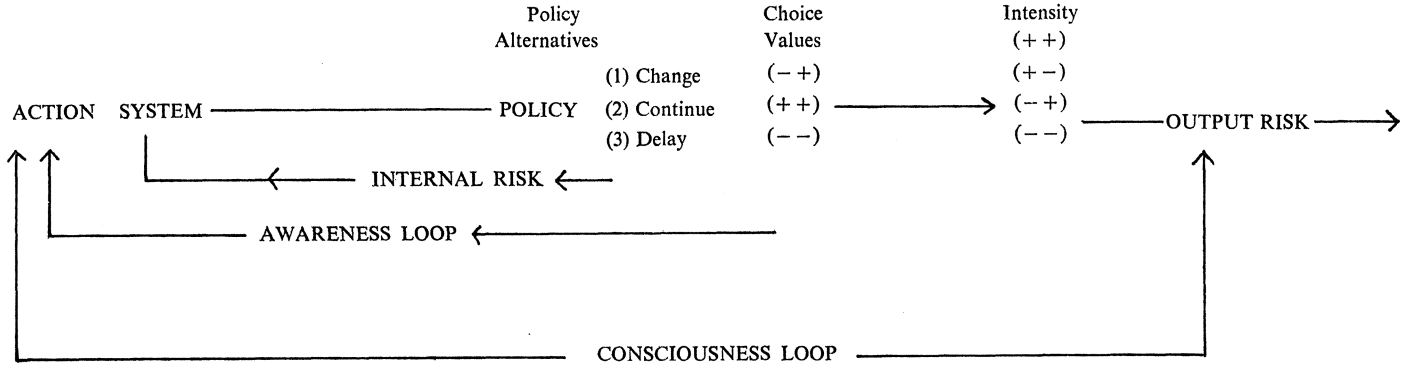

Figure 2 : 7
Consciousness and Risks in an Action System

Passitivity factor

In actuality, the international system consists of decision making through environmental systems and decision making generated by action systems. Action system performance is restricted by the existence of environmental systems. Environmental systems, it will be recalled, tend to delay in making policy. From the perspective of an action system, this delay will consist of passivity. What passivity means to an action system can be explained through an example. Suppose that an action system developed between the United States and the Soviet Union, with Great Britain and Poland cooperating in the effort. Suppose as well that other major powers remained "passive" vis à vis the action system. The action system would have a chance of success so long as these other actors remained passive toward the action system. This is because the action system would be politically free to try and solve a certain problem. But if a shift from passivity to activity took place, the chances of the action system maintaining its freedom of action would decline substantially.

What is critical from the point of view of an action system is how long it takes for passive states to become active and challenge the action system. In part the time factor will depend on how well managed the action system actually is, and how quickly it can achieve its goals. It would also depend on what preparations an action system could make to encounter the shift from passivity to activity.

SUMMARY

This chapter has sought to show how the international system might be understood using the cybernetic approach. The cybernetic approach fits in with other contemporary approaches by insisting on viewing international politics as a system. Decision making for this system can be made by the actors in the system acting independently through nation-state sustaining systems or acting in concert through international action systems.

There are two perspectives of the international system found in contemporary literature. One is a view of the system as "environmental." In an environmental system steering and control are difficult to achieve because it is supposed that all the actors are pursuing their own goals independently of each other. The other perspective is that of an "international political system." In an international political system the stage is set for effective internationally centered decisions to be made.

Is the system today environmental or political in character? A number of

approaches were reviewed to find an acceptable description. While all the approaches made substantial contributions, none of them emphasized, as Deutsch's cybernetic view did, how systems adjust to changed circumstances. Deutsch's approach helps instruct us how a system makes decisions and changes in response to new problems. It becomes possible to describe what happens when there is an environmental international system and what happens when there is an international political system.

CHAPTER III

THE CYBERNETIC APPROACH AND THE PAST

INTRODUCTION

This chapter seeks to apply the cybernetic approach elaborated in the last chapter to an international environment of the past. If the cybernetic approach is useful, it should help improve our understanding of the past. Because we have a great amount of information about past events, the cybernetic approach can help us organize that information. The use of the cybernetic approach should also help us appreciate past events in relationship to current international conditions.

In this chapter the past event selected is one of the best known to students of international politics. It is Bismarck's effort to deal with France in 1870. Often the late nineteenth century has been considered as the "golden age" of balance of power politics – some scholars have even suggested that a return to the politics of the period would be ideal.[1] Yet a careful reading of the events that occurred in the 1870's, based on the cybernetic analogy, may indeed force a reconsideration of these earlier ideas.

USE OF THE PAST

To discuss the past is to be sensitive to the special character of the past under discussion. If the cybernetic approach is to be used properly, an estimate of the status of the international system discussed must be made. Such an estimate should be two dimensional – it should indicate the relative degree of

[1] What most scholars have in mind is a return to multilateral convocations of major international actors. According to Inis Claude, "A major feature of the unsystematic system was the frank assumption of special status and responsibility by the most powerful states . . . ." Claude says that "Diplomacy by conference became an established fact of life in the nineteenth century." See Inis L. Claude, *Swords Into Plowshares: The Problems and Progress of International Organization,* 3rd. ed. (New York: Random House, 1964), p. 21.

organization and control in the international system and it should also be sensitive to the goal parameters of the international system (See Figure 3 : 1). In order to get a fix on both dimensions it is assumed that the status of the international system can be judged by the status of the main actors in the system. Until such time that precise methods of identifying locations along either the organizational or goal axis are determined, the location of systems must be hypothetical. Common sense can be used in determining the primary location of a system: the unfolding of events can help determine the final location and condition of a system (assuming of course that such a location is where the analysis stops, but not necessarily where the system will remain for all time).

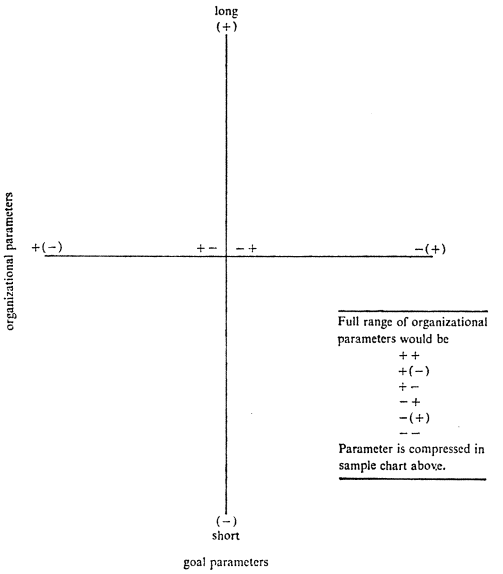

Figure 3 : 1
A Plotting Chart for Studying Action in an International System

In making use of such a dual axis, the cybernetic approach does not seek, ahead of time, to divide international systems of the past into any special arrangement. The actual effects of specific milieus will, it is hoped, become clear within the analysis. Nonetheless, the cybernetic approach must be aware of the special behavior patterns of institutions that exist at any point in time. While cybernetic analysis does not focus on institutions as institutions, it does assess informational chains as they run through institutions. Consequently, the nature of the institutions in any system must be known

ahead of time. In general, historians are often helpful in making preliminary determinations of institutional meaning and functions.

PROBLEM OF CONCEALMENT

The discussion of institutions requires some further amplification. Institutions will conceal, as often as they will reveal, what they may do in terms of the system they are in. This is true whether we use a cybernetic approach or whether we analyze international politics from any other perspective. One cannot take an institution at face value.

This statement may be emphasized by reference to the alliance system of nineteenth century Europe. We might assume that if an alliance exists then a convergence of goals between "allies" also exists. Using the language of cybernetics developed in these pages, we would then presume that we were looking at a well developed action system. But, as Langer has shown,[2] if we indeed did say this in relation to alliances of nineteenth century Europe, we would be wrong.

Langer has been quite sensitive to the nature of nineteenth century alliances. He believes that alliances can be conceived in two broad frameworks – primary and secondary. According to him, primary alliances are made for the sake of convenience and not for the possible conscious steering of an international system. Langer describes primary alliances as they developed:

> Among other preparations statesmen began to devote themselves to finding allies, and alliances came to be the accepted thing in international relations. Such connections between the states or even such combinations of several states were nothing new in themselves. Alliances were, in fact, as old as recorded history. But these older alliances were frequently of a religious or racial type and the combinations which led to the gradual consolidation of territory and the emergence of the modern monarchy had little in common with the combinations between modern European states themselves. Leaving aside such vague international connections as the Family Compact of the eighteenth century or the Holy Alliance of the nineteenth, the great coalitions of modern history were almost always made just before the outbreak of war or during the course of the conflict itself.[3]

Primary alliances may be described as "lowest common denominator" agreements. They tended to work automatically. Decisions would be taken by each actor individually without detailed reference to the other actors.

[2] William L. Langer, *European Alliances and Allignments, 1871-1890* (New York: Harper and Brothers, 1950).

[3] *Ibid.*, p. 5.

Because such alliances were connected with anticipated or ongoing feuding within Europe, they were not likely to develop very far beyond their original purpose.

Secondary alliances are of quite a different stripe (See Figure 3 : 2). While secondary alliances perform some of the functions of the primary alliance, they are mainly concerned with protecting against a primary disturbance. By primary disturbance we mean here the "root cause(s)" of disturbance as perceived by the actors. A primary disturbance is assumed to go further than the actions of any individual actor. Instead of focusing on an actor as creating disturbance in the system, attention is directed at the sources of the disturbance itself – whether the disturbance be of a political, social, economic or technological nature.

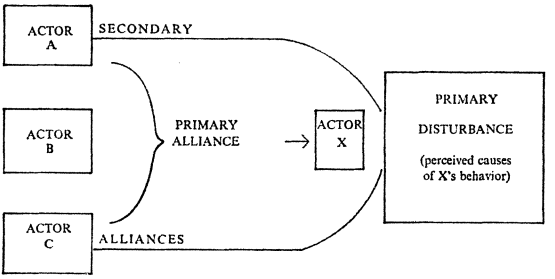

Figure 3 : 2
Primary and Secondary Alliances*

Secondary alliances are difficult to identify because rarely is the nature of the primary disturbance "publicly revealed." If the nature of the disturbance is indicated at all, often the description of the disturbance is given in moral terms. Occasionally it is still possible to find somewhat clear examples of secondary alliance systems.

One significant example involved an agreement between Germany, Austria and Italy. Since Germany and Austria, and Germany and Russia were already tied together, Italy was not important as an alliance partner in a defensive arrangement. Since the alliance that was worked out was secret, there was not even reason to state any specific purpose in the alliance. However, at the same time that the European states had a viable web of alliances from the point of view of preventing effective hostilities between states, the significant primary problem within Europe that was as yet unsolved involved internal threats to the existing governments of the European states. In its preamble, the alliance with Italy reflected the attempt to find

* Note that primary alliances do not necessarily lead to secondary alliances.

machinery that might attempt to prevent these internal threats from increasing. The treaty read that Austria, Germany and Italy "animated by the desire to increase the guarantees of peace, to fortify the monarchical principle, and thereby assure the unimpaired maintenance of the social and political order in their respective states, have agreed to a treaty which, by its essentially conservative and defensive nature, pursues only the aim of forestalling the dangers which might threaten the security of their states and the peace of Europe." [4]

Secondary alliances, while important, do not automatically permit conscious policy implementation. Instead of being described as action systems, they are action systems in the making. They can become action systems if one of two activities follows. First, if other states perceive the secondary alliance combination as a coalition designed to attack primary disturbances, they may respond to the secondary alliance on that basis. This might force the secondary alliance to make a policy choice – either to pursue what is expected of it by attacking the primary disturbance, or to change what other actors anticipate and pursue a less probable course of action, or to delay taking action. A secondary alliance may be differentiated from an action system because the *delay choice is present in a secondary alliance but not in an action system.* Second, a secondary alliance can become an action system if it pursues its course rather openly from the start. If this means toward the creation of an action system is followed, the initial start will have to be somewhat forceful – that is, of such high intensity that results of the system's action can be tested.

How a secondary alliance "converts" into an action system may be seen as an important factor in the performance of the system. If a secondary alliance is "managed" – that is, *if* one actor or subactor takes charge of the alliance at the start, an ability to quickly shift the alliance and respond to outside events exists. If the alliance is not well organized it may have the advantage of being responded to without having to take positive action on its own, but it may not have the capability to respond and follow up on such changes in the system. In such a case the alliance may become vulnerable, or may be pushed into a "late response" that will lack subtlety (See Figures 3 : 3 and 3 : 4).

A managed secondary alliance is likely to emerge when one actor can act as a "nerve center" for other sympathetic actors. An actor can begin to play the role of nerve center if it is acutely aware of the problems confronting it and assumes that it cannot solve such problems through individual action. It might be hypothesized that such an actor might be anticipating a crisis or

[4] *Ibid.*, p. 245.

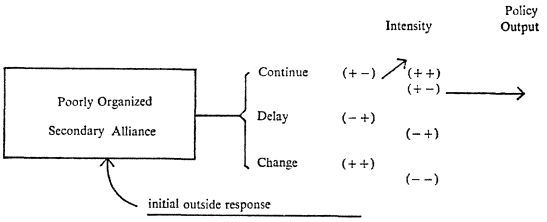

Figure 3 : 3
A Poorly Organized Secondary Alliance Responding to Outside Initiatives

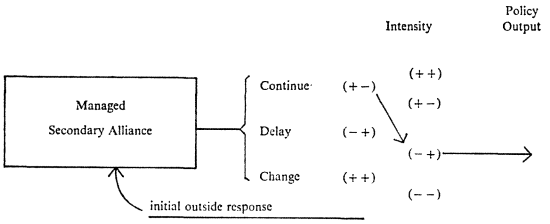

Figure 3 : 4
A Managed Secondary Alliance Responding to Outside Initiatives

has just emerged from a crisis situation. Moreover, the actor would have to show that it was somewhat successful acting on its own.

The managed secondary alliance is likely to become an action system. As an action system it is likely to make an effort to continue to support the rationale of the existing set of international relationships, or it will seek to change the international system altogether. Change here means a decision to change the actors within the international system, either by eliminating or adding actors, or by causing substantial changes in power among the actors.

Some secondary alliances that are managed by more than one party to the alliance, but not by all of the alliance members, have a choice of continuation or change, but are more likely to practice continuation. If the alternative of systemic change is selected it is likely to be "ersatz" change. For example, the U.S.S.R. and the U.S. might be considered as the dominant components of a secondary alliance at the close of World War II. Their joint policy was to stabilize international relationships at the close of the war. In effect this was a policy of continuation of the situation that existed at the close of the war. However, at the same time the U.S. and the U.S.S.R. cooperated in creating a new international actor, the United Nations. This might be interpreted as a change in the international system in the sense that a new actor with some enforcement policies was created. However, the decision to create a United Nations was really an "ersatz" change because the major parties to the agreement did not visualize the new actor as significant. The

Charter of the United Nations was designed in such manner as to prevent the new actor from carrying out significant action beyond the will of the major actors.

This description of secondary alliance systems and action systems should serve as an indication of the complexity of the matter and the need to be sensitive to the special conditions that might prevail at any time or place. With Langer's advice in mind, and equipped with this discussion of secondary alliances and action systems, it is now appropriate to turn to the international system selected for consideration in this chapter.

A NINETEENTH CENTURY ACTION SYSTEM

In the last third of the nineteenth century let us assume that the following interaction took place. Suppose that State X threatened State Y while States A, B, C . . . *n* stood by and watched. Suppose further that State X entered into a conflict with State Y, won the conflict, and compelled State Y to sign a peace treaty. As part of the settlement State X managed to change the government of State Y and remove large sections of territory belonging to State Y. Suppose still further that State X turned around and communicated with States A, B, C, . . . *n* with the intention of preventing another incident leading to a State Y situation. Suppose still further that in order to offset the losses of State Y, State X helped State Y find compensations elsewhere.

The interaction described above does not correspond to the behavior of a balance of power international system. According to that theory, States A, B, C, . . . *n* would have been obliged to defend State Y even if they were not in agreement with the policies of that state. Moreover, even if they "failed" to intervene, they should still have been instrumental in the mitigation of punishments inflicted on State Y. In the case here developed it was State X *alone* that sought to help State Y achieve release from the severities of the punishments. While in the balance of power logic not all of the requirements of the balance are expected to be fulfilled, it is proper to expect that some attempts should have been made at satisfying a few – even one – of the balance principles.

In somewhat simplified terms this is a description of major actor interactions in the Franco-Prussian conflict of 1870. It is, of course a very schematic overview designed to show why the balance of power explanation does not work. A cybernetic explanation, which follows, should be more helpful.

France-Prussia in 1870

Between 1866 and 1870 tension between France and Prussia steadily increased. The French had failed to take decisive action in 1866 when the Prussians had won at Sadowa. French politicians along with many other Europeans were anxious for a revenge of the Sadowa affair. War between France and Prussia erupted in 1870.

Within Prussia, Bismarck was occupied with consolidating the gains from the Sadowa victory and was pulling the Southern German states into the "new Germany." The South Germans were not anxious for unification and Bismarck saw that a French war might provide the leverage needed to "convince" the German holdouts of the validity of unification with Prussia.

While it may have appeared that Bismarck could gain from a successful feud with France, European opinion generally held that the odds in any conflict were on the French side. France had, it was believed, a superior military machine – well equipped, well trained, and well deployed. According to Langer, "The French were prepared to the last button on the last gaiter. They had confidently expected to march to Berlin." [5]

From the point of view of balance of power theory, France was now in a position to maximize continental European hegemony. In Dehio's terms, two principles governed European affairs: the principle of continental supremacy and the principle of maritime supremacy. It was up to the maritime powers to offset a continental advance.[6]

However, there was no attempt to block a French advance. England, considered to be the most effective maritime power – and ideological purveyor of the balance principle – did little more than protest the engagement of Prussia and France. Gladstone's Liberal ministry (ideology does not count from the point of view of most balance theorists) was not interested in doing more. The other European states, continental and maritime, did nothing more. Only in the last few days between the war declarations and the actual outbreak of hostilities was there any real attempt to influence both governments. Most emphasis was placed in French sources. These attempts failed, thus reflecting awareness, perhaps some consciousness, but no conscious policy. No "armed mediators" such as Napolean had considered after Sadowa, were created. Inside information insisted that the Prussians would lose to the French and the rest of Europe would wait for the French decision after the victory. At least in the preliminary stages there is no

[5] *Ibid.*, pp. 9-10.

[6] L. Dehio, *The Precarious Balance: Four Centuries of the European Power Struggle.* (Trans. C. Fullman; New York: Alfred A. Knopf, 1962).

record that Europeans felt that France pursued a "continental principle" or was pressing to create a single European monarch. A localized conflict was anticipated – the French would defeat the Prussians and the possibility of a unified Germany would be thwarted. A general European consensus existed in agreeing that such a consequence was acceptable.

As events proved, all of these calculations were amiss for the victor did not turn out to be Napolean. The French were defeated, not bit by bit, but completely and swiftly – in only four weeks. From a modern point of view the same situation is reflected in the unexpected victory of the Israeli army over the United Arab states. The difference is that France was reputed to be the most powerful nation in the world.

The French defeat was costly. The Napoleanic regime was toppled and could not be restored since Napolean had found himself accidentally in the hands of the Prussians as a prisoner of war. An emergency government under Jules Favre was created. Favre decided not to sue for peace immediately but to oppose the Prussians in the streets of Paris. The French population was called upon to resist.

Favre's decision marks an important change in European politics. Opposition in the streets and the use of volunteers and civilian street fighters, was not considered an appropriate way to respond to a "proper" military defeat. Nonetheless a seige in Paris was begun and a "Peoples War" began in the Provinces.

The attempt failed. There was not yet an effective, patriotic organization capable of pursuing a war *a l'outrance*. Moreover, the French were unable to obtain outside support from either Austria, England, or Russia. The English were immobile. The Russians were interested in getting the "Black Sea Clauses" abolished. The Italians occupied themselves by occupying the city of Rome – which had been guaranteed by Napolean – and threatened the papacy. Austria had good reason to take action since a German victory could mean a loss – of a permanent kind – of Austrian rule in South Germany. But Austria held back because, they said, the Russians might move in from the East. Actually, Austria had learned something about the Prussian military capacity. Any further reduction of Austrian prestige would unglue the Austro-Hungarian Empire. In summary, there was no balance of power mechanism to aid the French because there was no belief in its value or necessity.

When France sued for peace there were some severities. There was an occupation made contingent on the payment of an indemnity. Alsace and Lorraine were annexed to Prussia. (The annexation had been demanded by South and South-west Germans). The annexation, while defensible in some

ways, was not really wanted by the top Prussian leadership. As Bismarck knew, this could become a *casus belli.* It was his ardent desire to prevent a future Franco-Prussian/German conflict. There was also an interest on his part to create a larger, lasting, European arrangement. In short, the aim was to reduce tensions and aim for a stable European community.

Cross-cutting forces

The major issues that have effected the behavior of states have rarely been issues exclusively of a political nature. Except for low keyed periods, international difficulties have been tied to social processes. In the sixteenth century the cross-cutting destabilizing issue was religious discord. In the German states this difficulty began to cut into interstate politics, and the marriage of religious and political differences helped make political activity hard to interpret and often pathological. During the eighteenth century difficulties centered on colonial acquisition and the conflict over which families would control what holdings. Consequently, political and social issues were interlocked and solutions had to be achieved on both levels. The situation was not pathological – controls were partly conscious – although little was done to consolidate the consciousness. Probably the reason for this was the exacerbation between the social and political scene and the growing disinterest of the social elite with the political process. The seed of an alienation between politics and social life may be observed.

With the growing division within the elite social strata there was also separation of political activity from the larger process of social change in Europe. The European political apparatus was, generally speaking, not equipped to meet the situation. At the inter-European level, achieving solutions was almost hopeless and the situation came close to being pathological. The mechanisms that did exist – in the form of informal agreements and secondary alliances – had little ability in handling policy feedback and attempted to take action without sensitivity to the political arena being acted upon.

The European international scene can be characterized as one of drift, interspersed with occasions of pathological behavior. The domestic condition of most nations was not much better. This meant that positive international action might be bypassed because of the severity of domestic pressure. Even Prussia, which was under somewhat less tension, soon became aware of the meaning of social revolt. The first major confrontation came in the streets of Paris where Prussians witnessed the "socialist menace." They realized that such a threat could be found in Prussia and were especially fearful of

escalating dissent fed by the great demographic upturn. At the same time, rules of conflict changed: new weapons, a byproduct of technological growth, changed the psychology of warfare. (This was not an immediate change. The first machine gun, for example, was invented by Dr. Richard J. Gatling of Chicago in the 1860's. A "secret weapon" employed by the French forces in 1870 was the Montigny, Belgian-French, Mitrailleuse. On the whole, the French did not learn to employ it properly and it did not provide the military increment expected by the French.)

At the same time that unrest grew, technology increased, and the rules of warfare changed, an important modification in mobility and communication became obvious to governmental agents. The railroad and the telegraph changed the political style at the domestic and interstate level. If conflict threatened, internal mobilization could take place quickly. The process of bargaining made possible by the communication and transportation differential, was no longer as possible. It became obvious that new means were necessary to replace the older, more leisurely bargaining processes. These devices would have to be automatic, prepared in advance. The challenge was clear: a new politics had to emerge that could maneuver between the tightening multipolar international scene and the domestic industrial, technological, and social upheavals.[7] This was the policy of Bismarck.

Bismarck's alliances

The key to Bismarck's creative effort was the interlocking alliance system. On the surface the alliance arrangement was designed to check adventurism among states by making any significant advance in the European sphere impossible. On the underlevel, it was designed to control the social-industrial revolution, particularly the political changes this process would bring. To support the undergirding goal, Bismarck was willing to play upon whatever controversial social forces he could (nationalism, religious Catholicism, socialism). Bismarck was also willing to cajole and manipulate his own leader, the King, and the leadership of other states. For us he describes the first meeting of his most important secondary alliance, the League of Three Emperors, thusly:

[7] A. F. K. Organski labels this period as part of the second stage of the "power transition." Organski charts a path between the large, satisfied states and the lesser, increasingly dissatisfied states. During the industrialization process a special kind of politics is needed, according to Organski, which is not balance of power politics. See A. F. K. Organski, *World Politics* (New York: Alfred A. Knopf, 1958), pp. 330-331.

"We have witnessed a novel sight today," Bismarck is reported to have written. "It is the first time in history that the three Emperors have sat down to dinner together, in the interest of peace. I wanted these three emperors to form a loving group, like Canova's three graces. I wanted them to stand in a silent group and allow themselves to be admired, but I was determined not to allow them to talk, and that I have achieved, difficult as it was, because they all think themselves greater statesmen than they are."[8]

Bismarck was the main conscious actor. He put himself in the unique position as the nexus of secondary feedback. He did this, he thought, to achieve European peace. He accomplished his task, first through a galvanization of the European state system that involved warfare in the earliest period and militarization during the intervening and concluding periods. These are among the unfortunate derivitive results of Bismarck's policy. While they are not reviewed in depth here, they obviously count as "costs" in the effort at conscious policy implementation. It might be added that such "costs' 'may be prohibitive, particularly for states with representative, libertarian cultures.

Nonetheless, Bismarck's policy is worth describing since it contains many insights about conscious behavior. Here we shall employ the dual axis illustration described in the last chapter. This is shown in Figure 3 : 5. On the

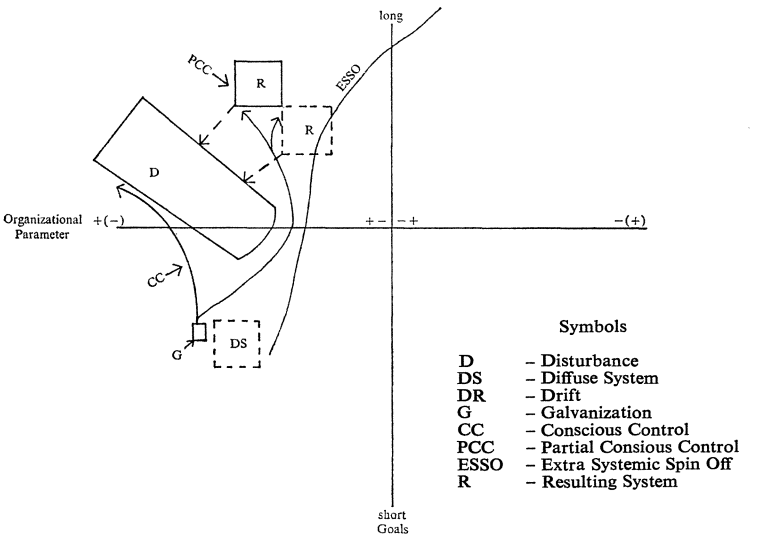

Figure 3 : 5
Bismarck Policy, c. 1871

[8] This statement was discovered in the British Foreign Service archives and was reported in N. Japikse, *Europa und Bismarcks Friedens Politik* (Berlin: N.P., 1927), pp. 29-31. In Langer, *op. cit.*

horizontal plane the organization level is depicted. In principle this could run from a status of perfect organization (given as [+ +]), to a condition of no organization (given as [— —]). Since we are here concerned with an international system this axis has been compressed somewhat: a high level of organization is represented by + (—), a low level by — (+). On the vertical plane is the goal parameter. This runs from short (—) to long (+) range.

The chart seeks to show the first "run" of Bismarck's policy. Since it is limited in this respect, many of the feedback channels are not shown or developed. The square boxes represent the state system, or cluster. Square D.S. represents the diffuse international cluster (in drift) at the close of the Franco-Prussian war. The system was diffuse because of the large number of passive actors who chose to watch the conflict. The system remained diffuse because political tensions did not build substantively after the conflict.

The location of square D.S. is important. The conflict between France and Prussia had remained localized. I have placed this square somewhere between + (—) and + —. (The unbracketed minus sign is "stronger" toward the negative than the bracketed negative sign.) D.S. is also dropped below the axis to indicate that system goals were relatively short ranged and undeveloped. The "distance" between blocs is difficult to gauge. I have made the distance between D.S. and R-R equal, to permit the goal change to be symmetrical, while reflecting an assymetry in terms of organizational level.

Boxes R-R indicate the condition of the system after the implementation of the League of Three Emperors. R-R is not a bipolar system, nor is there any reason why it should necessarily become bipolar. It is a system with assymetrical organization, represented by the completed square R, and the broken square R. The sizes of all these squares is incidental. It might be possible to draw square R to half scale of square R.S. but that would suggest that one half of "something" is to be found in the completed square, the other half in the broken square.

Area D's size (Disturbance) is also optional. In terms of the diagram, D must cover the area of high organization (where individual states are located) and the area of medium location (where the cluster is located on the organizational axis). The reason for this is simple: the disturbance affected local as well as international politics. At one end D is expanded somewhat to represent the problem of severe domestic unrest. Like the rest of the portrayal, the picture given of disturbance is limited. The purpose of limiting is to indicate the aspects of disturbance treated by the actor (Bismarck).

Line ESSO (extra-systemic spinoff) is a consequence of conscious action. It represents attempts to move certain systemic disturbances out of the system by channeling off energy. The line runs through broken box R to show that the policy of ESSO was aimed at a certain constituency (mainly France). This was an attempt to channel the French into colonial development activities. Much other colonial activity is unrelated to this policy making situation and is not shown on the chart. ESSO's feedback is not shown as well, because the exact meaning of the policy – and its possible reflection in the Balkans – is impossible to estimate.

Dark line Box G (small box) represents the galvanization of system D.S. This was accomplished in the form of an attack on D in order to focus system D.S. The attack was multifaceted – mainly it was an effort to emphasize the legitimacy of the traditional governments of Germany, Russia and Austria. It involved a major political competition with the "liberal" states (France and England). This helped create R-R. Line CC ("v" shaped) represents the area of conscious control which, as the chart shows, began to dissolve as R-R hardens. The accomplishment of the Bismarckian policy rested on the ability to control broken Box R by emphasizing ESSO and manipulating D (while evading feedbacks from both).

The policy problem that existed in the light of Bismarck's effort in 1871 was how to move D.S. to R-R status without creating a disturbance of significant proportion in the new R-R. Very little directly could offset the presence of D. More emphasis would have to be placed on the structure, behavior and developing values of R-R than on D. It was hoped that R-R would move into a position which would enable it eventually to handle D.

Events – and unfortunate timing – prevented the hoped for result. First, a fragmentation of local safety valves made D a more immediate menace and distracted attention from creating the relationships needed for R-R status. ESSO possibilities were also quickly exhausted. Secondly, D expanded in the sense that disturbances were aimed at short range domestic problems rather than longer range problems. R-R lost any ability at conscious steering in the face of these overturns in the expected encounter with D. The autonomy of R-R became a serious question as D penetrated the structure of R-R.

Even with this bad timing, the effort to take advantage of some elements of social disturbances and extra systemic spinoff was novel. The real benefits in doing this appear, however, as questionable. Measured against costs, it may be prohibitive behavior.

Other costs must also be considered. R-R status was costly because R-R

was a tension oriented system.[9] Opinion polarized on the proper way to treat D. This was true even within closed box R where, nominally, agreement existed on how D would be handled. One reason for this polarization within closed box R may be traced to Bismarck's earlier policy of offsetting internal problems by encouraging diverse domestic institutions. One main institution was the military establishment. The military appraisal of D, while earlier allied with Bismarck's perception of needs, ideologized in respect to D.

The strength of D was never correctly estimated. An attempt was made to harness the "progressive" elements in D to a conservative political ideology. This was done only in part since Bismarck along with others was unwilling to adjust to the deeper class changes that Europe was experiencing. The entire policy could have been a total failure except that real pressure from D materialized in broken box R, whereas closed box R – because it consisted of somewhat less "developed" states (viz: Russia, Austria, Prussia and the German states) – was less directly pressured. D's influence in broken box R was also not understood as an international phenomenon but rather as a local conflict. Consequently, this attitude postponed the full translation of D into an issue between R-R.

However, it is clear that conscious policy action from the vantage point of R-R never really materialized. Bismarck became the essential manager of a holding operation. The chances of managing feedbacks and conscious policy action – in order to be realized – would have to transcend the personality of Bismarck and extend at least to Germany as an entity or, even better, to Germany together with another major actor. Perhaps this did not materialize because the costs of achieving R-R status were too great.

The whole attempt to create conditions leading to conscious policy making – and even the possibility of turning this activity into a sustaining system – rested on the ability to maneuver D and ESSO conditions. This manipulation consisted of interference in the religious establishment (through pressure on the Papacy), Germanization (Kulturkampf), and colonization. Such manipulations are far more difficult today since the nation-state has a more conclusive ability to regulate what happens within its borders, thus preventing penetration from outside. Colonial imperialism, at least as it was practiced in the nineteenth century, is not possible today.

[9] Herbert Dinerstein believes that disfunctional conditions were much in evidence during the so-called balance of power period. In the period 1870-1914, for example, Dinerstein says that "More than a dozen wars were fought...." All of these wars were "bilateral" rather than "multilateral". He argues that "many of them could have been expanded into larger wars" (p. 571). See H. S. Dinerstein, "The Transformation of Alliance Systems," *American Political Science Review*, LIX (1965), pp. 589-601.

Whereas D reflected on the local scene in Europe and impinged more immediately on broken box R, the differential between R-R was still not very great. Today there is far more unevenness in the nature of disturbance, probably because of the differential in modernizing – in a technological and organizational as well as political sense. This means that the systemic benefits accrued from playing D are going to be extremely difficult to estimate.

Changes in the spatial dimension are also revealing. The move from D.S. to R-R in 1871 was contingent on the diffuse status of D.S. and the ability of a single galvanization aimed at playing D and ESSO. Even with this situation, conscious action was short lived. At the present time, conditions are different. There is not now a system as diffuse as D.S. was. Consequently, movement is limited since the present system is under high tension. What this may mean will be discussed in more detail in the next two chapters.

SUMMARY

The traditional explanation of Bismarck's alliance politics is that it was a brilliant effort to manipulate a balance of power system. There can be no doubt of Bismarck's brilliance but certainly one can call into question the wisdom of attempting an alliance politics of the sort pursued by Bismarck. Bismarck never managed to mesh the old politics of Europe with the unfolding new political attitudes that were taking hold. Moreover, Bismarck acted at a time when even the old politics were deeply affected by the new methods of communication and warfare. This made the old politics temporarily more effective and dangerous than they ever were previously. It can be asserted that Bismarck's machinations probably set the stage for the pathological politics of the 1890's and on into the beginning of the twentieth century.

This chapter has attempted to describe Bismarck's international politics in cybernetic terms. In doing this the concept of an action system was joined with the idea of primary and secondary alliances. The traditional view of Bismarck as the "operator" of a balance of power system was disallowed. In its place, Bismarck is seen as making an effort to deal with a tightening multipolar international scene which, itself, is affected by an increase in domestic industrial, technological, and social upheavals. Bismarck had to find a "new politics" and he had to map new goals for the international system. The cybernetic approach is able to relate the goal seeking problem to Bismarck's activities and show what happens when a system tries to adjust to changed circumstances.

CHAPTER IV

INTERNATIONAL POLITICAL SYSTEMS AND THE FUTURE

THE PRESENT AND THE FUTURE

If a cybernetic approach is helpful in understanding past activities in the international milieu, is the same approach helpful in clarifying the meaning of the present? As the development of the cybernetic approach itself suggests, this kind of analysis should be very useful in determining how the present international system operates. What remains to be asked is within what framework can the present be best understood?

In terms of temporal relations, logically there are four ways in which the student of international politics can study the present. First, it is possible to consider the present as a thing in itself, independent of the past or the future. Second, it is possible to consider the present as related to the past. Third, it is possible to consider the present as related to the future. Fourth, it is possible to see the present as related to the past and to the future. None of these approaches is in any way improper – each stresses relationships that are important in building a complete understanding of the present. While all are important, some are stressed more than are others. For example, the relationship of the present to the past is frequently discussed. Explorations of the present, similarly, are conducted. Sometimes the past and the future are linked together in order to explain the present, as in Kaplan's six systems. However, it is unusual when the future is related in any detail to the present. Social science discourse on this topic is vere limited – the only recent purportedly scientific exploration of the future related to the present has been conducted by Frederick Polak, and Polak's study has had only limited circulation. Polak has shown that our way of seeing the future seriously affects our behavior in the present. If we are to develop a sound social science, greater attention to the relationship of the future to the present is necessary.[1]

[1] If the work of F. Polak is considered as significant, this lack of scientific interest in the future is at an end. See: F. L. Polak, *The Image of the Future*. 2 vols. Translated by Elise Boulding. (Leyden: A. W. Sythoff, 1961).

To build new linkages to the present, this chapter explores how thinking about the future reflects on our understanding of the present. There can be no doubt that how we perceive the international environment of the future affects our understanding and proposals for the present. We might imagine that the present and the future can be visualized as two overlapping circles. One circle is made from a solid line, one is made from a broken line. The bounded circle is on the left and will be labeled as the present. The broken circle is on the right and will be labeled future. The overlap of the two circles is really a systems interface – it is where our ideas of what the future might be like meet the reality of the present. This interface can vary dimensionally: if our vision of the future is distended, the future will appear as elliptical in shape and the interface will be larger than that present in the two circle interface. If, on the other hand, our understanding of the present and focus on the present is extensive, the present would be elliptical in shape and the interface would be loaded toward the present.

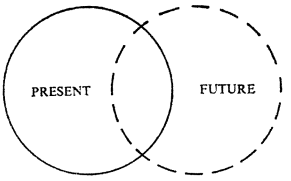

Figure 4 : 1
Present and Future

In this chapter two approaches to the future will be examined. One is found in the more recent work of Richard Rosecrance. Rosecrance is concerned with the nature of the international environmental system, or what he calls the structure of the international system. What Rosecrance wants to do is to escape the pathological problems of the present international system and "jump" to a future system. The future, for Rosecrance, is elliptical – the objective is to move from the present a "long way" into a safer future.

The second approach dealt with is an effort by Charles McClelland to describe what is, in the terminology of this text, an international action system. This action system proposed by McClelland occurs in an unchanged international environment. The present, for McClelland shows no promise of change – as such, the present is overbearing. In the language of the illustration, McClelland's view of the present is elliptical. The future, if there is to be one, is merely a possible opportunity developing out of the present.

These examples have been selected because of their interesting contrast in

viewing the future and because one deals with an international environmental system, the other with an international action system.

ROSECRANCE'S ENVIRONMENTAL APPROACH

Rosecrance's main effort has been to suggest that the current international environment is very dangerous and needs to be changed.[2] He views the future as possibly modifying the international environmental system. He accepts the characterization of the existing environmental international system as bipolar.

According to Rosecrance, many students of international politics find the bipolar international system as relatively stable. Consequently, not very many scholars have urged a change in the bipolar system. Rosecrance, however, is quite suspicious of a bipolar environmental system. He develops three interlocking arguments as a critique of bipolarity.

Firstly, Rosecrance explains, "bipolarism comprehends only one of the impulsions to expansion or agression. While it may be true," he says, "that international polarization helps to prevent successful expansion by either side, since it calls forth counter pressure by the opposing camp, it does not reduce motivations for expansion and may even increase them."[3] This, Rosecrance believes, will "accentuate the political hostility between camps" with the "tempo of discord" accelerating.[4]

Secondly, according to Rosecrance the whole idea of bipolarism is ambivalent. One version of bipolarism has it that the Soviet Union and the United States "are engaged in a duel for world supremacy or, at minimum, in a struggle to maintain their relative positions."[5] In this version, all activities will fall within the grips of these two powers. However, a second version holds that "substantial territorial and/or political changes can take place in international relations without impinging on the overarching stability."[6] This would mean that either the United States or the Soviet Union could afford both gains and losses respectively without a change in the essential bipolar status of the system. The Cuban missile incident may be a good example. In any event, the first and second interpretations conflict.

Thirdly, Rosecrance raises the issue of the "peace by crisis formula" that is often developed in the bipolar setting. This, he feels, "is a dubious pal-

[2] Richard Rosecrance, "Bipolarity, Multipolarity, and the Future," *Journal of Conflict Resolution,* X (1966), pp. 314-327.

[3] *Ibid.,* p. 315.

[4] *Ibid.*

[5] *Ibid.,* p. 316.

[6] *Ibid.*

liative." He argues that there is some truth in saying that the Cuban and Vietnamese crises may be stabilizing in the sense that they teach techniques of "crisis management," but that they are destabilizing in that "there is always the possibility that the lessons will not be learned." [7] At the minimum, says Rosecrance, "it is not unambiguously clear that serial crises are the best means to preserve peace." [8]

These arguments lead Rosecrance to an additional observation. He believes that the connection of the idea of *detente* with bipolarity may be erroneous. *Detente,* he feels, "is directly contrary to one of the major formulations of bipolarity. *Detente* presumes that the interests of the two parties can be advanced simultaneously." [9] This is untrue, in his view, because the zero-sum notion of bipolarity holds that one always advances only at the expense of the other.

The attack that Rosecrance levels at the notion of bipolarity is repeated when he considers the multipolar phenomenon. Many scholars have urged that multipolar systems are superior to the existing bipolar arrangement. Rosecrance, however, believes that a multipolar world will increase, rather than decrease the number of international conflicts, although the scale of significant conflicts may actually lower. The main point is that the system will be unstable.[10] In the nuclear age, with the dissemination of nuclear knowledge, this instability is particularly frightening. If, says Rosecrance, "a multipolar international world is as harmonious as its proponents claim, even widespread distribution of nuclear weapons should not destabilize the system." Yet, according to Rosecrance, "That the dissemination of weapons is viewed as crucial ... indicates that multipolar exponents recognize the latent conflict in a multistate system." [11]

Rosecrance also observes that, with or without nuclear weapons, a multipolar world makes calculations on the basis of change in the system very difficult to make. "The number of tentative combinations is astronomic; military disposition may take myriad form. Multipolarity, then, raises the difficulty of poliiymaking." [12]

Even with the criticism of multipolar and bipolar systems in mind. Rosecrance does recognize positive elements in each of these systems. It may be possible, he argues, to convert the advantages of both systems to the kind of "relevant utopias" urged by Stanley Hoffmann.

[7] *Ibid.*
[8] *Ibid.*
[9] *Ibid.*
[10] *Ibid.*, pp. 318-319.
[11] *Ibid.*, p. 319.
[12] *Ibid.*, p. 320.

Rosecrance begins his discourse concerning the positive elements by accepting the possibility that a *detente* may be possible in a bipolar system. He writes:

> The maintenance of the *detente* is of fundamental international significance, both theoretical and practical. It is theoretically important because it avoids the antagonism of the zero-sum games in strict bipolar terms. It also obviates a general trend toward multipolarity, with the loss of control and increase in the frequency of conflict that this would involve. A modicum of bipolar cooperation dampens hostility in the external sphere; interventions may be at least partially designed for the purpose of preventing multipolar conflict that could threaten central bipolar stability. In practical terms, the *detente* is the means by which the spread of nuclear weapons may be channelled, controlled, or halted. It should be observed that nuclear weapons do not affect the theoretical question of conflict and cooperation. A measure of bipolar agreement has been achieved despite opposing nuclear weapons systems.[13]

While, as Rosecrance believes, a *detente* at some level is important, we should also realize that the current cold war system generates its own advantages. As he puts it:

> A total bipolar *rapprochement,* an end to the Cold War, would be likely to create a new bilateral tension between major power and multipower spheres. In practical terms, it could represent a conflict of rich countries and poor countries, industrial states and agricultural states, European and colored races, northern and southern nations.[14]

In fear of another system more dramatically divided than the existing bipolar world, but interested in a system with less rough edges than the current one, Rosecrance proposes marrying the bipolar and multipolar systems.

> A bipolar-multipolar system . . . would seek to avoid the extreme of either parent form. Enough bipolar control of the multipolar realm would take place to prevent extremes of conflict, or, if conflict could be averted, to disassociate bipolar interests from outcomes in the area. At the same time bipolar competition would continue in multipolar as well as bipolar regimes. The two major states would act as regulators for conflict in the external areas, but multipolar states would act as mediators and buffers for conflict between the bipolar powers.[15]

Either with, or without, nuclear arsenals, the degree of *overt* conflict would be lower than in either the bipolar or multipolar systems alone. Rosecrance

[13] *Ibid.,* p. 321.

[14] *Ibid.,* p. 322. Rummel has questioned the intensity of this form of conflict possibility. See R. J. Rummel, "Dimensions of Dyadic War, 1820-1952," *Journal of Conflict Resolution,* XI (1967), p. 182.

[15] Rosecrance, *op. cit.,* p. 322.

seeks to show why this is so by illustration (Figures 4 : 2 and 4 : 3). As Figure 4 : 3 shows dramatically, the growth of nuclear weapons possession – line D – shows a great increase in uncertainly in the multipolar system, but

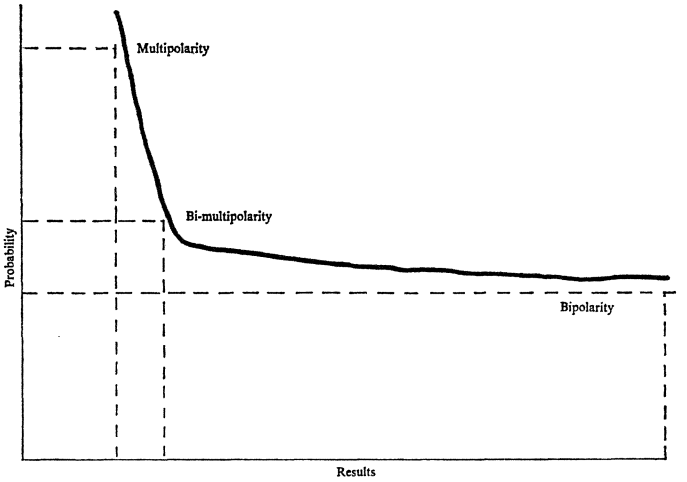

Figure 4 : 2
Probability of and Results of Overt Conflict in the Three International Systems (Source: Rosecrance, p. 323)

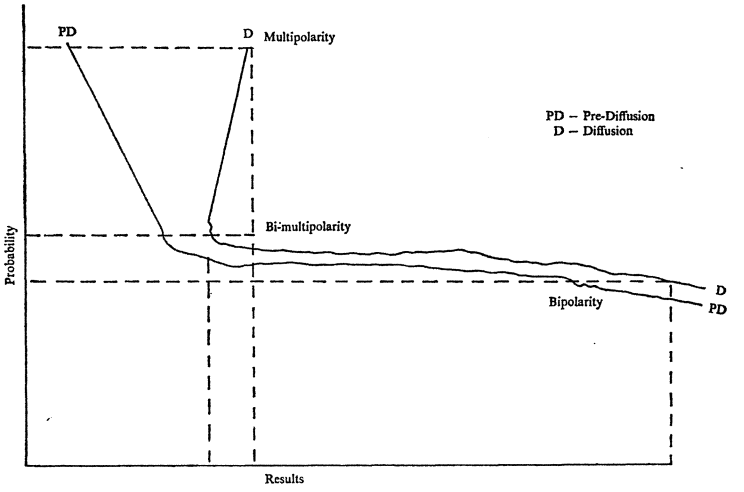

Figure 4 : 3
Probability and Results of Overt Conflict in Three International Systems with Nuclear Weapons Available to a Large Number of States (Source: Rosecrane, p. 323. Copyright 1966 by The University of Michigan. Reprinted by permission.)

only a relative increase of uncertainty in a Bi-multipolar system. This illustration would seem to suggest that a Bi-multipolar system might make the future international environment safer than the present-day bipolar international system.

The most important question to be asked of Rosecrance's proposal is just how do we recognize a Bi-multipolar system – and if it can be identified, how can it be brought about?

In Rosecrance's evaluation, what a Bi-multipolar system is and how it is to be brought about are run together. The system appears to be the existing bipolar powers (the U.S. and the U.S.S.R.), with their existing blocs, and the uncommitted nations. What makes the bipolar system characteristically somewhat multipolar is a decrease of interest by the bipolar powers in "allies" and a decrease of pressure by the bipolar states on the uncommitted nations to join either of the blocs. Given the ongoing international alignments, such a political change appears to be very unlikely.

Does the division between bipolar and multipolar systems have to be run so far into the future, as Rosecrance's formulation tends to push it? There seems to be a penchant among students of international politics to avoid other powerful nations that are existing at the present time and deeply affecting the conduct of international politics. China and India come immediately to mind. Focusing on China alone, there can be no doubt that *if* the international scene is dominated by a bipolar posturing between the U.S. and the U.S.S.R., that arrangement is currently being challenged by Chinese efforts vis á vis the United States, the U.S.S.R., and the uncommitted states. This challenge is being conducted in a *political* and military framework, with heavy armaments strategy only a minor aspect of the confrontation, at least at the present time. Given that the challenge is not yet well developed, it can be presumed that as it matures new attitudes will have to develop within both the U.S.S.R. and the U.S.A. Certainly this will make for a different kind of environmental system than now prevails, but it will not be a Bi-multipolar system as Rosecrance proposes.

The message that Rosecrance develops is an interesting one, nonetheless. Rosecrance is willing to discuss the international environmental system, thinking through the implications of the different systems forms. He finds that given an international system where the very powerful nations attempt to regulate relations between smaller states while remaining disinterested in attracting the less powerful states individually into bloc ideological politics, the chance for outbreaks of dangerous violent conflicts is lessened. Similarly, given the freedom of the smaller states from political penetration by any of the major powers, the smaller states may be able to act as intermediaries

where disputes arise between major powers. This is a sensible message – but it is not accomplished in fact through a change in the environmental qualities of international affairs. To bring about the condition that Rosecrance suggests can be accomplished only, in the first instance, through action systems developed between the major powers. Rosecrance, who uses a systems approach, unfortunately is not concerned with the problem of carrying into effect the proposals he has in mind. The cybernetic approach, however, is aimed not only at showing what systemic conditions are or may be, but also showing how a policy to effect the system can be implemented, particularly through the use of action systems. Such action systems have to tackle the primary problems of the international system. What kind of action systems are possible today? An effort at developing an answer to this question has been made by Charles McClelland.

MCCLELLAND'S ACTION SYSTEM APPROACH

Charles McClelland has been deeply interested in cybernetics and the effect that cybernetic implementation can have on political decision making. His approach to cybernetics is somewhat different from that elaborated by Deutsch. Rather than an analytical technique, McClelland sees government slowly being permeated by cybernetic facilities, such as are already visible in the Department of Defense. What McClelland would like to suggest is how the growth of such cybernetic facilities will effect the conduct of foreign policy, as well as the interstate conflicts that presently threaten to destabilize the international system. Like Deutsch, McClelland sees the crucial issue as one of steering and control. Somewhat unlike Deutsch, it is McClelland's opinion that control of international affairs has to be imposed. As McClelland puts it:

> We are coming quickly, I think, to the choice point of either failing to direct international politics by design away from the holocaust or of learning methods of imposing calculated controls on the dynamism of international politics. This is a coordination problem involving separate centers of foreign policy decision making and its solution entails procedures for steering international conflicts away from the crossover boundaries when the employment of a vast military apparatus of the world begins to become unavoidable.[16]

In McClelland's opinion the problem of control relates directly to the question of military armaments. He makes the point that the chance to eliminate "great weapons" is becoming progressively less likely as heads of

[16] Charles A. McClelland, "Unmanaged Weapons and the Calculated Control of International Politics," *Journal of Conflict Resolution,* VII (1962), p. 319.

state require safeguards for elimination that cannot be provided. In McClelland's view, barring the possibility of a diplomatic arrangement, the only way to cope with the armament problem "is to build redundancy into mutual deterrence." What redundancy is may be simply explained. If nation *A* makes weapon *X*, then nation *B* will also make weapon *X*. By "building redundancy into a system" what one does is find ways to insure that if nation *A* can make *X*, nation *B* will have the same capacity. Redundancy also involves automaticity – that is, if nation *A* develops weapon *X*, nation *B* should have already thought of it before nation *A* actually made public its discovery, and nation *B* would already be well along on its development, quite independently of nation *A*. Redundancy is especially necessary, according to McClelland, because technological development, instead of reaching a limiting point, has only just begun in terms of military sophistication. This means that "the overall consequence in the middle future could well be the attainment of multiple means to best exact extreme penalties in retaliation to attack by an enemy." [17]

Redundance, of course, leads to "spiraling" (escalation at one level), but it is offset by "lateralizing Cold War military preparations" – that is, by "fanning out" interests in different kinds of weaponry. However, such a process does have limits. "The eventual limits on the fanning out of redundancy programs of weapons development will be in the amount of a nation's wealth that can be channelled to them, the engineering and technical inventiveness that can be brought to bear in them, and the willingness of governments to support them." [18] Redundancy, however, does offer a relative period of security. "Redundant mutual deterrence, extended for a distance into the future, allows certain opportunities for the growth of new forms of international politics." [19] In part at least, Mc Clelland sees opportunities emerging as a result of outgrowths from the effort invested in the military armaments program.

The development of weaponry has been made possible by teams of highly skilled, university educated, Research and Development (R-D) personnel. As more direct military, and military related, growth occurs, the more persuasive are the R-D people within the government. McClelland believes that R-D has grown so rapidly and is of such national importance that nations are now beginning to be judged on the basis of their R-D facilities. In his words:

[17] *Ibid.*
[18] *Ibid.*, p. 316.
[19] *Ibid.*, p. 319.

> We are clearly beginning to judge their strength and, hence, the prestige of ourselves and others in international politics by the potency of R and D establishments. In the future, the image may be transposed so fully that forces in being will cease to be the prime consideration in calculations of power, influence, and intentions of nations in world politics. It will become the size, the budget, and the accomplishment of the research and development operation that will be the measure of power and influence.[20]

McClelland believes that as R-D becomes a standard, the frequency of controlled leakages of information will increase so that other states will be able to evaluate the R-D national level. At the same time, the building of actual military hardware will decline because the measure of national capacity will be the *ability* to build, rather than the actual manufacture of the item, as was the case during the initial stage of nuclear weapons stockpiling.

Moreover, McClelland argues that the nuclear deterrent psychological theory will be expanded. "The entire supposition that new weapons are developed mainly so that they will not have to be used supports the idea that demonstration of the ability to develop weapons may eventually take the place of making and using them in quantity." [21] But, because the means for rapid manufacture exists, communications between states are necessary. It is McClelland's understanding that R-D staffs will produce a *covert* signalling method between themselves and their opposite numbers in other states. (It may be true already that rudimentary signalling takes place, as in highly technical discussions in scientific journals. Politicians cannot always understand the implications of such discussions.)

This line of thought leads McClelland to his most important declarations. R-D teams, now restricted to governmentally sponsored projects and derivative activities, will shift their efforts into the heart of the government's planning structures. R-D researchers already are at the brink of transferring their activities into pure government as adjutants to the military defense system. Now the "practitioners of the foreign service and the Department of State will have their operations reinforced and informed in the same general way that military planning in the Department of Defense has now come to include the constant advice of research scientists and technical experts." [22] "The correction and refinement of this research will be continuous" and predictive capacity would improve, leading to more reliance by government on R-D facilities.

Other states, faced with a superior planning apparatus, would have to

[20] *Ibid.*, p. 320.
[21] *Ibid.*, p. 321.
[22] *Ibid.*, p. 323.

take countermeasures. This, according to McClelland, is "almost certain." As he sees it:

> The government that is first in reinforcing its foreign office through intensive contract research of the system analysis variety will gain a lead as impressive as any weapons advance in an arms race. It will force the adoption of similar techniques on other governments as well. The net result should be an increase in the reliability of the workings of the international system.[23]

The output of such an increase of R-D planning would be a world wide guidance system – decentralized but operative. The international system would persist through the maintenance-deterrence processing of machines. This is an accomplishment of science – through "rigging nature." McClelland explains:

> It is hardly an original idea. The way by which scientists have always gotten their knowledge to work for man has been to "rig nature" into controlled situations when desired outcomes were planned. The more success there is with the rigging, the more certain that anticipation becomes of how things will turn out. To say that international politics will have to be made more predictable and held under conscious control is to involve this bit of scientific craft. That we must learn surer methods of coping with an international system and that the use of scientific problem-solving techniques is the most likely approach to the control of the future has been the underlying theme of the present discussion.[24]

This solution that McClelland proposes relates to his findings in an earlier study, "System and History in International Relations." [25] In that work McClelland attempted to isolate the problems of theory building. In this task, he constructed what he called a "ladder of abstraction-generality." [26] This ladder was created to show from where theory would have to come as well as why it was so hard to construct adequate empirical theory for the study of international politics. McClelland identified the problem as resting at the middle range, stage three of the ladder of abstraction-generality. McClelland said that at this level it would be most difficult to establish "supportable principles." He went on to argue that "Contrary to the opinion sometimes expressed, there is little likelihood of early payoffs through middle range theory in international relations, given the present state of the field." [27]

[23] *Ibid.*

[24] *Ibid.*, p. 324.

[25] *General System Yearbook* III (1958), pp. 221-247. Reprinted in J. N. Rosenau (ed.), *International Politics and Foreign Policy* (New York: Free Press, (1961), pp. 24-35.

[26] Rosenau, p. 33.

[27] *Ibid.*, p. 34.

The R-D formula of "rigging" the international system is a way of bridging the research gap that McClelland identified at the middle range. The middle range can be established, if not on a theoretical basis, at least on an applied level. McClelland believes that the most difficult objective of international study is predicting outcomes. However, the theory by which outcomes could be predicted has not existed. The reason lies in the highly complex and variable behavior of single decision making units. But, by rigging important decisions through interconnections between "professional" technicians the standards for accuracy in decision making increase substantially and it becomes possible to make sensible generalizations about the behavior of the international system. In effect, the existence of R-D types within political systems supplants the existing decision makers who differ from each other in political, social and cultural terms. Since R-D decisions are based on technological considerations, they are decisions free from the conflicts induced by political, social and cultural phenomena, or at least McClelland believes this to be so.

Critique

What McClelland does not do is to measure the success of the R-D policy enthusiasts in international affairs. I suspect – and that is all anyone can as yet do because of the limitations of information – that the promise of R-D has not been realized in practice. There are two reasons for this. On the one hand the R-D perspective does not really involve the essential variables of international politics. On the other hand, the translation of R-D to policy makers has led to some rather surprising results, or at least appears to have produced the results that will be reported on here.

The first observation made here requires little additional comment because this study has been devoted to specifying the variables of the international system. Obviously, the existence of armaments does not express the only form of interaction at the international level. Indeed, it is possible to urge that escalation in the possession of armaments is only one manifestation of political interaction which influences the kind of bargaining that takes place at the international level. Armaments cannot account for all, or even many, of the actual problems that are adjudicated at the international level. It is even possible for nation-states to do away with particularly offensive weaponry, as has taken place in the Test Ban arrangement and in the newer antiproliferation treaty. To some extent, the presence of the latter agreement indicates that solutions to arms problems are possible even where *détente* or cooperation in other fields has been reduced.

If R-D people are basing their manipulations of the international scene on armaments, then they are missing the political manifestations of international events. Moreover, the whole rigging hypothesis requires rough similarities in high level technical achievement: no control can be exercised over those who do not have such achievements. From the point of view of political developments such as the anti-proliferation treaty, it appears unlikely that the attainment of armament superiority will ever be commonplace. If, with this in mind, it is apparent that conflicts arise at the international level outside of the immediate technological struggle, then the possibility of control and management of tensions from areas where control has not succeeded seems very limited indeed. It follows that if R-D is to have any substantive meaning at all, this will only come after the R-D people have been politically educated. I suspect that this will tend to redirect their interests and separate them from the ideological environment that exists among R-D people – assuming of course that McClelland's reading of R-D people, and their value system, is really accurate.

The second observation follows from the first. Assuming that some kind of transmission from R-D people is relayed to policy makers, how does one expect policy makers to respond? The answer depends upon the nature of the transmission and the qualities of the policy maker in question. Here there is only a minimum of experience, but some possibilities may be suggested. Assume that the R-D people produce policy positions as they have been reported to have come from the Department of Defense. These reports have been answers to specific questions, viz: what military effort is required to win the war in Vietnam? In response, the Department attempts to consider the logistics and command, personnel, and resources needed to satisfy the question. A range of alternatives is reported to which the most viable (in terms of the variables) is selected. The goal, as set in the question, is not modified. This information is then transferred to the authorities who decide whether to implement the strategy.

While ideally this seems to be a satisfactory exchange, in practice it has not proceeded along such clear cut lines. Actually, what appears to have happened is that the messages, both inflow and outflow, have not been transmitted without significant degrees of emotional commitment. Consequently, the R-D people have not only responded to questions analytically, they have also responded politically. While R-D techniques appear to be non-committal, R-D people are not at all free from politics. Even if the R-D people were free from politics, the very questions handed to them are very often devised as political, as well as strategic or operational, questions. To a certain extent the R-D response has to be loaded because the question

itself has been prepared in a political manner. Occasionally, however "innocent" the R-D response may be to a question, that is, however free from political coloration, political leaders may argue that the "scientific" findings of the R-D people confirm the rightness of this or that policy. Or one can think of an even more interesting possibility: R-D people convince themselves and the political leaders that decisions based on science are objective in nature, leading to commitment of the government to policies that "cannot be wrong." In doing this the actors on all sides tend to inspect the answers or results of questions asked, rather than thinking deeply about the nature of the questions as questions. For example, asking how the Vietnam war can be won militarily cannot be answered until a determination is reached over what political arrangements are acceptable to this, as well as to the other, side. Once the political goal structure is established, questions of a military nature might be answered.

Certainly the outcome is not an R-D establishment that is able to rig nature. Instead of rigging nature, the R-D people succeed in programming their own attitudes and converting their science into policy. While the policy that results may be good policy, and it may be highly influential, it is not "close" enough to scientific standards to be communicated with great clarity to R-D personnel in other nations. Its usefulness as a covert communications device seems very limited.[28]

SUMMARY

The ideas of Rosecrance and McClelland help make the message of this chapter clear; an approach to the future must be moderate insofar as the international environment is concerned, moderate about the impact of action systems in a political world, and moderate about the hold of the present on the future. While neither Rosecrance's nor McClelland's studies need be dismissed from consideration, both tend toward distended mixtures of the present and the future.

Rosecrance's future is very far away and no road map of any clarity exists to get us to that future. For the most part Rosecrance believes that we will get to the future he suggests if nation-state development *happens* to fall along the lines suggested by the increase of industrial and technological facilities in most nation-states, and if the bipolar states become somewhat "passive"

[28] Recent studies of R-D facilities indicate that the influence of R-D has declined substantially. See George W. Ashworth, "Pentagon Unwinds as Systems Analysis Role Recedes," *Christian Science Monitor,* February 25, 1969, p. 3. See also, George W. Ashworth, "Pentagon Power Balance Shifts with Administrations," *Christian Science Monitor,* February 26, 1969, p. 3.

vis à vis their respective blocs. Such a proposal raises a number of problems. If we must rely on what "happens" rather than what we might try to control, we are prisoners of our environment. As prisoners it does not matter very much what we think of the future. Moreover, our environment is not very "rich" – that is not very much variety in the alternative futures that can be conceived. If only one "realistic" option is far away, and no other options exist, then certainly we must be very pessimistic about the present as well as the future.

McClelland's ideas about the present and the future tend to create the same pessimistic attitude through a different procedure. To McClelland the only future involves a highly specialized modification of the present. The crucial variable of the present is armaments, the only environment is bipolar, and the only way to mitigate the intense military-technological competition characteristic of a bipolar environment is through a covert communications apparatus of R-D personnel in the two superpowers. Like Rosecrance, the international environment McClelland forsees is not very "rich" either – that is, it is aimed along an almost inalterable course of armaments redundancy. Even in McClelland's idea for breaking this redundancy (at least in terms of hardware), the system is pictured as highly determined. R-D people remain R-D people – they do not directly advocate policy within the political system. Instead they by-pass the political system of the nation-state and connect with R-D personnel in the other superpower. Communications between R-D personnel determine policy, rather than communications between R-D personnel and politicians, or between the leaders of one state and another. Perhaps an interesting, even creative politics could emerge in an interplay between R-D personnel and political leaders, but McClelland does not consider this. McClelland's focus is on direct communications between R-D "establishments." This scenario for the future is a frightening explosion of one of the elements of the present. Certainly, the opportunity approach that McClelland elaborates is very narrow. If faith in R-D is the only hope, there is not much prospect for the future.

What is needed is a way to sensibly discuss the present and the future without becoming idealistic or pessimistic. Moreover, the objective should be to have a balanced view about the present and the future. The Deutschian approach, as modified in this study, should prove helpful in this respect and should overcome the "traps" that both Rosecrance's and McClelland's studies evidenced.

The Deutschian approach stressed the variations in systemic behavior, based on the goals the system aims at, as well as the level of organization that exists. As has been pointed out, modifying the formula in terms of action and

sustaining systems should help give us a reasonably good portrait of the international system. From that point we can decide what elements are in need of development, for the present and the future. For example, if there were a dramatic absence of secondary alliances or action systems – or an absence of attempts in this direction – pursuit of the development of such systems might be stressed. Political programs to bring about such results might be devised. The future, in such a case, promises to be inventive for the analyst, and at least in principle is within the range of practical politics. Consequently, while we are helpless in real terms in the face of the prescriptions of either Rosecrance or McClelland (because there are too many environmental as well as political variables to be concerned with), we are not helpless with the cybernetic approach here elaborated.

CHAPTER V

PATHOLOGY AND INTERNATIONAL SYSTEMS

INTRODUCTION: CYBERNETIC SYSTEMS AND PATHOLOGY

The cybernetic approach makes a distinction between systems that are viable and systems that are pathological. The discussions of Bismarck, Rosecrance and McClelland indicate that the distinction between viable international systems and pathological systems should be made clearer. When is an international political system pathological? Are there symptoms of pathology that can be identified ahead of time?

In cybernetic language, a pathological system is one that can no longer perform its tasks. A thermostat fails to operate and a heater runs on and on, only to use up all its fuel, or burn out the motor of the heating unit, or make the house so hot that it is dangerous for human beings to remain within the house. Or the example of a too sensitive thermostat may be cited. Instead of the thermostat permitting a tolerance factor in the command system, the unit switches the heating unit on and off constantly, soon destroying the heating mechanism. Or the thermostat occasionally sends wrong messages to the heating system, causing it to operate when the house is already warm enough, or fail to operate when the house grows cold.

Each of these problems in a heating system has parallels for political systems. The conditions described may be summarized as: (1) a failure to make decisions; (2) a failure to allow flexibility in the decision that is made; (3) making false decisions or mixing the sequence of decisions improperly. A political system that fails to make decisions surrenders its position as that unit in society that is recognized as able to make decisions for society. A failure to make a decision is not the same thing as a delay in making a decision. Delay may be appropriate when a decision could trigger responses in society that might threaten that society or the political system that made the decision in the first place. Failure occurs when the political system clearly faces a choice and refuses to make a choice. One can picture failure

occurring within a drama – the actors within the system and the clients of the system know that a choice has to be made. Both actors and clients sense that the decision is not an easy one and that an effort to force the system to achieve a decision is necessary. If the political system refuses or withdraws it loses its ability to claim control over the area of decision. No longer is the system responsible for the decision making problem it has surrendered. Moreover, responsibility is difficult to surrender in an uncontained fashion – surrender in one area alerts those who might want to challenge the system in a different fashion. The system is pressed in upon from a number of different areas and the key actors in the system might feel compelled, under the circumstances, to act quickly in order to defend the system. The system will overreact, treating many of its problems in an intense manner. A system in failure can become fully pathological, because a surrender in one area creates a loss of sensitivity in other areas.

The system described above may be said to lack flexibility. Whatever flexibility the system had was destroyed by the failure of the system to make a decision in an important area. Flexibility can also be destroyed by overcommitting the system to one policy or goal. A system that is overcommitted can use up all of its resources in one area, having nothing left over for other important problem areas. Resources in this context mean more than merely physical resources. Human energy is also a resource. If human energy is consumed in one activity, the system may not be able to act with full determination on other problems, or respond quickly enough to changes of dimension in other problems. Flexibility of this type depends on the ability of the system to focus itself on problems in order to make sensitive decisions, utilizing all or most of its decision making mechanisms to make such decisions. If the system cannot focus its problem areas all will blur together. Discrimination between one problem and another will become impossible.

A system that cannot discriminate between problems will begin to make mistakes in transmitting decisions to the problem areas of the system. For example, if it is found that the application of military force or police force will solve a problem in one place, the system might too readily assume that a similar application wil suffice for another area. Time will not be spent in evaluating each and every individual problem. If the policy to use force succeeds at point *A*, but fails at point *B*, the system is not likely to conclude that the policy must be reviewed or scrapped. Once a commitment to a decision is made in a system that cannot focus well anyway, a change of policy is not likely. Such a system is attempting to defend itself and is on the road to becoming broadly pathological.

A fully pathological system might be understood as a system that is on the defensive, that has rationalized its choices to its clients and to itself, and is

able to make future choices only at a high level of intensity. The system "can no longer perform its tasks" because it is unable to make decisions that will be of benefit to the system – any choice made can lead to even greater danger. If we apply the language of sustaining and action systems to this description, only sustaining systems can be considered as able to become fully pathological, because they have lost the ability to deal with the environment with any sensitivity.[1] If they act, they act only in an intensive fashion. Or they may withdraw, assuming a fortress posture, and hoping that an attack on them does not materialize. A sustaining system that is pathological is not in *drift* in the Deutschian sense. Instead, such a system is in *radical drift*.

Drift is a condition of aimlessness, that might be visualized as a meandering stream. Radical drift is not aimlessness, but a sequence of false aims at unreal targets. Radical drift can be visualized as a saw tooth design. The tip of the saw consists of sharp ridges and valleys not separated by great distances horizontally or vertically. As one moves from the tip of the saw to the base, the saw tooth fans out. The depth of each saw tooth, that is from the point tip to the horizontal plane, widens. The separation of each tip point from the other widens. A political system in radical drift is likely to destroy itself, as each move increases the intensity and danger. A political system that is merely drifting *can be destroyed*, but it is not likely to destroy itself since the relationships within the system are not intense enough to create a saw tooth syndrome within the system. A system that is in drift is a *soft* system – it will not destroy itself but it is easily penetrated from the outside. A system in radical drift is a *hard* system – it is insulated and on the defensive and is likely to destroy itself.

Action systems cannot be considered as pathological because they are designed to deal with problems that sustaining systems by themselves are unable to handle. Because intensity of response in an action system will always be higher than in a sustaining system, the language of pathology developed here is not applicable. But if action systems evade the problem of pathology themselves, their effect on existing systems depends on the situation the existing systems are in.

Action systems have only limited meaning within hard systems. This is a result of process that goes on in a system that turns in on itself. Not only does the system turn in on itself, but each element of the system becomes defensive. Communications between segments of the system significantly decrease or even cease. Often major institutions of the system feel alienated

[1] Action systems, as described, do not "sense" the environment in the same manner as sustaining systems. But, as the following pages show, action systems may effect the viability of political systems.

from other institutions. A symptom of such malaise is the use of informants and spies within the institutions of the political system. An indication of extensive institutional insularity and pathology is when spies and informants become independent of any institutional segment of the system. Informants no longer are in the employ of one segment of the system, but may work for many parts of the system simultaneously. Because no part of the system feels secure or safe, no one trusts anyone else. Unless an outside force of some kind affects this string of relationships, the system will be increasingly pathological. Action systems from within the system are not likely to effect a change in the situation.

In principle, the pathology of a sustaining system may be broken if an action system operates from outside of the system. In nation-states, an approach from outside of the system may be called a revolution.[2] A true revolution is an effort to disrupt a pathological system. Revolution may involve the repair of the system after the pathological chain is broken, or revolution may involve replacing the system.

PATHOLOGY AND INTERNATIONAL SYSTEMS

Thus far the discussion has focused on political systems in general. Pathology can be present in the international system as well as in nation-state political systems. However, the nature of international pathology is somewhat different from pathology at the nation-state level.

International political systems have been described as consisting of action systems and sustaining subsystems. Conscious steering and control of the international system is accomplished mainly through action systems. Where there is no action system operating at the international level, the system may still be steered if a sustaining subsystem is clearly dominant. Partial steering may also take place if sustaining subsystems dominate limited segments of the international system, as in a "sphere of influence" arrangement. Normally, international politics is a mixture of partial steering through

[2] Many political theorists might disagree with this observation. Chalmers Johnson, for example, calls revolution "a form of intrasystemic violence . . . ." See Chalmers Johnson, *Revolutionary Change* (Boston: Little Brown and Company, 1966), p. 13. He goes on to say that: "True revolution is neither lunacy nor crime. It is the acceptance of violence in order to cause the system to change when all else has failed, and the very idea of revolution is contingent upon the perception of societal failure." (p. 12). The use of the word "system" here is in the grand sense – everybody is "in" the system. Consequently, revolutions are intrasystemic. In the language of system developed in this study, revolution would have to occur from outside of the system. Moreover, a typology of revolution would possibly involve more than violence as a way that revolution can be carried out.

spheres of influence and efforts at building action systems. Under such circumstances, pathology as it relates to drift has a different meaning than it does in nation-state political systems.

In a national political system drift often occurs when the system treats problems without relating one problem to the other. For example, the government of a country might subsidize medical research concerning heart disease. The research might produce a cure for heart disease. At the same time the government may decide not to increase its subsidy for medical treatment of patients, even though the new heart cure is very expensive to perform. Here the government has produced a cure for a disease, but it has not allocated the necessary funds so that people can be cured. Such a system would be aimless in respect to medical research and treatment.

International systems may experience drift of this kind, but this is not the most serious form of drift because neither governments of states or citizens expect the international system to solve problems in a connected manner. They do not hold the international system responsible in the manner that national political systems are held responsible. Nonetheless, drift of a serious kind can materialize in an international system. Serious drift results not from the pursuit of goals in an unconnected way, but instead by the same goals being pursued by many members of the system. Drift in this case is produced by a convergence of activity. Drift sets in, very often, after convergence has occurred.

The Indochina conflict may serve as an example of drift after convergence. Before World War II, Annanite [3] lands were dominated by France. Indochinese nationalist and communist leaders had been negotiating with the French for over twenty years in an effort to secure some type of independence agreement. These negotiations were broken off with the beginning of World War II when Indochina was occupied by the Japanese. Negotiations resumed after the war while the Japanese remained in Indochina. The government of Japan was ordered to withdraw its troops in favor of the French. The French began to move their forces back into Indochina and a "hot" conflict ensued between French forces and nationalist and communist Indochinese, now organized as the Viet Minh. The Viet Minh's main spokesman was Ho Chi Minh. Ho drew support from the U.S.S.R. and from the Chinese Communist military. The French were supported by the United States, although the aid tendered by the United States was not given directly for the reconquest of Vietnam. By 1954 the French had suffered serious military losses and defeats, which led directly to the Geneva accords, signed

[3] Historically the Vietnam area was dominated by the Annanite Kingdom and Annanite race.

in the same year. These agreements divided Vietnam and committed all the outside powers present at the conference,[4] to the settlement.

The "solution" to the Indochina problem envisaged by the Geneva accords was for elections to be held in each part of Vietnam, deciding whether the land was to remain divided or whether it would be united. Had a solution been found, the problem of Indochina would have been localized and the major powers would no longer have focused their interest on this part of the world. However, instead of a workable solution, the Geneva meetings and their aftermath created more problems for the powers. After the accords, formal elections were held in North Vietnam, but not in South Vietnam. Conflict occurred again in Vietnam in the form of guerilla activities in the south of the country. This insurgency was directed by the National Liberation Front, once again a combination of nationalist and communist elements, but more clearly communist. It was heavily supported by North Vietnam, as well as by the U.S.S.R. and by China. The government of South Vietnam was aided by the United States. At this point it might be said that the convergence of the various parties at Geneva had led to a situation of drift. The parties, clearly, were further away from a solution than in 1954.

This continued from 1956 until 1963. During this time change in the situation was slight. The Viet Cong (the military arm of the N.L.F.) made advances in the South of Vietnam, were able to collect taxes and recruit soldiers, but were unable to capture the government of South Vietnam.[5] The United States stepped up its economic and military aid, but not enough to make a change in the conflict. By 1963 the Vietnam dispute was a drift situation. Various strategies were attempted, often at cross purposes, but none succeeded.

In 1963 an effort was begun to reach a conclusion of the Vietnam problem. The Viet Cong increased their activities. The United States increased its aid and sent more military advisors. These advisors were increasingly involved in participating in the fighting. By 1965 the United States sent large numbers of troops to assist the Government of South Vietnam. These troops soon started operating independently from the South Vietnamese. After the Tonkin Gulf incident,[6] the United States began heavy bombings of North

[4] See Theodore Draper, *Abuse of Power* (New York: Viking Press, 1967); Hilsman, *op. cit.*, pp. 413-537.

[5] It appears that the formal goal of the Viet Cong was to discredit the Saigon "administration" (the Viet Cong label for the government of South Vietnam) and replace that government, either as a result of direct military conflict or, more likely after United States entry, through political strategies.

[6] On August 2 and August 4, 1964, three North Vietnamese torpedo boats fired on the United States Destroyer Maddox, and on the fourth of August the United States Destroyer, C. Turner Joy, was also fired on. See Draper, *op. cit.*, pp. 62-68.

Vietnamese support facilities, air fields, military installations and factories. The North Vietnamese government sent more troops and supplies into South Vietnam.

Between 1963 and 1968 no solution appeared to the Vietnam problem. Since a serious escalation occurred during this period, no longer could the situation be typified as one of drift. During this period neither side made major changes of its policy vis à vis a solution of the conflict. The North Vietnamese called for the unification of Vietnam. The United States called for the respect of the sovereignty of South Vietnam.

It is tempting to call the situation pathological between 1963 and 1968. There were symptoms of pathology within the South Vietnamese governments of the period. Moreover, the United States leadership found it increasingly difficult to justify its position towards Vietnam, becoming more and more defensive. But while the war problem created significant stresses in the political system, it did not produce a total governmental preoccupation with Vietnam. The American administration still made efforts to pursue its domestic policies. During 1967 - 1968, the administration was even more hard pressed due to serious urban disorders. The government *was* able to deal with these disorders. While there is much disagreement about the methods employed, there can be no question that the first experiences with disorders created in the government a feeling that better methods had to be found. Emphasis was placed on more careful training of federal and state, as well as local, enforcement units. Efforts were made at offsetting potential problems before they exploded in the streets. While the problems the U.S. was experiencing with Vietnam impinged on the effort to produce solutions for the cities, there can be no question but that the government was able to "learn" something about how to handle its urban problems. A system that is still able to learn is not fully pathological.

It might be said that the United States was, in these years, in "rigid drift" vis à vis Vietnam. Drift was rigid because of the increased effort to solve the problem through warfare. No adjustment of goals took place.

Not all the outside powers were willing to stand by and see the Vietnam problem in rigid drift. The U.S.S.R. and Great Britain, as well as France, attempted to influence a change of policy by either the United States or North Vietnam. These states did succeed in convincing the United States and North Vietnam to subdue their military conflict and meet to discuss the problem. The military situation stabilized for a short while. No major goal change occurred.

The Vietnam conflict, up to 1969, did not reach the stage of radical drift. Radical drift could occur only if all of the outside parties polarized in view-

point. This would destroy the possibility of an action system penetrating the problem from the outside. If radical drift did occur, this would not then mean that all the parties to the dispute would find themselves at war. However, if radical drift did occur it would mean that no solution short of a military solution would be acceptable in Vietnam. If a military solution occurred in Vietnam, the stage would be set for a "hot" conflict between the powers outside of Vietnam. Or a solution in Vietnam might re-kindle subdued pathologies between the powers, creating an international pathology.

INTERNATIONAL ACTION SYSTEMS

International action systems should be a way to prevent the international system from becoming pathological. In principle this is achieved by attacking primary international problems before total convergence of actors occurs. In effect, action systems may be hypothesized to work best before convergence occurs. An international environmental system can be affected by an action system if the system is still soft – that is, if the system is not yet in rigid or radical drift.

The problem with action systems operating in soft environments is well illustrated by the Bismarck example. Bismarck decided to head off a potentially polarized Europe by taking action at a time when many actors in the system were passive. The steps he took, through the League of Three Emperors and subsequent alliances, turned the international system into a hard system. This came about in two contexts. First, the system became hard in the relationships of actors to each other. This hardness is epitomized by the interlocking alliance system. The alliance system was a sure sign that not much had been done to prevent a condition of rigid drift – a condition familiar to the European states. A symptom of the drift situation is reflected in the many secret provisions of alliance treaties, as well as by an increase in spying activities.

If Bismarck's effort polarized a passive system, his effort also failed to "catch" the politics of the day. One objective of the Bismarck plan was to organize the European states around conservative monarchical principles. The strength of the monarchies was on the wane in the Europe of the 1870's. Republican and socialist movements were growing and affecting domestic politics, as well as international politics. While Bismarck's own political career within Germany was based on his ability to work with these new ideological patterns, he was unable to translate this experience outside of Germany. Unable to harness the new forces of Europe, Bismarck was able only to create more of the same conflicts between the European states. These

conflicts, moreover, were now intensified – because the radical elements within each state made each nation more defensive and because, at the same time, the ability to conflict increased as new technological developments became available to the various military forces within Europe.

As the Bismarck action system operated, it created a harder environment and grew less able to make positive changes in the international system. In effect, the action system declined. This decline can be illustrated in a cybernetic system through the use of a mathematical operation known as a Markov chain. A Markov chain is a system of sequential events, each having a particular number of possible states, which satisfy the condition that at any time the conditional probability of transition from one's present state to another state does not depend on how one arrived in the present state. Symbolically, if we let E_m^{lm} represent the event that the system is in state lm at time m, then: $P[E_m^{lm}|E_{m-1}^{lm-1}, E_{m-2}^{lm-2}, \ldots, E_1^{l1}] = P[_m^{lm}|E_m^{lm-1}]$. This says the probability of the system being in state l at time m given the states of m − 1 previous events, is equal to the probability of the system having state lm at time m knowing only the state at time m − 1. Emmanuel Parzen says: "One sometimes says that a Markov chain is a system without memory of the past,"[7] although it is certain that the prior system configuration dictates the opportunities of the next system state.

In an action system, each actor has three choices – either to delay, continue, or change. The probability of each actor choosing one or the other option can be assessed, mainly by paying close attention to the foreign policy patterns of each actor. In an action system the delay choice is low in probability because an action system is created to act on the international environment. However, in an action system some actors are active, some may be passive. Consequently, the passivity factor (mathematicians would call this a "fudge" factor in the system) is important in the performance of the system. Without concerning ourselves with the effect of time on the action system, it can be said that the decision of the action system will rest on the mixture of choices of all the actors related to the active-passive condition. This is illustrated by Figure 5 : 1.

No choice in any action system is completely distinctive, since probability "strings" tend to even out as successive "runs" of the system occur. A system "run" represents one effort by the system to achieve a decision, with the environment of the system remaining relatively stable. The main choice in an action system is between continuation and change, with delay as a less probable alternative. The action system must "make up its mind" which it will do – continue or change.

[7] See Emmanuel Parzen, *Modern Probability Theory and its Applications* (New York: John Wiley and Sons, 1960), p. 136.

If the environment changes significantly, as in the case of hardening, the choices opened to the system become even less distinctive. Passivity in the system disappears giving each actor more dramatic impact. Because of the higher mixture of options, the choice between continuation and change equalizes, creating tension in the action system over what alternative is viable. The action system will experience *stalling*, that is, an inability to choose between continuing or changing.[8] Stalling is different from delay because delay is a voluntary choice among the participants. In an action system delay is a voluntary choice that is not made. Stalling, on the other hand, is involuntary. It occurs where the alternative policies narrow so much that neither is clearly acceptable.

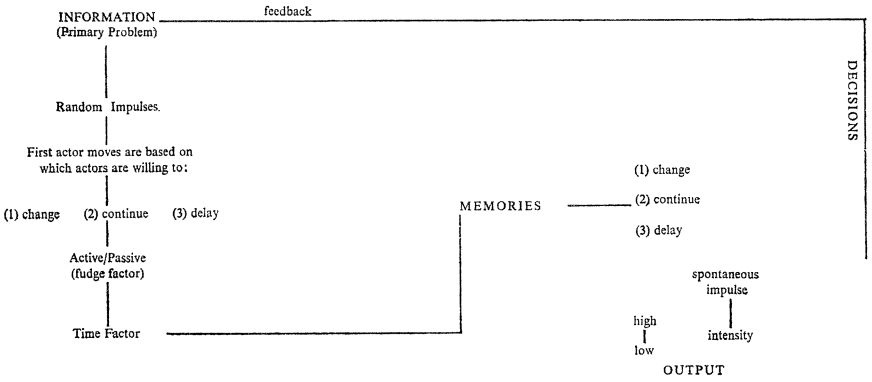

Figure 5 : 1
One Run of an Action System

As compared to reality, the model is a severe representation of the actual choice process in a decision making action system. "Runs" – that is, efforts by the system to achieve decisions – may not be as clear cut as the model makes them. Consequently, to make use of the Markov chain model, runs have to be grouped together as "phases" of the system's operation. Phase, in the action system described, would be related to the change of the environmental system. Referring to the Bismarck case, the first phase was a passive environmental system. The second phase was organizing part of the international system. The third phase was the polarization of the actors in the system (which occurred in full measure after Bismarck has passed from the scene).

[8] Stalling is a form of failure, as previously described. In an action system, stalling will lack the drama of failure that is found in a sustaining system.

Maintenance

The systems maintenance task of an action system is to keep the international system as soft as possible.[9] Maintenance here means preventing the actors in the system from violently interacting with one another all at one time. This differs from the usual systems analysis view of maintenance. Very often, maintenance means preserving the system as it is – assuming, of course, that how the system is, is normal. The cybernetic approach looks at the international system from a more dynamic perspective – the objective is to manage the system. If the system is already soft, the objective is to maintain the system as such. This can be accomplished by attempting to keep some of the actors in the system passive. Actors will remain passive, using Organski's terminology, only if they are satisfied. Keeping important international actors satisfied is a difficult chore. Bismarck attempted to do this after the war with France by finding new overseas territories for the French. This policy was not successful. Similarly, in an effort to "stave off" Communism, the United States attempted to keep its European allies satisfied through massive international investments, loans, and gifts after World War II. This was successful. However, such techniques are limited in impact because the benefits given to unstable actors to make them passive also strengthen these actors, giving them the means and the opportunity to interact freely in the international system.

If the objective of action systems in soft international environments is to keep the system soft while attacking primary problems, the task of action systems in hard international environments is to make the system soft. If McClelland's projection of the international action system at the present time is considered, it can be seen that his proposal does not in any way change the environment to a soft status. If anything, McClelland's objective is to work within a hard environment.[10] While it might be conceded that the armaments segment of the decision making system can be stabilized through an "ersatz' R-D connection (although I do not think that it can be), such an arrangement promises no spillover to the political decision makers. If there is a hard environment and the national actors are increasingly pathological vis à vis each other, stabilization of armaments does not solve the political problems dividing the actors. What is remarkable about McClelland's essay

[9] It should be emphasized that to create an action system some galvanization of the international system is necessary. But, when operating, the action system must try to keep segments of the system passive. The trick is to achieve an action system and then make it operate properly.

[10] See pp. 100-108.

is not the solution that he has proposed concerning armaments, but the solutions he has not proposed concerning politics.

McClelland assumed that the international environmental system was hard. On this basis McClelland attempted to discover some relationship between states, or at least between the technologically advanced states, that would head off warfare. The solution he was able to imagine involved the research and development facilities within each state. If this indeed is the only projection of interconnection possible in the present international system, it is difficult to have much hope for the future of international affairs. Certainly McClelland's action system does not turn a hard international system into a soft system.

What can make a hard environmental system soft? It is difficult to imagine an action system coming directly out of a hard environment having such an effect. In fact, it is difficult to believe that a true action system of any kind can emerge, as McClelland's study testifies.

PATHOLOGICAL MIXTURES

Can we understand the international environment as hard? This is critical in assessing the possibility of international *politics*, especially at the present time. Perhaps the only hard international system -- across the board -- would be Kaplan's unit veto system. This is the only system that cannot be managed unless all the actors withdraw from contact with each other and become passive. In a perfectly passive status the inward turned actors would soon become individually pathological and might attempt to break out of this condition at the expense of the entire international system. Even if they did not attempt a break out from a passive international status, activity within each nation might become intense, creating strains within that few system members could stand. When access to the world is closed down, tension within rises excessively.[11] Certainly this is an important factor even in limited conflict between states when a strategy of one actor is to close down access from the rest of the world to the other actors, as well as close down access by the members of the actor's system to the world.

Even if we rule out the unit veto system as a meaningful possibility, Kaplan's tight bipolar system might be fashioned as a hard environmental system. Although Kaplan excludes emergent blocs such as a China-dominated Asian bloc, or an African bloc, his portrait of the U.S. directed western bloc and the Soviet directed eastern bloc is not totally negative. Within each

[11] I assume here that the closing of national boundaries has to be a deliberate political decision. Natural isolation would be a different circumstance.

bloc there is a great deal of interstate political activity. Major problems of bloc management and organization are at issue. Even if the problems between the blocs promise to become pathological, intrabloc conflicts will offset the impact of conflict between the blocs, at least to some extent. So long as bloc politics are diffuse internally, the system cannot be pictured as completely hard.

If there are offsetting forces even in a tight bipolar system, Kaplan's projections might suggest that pure international pathological conditions will be infrequent. More likely will be pathological situations between limited numbers of actors in the international environment. Under these circumstances the objectives of international policy making (that is to say, the objectives of action systems), will be to offset such conflicts. Here the desdescriptions of action system potentialities within soft systems becomes meaningful. With a range of choices opened to the actors, the chance for successful positive action increases geometrically compared to an environmental system. If these circumstances prevail, then one of the important tasks of the international actors will be to "bail out" individual participants whose behavior may have become pathological. This could produce two benefits. First, it is a way that the pathology of one actor can be contained. This is important since "gut" reactions to the errant behavior of one actor could destabilize the other actors. Second, the political task of aiding other actors creates a useful and developable political relationship. Such a relationship is not a product of philosophy or ideology, but of practice. Consequently, it has a chance of lasting over a long period of time. Thus, the international system may still be understood as a system that permits opportunities within it to take place. Such a system still has many brittle problems to solve, but at least there is the political possibility for solutions to take place.

NUCLEAR WEAPONS

Opportunity and hope in a system that is still soft is crosscut by the reality of nuclear and biological armaments [12] and the delivery systems for such

[12] According to Walter Millis, "the present international order and its power relationships are founded upon a military concept of power which has been an anachronism at least since 1916 and totally unworkable since 1945." See Walter Millis, "The Uselessness of Military Power," in *America Armed,* ed. Robert A. Goldwin (Chicago: Rand McNally and Company, 1969), p. 22. Millis believes that "The Kennedy administration's new enthusiasm for adding a 'limited-war capability' to the 'deterrent' is a tacit – perhaps unconscious – admission of the uselessness of military power and organized war as a basis for great power relationships." (p. 33). Millis does not see international politics as "crosscut" by nuclear and biological weapons: he

armaments. Certainly modern mass destruction weapons are the dynamite of the international system now and for some time to come. This is not only a problem that dates from the close of the Second World War. The whole of the twentieth century has been concerned with the problem of weaponry, whether the problem was the use of dum-dum bullets, application of mustard gas, spiraling naval armaments, submarine ships, aerial bombardment, napalm, nuclear weapons, missiles, or biological warfare. In all of these areas efforts at control have been attempted – and in each area of concern control has eventually failed.

Why has such control effort failed? Is it because suspicion between national actors has persisted? Is it because a nation-state involved in battle will resort to any weapon that will produce victory? Certainly these are factors, but the malaise of armaments expansion runs deeper than the issues suggested by these questions.

Cybernetic models, of any kind, cannot illustrate or dramatize the reason why this century, or any other, has been plagued by spiraling armaments. In my opinion, why we insist on developing weapons that exceed the necessities of the systems we live within escapes the capacity of any systems model. A cybernetic or systems model might illustrate some of the factors that lead to the development of weapons, but such models cannot explain why we decide to make such weapons – that is, cybernetic models cannot expose the personal, as opposed to the systems, causes of armaments. The pathology of building and using nuclear power, or biological power, is a pathology of a different kind than that discussed in these pages.

This distinction can be illustrated by returning to the description of pathology developed in this chapter. Pathological systems are systems that are in radical drift, running close to self destruction. This text has urged that the international system is not now in radical drift and, while some pathologies are recognizable within the system, the whole system may be able to react to these conditions and dampen or even solve them. If the system is not fully pathological, it can be viable. A viable system is one that can make choices and, consequently, one within which steering and control is

sees the system as *based* on such armaments. There can be no doubt that modern political systems have made possible – even have demanded – the production of over-kill weapons, but it seems to me incorrect to say that the whole international political system is based on such weapons. If that were true progress and change would have to relate directly to armament capability, which does not seem to be true. What is true is that many political leaders base their strategies completely on the state of armaments possessed by a nation. This seems a dangerous way to proceed, and could lead to many tragic errors.

possible. With this in mind, the problem of armaments can be discussed in systems terms.

The twentieth century international system may be said to have produced two decisions concerning armaments. One decision has been to make *efforts* at limiting the production, possession and use of military armaments. A second decision has been a common understanding that creating armaments involves a problem of spiraling or escalation, which needs to be monitored even if production, possession and use cannot successfully be limited. Together these two decisions resolve into the question of how, according to David Inglis, we "can introduce some (armaments) constraint with sufficient symmetry between the contending nations as not to invite dangerous misadventure . . ." [13]

These two decisions have resulted in what may be described as "step function control." Step function control is an effort to recognize parameters to any one kind of weapons development. Once recognition of meaningful limits takes place, it is hoped that an end-point of that type of development has been reached. Step function control assumes that major breakthroughs in weapons types do not occur. Given the technological capacity of modern times, the hope for effective step function control must always be guarded.

Is an international system that is threatened with such a fragile kind of armaments control a pathological system? To ask this question is to raise additional questions: Are the nation-states that produce the weapons pathological? Are the people who design and manufacture and man the weapons within the nation-states pathological because they agree to do these things? While the tensions developed within political and social systems may have stimulated and encouraged weaponry development, it seems obvious that if there is a pathology it is a pathology that runs deeper than any single political or social system, or even the interactions of political and social systems. Rather than a result of systems, it may be that this kind of pathology relates to mankind in general. Political systems have not, in the past, considered it necessary to solve problems of this kind. If there is violence within mankind, if men seek to protect and defend themselves with weapons of increasing sophistication, this has not often been considered a political impropriety. In the United States, for example, the development of the anti-ballistic missile system – and the arms spiral this will no doubt stimulate, emphasize the *political* acceptability of military-technological expansion. While there is increasing opposition to the "military-industrial complex," this opposition is geared mainly to controlling the military-industrial complex so that it will produce sensible and workable armaments.

[13] David R. Inglis, "Transition to Disarmanent," in *America Armed,* p. 92.

While international political systems, with varying degrees of success, have imposed certain limits on the activities individuals and groups can be involved in, there are few examples where self-imposed moral restraint of the national group, acting in the international world, has been practiced.[14] In fact, it may be judged that more frequently efforts at limitation on national group behavior have been tried from the "outside," that is by international agreements. Outside agreements have been successful only in the short term – they have not succeeded in bringing about permanent modifications in nation-state behavior, or in the behavior of individual men. How can man's behavior be controlled? Will it be through action taken on his own without reference to politics? Will control come about through decisions enforced by nation-states? Or, finally, will control be achieved exclusively through international action or through international action coupled to decisions made by nation-states?

To answer such a question conclusively is impossible. Here some outlines of an answer are attempted which are relevant to what the Deutschian cybernetic approach is meant to achieve.

[14] In the past, Japan, Korea and Siam attempted to remove themselves totally from the international world. These three nations practiced, for a time, *total* isolation from the world – their citizens did not go abroad and foreigners did not enter. After the First World War the United States practiced a limited form of isolationism, restricted to political and military affairs with the specific provision that the United States would enter into no alliances of any kind. This meant alliances that would help keep the peace (such as the League of Nations), as well as alliances that might be of a threatening kind. The rationale for this position was that if the United States did not in any way participate in international affairs, this country would not be attacked. According to Selig Adler, "the isolationists have been willing to gamble on the destruction of friendly countries, preferring to fight only when confronted by immediate danger. An America grown to full strength, say the isolationists, can maintain her world position and best serve humanity by going it alone. They cling tenaciously to faith in the unchangeability of our changing world." Selig Adler, *The Isolationist Impulse: Its Twentieth Century Reaction* (New York: Collier Books, 1961), pp. 32-33.

There have been lesser efforts at restraint. The United States, for example, has claimed that it has not employed germ warfare in the Vietnam conflict, not because such techniques were unavailable, but because their use would be improper. Whether this is evidence of a self-imposed moral restraint is difficult to determine, as are many other similar claims. For example, it may simply have been politically inadvisable at the time to employ such weapons.

According to Deutsch, where restraint has been practiced it has come about due to a learning process generated by successful national conflict tolerance and conflict management processes which suggest that the nations' interests can be pursued best by attempting to solve problems in a manner similar to that employed domestically. Deutsch cites England after the fifteenth century, Switzerland from 1515, Sweden in the eighteenth century, the United States vis à vis Canada in the nineteenth century. *Analysis of International Relations,* pp. 153-154. Most of these examples are, however, quite limited in scope.

Part of the answer to the problem of control revolves around the concept of mankind. The idea of man being related to other men (thus, mankind) is ancient. However, only on an intermittent basis has the concept been related to actual practice. Normally, cultural values, related to specific groups, have prevailed. Individual cultures and groups have supported their own protection and aggrandizement. Thus, even if they individually insisted on some internal limitation on activity, external limitation of the behavior of the group has only occasionally been practiced. This pattern has been the norm for centuries and no social or political system has changed this pattern.[15] At this point in history, however, we are now faced with the practical problem of limiting violence. This might be accomplished by making something out of the concept of mankind. According to Arendt:

> No longer separated by space and nature and, consequently, by spiritually insurmountable walls of history and culture, mankind will either find a way to live in and rule together an overcrowded earth or it will perish – an event that will leave the sublime indifference of nature untouched.[16]

Professor Arendt suggests that the concept of mankind must be given weight through political action at the international level:

> The most immediate political consequence of the new historical situation, where mankind actually begins to occupy the position formerly assigned to nature or history, is that some of the factual responsibility shared by the members of every national community for all the deeds and misdeeds committed in their name has now expanded to the sphere of international life.[17]

This means, in Galtung's terminology, that an "associative" approach is required, but the associative approach must have a dual character. On the one hand, following the cybernetic description of pathology, the associative approach must conduct a "holding operation" in order to prevent pathological politics from emerging. Such a holding operation is possible but it is, as pointed out, crosscut by the constant increase in armaments and weaponry. Thus, an associative approach must also seek to operate at another level in developing a "new politics," in much the same sense that Bismarck, unsuccessfully, sought a new politics. This new politics is, as Arendt says, really the "conscious [political] beginning of the history of *mankind* . . . ." [18] Arendt also goes on to say that "the greatness of the task is crushing and without precedent." [19]

[15] Hannah Arendt, *The Origins of Totalitarianism* (New York: Harcourt, Brace and Company, 1951), pp. 435-436.
[16] *Ibid.*, p. 436.
[17] *Ibid.*
[18] *Ibid.*, p. 437.
[19] *Ibid.*

If the cybernetic approach is helpful in showing the way to conduct a holding operation, it may also help point out opportunities where a new politics of mankind can be pursued. For example, the cybernetic approach might indicate what organizations can learn to value mankind as such, and apply this learning politically so that is felt by all the members of the international system. Not only should the approach be of use in determining what organizations might be productive, it will also be of use in illustrating what organizations or systems are counter-productive. Here we need to be less concerned with organizations that do not attempt a politics of mankind, but we must be deeply concerned about organizations that presume to deal with mankind, such as the United Nations. Following the arguments of Haas,[20] if such an organization verbalizes the problems of mankind but, in action, contradicts the piety of such verbalizations, then perhaps investment in such organizations might be a dangerous mistake. Following Deutsch's analogy of influence to money,[21] a high investment in a counter-productive organization will create a "monetary drain" in influence that cannot, for some time, be replaced.

The cybernetic logic might make even more intriguing recommendations, if developed. Here one such recommendation is given as a speculation. It was stated in earlier pages that nation-states have well developed sustaining systems which do not exist at the international level. These may turn out to be of importance in establishing a "new politics of mankind" in the future. If, as Galtung and Vickers argue, the traditional governing task of nation-states is being superceded, at least in the Western world, by supra-national organizations, then the nation-state systems may, over time, be freed of the heavy obligations now placed upon them.[22] This could help infuse such systems with a new capacity. Nation-state political systems might be free to pursue a complicated goal-changing task by making decisions that attempt to implement a "new politics of mankind." In effect it is hypothesized that the "becoming of" [23] an increased international political system will not defeat the nation-state system, but give it a new and more profound service to perform.

[20] *Tangle of Hopes*, pp. 176-182; 240-241; 255-256.

[21] *Nerves of Government*, pp. 117-118.

[22] It is assumed that some juridical relationship will be evolved between supra-national organizations and nation-states. A legal division of authority would help encourage the development of new roles by nation-states. How specific such a grant of legal power might be – and how much reliance would have to be placed on the evolution of non-legal functions – cannot be determined at this time.

[23] See Inis L. Claude, Jr., *Swords into Plowshares: The Problem and Progress of International Organizations* (New York: Random House, 1964), p. 9.

CONCLUSIONS

This study has applied cybernetic analysis to the study of international politics. The cybernetic themes were developed mainly from Karl Dentsch's *Nerves of Government*. According to Deutsch, this work was an "interim report" that eventually would lead to a theory of politics, national and international. Deutsch's cybernetic approach looks at politics primarily as a problem of steering the political system. The process of steering, and with it the control of the resources of the system, depend upon communications within the system. In this study this approach is followed in the analysis of international systems.

The cybernetic approach is part of the systems analysis movement. It attempts to apply knowledge of the operation of certain sophisticated electronic devices (such as electronic computers) to human systems, whether psychological, social, or political. There are, of course, significant operational differences between electronic and human-based systems, as this study has emphasized. Human systems take risks and learn from the risk taking process. Some systems are capable of an "awareness" of new problems as they arise and, moreover, such systems may become "conscious," making possible choices between the goals the systems may pursue. Awareness and consciousness are part of the decision making process that cybernetic analysis focuses on.

Decisions, it has been shown, depend upon a number of mechanisms within the system – the "storage" units of the system, the "memory cells" of the system, the system's "will," and its 'inner freedom of will." It is the claim of the cybernetic approach that only through conscious decision making will the system be able to successfully steer itself in its environment.

While many systems can deal with their environments and can increase in scope when necessary, political systems adjust very slowly. As Deutsch and Vickers have shown, nation-state political systems, today, are over-loaded. Vickers argues that nation-state political systems have to unload some of

their obligations and allow regional and universal organizations to find solutions to many modern problems. While regional and universal organizations have not performed well in this regard – and are often held to be suspect by nation-states – this study has argued that important decision making does go on at the regional and universal level. While most decisions are made in what this study identified as sustaining systems (formal, decision making units), informal and non-institutional processes also produce important decisions. These systems were identified as 'action systems."

How action systems work in the international system requires an understanding of the components of international politics. This was undertaken in great detail in Chapter II. Analytically, international systems were divided into two types. The first type was called international political systems. International political systems involve communications between states aimed at producing decisions for the international system. The second type of system was identified as international environmental systems. Environmental systems are systems where nations get along mainly by keeping apart. Different operational patterns for international systems that were either largely environmental or largely political were identified in this chapter. It was pointed out that environmental systems are unable to pursue "change" as a policy. These systems will have great difficulty in consciously responding to new problems that arise in the system. International political systems are more likely to have action systems operating within them. The operating characteristics of action systems are reviewed, emphasizing the inclination of action systems to promote existing political relationships (a policy of continuation) rather than attempt major changes in the system (change policy).

In Chapter III an attempt was made to examine a past international action system using cybernetic analysis. Bismarck's attempt to deal with Europe after the Franco-Prussian war was used as the chapter's example. The action system concept was joined to a discussion of alliance efforts in the nineteenth century. Two forms of alliances were identified – primary and secondary. Primary alliances were designed to respond automatically to immediate threats by other states. Secondary alliances, however, were designed to attack major disturbances in the international system. A secondary alliance can convert into an action system as this chapter shows. How this will be accomplished depends on the nature of the secondary alliance. If the alliance is poorly organized one set of circumstances will result. If the alliance is "managed" – that is, where one actor acts on a "nerve center" for the alliance, a different pattern will result. Bismarck managed a secondary alliance system which became an action system. He attempted, unsuccessfully, to deal with a tightening multipolar international system which was affected by domestic industrial, technological, and social upheavels.

As chapter IV shows, the cybernetic approach is not only useful in describing the international system or evaluating past performances in the system, but also in determining future policies at the international level. Chapter IV discusses Rosecrance's vision of a future international environmental system and McClelland's proposal for an unusual future international action system. It is urged that a well developed cybernetic approach offers a more flexible interpretation of the international future than that offered either by Rosecrance or McClelland.

Chapter V seeks to adapt Deutsch's characterization of systems as viable or pathological to international systems. Pathology comes about after a system "drifts." Drift in an international system results not from the pursuit of goals in an unconnected manner, as in nation-states, but instead by similar goals being simultaneously pursued by many actors in the system. Drift, here, is produced by a convergence of activity. Action systems can help prevent such drift by keeping the international system "soft" – that is, by acting before convergence occurs.

While the system may be prevented from becoming pathological, the international system can still not be characterized as a safe system. The reality of nuclear and biological armaments make the international system dangerous. To reduce this danger it is argued that changes have to be made in the political basis of the international system – the tasks of the units of the system (nation-states) have to be modified. It is hoped that the cybernetic approach may be helpful in pointing out opportunities where changes in the existing system might be carried out.

Short of bringing about significant changes in the international system, nation-states are faced with the continuing necessity of attempting to successfully steer themselves among other nations. Some nation-states have the additional burden of directing, to a significant extent, the future of the larger international system. They must control their own behavior and restrain the behavior of other states if the system is to continue operating. Even if the levels of technologies present today are dismissed, the prospect for successful steering and control is not very great. This is simply a fact of life for a world-wide system made up of nation-states. The political relationships of many nations has to be complicated and delicate. The assignment of control and responsibility to specific nation-states will tend to be variable. In the twentieth century such conditions are amplified by the increasing number of active participants in the international system, by the breakdown of rules of conduct between the "leaders" of the international system, by the parity that threatens to be achieved at the weapons level, and by the ideological positions that have fragmented nation-states and national and cultural

groups from understandable contact with one another. Certainly the cybernetaic approach, or any other theoretical or conceptual system will not solve these problems. Even *if* a theory or approach were found that *could* solve all international systems problems, such an approach would have to be employed and there would have to be a *willingness* to solve all international problems if the approach or theory was to be considered.

Politicians and theorists of politics (whatever their persuasion may be) live in different worlds and speak different languages. The process of translating the findings of political theorists into concrete policies (where such a translation is desired or where intermediaries decide it is desired) is only partially understood. Certainly it is hoped that some of the ideas of the cybernetic approach can be suggestive to politicians. If one had a choice, the concept of the action system and its operation would be a worthwhile contribution to policy makers in all countries. Short of this, the distinction between action systems that can change the international system and action systems that do not change the system but contribute only suspicious interconnections in the system (as McClelland's analysis might suggest) might be emphasized at the public level.

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