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SEAPORT DEPENDENCE AND INTER-STATE COOPERATION: THE CASE OF SUB--ETC(U)
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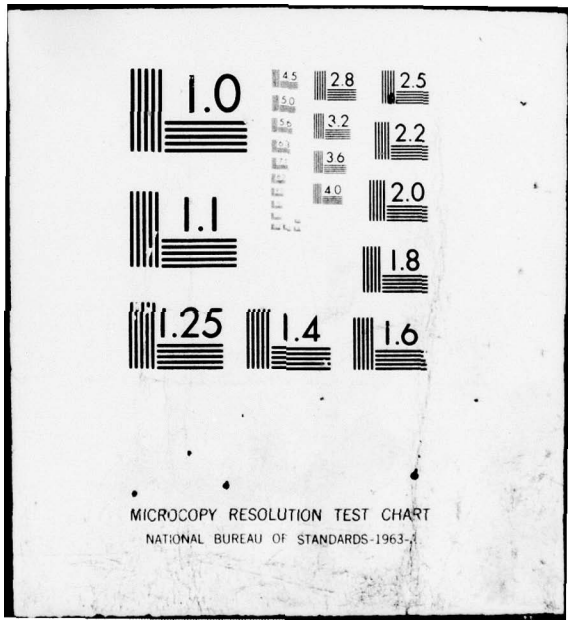
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# (6) SEAPORT DEPENDENCE AND INTER-STATE COOPERATION: THE CASE OF SUB-SAHARAN AFRICA.

(10) James S. Thomason

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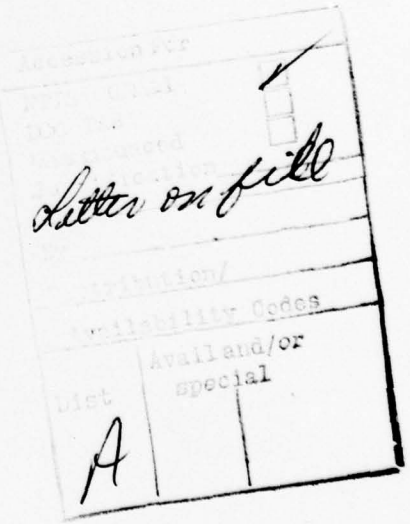
PROFESSIONAL PAPER 268 / January 1980

# SEAPORT DEPENDENCE AND INTER-STATE COOPERATION: THE CASE OF SUB-SAHARAN AFRICA

James S. Thomason

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# CHAPTER ONE

## INTRODUCTION

This is a study of cooperation among 18 sub-Saharan African states during their first post-colonial decade (1962-1968).* Five major hypotheses about cooperation are tested. The states were selected from each part of independent sub-Saharan Africa. The unit of analysis is the dyad; a pair of social actors considered together as a relational unit.**

The first hypothesis posits that, under certain conditions, great resource dependence leads to cooperative attempts by the dependent state toward the state(s) with the resource. To study this claim, I focus especially on the resource dependence of land-locked states upon states with seaports. The second hypothesis stipulates that geographically proximate states will cooperate more than will states at great physical distance from

*The 18 countries included in the sample are: The United Republic of Cameroon, The Central African Republic, The Republic of Chad, The People's Republic of the Congo, the Republic of Dahomey (Benin), The Gabon Republic, The Republic of Ghana, The Republic of Ivory Coast, The Republic of Kenya, The Mali Republic, The Federal Republic of Nigeria, The Republic of Senegal, Sierra Leone, The Republic of the Sudan, The United Republic of Tanzania, The Republic of Togo, The Republic of Uganda, The Republic of Upper Volta.

**The sample consists of 153 "non-directional" dyads, i.e., (18x17)/2. With 18 states combined dyadically there are 18x17, i.e., 306 logical pairs if we are using directional pairs. If the direction of the relation is relevant, then country A's relation toward country B will be construed as a separate empirical case from country B's relations toward country A. As we shall explain, in this analysis we are concerned with the aggregate of relations between A and B, so there are only 153 dyads, not 306.

each other. The third asserts that the greater two states' combined "resource capabilities", the greater will be the cooperation between them. The fourth posits that the greater a dyad's cultural similarity/homogeneity, the greater its cooperation. The fifth hypothesis stipulates that certain highly similar linkages between each dyadic member and an external "organization" will affect cooperation between dyadic members.

Several considerations led me to focus on African states' relations. First of all, no systematic attempts to account for inter-nation cooperation patterns incorporate intra-African states' relations in even crude proportion to those states' frequency in the international system. There clearly have been useful efforts to describe such phenomena as African patterns of diplomatic representation, U.N. voting, international organizations memberships, trade, and foreign policy orientations. Indeed, rapidly growing literature on these topics provided many insights. Yet none of these studies has systematically examined determinants of inter-state cooperation while rigorously trying to rule out "plausible rival hypotheses" (Campbell & Stanley, 1966:7). Although an area-specific data base may have shortcomings, a close look at the five hypotheses examined here in an African context is surely a crucial step in coping with the overwhelming sampling-bias in previous studies.

The states examined here were just beginning to develop foreign policies during the 1960's. I therefore particularly wanted to see whether their patterns of cooperation fluctuated in

this period. This was even more interesting since much of the literature claimed great stability through time in the potency of factors associated with cooperation. This "setting" appeared, on the surface, to offer a sharp challenge to this claim.

Third, in the major recent studies of inter-nation cooperation, there had been virtually no attention paid to the effect which shared (or divergent) colonization experiences might have on the chance of cooperation between the formerly colonized units. By contrast, the literature of comparative politics is virtually unanimous in assuming that colonization can have a deep and wide-ranging impact upon the subordinated societies, an impact extend ing well past the dates of political independence. But what (if any) effect would colonial subordination have upon cooperation among the previously subordinated units? African states whose cooperative inter-relations are examined here seem an ideal starting point to explore this question.

Chapter Two first defines cooperation as voluntary relations that generate mutual benefit for participants. A general strategy for measuring variation in the extent of cooperativeness between two actors is then formulated. Chapter Three specifies the hypotheses to be assessed; Chapter Four presents the research strategy and measures of independent variables, while Chapter Five discusses measures of cooperation to be used. Chapter Six offers the main empirical findings, and Chapter Seven then interprets these results in light of theoretical expectations as well as of trends in the potency of selected independent variables. Finally,

Chapter Eight discusses potential implications of the study's findings.

# CHAPTER TWO

# COOPERATION: AN ANALYTIC APPROACH

## COOPERATION VS. INTEGRATION

A concern with cooperation is at least implicit in most recent studies of international transactions and agreements. Curiously though, its explicit relevance to integration processes is often deemphasized.

The major reason for this deemphasis is the purported "status-quo" bias of cooperation per se: some scholars view cooperation as unable to generate certain changes they desire, e.g., regional or global federation. To them, cooperation is limited to "classic" diplomacy, temporary alliances and weak intergovernmental pacts, activities unable to generate durable international communities (cf. J. Nye, 1971:37-38; J. Caporaso, 1972:18; S. Hoffman, 1966). In such a view, cooperation implies a world of "nation- fortresses" and national leaders routinely hostile to any significant joint decision-making. "Integrative" processes, by contrast, are thought to be the only voluntary mechanism sufficient to engender such new joint decision-making units.

But why is such a stark contrast drawn between cooperation and integration? Do "cooperation" and "integration" have different causes or pre-conditions, or is integration just intense cooperation? A second issue here is that many integration scholars also rashly assume that regional federations are

desirable. It is easy to see some possible attractions: economies of scale; greater bargaining power; governmental and social machinery for controlling conflicts. Yet regional political unification does have a dangerous aspect. It is the spectre of zealous nationalism writ large, of efforts to exact unwavering loyalty and to eliminate diverse, cross-cutting interests and commitments across political units. Cooperation, on the other hand, even if it falls short of formal political unification in a particular case, can also generate economies of scale, substantial collective bargaining power, and machinery for the peaceful resolution of conflict.

My interest in this study is with factors promoting internation cooperation, not exclusively with those promoting political unification or federation. These may be "different" factors, but we cannot decide this a priori: if cooperation and unification are promoted by the same factors, then they may well be parts of the same continuum.

This particular study does not examine the latter question, however; there is simply too little variation among African states, too few cases of international political unification. But the frequency of cooperative activity among these states does differ considerably. This study examines several possible explanations for that variation.

Yet before considering those explanations we still must more carefully define cooperation and discuss some attendant ambiguities.

## SENSES OF COOPERATION

The concept of cooperation can enhance understanding of global community-formation processes. In common usage, a "cooperative" person may mean little more than one who acquiesced in another's wishes. But that usage ignores both the voluntarism and mutual benefit in cooperation as defined here.

Cooperation will be defined here as voluntary relations in a collectively adopted framework that generate mutual benefit for participants. Yet even this formulation has ambiguities needing clarification.

### Associative and Dissociative Forms

Two issues are familiar from the literature. First, are the so-called "dissociative" and "associative" senses of cooperation (Galtung, 1969) compatible? Dissociative forms are typically agreements not to "intrude" in each other's affairs. Associative forms, by contrast, involve interaction of a non-hostile and non-violent sort the dissociative sense precludes.

Both senses reflect agreements, but the former implies unwillingness to communicate further or explore more areas of mutual benefit.* Therefore, we will focus only on the associative sense

*On the other hand, an agreement not to "invade" may be a prerequisite to associative forms of cooperation, at least in practice.

of cooperation.*

A Cooperation-Conflict Continuum or a Cooperation-Isolation Continuum?

A second issue concerns whether cooperation is part of a "cooperation-conflict" or a "cooperation-isolation" continuum. Since Guetzkow's (1957) sketch of a "collaboration-isolation" continuum there has been increased recognition (Rummel, 1966a; Cobb and Elder, 1970; Terrell, 1972; Mahoney, 1974) of possible empirical independence (or even direct covariation) between cooperative and conflict behavior. In short, it is possible that those nation pairs with the greatest frequency of "cooperative" behaviors could also have the highest number of conflict behaviors.

But if we define conflict between parties so as to preclude any cooperation between them (in the same time period), we cannot assess the empirical relationship between cooperative and conflictual interactions. Moreover, since isolation may be an alternative to conflict among states, to decide analytically that less cooperation necessarily means more conflict (and vice versa) is to drastically oversimplify possibilities.

My view is that both continua are relevant to cooperation, but come into play at different stages in an analysis. Any single interaction, because it is an interaction, falls somewhere on a

*In order words, a high level of agreement not to interact non-violently is taken to reflect a low level of the sort of cooperative relation of interest here.

cooperation-conflict continuum, not along a cooperation-isolation or a conflict-isolation continuum. Any overall relationship can be viewed in terms of the parties' scores on both a cooperation-isolation continuum and a cooperation-conflict continuum. Groups' scores on these latter two continua may or may not be expected to covary empirically, depending on one's theory.

Other ambiguities revolve around several explicit components of the definition of cooperation offered above.

Cooperation: Framework or Interaction?

Cooperation presupposes a joint framework (norms), and mutually beneficial interaction within that framework. However, we must still ask if differences in cooperation are best assessed by: variation in the scope of the framework; variation in the frequency of cooperative interactions; or, some combination of scope and interactive frequency.

Cooperative interactions presume a framework of agreement, however minimal. The scope of such frameworks could directly covary with the frequency of cooperative interactions between parties. Yet particular cooperative interactions could all be at very low levels of commitment. Even if frequent, such interactions would probably not reflect a high commitment to mutual benefit. At the same time, formal frameworks of apparently high scope (on paper), often are little more than empty promises of cooperation.

In this study we focus specifically on the frequency of transactions and other non-hostile behavioral interrelations, i.e., trade, shared memberships in IGOs, and elite regional political interactions. We will neither (1) weight these behaviors by the scope of the collective agreements they transpire in, nor (2) study the covariation between the frequency of such interactions and the scope of any formal agreements. Hopefully, future research will be able to assess those issues.

Mutual Benefit

There is, however, a second and perhaps more crucial ambiguity in the definition of cooperation. If it consists in interactions generating mutual benefit, how can we identify them? Some analysts argue this requires questioning participants about their perceived benefit from interactions. That reflects an admirable sensitivity to risks of using aggregate data to infer participants' benefits. These analysts would, for instance, rightly deny that, just because citizens live under a politically stable regime, they also have high personal welfare satisfaction. To infer this from the regime's stability seems cavalier and dubious at best.

Though aware of such risks, I believe an aggregate approach can still distinguish cooperative interactions from others by applying several systematic "screening devices" to the behavioral data available.

This approach is by no means wholly novel: three specific and two general criteria have been suggested by others.

Voluntarism

There is nearly total scholarly agreement that cooperative interactions must not be coercive. Without a semblance of choice, i.e., no coercion by the other party to the interaction, cooperation cannot be entailed. This indeed seems a pre-requisite, and procedures for so classifying interactions are specified in Chapter Five and Appendix 1.

Non-Hostility

The second specific criterion concerns the degree of "manifest hostility" in an interaction. It appears plausible that hostility of one party toward another within the interaction itself indicates mutual benefit is not a jointly expected outcome.* Procedures used to select non-hostile interactions are also discussed in Chapter Five.

Symmetry of Flows

Various arguments claim that the chance of identifying mutually-beneficial interactions will increase by selecting only symmetrical, rather than all voluntary, non-hostile interactions. (See Deutsch et al., 1966: 34-36; Nye, 1971:33; Gleditsch, 1970, 7-9.)

*This is not to say some hostile interactions cannot form part of a comparatively cooperative relationship.

There are two basic variants of the argument. One assumes that the most mutually-beneficial interactions are also most equal in the magnitude of directed-behaviors of a given type from each party to the other (see Nye, 1971:33). The other also assumes equality in magnitude of directed behaviors is relevant, but claims the overall symmetry across all types of behavior is really critical (see for example Deutsch et al., 1966:35-36).

Perhaps most problematic in contemporary formulations of such indices is the assumption that if "A" exports a great deal to "B" but not vice versa that this represents a greater benefit for A -- even though B finds it worthwhile to pay for the goods. (A critique of this sort appears in J. Ingram, 1966:4-30). Yet there is some potential value to this symmetry criterion. We neglect it here because the first two criteria (voluntarism and non-hostility) are also important and comparatively straightforward, and because the symmetry question deserves more attention than this initial study can provide.

General Criteria

There are at least two general strategies as well. However, they are only useful if our theories relating to cooperation are precise and empirically reliable. Assume we have a theory we know (from other research) explains variation in the frequency of cooperation. Then, the extent to which our measures of cooperative interactions empirically relate appropriately (as given by the theory) to other concepts in the theory will itself indicate how

well we have identified mutually-beneficial interactions (see for example A. Kaplan, 1964:198-99). A similar approach could be utilized, at least in principle, by reference to a well-tested theory about the effects of cooperative interactions.

## SUMMARY

Cooperation is defined here as voluntary relations, in a framework of collective agreement, which generate mutual benefit. Yet, even given this definition, there is lack of scholarly consensus on several issues: (1) is cooperation properly thought of in its dissociative or associative sense?; (2) should we view cooperation as part of a cooperation-conflict or a cooperation-isolation continuum?; (3) should variation in cooperation be assessed by different levels of a collective framework for interactions or by variation in the frequency of cooperative interactions?; and (4) finally, how can we identify interactions involving mutual benefit for participants?

Though dissociative and associative senses of cooperation do both involve agreement, only the latter allows the sort of permeating, boundary-softening, voluntary interdependence of interest here.

Instead of being mutually exclusive, the cooperation-isolation and cooperation-conflict continua are both relevant, but at different points in the analysis and/or levels of aggregation. A given interaction can fall somewhere on a cooperation-conflict

continuum, but a given relationship may be comparatively low on a cooperation-isolation continuum without necessarily exhibiting a high degree of conflict behavior. Whether it is highly conflictual should be treated as an empirical not a definitional matter.

As to the third issue, high levels of cooperation imply both an extensive framework of agreement (however informal) and extensive interaction in that framework. Yet formal frameworks for cooperation can be only statements of vague hope rather than indicative of actual cooperative activity. We focus on variation in the frequency of cooperative interactions. This is not the only approach, but it is most certainly a basic one.

The fourth ambiguity concerns identifying interactions which generate mutual benefit. The approach in this study might be labelled a structural type. It involves using two operational criteria (voluntarism and non-hostility) to identify cooperative interactions.

This structural approach ideally involves determining how well such measures of mutually-beneficial interactions empirically relate to previously well-tested theoretical determinants and effects of such interactions. In principle, a close fit between such concepts could be considered a validity criterion for the measurement strategy.

I do not presume to adequately measure variation along all dimensions of cooperation with this strategy. Yet results and measurement procedures will be available for scrutiny. And, since the strategy is operationally similar to that in several previous

analyses, at least some of the work here will test hypotheses that until now have only been examined in a non-African context.

Some hypotheses to be examined have emerged from the study of a relatively limited spectrum of inter-nation relations in the contemporary global system. But there have already been calls for systematic tests of them in different settings. For example, Cobb and Elder (1970:141) have argued the need for

> Studies of Latin America, Southeast Asia and Africa...to determine the extent to which the different indicators of regional cohesion used in this study are consistent with our North Atlantic findings.

# CHAPTER THREE

# EXPLAINING INTER-STATE COOPERATION

## INTRODUCTION

In this chapter I discuss five potential determinants of inter-nation cooperation. The first concerns a resource-short unit's incentives to cooperate with potential resource sellers, while the last deals with the impact of external organizations on cooperation between two other units. The other three concern the possible effects of proximity, resource capabilities, and cultural/ value homogeneity. The relevance of these latter three to cooperation is widely assumed, and in previous studies they commanded varying but generally strong empirical support.

## BASIC PERSPECTIVES ON COOPERATION

Nations cooperate for compelling reasons. Along these lines, Henry Teune (Jacob and Toscano, 1964:262) argues:

> Cooperation, alliances, and mergers between political communities -- instances of political integration -- can be explained as the result of rational calculation of payoffs or rewards.

Dougherty and Pfaltzgraff (1971:284) suggest that,

> In general, integration theorists hold that persons adopt integrative behavior because of expectations of joint rewards or penalties.

Certain conditions in social, political and economic life create highly inflexible demands for access to specific resources.

These conditions, coupled with several others, are in fact likely to generate cooperative efforts to gain access to such resources, at least if actors try to realize their preferences.

The rest of this chapter first outlines a set of minimal conditions (Model 1) sufficient to generate cooperative efforts by one rational actor toward another and then modifies those conditions (Model 2) to approximate some real world situations, thus offering the chance to test some of its implications. Subsequent sections analyze the assumptions underlying the four other hypotheses.

Model 1 (M1): A simple Model Leading to Non-Violent Interactions/Bargaining for Access to a Resource

Postulate 1 - units seek to maximize preferences.

Condition 1 - unit $A_1$ has a strong and inflexible preference for acquiring a given resource (e.g., x), but cannot acquire access to nor construct that resource without external contacts.

Condition 2 - unit $B_1$ has a surplus of x (a surplus $A_1$ knows exists) and that surplus is not possessed by any other unit.*

Condition 3 - unit $A_1$ is willing to negotiate with unit $B_1$ for access to x and could (in principle) overcome its shortage by access to B 's surplus.

Condition 4 - unit $B_1$ is willing to negotiate with $A_1$ for access to x because $A_1$ has something $B_1$ can use.

*Note that in this entire essay, from this point on, an "$A_1$" will refer to a resource-short state of the sort defined by Condition 1 above; a "$B_1$" will be defined as a unit with a surplus of the resource the $A_1$ "needs," although more than one $B_1$ may exist (contrary to condition 2 above).

Condition 5 - unit $A_1$ is able (in principle) to negotiate freely with $B_1$ for access to x.

Condition 6 - unit $B_1$ is able (in principle) to negotiate freely with $A_1$ for the best concessions it can get in return for granting $A_1$ access to part or all of its surplus of x.

Condition 7 - unit $A_1$ has resources adequate to purchase access to that resource (x) from $B_1$.

Condition 8a - unit $A_1$ does not have resources adequate to expropriate access to $B_1$'s surplus x or to credibly threaten $B_1$ into surrendering access to its surplus of x.

or 8b - unit $A_1$ does not have the inclination to expropriate access to $B_1$'s surplus of (x) or to threaten $B_1$ into surrendering access to its surplus of x.

Model 1 (M1) may suffice to generate non-violent interactions between $A_1$ and $B_1$, but it is also a tightly restricted model. Consider the first stipulated condition. In principle, I believe that a perceived resource-shortage can lead to one or more of four strategies:

(1) suppress or modify demands for the resource;

(2) substitute another resource using internal means;

(3) expropriate needed resources from areas not politically controlled, i.e., newly discovered/uninhabited/as yet unclaimed territories;

(4) engage in conflictual, competitive or cooperative interactions to gain the needed resource.

Such a resource-short unit might find that external contacts are less costly than internal production or demand-suppression, but rarely will it be completely dependent on external contacts for the resource. Nor do social units often have a completely inflex-

ible demand for a resource; usually, the intensity of demand will vary with its cost.

Or consider M1's second postulated condition. It is unusual for one and only one unit $B_1$ to have an available resource surplus that $A_1$ has both a strong, inflexible preference for and an inability to obtain without external contact. Normally, an $A_1$ has several potential suppliers.

The third and fourth conditions seem generally plausible,* but the fifth and sixth probably apply to legally sovereign social units far more than to colonial regimes.** Whether the seventh condition applies depends on the $A_1$'s available bargaining resources and on the price the $B_1$ demands. The appropriateness of the eighth condition should depend (for 8a) on the relative military capabilities of $A_1$ and $B_1$, and, for 8b, on the likely sanctions by the larger international system if $A_1$ were to try expropriation.

For our purposes, however, the second condition in M1 requires greatest modification: most $A_1$'s with internal resource shortages are <u>not</u> each utterly dependent on a single $B_1$ to alleviate the shortage. We need to specify the resource-acquisition strategies, and their consequences for cooperative

*As we shall discuss below, the plausibility of even these conditions will probably depend upon salient value, belief and attitude compatibilities/incompatibilities between $A_1$ and $B_1$.

**Furthermore, material capabilities for interactions may also depend upon mobilized material and technological resources for such activity.

attempts, that $A_1$'s are likely to try under varying amounts of choice. First, though, it may help to summarize the more general model which has emerged.

(M2) A Revised Model Leading to Non-Violent Interactions/ Bargaining for Access to a Resource

Postulate 1 - units seek to maximize preferences;

Condition 1 - unit $A_1$ has a strong and highly inflexible preference for a given resource (x) and external contacts constitute the least costly means of acquiring access to it;

Condition 2 - a number of units ($B_1$'s) which are accessible to $A_1$ each have surpluses of the given resource (x) which the first has a shortage of;

Condition 3 - unit $A_1$ is willing in principle to negotiate with any $B_1$ for access to resource (x) and could in principle overcome its shortage by access to $B_1$'s surplus;

Condition 4 - each unit $B_1$ is willing to negotiate with $A_1$ for access to x because $A_1$ has something $B_1$ can use;

Condition 5 - unit $A_1$ is able (in principle) to negotiate freely with any $B_1$ for access to resource (x);

Condition 6 - each unit $B_1$ is able (in principle) to negotiate freely with $A_1$ for the best concessions it can get in return for granting $A_1$ access to part or all of its surplus of x;

Condition 7 - unit $A_1$ has resources adequate to purchase access to that resource (x) for a $B_1$;

Condition 8 - the relative military capabilities of $A_1$ and a given $B_1$ and/or the sanctions likely to be imposed by the larger international political system in the event $A_1$ attempted expropriation of $B_1$'s surplus of x are such that neither expropriation nor threat is a viable option for $A_1$ in overcoming its resource shortage.

Given the postulate vis-a-vis preference maximizing behavior in M2, we assume that resource-short states under conditions of M2 will try to obtain resource x as best they can. Thus, under the conditions of M2,

$H_1$ An $A_1$ is likely to interact non-violently* more intensively with at least one available $B_1$ than with other $A_1$s, with unavailable $B_1$s, and even than are $B_1$s with each other, ceteris paribus.

The rationale for $H_1$ is that an $A_1$ has more incentive to interact in this way with at least one available $B_1$ than with others, ceteris paribus. The incentive derives from $A_1$'s need to assure itself access to the resource. In short, $A_1$'s incentive stems from a so-called "first-order" preference -- overcoming its resource shortage. This incentive exists no matter how many $B_1$s an $A_1$ can choose from.

But given this, let us look closely at a situation where several $B_1$s could provide $A_1$ access to resource x, and where each $B_1$ can provide the $A_1$ with sufficient x for its needs. Does $H_1$ fully address an $A_1$'s expected resource acquisition strategy here? Postulate 1 implies an $A_1$ will also try to maximize so-called "second-order" preferences while trying to satisfy the first-order preference. Assume for the moment that $A_1$'s second-order preference is to minimize cost, and also that

*Note that the interactions we are talking about here do not necessarily include the movements between $A_1$-$B_1$ of the resource $A_1$ has need of. We shall clarify this below.

$A_1$'s resource-shortage cannot be satisfied by a one-time "purchase" but instead requires continuing access.

Of course, we might see the rationale behind $H_1$ itself as that $A_1$ uses cooperative attempts to achieve current and continuing access to the resource at a minimum price. In general, though, two sorts of strategies for satisfying second-order preferences seem available to $A_1$ under conditions of M2:

(1) attempts by $A_1$ to somehow create relationships with $B_1$s* which minimize the likelihood of unreasonable future attempts by available $B_1$s to raise the price of access to their resource;

(2) selection by $A_1$ from available partners ($B_1$s) that one** which currently best satisfies $A_1$'s second-order preferences at the same time it provides $A_1$ access to resource x.

In terms of the first type of strategy, it seems theoretically sensible that the less choice $A_1$ has in selecting a $B_1$ (the fewer the possible sources of access to resource x), the more attention $A_1$ will give to sustaining relations -- with its set of possible $B_1$s -- that maximize the chances of continuing access from at least one of them at an acceptable price. But what sorts of relations and with which $B_1$s?

In general, it seems that, ceteris paribus, the fewer options available to $A_1$, the more attention $A_1$ is likely to give to its

*i.e., one or more $B_1$s (units capable of supplying $A_1$ with the resource it has a shortage of).

**This strategy would in effect find the $A_1$ placing all its hopes on its one "best" choice of a $B_1$.

available $B_1$s in order to minimize the cost of acquiring x from a particular $B_1$. But how would such attention help minimize cost? The assumption here is that amicable attempts by $A_1$ toward one or more $B_1$s is $A_1$'s best bet to forestall collusive price increases -- attention given to the extent that competition between resource-suppliers is lacking. This claim in turn assumes that the smaller the competition between suppliers, the less the market itself will minimize price, and the greater $A_1$'s need to "compensate" for the lack of competition. Amicable attention -- cooperative attempts -- are assumed here to help make unreasonable (and potentially collusive) price increases "unthinkable" to $B_1$s. I am arguing, in short, that in a non-competitive market, an $A_1$ is most likely to avoid the effects of collusion among potential suppliers by developing cooperative relations with at least one of them. The main implication of this argument here is that:

$H_{1A}$ The fewer the options ($B_1$s) available to $A_1$, the greater will be $A_1$'s overall cooperative attempts vis-a-vis its set of available $B_1$s.

However, it is still not clear from the above whether an $A_1$ will direct such attention (1) equally toward all its potential suppliers; (2) toward just one potential supplier; or (3) in some other way. Several strategies would be compatible with $H_{1A}$. Here, however, let us consider the second strategy (alluded to above) an $A_1$ might use to satisfy its second-order preferences while also gaining access to x. This, we noted above, would involve $A_1$ selecting from among available partners ($B_1$s) that

one which currently would best satisfy $A_1$'s access to resource x.

Let us assume, for example, that $A_1$, with five available $B_1$s, finds that its transport costs per pound to $B_{1a}$ are much smaller than its transport costs to any of $B_{1b}$-$B_{1e}$. This situation, coupled with the preference maximizing postulate, prompts the hypothesis that:

$H_{1B}$ $A_1$s will tend to select as a supplier (and hence cooperate most intensively with)* that $B_1$ (rather than others) which will minimize the costs of obtaining the needed resource for $A_1$.

This hypothesis stipulates that $A_1$s will select as supplier and cooperate most intensively with its best option, ceteris paribus. It does not assert any particular magnitude of cooperation between $A_1$ and other potentially available $B_1$'s.

On the other hand, even if an $A_1$ can fully satisfy its resource-shortage through contacts with just one $B_1$, we still need to ask if there are any incentives, based on its continuing need for resource x, which might lead an $A_1$ to cooperate with $B_1$s other than its "best" option? One possibility stems from the following: an $A_1$ which ignores relations with all $B_1$s except its current best option might find, despite cooperative attempts

*$A_1$ would, in short, be using intense cooperative overtures to maximize its likelihood of developing and maintaining a relationship with $B_1$ such that $B_1$ would consider arbitrary price increases against the $A_1$ "unthinkable."

toward that best option, that the selected $B_1$ still unilaterally raises the price of x to $A_1$. Yet if $A_1$ had made cooperative overtures toward some other available $B_1$s, its current partner might be less confident of its ability to exact higher prices from $A_1$. It is certainly not clear, however, that $A_1$ would have needed to develop equally cooperative relations with all its available $B_1$s. But what pattern of cooperative attempts would it be likely to employ? One possibility would be a distribution in accord with each available $B_1$'s capacity to lessen $A_1$'s costs of x. In these terms we might hypothesize that:

$H_{1C}$ the smaller the costs of $A_1$'s achieving access to the needed resource through a given $B_1$, the greater $A_1$'s incentives to cooperate with that $B_1$.

Other reasonable distributions exist, however. For example, an $A_1$ might have more incentive to focus cooperative attempts on a few alternatives to its "best" option (still as a function of these $B_1$'s capacity to lessen $A_1$'s costs) than to devote cooperative attempts toward all available $B_1$'s, as $H_{1C}$ asserts.

## Summary

Our discussion of an $A_1$'s interest in maximizing both "first-" and "second-order" preferences through cooperation suggests that, if rational, an $A_1$ will try to achieve three goals in dealing with available $B_1$s:

1) overcoming its resource-shortage per se;

2) assuring the resource at the lowest cost at any current-time;

3) assuring the resource at the lowest cost in the future.

I have argued that under certain conditions, $A_1$s will try to achieve these goals by aiming cooperative overtures toward available $B_1$s. The implications of these arguments are imbedded in the hypotheses just listed. $H_1$ asserts that nation-groups consisting of an $A_1$ and an available $B_1$ are likely to manifest higher intra-group cooperation than are other nation-groups, ceteris paribus. $H_{1A}$ implies that if $A_{1a}$ has five available $B_1$s and $A_{1b}$ has only two, $A_{1b}$ will make more cooperative attempts on the average toward its $B_1$s than $A_{1a}$ will make toward its, ceteris paribus. $H_{1B}$ claims an $A_1$ will make more cooperative attempts toward the $B_1$ best able to minimize $A_1$'s cost of access to x than $A_1$ will toward others, ceteris paribus. $H_{1C}$ says that an $A_1$ will make cooperative attempts toward each available $B_1$ as a function of each $B_1$'s capacity to lessen $A_1$'s cost of x, ceteris paribus, regardless of whether the $B_1$'s resource is being used at the time by the $A_1$.

## Availability of Suppliers

This discussion has just framed a number of hypotheses in terms of "available" suppliers. Yet doesn't "available" merely mean a $B_1$ can supply the resource? If any resource (x) is fully usable in principle by any buyer, then the distinction (available/

unavailable) simply confuses the issue. If not, the contrast is vital.

The "resource" (x) we plan to examine consists of a deep-water seaport. We discuss this in detail in the next chapter. But given a certain kind of state with import/export needs, a preference for such a port cannot be satisfied by substitution under prevailing technological conditions. This preference seems to come as close to fulfilling condition 1 of Model 2 (and M1) as possible:

Condition 1: Unit $A_1$ has a strong and inflexible preference for acquiring a given resource (x), but cannot acquire access to or construct that resource without external contacts.

If we cannot assume an extremely inflexible demand for a resource, alternative assumptions introduce an order of complexity which makes outcomes very difficult to predict. Examining the hypotheses just discussed in terms of this resource should drastically simplify tests of the model's and hypotheses' basic plausibility. Note, however, that though many nation-states have deep-water seaports, relatively few ports are logistically relevant to a given $A_1$'s import/export needs. For instance, a $B_1$'s port may not be accessible to $A_1$ except via sea-routes. Or use of a $B_1$'s port for imports/exports could involve $A_1$ obtaining rights-of-way across so many intermediary and autonomous units as to make the particular port practically irrelevant for $A_1$. For such reasons we distinguished between available and unavailable $B_1$'s. In the next chapter we make testable assump-

tions about those seaports effectively "available" for a given $A_1$, beginning with the notion that non-contiguous $B_1$s are in practice "unavailable."

PROXIMITY

Neither hypothesis $H_{1B}$ nor $H_{1C}$ predicts any particular role for "second-order preference-maximization" as a determinant of cooperative interactions in the absence of first-order preferences. Rather, only if $A_1$ has a resource-shortage (as in M1), do $H_{1B}$ and $H_{1C}$ assert $A_1$ will interact most intensely with the $B_1$ which can both provide x and also, say, minimize transport costs for $A_1$ in getting x, ceteris paribus. In short, neither $H_{1B}$ nor $H_{1C}$ asserts that "relative ease" of contact between two units itself creates incentives to engage in high levels of contact. $H_{1B}$ and $H_{1C}$ instead stipulate interactive effects* between two kinds of characteristics of nation-groupings in their relations with the chances of cooperation in the grouping.

Interactive effects have received little attention in the empirical literature on internation cooperation. There is instead a pronounced tendency to test as many additive hypotheses as possible before considering them. Yet that may not be our best ap-

*"Briefly, a first-order interaction of two independent variables $X_1$ and $X_2$ on a dependent variable Y occurs when the relation between either of the X's and Y (as measured by the slope byx) is not constant for all values of the other independent variables" (Blalock, 1969:155). See Chapter Six (below) for a fuller description.

proach: even common sense suggests that variation in the geographic proximity of A to B will affect the chances of A's cooperation with B only if there are otherwise equally high incentives for A to cooperate with any given B, rather than some such general relationship as:

$H_2$ The more geographically proximate two nations, the more they will tend to cooperate with each other, ceteris paribus.

Geographic distance -- the shortest traversible distance between two points -- is only a measure of certain costs of interactions between two parties; it offers no clue by itself to the benefits from such interactions. Geographical proximity does not seem by itself to provide an incentive for interactions. However, we can hardly ignore the studies which found empirical relationships between geographic proximity and the frequency of internation transactions and non-violent exchanges. Thus, Cobb and Elder (1970:89) examined linear relations between proximity and eight indicators of "mutual relevance" among logical pairs of 49 nations using data from 1955. They conclude that:

> There is a distinct tendency for geographically more proximate nations to exhibit greater mutual relevance.... Proximity has its greatest impact through the sharing of a common boundary.

Do such findings indicate a flaw in the claim that geographical proximity does not provide incentives to interact? No. Cobb and Elder's analysis did not begin to assess whether other, analytically separate independent variables may have

a) covaried with proximity, thereby potentially producing the observed relationship between proximity and interactions; or

b) been virtually invariant across the sample and been at levels providing more or less equal incentives for all units to interact with all other units, except for the different costs of interaction due to varying geographic distances.

At the same time, such findings lead us to wonder whether a linear additive model of the effects of (1) a dyadic characteristic of resource-shortage -- resource surplus and (2) proximity, is as effective in accounting for variation in dyadic cooperation as an interactive model of these two variables. Consequently, we will examine both forms, but with higher hopes for the interactive model -- for the reasons discussed above.

RESOURCE CAPABILITIES

Another hypothesis which has received substantial prior attention involves the notion of "capabilities for communication/interaction." Such capabilities are asserted to vary directly and strongly with the frequency of communication/collaboration between units. This conjecture developed, it appears, from the commonsense insight that communication entails costs and thus requires certain resources.

> ...communication involves certain loads, or burdens, for the communication units. The costs of communication tax both the capabilities and the attention of the units involved. Therefore, for effective relations to be maintained, capabilities and attention must be at least commensurate with the level of communication load (Cobb and Elder, 1970:8).

This tends to be the rationale for the hypothesis that:

$H_3$ The greater two units' mobilized economic/administrative capacities, the greater the extent of their non-violent interactions with each other,

as though the "capacity" for performing a given act necessarily converges with the inclination to do so.

CULTURAL HOMOGENEITY

A third hypothesis drawn explicitly from the literature on international cooperation seems to stem from two basic notions: (1) the more orientations/characteristics we share, the easier it will be for us to cooperate; (2) the more orientations/characteristics we share, the more advantage there will be in our cooperating. Many scholars nonetheless argue that the plausibility of either notion will depend on the types of characteristics shared. They base this claim on the convictions that (a) certain critical differences between individuals are far more likely to generate obstacles (mistrust, hostility, fear) to cooperation than others, and also that (b) certain similarities are far more likely than others to engender rapport. But <u>which</u> characteristics will be more critical, and will the same characteristic be as salient for one group of individuals as for the next?

These are difficult questions, and we cannot hope to treat them comprehensively here. We should note, however, that the common assumption is that some one overall measure of cultural homogeneity can effectively tap the most salient characteristics. This has led in turn to the following type of hypothesis in a number of empirical studies:

$H_4$ the greater the cultural homogeneity of two social units, the greater the likelihood of cooperative interactions between them, ceteris paribus.

"Culture" is a very broad, rather amorphous term, and there is much more that needs to be said about assigning empirical content to the concept of cultural homogeneity. Now, however, it is important to consider the possibility that shared culture may ease difficulties of engaging in non-violent interactions without itself increasing the chance of such interactions. For example, if $A_1$ can satisfy its resource shortage through either $B_{1a}$ or $B_{1b}$, and $A_1$ and $B_{1a}$ share a common language while $A_1$ and $B_{1b}$ do not, linguistic homogeneity may guide $A_1$'s selection between $B_{1a}$ and $B_{1b}$. But if $A_1$ cannot satisfy a resource shortage through $B_{1a}$ even though $A_1$ and $B_{1a}$ share a language, $A_1$ may not be more likely to cooperate with $B_{1a}$ than with $B_{1b}$. This sort of relation between cultural homogeneity and cooperative interactions is quite different from that asserted in $H_4$. We are interested here in both potential relationships between shared culture and cooperative interactions, and will discuss some ways of examining them in the next two chapters.

EXTERNAL FACTORS

Cooperation between two states does not take place in an international vacuum. Joseph Nye (1968) argues, for example:

> External factors of the "active" variety, involving deliberate decisions by those outside the region to help or hinder integration, include among others: governments, international organizations, private foundations and private investors. (p 415).... Some of the exter-

> nal factors that affect an integration process (the "passive" ones) are of such a broad and general nature that whether they exist or not is a matter of historical fortune (p 414). Of the "passive" external factors that establish the climate of integration, the most important (for Central America) have been the geographical position of Central America in relation to the U.S.; the conditions of the international economy; and post-war trends in international organization. A possible fourth factor, fear of direct or indirect subversion from the Castro government of Cuba, has played a role in enhancing cooperation in defense matters and in stimulating the U.S. and, at times, Central American governments, but it has not been nearly as important to the Common Market as the other three factors (p 414).

In sum, Nye says:

> A case can be made that favorable external factors were a necessary condition for the early success of Central American economic integration. But arguing that they were a necessary condition is far from saying that they were sufficient. Without Central American initiative and for the other reasons discussed, external factors would have been of no importance at all (p 420).

This suggests to Nye that external factors were not sufficient to generate an economically integrated unit, at least not in Central America. According to Nye, Central Americans played a "uniquely important role," an assertion that may be more flattering to Central Americans than it is enlightening.

Case studies of integration processes can be very important sources of hypotheses, but their frequent limitation is in failing to provide variation to assess whether conditions postulated as important actually do relate to such outcomes. This is not an inherent limitation, (cf. Caporaso and Roos, 1973:1-37 and passim) but some very knotty sample selection issues attend the use of such designs.

At an opposite extreme from the case study approach to external factors are several rather atheoretical recent efforts to examine relationships between the extent of similarity two states (A and B) have in their linkages with Nye's "active" external factors and interactions between A and B. For example, Rudolph Rummel's (1972) Dimensionality of Nations Project used A and B's "similarity of Cold-War bloc-affiliation" as one among hundreds of potential determinants of A and B's cooperation/conflict.* But little theoretical rationale for such a linkage was given, nor any explanation for why such a relationship between variables might vary across types of international systems. This sort of theoretical work may not have been Rummel's self-assigned task, but it certainly is important in understanding international processes now.

The Role of External Factors

In general, external factors constitute pressures which may stimulate, reinforce, or deter collective actions of various kinds between the actors in a referent system. Hence, actors in a system develop beliefs about the probabilities that various sanctions will be applied by the "external environment" in response to their actions. Clearly, also, decision-makers are more or less aware that historical interactions (or the lack thereof) between their

*For a history and critical review of the DON project, see G. Hilton (1973). For a description of the "Cold War" bloc affiliation measure used in the DON project, cf. T. Park (1972:346-347).

units and the external environment have had multiple, complex effects upon their units.

In general terms, it is plausible that the relationship A has had with Y will influence whether A will cooperate, compete or fight with B. If A and B are considered a system, Y may be considered part of A-B's environment.

In these terms, the contacts A has with Y could coercively constrain A from cooperating with B. Y could in principle achieve this by using superior military resources. Y might allow A to cooperate with C, D, E, etc., but A might or might not "prefer" to cooperate with these units.

On the other hand, Y might provide incentives for A and B to cooperate with each other. Or Y could interact with both A and B so as to mold internal material conditions gradually in both A and B and leave them with few "internal" incentives to cooperate with each other. Or Y might interact with A and B so as to eventually provide A and B with substantial internal incentives to cooperate with each other. A given Y could in principle act so as to socialize elites in A and B into a world-view that strongly facilitated cooperation between A and B (including cooperation to try to encourage Y to provide them with better aid, terms of trade, etc.), or into a world-view strongly discouraging cooperation between A and B. Y could socialize elites in A and B into a world-view encouraging cooperation between A and B, but Y might simultaneously have molded A's and B's economies so as to leave them with few material incentives to cooperate economically. At still another

level, A and B may both have similar patterns of contact with Y, yet Y may not be capable of nor act so as to influence cooperativeness in the given system, A-B. In this latter case, A and B's similar orientations toward Y may only indicate that A and B share many orientations of interest; even if A and B's similarity of orientations toward Y predicts A and B's cooperativeness with each other, we could hardly infer that affected cooperation between A and B.

In the contemporary international system there is obviously a wide range of organizations external to any given dyadic unit A-B. This variety of external forces is so bewildering in even its possible net effects upon a given unit, A-B, as to lead almost immediately to despair about the prospects of systematically coming to grips with it. Yet one arena where we might profitably examine such possible effects is in relations among newly independent states which have varied in the similarity of their historic relations with particular metropolitan powers.

It is true that not all states have been "colonized." So a study of possible effects that variation in patterns of colonial affiliation have upon relations among formerly colonized units will not necessarily have broad relevance to a general assessment of the role of external factors as determinants of inter-state cooperation. Yet so little emphasis has been given to their potential role, and particularly to the possibility that the potency of such factors might vary over time in their effects, that this analysis seems justifiable -- despite its limitations.

Colonial rule implies domination of one unit by another. A colonizing agent may be able to exert many of the same kinds of sanctions upon its colonized units as a "bloc-leader" is able to exercise upon subordinate allies in a polarized international system. Though there may be limits to this analogy, it could also have useful implications for understanding any effects of bloc-affiliations on cooperation between two units, A and B.

Consequences of Colonial Domination

Colonialism has had many consequences for colonized peoples, colonizers, and other participants in international affairs. These consequences have generally been most unfortunate for the colonized peoples, but it is not my intent in this essay to moralize. Instead, I plan first to suggest some plausible effects of colonial rule on relations between groups of colonized peoples and for relations such groups may have with other actors in the international system. Second, I want to specify how we might identify such consequences.

Consider the idea that:

$H_5$ The greater the degree to which two states shared a "colonial experience" vis-a-vis the same metropole, the greater the frequency of those two states' cooperative interactions with each other.

Such an hypothesis, suggested by several scholars including Povolny (1966:297-318), Organski (1958), Cobb and Elder (1970:40), clearly assumes that if two groups of people have been colonized by the same metropole, this "common" experience will generate stronger incentives to cooperate than will "separate" historical

experiences, ceteris paribus. It is not being colonized per se which is assumed to generate greater cooperative orientations; it is colonization by the "same" agent. Different colonizers are thus assumed to have different effects upon colonized units.

Yet if two formally distinct metropoles were each only "holding companies" for a common super-organization, and if the only difference between metropole X and metropole Y was their name,* this hypothesis would clearly seem less plausible than a first glance would suggest. In short, the concept of a shared colonial experience through the "same" metropole does not itself specify the aspects of such an experience likely to be important in generating cooperative orientations between A and B (two units colonized by the same metropole) toward each other.

More basically though, the belief underlying $H_5$ appears to be that colonizers generally engage in competitive alliance formation -- efforts to extend their nation's property and cultural system, over and above those of any competitors in the international arena. The effects of such competition are assumed to include molding the colonized individual's orientations so to form a kind of "international" community -- consisting of the metropole and its colonies -- all with greater compatibilities between them than across imperial lines.

*This is an argument which follows the reasoning about the status of proper names in scientific explanation as traced in Przeworski and Teune (1970:29).

Colonizers have in fact generally encouraged colonized groups to adopt their language and symbol systems as well as their formal political institutions (or some rough variant thereof). They have often also brought technology, trading practices, forms of administration, moral codes and a host of attitudes, beliefs and artifacts in their conquests. Indeed, to the extent a colonizer brought a roughly common "culture" to formerly disparate peoples, however unintentionally, that colonizer may have eased difficulties in communication and collaboration across large and complex cultural distances. And in providing -- albeit unwittingly -- a common focus for the colonized peoples' political independence activities, a given colonizer may well have provided incentives among colonized elites to cooperate with each other -- to enhance their collective bargaining power vis-a-vis the metropole. Similarly, even after political independence, since ex-metropoles have often provided aid, technical and policy guidance and served as major trading partners to many of their former colonies, it is plausible that a metropole (or ex-metropole) may offer more (at least indirect) incentives for its former colonies to cooperate among themselves than to cooperate with, for example, states that were once the colonies of another metropolitan power.

Yet many countervailing influences could reduce these incentives.* For example, several ex-metropoles may decide to consoli-

*Although in this essay we generally use "$A_1$" to refer to a resource-short state and $B_1$ to mean a resource-surplus state, in this paragraph the subscripts are merely used to distinguish one national actor from another.

date their aid-giving programs (if any). Suppose a simple international system includes two imperial powers, $A_1$ and $B_1$, and ten satellite-subordinate states -- where $A_2$-$A_6$ are satellites of $A_1$ and $B_2$-$B_6$ are satellites of $B_1$. Also assume that at time $t_1$ leaders of $A_2$-$A_6$ believe they can get aid from $A_1$ (but see no prospect through $B_1$), while leaders of $B_2$-$B_6$ see a possibility of aid through $B_1$ (but none from $A_1$). $A_2$-$A_6$ may well have an incentive to coordinate their own aid-acquisition strategies -- since they all will be dealing with the same potential donor $A_1$, while $B_2$-$B_6$ may have a comparable incentive to coordinate -- since they will all be dealing with $B_1$. $A_2$-$A_6$ therefore may have less incentive to interact with $B_2$-$B_6$ than with each other, and vice versa. But if $A_1$ and $B_1$ merged their aid programs, $A_2$-$A_6$ could well have more incentive to interact with $B_2$-$B_6$ (and vice versa), and thus relatively less incentive to interact with each other to the exclusion of $B_2$-$B_6$ than they did before. The effect of shifting to a joint aid program might thus be to reduce incentives among ex-colonies of the same metropolitan power to cooperate more intensely with each other than with other political units. Secondly, elites from a number of ex-colonies (from two or more former empires) may simply decide to bargain collectively with elites in the several ex-metropoles for better terms of aid, trade, etc. Third among countervailing influences, consider the possibility that a given metropole has had historical relations with its colo-

nies which have produced a group of economies with even less to trade among each other than each has to trade with at least some former colonies of another imperial camp.

Along the lines of this last point, Galtung (1971:81-117) argues that a metropole virtually always behaves so that its colonies will not have economies complementary* enough to generate trade with each other. Galtung claims that the colonies become more and more specialized to the needs of their given metropole, not each other. Although a given colonial economy might be quite specialized, Galtung says a second colony's economy (linked to the same metropole) will have virtually no consumers for the first's product(s).** In sum, he argues it is very unlikely that two states which share (or shared) a metropolitan linkage will be more likely to cooperate economically than will other units, ceteris paribus. There is some plausibility to this argument, certainly enough to make it naive to suppose that $H_5$ will necessarily obtain across all dimensions of cooperative relations. Yet even if Galtung's argument receives empirical support, states sharing a (former) colonial affiliation may still be more likely to engage in political cooperation -- and for some of the reasons suggested

*"Complementarity" refers here to a relational condition in which one economic unit (A) is producing something a second unit (B) has "need" of (but which, at best, B is not producing as efficiently as A).

**In short, the argument here is that product specialization (by both A and B) by itself does not necessarily produce a condition of complementarity between A and B.

above. Particularly in the immediate post-independence period, elites in an ex-colony may well view other elites who sought independence from the same metropole as "natural allies" in many other tasks.

A dyadic characteristic such as having shared or not shared a colonial experience with the same metropole may vary through time in its potency as a predictor of cooperative interactions between the two states. If it should vary, this clearly indicates the need to develop techniques to estimate the underlying changes that might heighten or reduce an observed relationship. Along these lines, consider that elites in the nations whose cooperative relations are being examined may change their perceptions of their particular ex-metropole as their most likely source of development aid. Such a change could have major implications for the support lent the hypothesis that the "more" two states shared a colonial experience via a common metropole, the more the cooperation between those two states.

It is my basic view that "shared colonial affiliation" is an umbrella term for a host of processes which are hardly confined to formal subordination to a common external organization. The role of "external factors" in affecting cooperative processes within a given system (A) seems likely to vary according to a number of conditions, including (1) extent of isolation of A from the particular external actors(s) in question; (2) the duration and types of contacts A has had with the external actor(s); and (3) the re-

lative capacities of the external actor and A to influence each other's behaviors.

For this study, however, my fundamental concern with external factors is to insure that in assessing the relation between one state's resource dependence on another and cooperative interactions between them ($H_1$), we are not merely observing the effects of shared colonial experience (with a common metropole). In Chapters 5 and 6 we discuss how we guard against that possiblity.

Yet it is also important to note that the characteristic of having shared "colonial" status under a particular metropole may or may not imply: (1) equal "metropolitan" efforts to effect changes in each colony (or ex-colony); (2) comparable changes in the specific colonies. For example, a metropole Y may have several colonies (A, B, and C), but Y's trade links with A may be much greater than Y's links with C. Or Y's contacts with A could result in A's elites acquiring greater fluency in Y's language than do elites in B or C. One explanation for such differences might be that Y had colonial ties with A for longer than it did with B or C. Alternately, Y's interest in intense, stable relations with A might merely have been greater than with B or C.

The fact that there may be substantial variation in the "meaning" of "shared colonial affiliation" from one dyad to another is likely to have major consequences for the plausibility of $H_5$. Clearly, also, other (non-colonial) powers may affect whether (and how much) members of a given system (A-B) will cooperate. In Chapter 7 we will therefore develop a general means of

assessing the impact which a range of external actors have on cooperation within a referent dyad.

CHAPTER FOUR

# RESEARCH DESIGN AND CONCEPT MEASUREMENT

## I. PRELIMINARIES

Although this subject is not amenable to experimental treatment, we are not condemned to a wholly casual empiricism. This chapter specifies measures of independent variables used in our hypothesis tests. First, however, some information about the sample used and the method of analysis should be helpful.

### A. Research Setting

The research "setting" in this study consists of selected relations among all possible non-directional dyads (153 pairs) of 18 African nations during 1962-68. The nations were drawn from East, Central, and West Africa, but exclude North and Southern African states.* The reasons for this exclusion were lack of data and/or a design precluding inclusion of states that were politically non-autonomous between 1963-68.

To assess an hypothesized linkage between variables, we need variation on at least the independent variables. Yet, how much is "adequate?" Among these dyads there is clearly variation across the traits of interest, but less than would be found in a random, global set of (153) internation dyads. This is not a critical impediment. However, if a given hypothesis is not supported here,

*The sample is listed in Chapter One, p. 1.

it may be that the dependent variable has not "responded to" such differences.

To guard against this "false-negative" result, a setting with the greatest possible variation in the independent variable(s) might be ideal. We have not used quite that approach, dealing as we do only with African states. Nonetheless, since there is a fair range of variation across our sample, and because of a prime interest in how well several explanations of interstate cooperation account for African patterns, we focus on these dyads.

B. Research Design

The hypotheses in Chapter 3 could be examined in several different ways, most notably with a cross-sectional or longitudinal design. In cross-sectional designs, variation is observed over a set of cases at one point in time. In a longitudinal design, variation is observed in the same case over time. In either version an hypothesis is "tested" by assessing whether one variable is systematically related to another.

The design used here is best described as cross-sectional with replications on a panel of dyads -- using three different sets of observations (for 1962, 1965, 1968) on the same variables for the same cases.

No hypothesis can be assessed without comparable measures across cases for at least some of the critical concepts. It is to specification of such measures that we now turn.

## II. $H_1$ (RESOURCE DEPENDENCE BETWEEN NATIONS)

To analyze $H_1$, we assume that, for this sample and time-frame, any dyad unit comprised of (1) a land-locked (LL) nation and (2) a contiguous nation with a deep-water seaport (CP) has high resource complementarity in (X) as specified under the conditions of M2.* The plausibility of this claim rests on several secondary assumptions which themselves require justification.

### A. The Conditions of M2

Admittedly, not all LL nations necessarily require access to seaports. The following LL states seem to have only minimal such needs:

(1) those capable of autarky;

(2) those with import/export preferences of a low bulk/weight but high value nature, e.g., diamonds;

(3) those able to rely only on land-routes to export markets.

However, none of the LL states in this sample appears to satisfy any of these criteria.

First of all, the trade each did during 1962-68 with non-African states comprised a large part of each one's total economic activity (Morrison et al, 1972:144).** During the 1960's

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*See Chapter 3 for details.

**Principal trade partners were as follows:

Central African Republic (CAR) -- France and EEC, U.S., Israel
Chad -- France, U.S., Japan, Cameroon, CAR, Nigeria
Mali -- France, China, U.S.S.R., Senegal, Ivory Coast, Ghana
Uganda -- Britain, W. Germany, Japan, Italy, Canada, Kenya
Upper Volta -- France, U.S., Ivory Coast, Ghana

none of these states relied on low-bulk, low-weight-high value imports or exports (Morrison et al, 1972:199, 204, 294, 365, 372). Finally, none of these five states could realistically transport needed imports/exports even largely by land alone: costs would have been too high, and such a restriction also would have meant developing trade relations (import/export markets) with many of the same ported states which we are here examining the plausibility of their avoiding.

Nations needing access to a seaport should try to acquire it at the lowest possible cost. In general, contiguous states with ports can probably offer lower cost access than other options, i.e., combinations of one or more intermediary non-ported state(s) and a non-contiguous ported state.* Contiguous ported nations generally also seem to offer the lowest risk option: such an arrangement only requires amicable relations with one other political unit.

*It is possible that the contiguous state could only offer a seaport more geographically distant than that of a non-contiguous state, or that the terrain between the land-locked and contiguous state might be practically impassable. Contiguous states' ports need not necessarily be of lowest cost. Yet other general criteria appear too broad, irrelevant, or narrow. For example, we might argue that any ported unit accessible by non-sea routes could qualify. But this would include many wholly irrelevant ports and therefore be too broad a criterion. We might argue, alternatively, that any ported unit closer than, say, 500 miles and accessible by non-sea routes is "available." Yet this would present obvious problems if, for a given LL, the closest ported unit was 600 miles away. A criterion this arbitrary would be patently unreasonable and irrelevant. On the other hand, a criterion which simply specified the actual options considered by a land-locked state's elites would be too narrow. We want a general criterion that predicts the options relevant to a specific land-locked state.

Can we assume that an $A_1$ needs ongoing and therefore relatively durable access to a contiguous seaport? Although one cooperative attempt might suffice to guarantee access, this seems unlikely. Why? After all, neglect by a land-locked state of such relations could lead a ported unit to impose harsher costs of access, an outcome that $A_1$ will seek to avoid, at least if it believes that the costs of avoiding neglect are less than the costs of $B_1$'s attempts to impose harsher terms. In effect, we assume that elites in an $A_1$ operate with such a belief.

Conditions 3 and 4 can be treated rather summarily here. As a benchmark, examples of comparative non-willingness to negotiate terms of access would be Mozambique's decision to close its borders to Rhodesian imports/exports and Kenya's 1976 decision to do the same vis-a-vis Uganda. No borders were closed a priori to communications, exchanges, etc., by any other state in this sample toward any other during the time period to be examined, indicating a favorable general climate for negotiating terms of access by an $A_1$ to a $B_1$'s seaport facilities. While relations between certain sample states were more strained than those between others during this period, conditions 3 and 4 do not preclude strain; they merely require that an $A_1$ and a $B_1$ be willing in principle to negotiate over access to $B_1$'s seaport. This condition appears to have been satisfied.

Conditions 5 and 6 warrant close attention here. Autonomy in foreign policy formulation is not normally available to colonial

regimes. At least in general, metropoles did not allow African colonial regimes to bargain among themselves for terms of access.* Land-locked French colonial regimes were virtually assured of access to the closest feasible French colonial seaport. The same set of conditions most assuredly applied in the British colonial empire in Africa.**

But as African ported states gained political independence, they could in principle bargain for access to their ports. In practice, use of this power may have been more prevalent at the end of the decade -- as the vulnerability of land-locked states' positions became clearer. Consequently, $H_1$ may hold more strongly as the decade progressed. We examine this possibility in Chapter Seven.

Condition 7 stipulates that a given $A_1$ has resources adequate to purchase access to resource (X) from any particular accessible $B_1$. In this sample of states and during the 1960's (at least), it seems safe to assume that Condition 7 obtained.

As for Condition 8, access to a seaport cannot be expropriated on a one-time basis or in and of itself. To use the resource requires right of way; since "access to a port" is not a moveable commodity, expropriation would necessitate at least partial armed occupation of the ported-state. Such a take-over (by a LL African

*cf. R.S. Morgenthau (1977:83-86).

**cf. L. Rubin & B. Weinstein (1974:50-62), and Morgenthau, Ibid.

state) was almost certainly not possible during this period. LL states in this sample were militarily inferior to contiguous ported states. In addition, the OAU commitment that evolved by 1963 to protect member states' territorial integrity would have militated very strongly against such an action.

It may not be as obvious, however, why threats could not have been usable (and quite effective). Perhaps a mixture of threats and cooperative attempts would have been even more effective. Given the generally inferior military capabilities of the LLs, I believe threats would not have been viewed as credible. However, this is actually a stronger assumption than we need. All we need to assume is that <u>if</u> a state used threats in attempts to gain port access, its cooperative attempts positively covaried with such threats. Under the circumstances, this does not seem an unreasonable assumption.

<u>B. $Hl_T$ and $Hl_M$</u>

Let us assume, given the above, that any sample dyad comprised of an LL and a CP nation is a unit ($A_1$-$B_1$), with high resource complementarity in (X). How can we measure dyadic variation on this trait?

For statistical analysis, we create a scale, labelled LPC, which scores dyads as:

1 if a dyad consists of an LL and a CP; 10 if not.

Note that while LPC posits an <u>interactive relation</u> between the dyadic traits of land-locked/ported status <u>and</u> contiguity as they

relate to dyadic cooperativeness, H1 does not require an interactive effect. If land-locked/ported sample dyads (contiguous or not), exhibit more cooperative interactions than others, ceteris paribus, this too would support H1. In fact, this prediction is the simplest version of H1. We are interested in both. For clarity below, the interactive prediction is labelled $H1_I$; the basic prediction is referred to as $H1_M$.

To examine $H1_M$ empirically, we created a scale (LL/SP) which assigns land-locked/ported dyads the score 1 and all others the score 10.

C. $H1_A$

Hypothesis $H1_A$ is based on the notions that:

(1) the weaker the competition in a market, ceteris paribus, the less likely potential suppliers will be forced by competition to minimize the price of a resource they sell;

and (2) the weaker the competitive force on suppliers to minimize the price of a resource, the stronger buyers' incentives to discourage sellers from arbitrary, "unreasonable" price increases."

$H1_A$ contends that a buyer's primary tool for influencing potential sellers as in (2) above is cooperative attempts toward potential sellers. It does not stipulate that the buyer will equally distribute such attempts among its available, potential suppliers. Rather, it asserts that:

> the smaller the competition in a market a buyer must participate in, the greater will be the amount of that buyer's overall cooperative attempts vis-a-vis its set of potential suppliers -- of resource (X).

How can we assess this proposition? To begin, how do we categorize the market competitiveness in (X) relevant to any given sample dyad? I assume that the fewer the potential suppliers of (X) available to an $A_1$, the weaker the competition in the market. Assuming this, $Hl_A$ implies that:

$Hl_A$ the fewer an $A_1$'s available potential suppliers ($B_1$s) of X, the greater the average number of cooperative attempts $A_1$ will direct at suppliers, ceteris paribus.

To assess the extent of supply alternatives available to an $A_1$, we proceeded as follows:

(1) If a dyad consists of an $A_1$ and a $B_1$ and the $A_1$ has many possible suppliers, the dyad ranks low on the DEPl(I) scale.

(2) If the dyad consists of an $A_1$ and a $B_1$ and the $A_1$ has few possible suppliers, the dyad ranks high on DEPl(I).

(3) If the dyad does not consist of an $A_1$ and and a $B_1$, it ranks lowest on DEPl(I).

The number of possible suppliers for an $A_1$ is then simply taken to be the number of an $A_1$'s contiguous ported (CP) states. For statistical analysis, it was most convenient to use an inverted form of DEPl(I), i.e., the "DEPl" scale.* Given this, $Hl_A$ posits a

*If the dyad is an LL/CP and the LL has:

| | DEPl(I) | DEPl |
|---|---|---|
| 3 conceivable CPs | 30 | 1 |
| 4 conceivable CPs | 20 | 10 |
| 5 conceivable CPs | 10 | 20 |
| If the dyad is not an LL/CP | 1 | 30 |

high inverse correlation between DEP1 and the magnitude of dyadic cooperative attempts, ceteris paribus. The "controls" used in examining this prediction are discussed in Chapter Six.

D. $Hl_B$ and $Hl_C$

In the third chapter I suggested that a resource-short state will try to satisfy "second order preferences" while overcoming its shortage per se. In brief, a buyer will try to get the "best deal" it can. But what is a "best deal"? Minimum financial cost? Minimum cost coupled with the greatest assurance against unreasonable future price increases? Minimum cost and maximum cultural compatibility? The package of second-order preferences that a set of buyers values most is difficult to specify theoretically, if indeed there is just one such package for all "buyers" we examine here.

Nonetheless, various sections of the last chapter intimated that: (1) "minimizing transport costs" might be a general and salient second-order preference among buyers trying to overcome shortages in (X); (2) buyers also try to select a supplier that would avoid unreasonable price increases; and, (3) buyers might try to satisfy this latter preference by directing cooperative attempts at both their current supplier(s) as well as other, potential suppliers.

Neither $Hl_M$, $Hl_I$, nor $Hl_A$ makes an explicit prediction as to which potential suppliers an $A_1$ is most likely to cooperate with/

select as supplier. $Hl_B$ and $Hl_C$ do just that, although the notion of "second-order preference maximization" is hardly explicit enough by itself.

"Minimization of current financial costs of access" does seem a generally credible type of second-order preference. A measure of transport costs per unit of volume/weight between an $A_1$ and a given $B_1$'s seaport may be a reasonable estimate of how well $A_1$ can minimize current financial costs of access to X using the given $B_1$'s port.

Transport costs are a complex function of several factors, including at least: distance, transport mode, terrain, seasonal conditions, insurance costs, etc. The only information we have here, however, pertains to the geographic distances between sample countries. However, it is still not immediately clear which geographic distance we should utilize.* Here we rely on a measure

*Possibilities include the distance between: (1) $A_1$'s capital-city and $B_1$'s major ports; (2) $A_1$'s capital-city and $B_1$'s closest sufficient port; $A_1$'s major productive area (i.e., source of export-bound goods) and either (3) $B_1$'s major port or (4) $B_1$'s closest sufficient port; a point midway between $A_1$'s two largest productive areas and (5) $B_1$'s major or (6) closest sufficient port. More complex measures might be appropriate too, such as one which does not assume that the geographic origin of $A_1$'s export- bound goods is the final "internal processing" site prior to export of those goods.

of surface distance between the capitals of an $A_1$ and a given $B_1$.* Though this is a crude measure, should we find support for $Hl_B$ or $Hl_C$ with it, more refined indices are apt to bear substantial rewards. If no support emerges, any support using better measures would probably not be particularly strong anyway.

In these terms, we assess $Hl_B$ and $Hl_C$ assuming minimization of current financial costs of access is the overriding second-order criterion $A_1$s use to make cooperative attempts toward available $B_1$s.

$Hl_B$ predicts an $A_1$ will make the largest number of cooperative attempts it directs at a potential supplier toward the one that also can maximize $A_1$'s second-order preferences. $Hl_B$ will receive support if there is a significant inverse relation between

(1) a scale which ranks as lowest those dyads formed of an $A_1$ and its "geographically closest" contiguous port state; as highest, any other sample dyads;

(2) a scale (or scales) ranking dyads by their magnitude of intra-dyadic cooperative attempts.

The first type of scale alluded to here represents the hypothesized interactive effects of "resource dependence" and "minimal transport costs." However, there are several ways of measuring

*Calculating geographic distances between capitals of the 18 sample states involved straight-line measurement of distance on the American Map Company's World Map (#9577) -- a Mercator Projection. All measurements made were within Lat. 15 North and Lat. 15 South, so the distortion problems inherent in measuring distances over great latitudinal variation were avoided.

resource dependence, even in terms of land-locked ported states' dependence. To assess $H1_B$, therefore, we use two scales, LPC-CLOSE and DEP1-CLOSE.*

*LPC-CLOSE weights a dyad's LPC(1) score by a second scale -- "CLOSE." CLOSE itself is devised so that all LL/CP dyads' LPC(1) scores are multiplied by 2 if the CP in the dyad represents the LL's closest CP, and are multiplied by 1 (left unchanged) if not. LPC(1) times CLOSE yields: LPC- closest = 20; LPC- not closest = 10; not LPC = 1. For testing purposes, however, we inverted this scale to get LPC-CLOSE: not LPC = 20; LPC- not closest = 10; LPC- closest = 1.

DEP1-CLOSE is the inverted product of a dyad's DEP1(1) scale and the CLOSE scale:

If dyad is an LL/CP and the CP is:

| | DEP1-CLOSE(I) | DEP1-CLOSE |
|---|---|---|
| closest of LL's 3 CPs | 60 | 1 |
| not closest of LL's 3 CPs | 30 | 20 |
| closest of LL's 4 CPs | 40 | 10 |
| not closest of LL's 4 CPs | 20 | 30 |
| closest of LL's 5 CPs | 20 | 30 |
| not closest of LL's 5 CPs | 10 | 40 |
| If dyad is not an LL/CP | 1 | 60 |

$Hl_C$ claims that an $A_1$ distributes cooperative attempts among potential suppliers according to their abilities to maximize $A_1$'s second-order preferences. $A_1$ may, after all, have incentives to make such attempts toward more $B_1$s than it currently uses.

$Hl_C$ argues that current use is sufficient but not necessary to induce cooperative attempts by an $A_1$ toward a specific $B_1$. There may be advantages to amicable relations with alternatives to the current supplier, such as the visible reminder to a currently used $B_1$ that competitors do exist. Yet an $A_1$ is not likely to cultivate all its alternatives equally, and may instead make cooperative attempts toward a given $B_1$ as a function of the $B_1$'s ability to minimize $A_1$'s current costs of access to resource X.

$Hl_C$ the greater the transport costs between an $A_1$ and a given $B_1$, the smaller the likelihood of cooperative attempts between them.

To assess $Hl_C$ empirically, we built two scales. The first, LPC-PROX, is a version of LPC weighted by inter-capital dyadic

distance.* The second, DEP1-PROX, is a version of DEP1 -- also weighted by inter-capital distance. More specifically, the LPC-PROX scale is simply a dyad's LPC score multiplied by its PROXIMITY score, while the DEP1-PROX score is the product of a dyad's DEP1 and its PROXIMITY score.

III. H2 (Proximity)

By contrast with $H1_B$ and $H1_C$, H2 asserts that transport costs between any social units affect the likelihood of their cooperative attempts. There is a rather consistent set of prior findings to the effect that:

> H2 the greater the geographical proximity between two states, the greater the magnitude of cooperative interactions between them.

Despite my belief that proximity is not the sort of trait likely to affect cooperative interactions between units, it is important to see whether even "uncontrolled" support for this hypothesis emerges. This should afford at least an initial means to

*$H1_C$ does not necessarily predict that across the entire class of $A_1$ - contiguous $B_1$ dyads, the smaller the transport costs the greater the intra-dyadic cooperative attempts, although such a finding might be compatible with the $H1_C$'s prediction under certain conditions. Rather, it predicts that, for a given $A_1$, its cooperative attempts toward each of its contiguous $B_1$ will be an inverse function of that $A_1$'s cost of transporting goods to the particular contiguous $B_1$. In other words, $H1_C$ is thoroughly consistent in principle, with a finding that, if $A_{1a}$ and $B_{1a}$ are 100 miles apart and $A_{1b}$ and $B_{1c}$ are 50 miles apart, $A_{1a}$ and $B_{1a}$ interact cooperatively at greater magnitudes than do $A_{1b}$ and $B_{1c}$. This could occur and be consistent with $H1_C$, however, only if $B_{1a}$ was $A_{1a}$'s closest available $B_1$ and $B_{1c}$ was not $A_{1b}$'s closest available $B_1$. Otherwise, we would expect $A_{1b}$ and $B_{1c}$ to exhibit greater magnitudes of inter-dyadic cooperative attempts.

assess any incentives to cooperate associated here with variation in proximity.

To examine H2, we use two measures: (1) inter-capital geographic distance (PROX), as described above; and (2) a dummy variable indicating whether or not two sample nations share a common boundary (CONT). The smaller the inter-capital dyadic distance, the smaller the dyad's score on PROX. A dyad of states with a common boundary receives a CONT score of 1; other dyads get a score of 10.

IV. H3 (Resource Capabilities)

In the last two decades, increasing attention has been given to hypothesis (H3):

> the greater the joint resource capabilities of a pair of states, the greater the magnitude of their cooperative interactions with each other.

Some work of Cobb and Elder (1970:107, 113), R. Rummel (1968), and of N.P. Gleditsch (1970:1-58) is illustrative.

Considerable support has been mounted in favor of this hypothesis too, although this has varied somewhat depending on the studies and the indicators used. Two measurement approaches have been dominant. First, average dyadic "mass" (or "size") has been used -- based on one or more of the following: population, land-area, energy production per year, gross national (or domestic) product, etc. Average economic development or mobilization levels have also been employed, using such measures as GNP/capita, energy production/ capita, school enrollments/capita, etc. Each approach has a certain plausibility. A "mass" measure would seem to

reflect differences in dyads' mobilizable resources. At the same time, a small but very well organized and economically developed pair of states with a combined GNP as large as that of two populous, impoverished states may have far more resources beyond subsistence levels with which to engage in relations with each other -- including cooperation -- than do members of the large, poor dyad. Cobb and Elder (1970) found some support for H3 regardless of which measure they used, although the latter type, e.g., GNP/capita, proved best.

> "The results ... show a substantial (positive) relation to exist between the level of internal development and mutual relevance." (1970:107)
>
> "Dyads with greater average economic power tend to show greater mutual relevance." (1970:113)

Gleditsch (1970), examining three highly abstract theories of inter-nation behavior ("attribute," "field" and "rank" theory), concludes in part:

> ...the three theories play variations on the same (rather trivial) theme: that absolute positive interaction can -- to a large extent -- be predicted from the magnitude of rank attributes. The other attribute...dimensions are somewhat less important, it seems, than...size and wealth....(p. 44)

To discuss details of these three theories would sidetrack us here, but note that the dimensions of size and wealth are, in effect, "mass" and developmental measures of capabilities; "size" and "wealth" are exemplified, respectively, by the joint "national" income of the dyad and by joint energy consumption/per capita. In testing $H_3$, we also use these two approaches.

The two (dyadic) indices used here are labelled MASS1 and MOBL1,* and $H_3$ will be taken as supported insofar as we find a strong, positive relation between a dyad's MASS1 (or MOBL1) index

Does "cultural homogeneity" refer to one or a number of traits? Just how meaningful is a summary measure that aggregates differences and similarities between two units on religious beliefs, kinship patterns, conceptions of authority, etc.?

"Culture" is quite an amorphous concept, so it would be presumptuous to assume here that we can effectively measure the main elements of cultural similarity/dissimilarity. In this study we are restricted to two types of measures.

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*These indices were formed from the following dyadic indicators:

MASS1: Population (1969), GDP (1965), Energy Production (1965), INGO memberships (1964), IGO memberships (1964), Trade with rest of world (1965);

MOBL1: Urbanization (1965), Economic Development, Governmental Scale (1966), GNP/capita (1965), Primary school enrollment/capita (1966). Sources for detailed definitions can be found in Morrison et al (1972) and Vincent et al (1971).

The factoral structure of each indicator set was unidimensional, thus bypassing rotation. A factor-score consists, basically, of a regression weight assigned to a given standardized component indicator -- to be used in estimating a given factor from the indicator (Rummel, 1970:172). A principal-factor routine, with iteration to estimate communalities, was used here; i.e., the PA2 version in N. Nie et al (1975:480).

First, we built a dyadic religious homogeneity estimate from data on states' religious identification patterns with Christianity, Islam, and Animism.

Second, we constructed a set of dyadic measures of "traditional" cultural homogeneity -- from ethnographic materials compiled (separately) by G. Murdock and D. Apter and refined by D. Morrison et al (1972:166-74).*

Why were these traits selected? Our religious homogeneity measure is certainly arguably related to a category which historically has been a fundamental basis for distinguishing one's "own kind" from other, potentially suspect groups. Such differences may operate internationally too. Second, many scholars of African societies do assume that the seven ethnographic traits listed (below) reflect exceedingly fundamental dimensions of culture. Thus, differences and similarities along each of these several di-

*The following seven measures were used:

Similarity between two states (A and B) as to the characteristic (X) of a typical ethnic group in state A compared to the characteristic (X) of a typical ethnic group in state B, where "X" refers to each of the following, in turn:

(1) DDESCRL: principle for reckoning lineage or kinship links;
(2) DSETTPAT: degree of permanence/complexity in settlement patterns;
(3) DHIERARC: number of levels of community structure above the family;
(4) DORGLEV: number of authority levels;
(5) DINHER: rules for transmission and disposition of real property;
(6) DMARMODE: rules governing gift exchange between groom's kin and bride's kin (at time of marriage);
(7) DAUTHSYS: degree of centralized leadership.

mensions could plausibly affect individuals' likelihood of cooperative interactions.

On the other hand, cultural homogeneity may relate to dyadic cooperation but not in the additive way $H_4$ implies. For example, if A has incentives to cooperate, and if any of several parties might satisfy A, cultural homogeneity could partially guide A in selecting a partner. But unless A's dominant preference can be satisfied by it, A may not select the most religiously homogeneous party, choosing rather the party most culturally similar to itself that also can satisfy A's initial preference. Moreover, the salience of specific cultural differences as they affect cooperation could vary greatly through time, given changing elites' views on the dangers in low levels of communication/cooperation. For example, dyadic variation in homogeneity of their members' attitudes toward a nationalized economy might decline in its relation with dyadic cooperation because prior cleavage patterns resulting from ideological "purity" about permissible international contacts seemed to generate excessive risks to global survival. There is little doubt such shifts can occur in the international system -- the recent American policy of detente with the Soviet Union appears illustrative, in some respects, of just such a shift.

These complexities, at least, make it difficult to argue that the specific cultural dimensions we examine necessarily relate to dyadic cooperation. Even so, since no assessment of relations between these cultural dimensions and cooperative interactions

exists for African states, this admittedly sketchy effort may at least encourage further study.

A. Religious Homogeneity

Cobb and Elder (1970) have developed an excellent strategy for measuring religious homogeneity. They argue that if more than two religious "choices" exist, and if each population in two states identified with only one (but respectively different) religions, a dyad formed of the two states would be properly scored as highly dissimilar on the two religions which either identifies with, but could too easily be scored as highly similar vis-a-vis any non-chosen religions. High similarity on non-chosen alternatives would be artifactual, and could easily distort the measure.

To avoid this problem, Cobb and Elder use the following:

$$Hom_{Rel} = 100 - \left(\sum_{i=1}^{n} \mid R_{ij} - R_{ik} \mid\right)/2$$

where $R_{ij}$ = the % of nation j's pop. identifying with religion (i);

$R_{ik}$ = the % of nation k's pop. identifying with religion (i).

We use Cobb and Elder's strategy here, label this scale RELHOM, and expect (under $H_4$) a strong, positive relation, ceteris paribus, between RELHOM and dyadic cooperative interactions.

If there were only two possible religions, X and Y, we could reasonably use dyadic similarity toward either to measure reli-

gious similarity.* This follows because a given state's score on X would determine its score on Y. Given this, dyadic similarity on X could be measured quite simply as the absolute value of the difference between dyad members' percent of identifiers with X. Since more than two religious "choices" exist, however, that strategy does not seem sensible. Consequently, Cobb and Elder's strategy appears most practical.**

B. Homogeneity of Traditional Culture

There is an important difference between the appropriate measurement strategy for religious homogeneity and that for assessing dyadic similarity on traditional cultural "dimensions." The latter can properly be measured using the simple distance model referred

*Of course, we must also be able to assume that members of a given state's population are actually identifiers with a religion; i.e., are not "non-identifiers," but we need to be able to make a comparable assumption in using our RELHOM measure as well. We discuss the grounds for making this assumption vis-a-vis these national populations below. Note, too, that in using either of these approaches we must also be able to assume that "between-religion" variation in orientations is greater than within-religion variation.

**The raw data used here to calculate dyadic religious homogeneity consists of percentages of each member state's population that are Christian, Moslem, and Animist. These "choices" are reasonably exhaustive. The Student Handbook for Africa (J. Paden, 1971) is the data source. Of the 18 states, 16 had percentages of identifiers (with these three religious groupings) which sum to 100%. The exceptions are Kenya and Dahomey. For Kenya the sum of the three was 98%; for Dahomey - 90%. In any event, for most of these states these three religions constitute the "universe" of religious identifications. (Animism may be a residual group -- assuming that non-Christians/non-Muslims identify with some native religion. This seems generally plausible for these units, though states such as Uganda (with a fair number of Hindus) would be somewhat misclassified.)

to as inappropriate vis-a-vis religious homogeneity. Each of the traditional culture indicators can reasonably be thought of as reflecting differences along a single continium. This could not be said of some dyadic religious homogeneity measure which used, for example, dyadic distances between member states in their percentages of Christian (or Islamic) identifiers.

Consequently, in this analysis we assess dyadic homogeneity on each of these seven traditional culture dimensions by the absolute (unsigned) distance between the two states with respect to each state's position on the particular dimension being examined. In short, we adopt an absolute distance model vis-a-vis all 18 states' distances from every other sample state on a state's "mean" for each of the seven traits described above.* This results in seven traditional culture measures of homogeneity for each dyad.

*The "scores" assigned in the Handbook raise several issues which should be mentioned. Specifically, national means on a given culture-trait are based on (1) an ordinal (not interval) scale and (2) a procedure treating each ethnic unit in a given society as of equal "weight" (regardless of the population size of the ethnic unit). The ordinality issue is not so troublesome conceptually as the second (see Sanford Labovitz (1970)). The second characteristic means that if two ethnic units of three in a country are hierarchically organized and comprise 99% of the population, while the third is very decentralized, the procedure underestimates how many of the country's individual people live under hierarchical arrangements, at least compared with the score of a society in which nine (of ten) groups which comprise 99% of the population are hierarchically arranged while the tenth is decentralized. In the future, we can improve these measurements by using appropriate population weights before computing means and standard deviations.

Not every one of these seven indicators necessarily taps a separate dimension here. Yet correlations among these traits suggest strongly that each does tap a distinct dimension.* We thus retain all seven measures in assessing H4.

VI. H5 (External Pressures)

We cannot examine all external determinants of intra-African cooperative patterns here. Our aim is more modest: to assess whether the similarity of African states' linkages with colonizing powers can account for some cooperative interactions among African states. No such relation will necessarily emerge, nor is there any assurance of stability over time in any relation found. Yet, if we can measure this characteristic, then we can assess its potency here, its stability, and can also control for its possible effects on any relations between dyadic resource dependence and cooperative interactions.

Our strategy presumes that the linkage most likely to indicate a strong elite orientation toward the colonizing power is the degree of "socialization" of national elites by that colonizing

*Note that correlations between RELHOM and these indicators are also very low: we thus use all eight measures in tests of H4.

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1. | DDESCRL | 100 | | | | | | | |
| 2. | DSETTPAT | 0 | 100 | | | | | | |
| 3. | DHIEPARC | 15 | -4 | 100 | | | | | |
| 4. | DORGLEV | 8 | 7 | 11 | 100 | | | | |
| 5. | DINHER | 28 | -16 | 9 | 7 | 100 | | | |
| 6. | DMARMODE | -5 | 4 | -1 | -9 | -8 | 100 | | |
| 7. | DAUTHSYS | -28 | -4 | 28 | 4 | 21 | -14 | 100 | |
| 8. | RELHOM | -11 | -13 | -11 | 7 | -6 | 6 | -11 | 100 |

power. We do have data on the percent of state A's (and B's) students trained abroad who were educated in a particular colonizing nation. These data come from a UNESCO study for 1963 (see M. Singer, 1972:149-172).

Since the colonizing powers relevant here are Great Britain and France, ideally we would have data for those students who studied in Great Britain and also for those who studied in France. Unfortunately, the data on France were too sketchy. However, the U.K. materials were complete, and because of the probable relations between these two data series, the U.K. data are likely to suffice. Why this should be so bears elaboration.

There is substantial evidence that these two series are strongly inversely related, at least for this sample. Our evidence is admittedly indirect, yet seems reasonable.* A consequence of this is that if a sample dyad ranks low in its "average" percent of students trained abroad who are trained in Great Britain, that dyad will rank high in its comparable percent of students trained in France, and vice versa. We are therefore confident that if two sample states are highly similar in this orientation to Great Britain, they will also be highly similar in orientation to France.

*In particular, as we note below, the correlation between dyadic similarity as to percentages of students trained abroad who were trained in the United Kingdom (Ca. 1963) on the one hand, and dyadic similarity of prior colonial affiliation, on the other, is exceedingly high and positive. This by itself is strongly indicative of the presumed inverse relation we are discussing here.

These conditions do not preclude the possibility that a former French colony has shifted its orientations away from its ex-metropole. It does indicate that intense relations of this sort between a sample state and Great Britain in practice virtually precluded intense relations with France, and vice versa.

In general, our aim is to develop a measure to assess any impact which dyadic similarity of orientation toward external organizations/social systems has on cooperation between the dyadic members.

But similarity/dissimilarity of dyadic orientations toward just any external organization seems much less likely to affect dyadic members' cooperation with each other as could their relations with certain other units. Particularly relevant would be those units which have both competed for dyadic members' affiliations and also have resources enabling them to profoundly influence the dyadic members' commitments toward the rest of the world. This presumption is in fact the basis for the general hypothesis that a metropole has greatly affected chances of cooperation between its former or current colonies. The direction of this hypothesized influence is by no means certain, as discussed in the last chapter.

Here we use two indicators of the similarity of sample states' experiences with external organizations -- organizations presumed capable of influencing these African states' cooperative orientations toward each other: (1) the measure of dyadic simi-

larity in educational orientations toward Great Britain (discussed above); and (2) a dummy variable to indicate if a pair of states "shared" a colonial experience with a common metropole or not.*

SUMMARY

This completes the measurement discussion of independent variables in hypotheses One through Five. The signs of all hypothesized relations with dyadic cooperativeness are negative, except for those in $H_3$ and $H_4$ (RELHOM). Chapter Five now briefly discusses the measurement strategy for dyadic cooperativeness itself.

*The first measure (SIMUKED63) is constructed by taking the absolute value of the difference (AD) between the percent of nation A's students trained abroad (1963) who were trained in the U.K. and the percent of nation B's students trained abroad (1963) who were trained in the U.K. The second measure (SIMCOLAFF) is constructed by assigning a score of 1 to those dyads which were colonized by the same metropole, and by assigning a score of 10 to those dyads not colonized by the same metropole. Given that the simple r between SIMUKED3 and SIMCOLAFF was +.89, our initial analyses in Chapters Six and Seven use only the first measure.

# CHAPTER FIVE

## MEASURING COOPERATION

Non-violent, manifestly non-hostile interactions can be employed cautiously to measure variation in cooperation between nations. This chapter depicts the specific measures and data we shall use to this end.

The quality of pre-existing "data" on inter-nation, non-violent interactions varies widely by global region. Yet some types are more accessible than others, regardless of region. Information on organizational memberships, diplomatic exchanges, and trade patterns are probably most readily available. Indicators of other sorts of activity, such as messages (sent and received), diplomatic initiatives, conference and organizational attendance, initiatives in undertaking joint projects of various kinds, etc., are much harder to acquire, especially for the economically least developed nations' relations with each other. Undoubtedly most difficult to get data on are covert "bribes" and payoffs of elites in one nation by elites in others, as well as the undercover activities of national security agencies (such as the CIA).

This is not to say that there have been no important efforts to develop systematic information on these less accessible data. The work of R. Rummel, E. Azar, C. McClelland, and P. McGowan stands out as quite valuable along these lines.

Materials on inter-nation cooperation for this study were not readily available. Once obtained, they required especially careful reliability checks. The measures used are (proportional) estimates of (1) dyadic trade, (2) numbers of shared memberships in IGOs and (3) the relative overall magnitudes of elite inter-nation political interactions (messages exchanged, visits, joint conference and organization meeting attendance). In particular:

Trade:

> Total annual trade (in dollars) between members of a dyad divided by the sum of trade each member did with all nations in the world (coded for 1962, 1965 and 1968);

Shared IGO Memberships:

> The total of all international governmental organizations to which both dyad members jointly belonged divided by the sum of all IGOs to which either dyad member belonged (coded for 1963 and 1967);

Elite Political Interactions (EPI):

> The sum of all regional, manifestly non-hostile dyadic contacts between elites from a dyad's member nations in a given year divided by the sum total of such interactions engaged in by elites from either dyad member in the year (coded for 1962, 1965 and 1968).

Procedures and sources for these measures are documented in Appendix 1, but several preliminary issues attending their use ought to be reviewed now.

First, do these indicators measure "cooperation?" Dyads exhibiting high levels of these three types of activities -- trade, joint activity in IGOs, and EPIs -- plausibly have greater cooperative orientations than dyads with low levels of these activities. Even so, our measurement of cooperative interactions is not as

comprehensive as we might wish. We have, however, compiled data on three reasonably distinctive types of cooperative phenomena. Hopefully, this analysis can help stimulate other work to broaden and refine available data.

Second, since I wanted to assess the temporal stability of findings as to determinants of inter-nation cooperation, I planned to score dyads on each activity type at three times -- 1962, 1965, 1968. Unfortunately, IGO data could be gotten only for 1963 and 1967.

Third, with only three indicators of cooperation, it seemed presumptuous to build an overall cooperation index. Moreover, as Table 5.1 shows, only the IGO and EPI indicators consistently covary at fairly high (positive) levels. Trade and IGOs do not covary at all, and the trade-EPI relation rather clearly shifts over time. Although I could have created a composite index of political cooperativeness, important variation on EPIs and IGOs also would have been lost thereby.*

*As Table 5.1 clearly shows, there is no variation shared by IGO and trade measures in this sample, while day-to-day elite political interactions do share same variation with the trade indicator. As a result and in light of the fact that a factor analytic index construction technique would result in a political interaction scale based only on variation shared between IGO and elite political interaction patterns, the composite index would also not evince any relation at all with our measure of economic cooperativeness in trade. Consequently, this composite political cooperativeness index would exclude from our analysis variation between day-to-day political interactions and cooperativeness in trade which we find to be of theoretical interest and will discuss in detail in Chapter Seven after presentation (in Chapter Six) of the study's more basic findings.

TABLE 5.1
INTER-CORRELATIONS AMOUNG PROPORTIONAL MEASURES OF DYADIC COOPERATIVENESS (1962-1968)*

| | TRADE | | | ELITE POLITICAL INTERACTIONS | | | SHARED IGO MEMBERSHIPS | |
|---|---|---|---|---|---|---|---|---|
| | 1962 | 1965 | 1968 | 1962 | 1965 | 1968 | 1963 | 1967 |
| TRADE | | | | | | | | |
| 1962 | ---- | | | | | | | |
| 1965 | 97 | ---- | | | | | | |
| 1968 | 94 | 96 | ---- | | | | | |
| ELITE POLITICAL INTERACTIONS | | | | | | | | |
| 1962 | 01 | 03 | 05 | ---- | | | | |
| 1965 | 31 | 30 | 33 | 82 | ---- | | | |
| 1968 | 25 | 27 | 28 | 84 | 86 | ---- | | |
| SHARED IGO MEMBERSHIPS | | | | | | | | |
| 1963 | -03 | 00 | -03 | 90 | 71 | 75 | ---- | |
| 1967 | -01 | 03 | 00 | 93 | 74 | 81 | 98 | ---- |

*N=153; coefficients are zero-order correlations.

Fourth, as should be evident, some hypotheses to be examined presume a "dependent" variable characterized as cooperative attempts by A toward B, while others view the dependent variable as "overall" cooperative interactions between two states. Note, however, that only non-directional dyadic behavior is measured in this study. This issue can be put another way. If I claim that

the number of cooperative attempts by A ---> B will be larger than those by C ---> D, but the only available data are (A <---> B) and (C <---> D), how can these totals bear on the claim? Several recent studies do argue that cooperative interactions are highly symmetrical, i.e., A ---> B ~ B ---> A.* If we could assume this, there would be no problem in inferring support for the prediction that A ---> B> C ---> D from data of the form A <---> B> C <---> D. This is hardly very steady ground to stand on, though.

But perhaps most important, not even an interaction A ---> B is more clearly a cooperative attempt by A ---> B than it is: (a) the culmination of a cooperative attempt (or perhaps a <u>set</u> of such attempts) by B towards A; (b) a <u>conventional</u> means of expressing in <u>directional</u> terms an exchange or interaction which is <u>indisputably occurring in both directions at once</u>. As to this second point, for example, if A is a land-locked state and $B_1$ a ported-state, and if A could obtain needed imports from several states (including $B_1$) at either the same or lower cost than from $B_1$, the fact that A may import such goods from $B_1$ rather than from others may itself reflect a cooperative effort by A towards B.** Yet such a trade flow, if considered superficially in directional terms, might well appear as a cooperative interaction by B towards

*See N.P. Gleditsch (1970:8).

**In that A is providing a market for B, i.e., allowing B to earn income from sale of its goods, when A could purchase the same goods at no worse a price from another supplier.

A.* This example suggests that, even if trade were from ported to land-locked states, such trade might reflect land-locked to ported cooperative overtures.

Similarly, many of the regionally focused elite interactions coded here, such as messages and visits between national elites, were comparably difficult to characterize as directional cooperative initiatives. This was particularly true for events such as joint attendance at regional organization meetings and conferences. Furthermore, many of the messages coded in this content-analysis were characterized by Africa Diary as responses to prior messages from the other partner in a given dyad (even though no report of that message appeared in a previous article). In general, the inherent conceptual difficulties in sensibly coding these interactions directionally, as well as the sketchy nature of many such reports, suggested that summed, non-directional counts of these interactions would probably be most appropriate here.

Fifth, as noted many times before (Caporaso, 1971:238; Puchala, 1970:732-63; Nye, 1968:855-880), there is a variety of available data transformations for deriving measures of non-violent interactions. The appropriateness of any one of these will depend largely on the specific purposes of the study. In general, however, it seems most sensible to be extremely cautious in transforming raw magnitudes of most data series. In any event, it

*This is not even to mention the fact that in such a situation (B exporting to A), A also exports (cash or credit or goods) to B, though a superficial reckoning of the direction of the flow in these circumstances is, again, merely from B to A.

still makes sense to assess one's results by using "raw" measures also -- to see whether results differ dramatically. The general virtue in this is to alert us to potentially idiosyncratic aspects of certain transformations (Caporaso, 1971:239-44). My approach has been to use a proportional version of each basic cooperative indicator. This choice is grounded in the nature of the linkage proposed here between dyadic resource dependence and cooperation. In short, only by controlling for differences in the gross (total) amounts of cooperative interactions engaged in by the various dyads in the sample can the relevant attentiveness of a dyad's members toward each other be properly assessed. Nonetheless, some readers will be interested in the results of selected hypothesis-tests using so-called "raw" (non-proportional) indicators of cooperative interactions. Consequently, in assessing these results I have tried to be as explicit as possible about the outcomes of these tests using both raw and proportional versions of the "dependent" variable(s).

# CHAPTER SIX

## AN EMPIRICAL ASSESSMENT

### Characterization of H1

Previous chapters elaborated what I believe is the fundamental hypothesis relating resource-complementarity* to cooperative interactions:

> The greater a nation's ($A_1$'s) resource-complementarity with a second nation (B) -- under conditions of M2 -- the greater the extent of cooperative interactions likely to transpire between them, ceteris paribus.

In this chapter I empirically assess several distinct versions of this hypothesis.

### H1M

The first variant is the simplest. It asserts that, under conditions of M2, a resource-short state ($A_1$) will cooperate on average more with states that have a distributable surplus of the resource $A_1$ "needs" than either $A_1$ will with other states or than other states will with each other, ceteris paribus. I test this by assessing the prediction that:

> H1M A land-locked state (LL) and a sea-ported state (SP) are more likely to cooperate intensely than are other dyads, i.e., LLs with LLs or SPs with SPs, ceteris paribus.

*Resource-complementarity is viewed here as a condition in which a first party needs a resource belonging to a second party and in which the second party is in principle willing to sell its "resource" to the first party. This definition is not that commonly referred to in the economics literature, where "complementarity" of two commodities refers to an habitual or "inherent" relation such that the two are ordinarily consumed together -- like peanut butter and jelly or black tie and tails (see C.R. McConnell, 1975:65).

H1I

This version is similar to H1M, but posits an interactive relation between dyadic resource-complementarity and the "logistical relevance" of a B's resource-surplus (for $A_1$) as these relate to dyadic cooperativeness. H1I asserts, in short, that a combination of high resource-complementarity and high logistical relevance between dyadic members will intensify cooperativeness within the dyad more than the additive effects of these two characteristics would suggest. This variant is empirically assessed in terms of the prediction that:

H1M: Members of dyads composed of an LL and an SP which are also geographically contiguous (logistically relevant) will cooperate more intensely, on average, than will other dyads, and more intensely than can be explained by the additive effects of resource-complementarity and contiguity.

H1A

H1A asserts that a combination of not only dyadic resource-complementarity and logistical relevance but also limited choice for the resource-short unit in selecting logistically relevant suppliers -- a kind of oligopoly -- will dramatically increase a resource-short state's incentives to cooperate with "surplus" units, ceteris paribus. Operationally, this version asserts that:

H1A: The smaller the choice an LL state has in selecting a contiguous SP nation able to process the LL's exit/entry preferences, the greater the cooperative interactions between the LL and any one of its contiguous SP options, on the average, ceteris paribus.

H1Bi-H1Cii

The last four variants of H1 all stipulate interactive relations among resource complementarity, logistical relevance, and "access cost minimization." Two of these, H1Bii and H1Cii, also claim that a vital part of the interactive relation likely to emerge vis-a-vis dyadic cooperativeness consists in restricted choice (as in H1A). The other two (H1Bi and H1Ci) assert an interactive relation between resource-complementarity, logistical relevance, and access-cost minimization vis-a-vis dyadic cooperativeness.

In addition, the difference between "B" and "C" versions lies in their approaches to the concept of access-cost minimization. As discussed above, there exist at least two plausible strategies for $A_1$s in making cooperative overtures toward potential suppliers: either (1) making overtures toward that one potential supplier able to minimize $A_1$'s access-cost to the resource (the "B" version); or (2) making such overtures toward each potential supplier in proportion to a potential supplier's ability to reduce $A_1$'s cost of access to the resource (the "C" version). Using the second strategy ("C"), the most cooperative overtures would go toward that potential supplier best able to minimize such costs, while the fewest would go toward those least able to minimize those costs. This strategy is labelled a "continuous" model; it posits cooperative overtures as a continuous function of each potential supplier's ability to reduce the resource-short state's access-costs. The first ("B"), I label a "discontinuous" model.

It posits that a resource-short state will focus cooperative attention on that potential supplier best able to minimize access costs and will neglect other potential suppliers. A variable (CLOSE), modelling the discontinuous ("B") strategy is included in both H1Bi and H1Bii. A variable, PROX, modelling the continuous ("C") strategy is included in both H1Ci and H1Cii.

Two notes are important here. First, these two approaches to access-cost minimization are not exhaustive. Second, there are no guarantees either that "access-cost minimization" is the most salient second-order preference for resource-short states, or that geographic distance between states' capitals bears any relationship to differences in relevant access-costs.

Yet, however crude these assumptions and procedures, possibilities for later refinement do seem great. Moreover, the theoretical issues underlying these four variants appear important enough to warrant empirical examination.

In sum, I assess these last four variants of H1 through the following predictions vis-a-vis dyadic cooperativeness:

H1Bi asserts an interactive relation between resource-complementarity (LL/SP scale), logistical relevance (CONT scale), and a discontinuous model of access-cost minimization (CLOSE scale);

H1Bii posits an interactive relation between resource-complementarity (LL/SP scale), logistical relevance (CONT scale), degree of choice open to the resource-short unit vis-a-vis selection of a logistically relevant resource-supplier (CHOICE scale), and a discontinuous model of access-cost minimization (CLOSE scale).

H1Ci stipulates an interactive relation between resource-complementarity (LL/SP scale), logistical relevance (CONT scale), and a continuous model of access-cost minimization (PROX scale); and

H1Cii hypothesizes an interactive relation between resource-complementarity (LL/SP scale), logistical relevance (CONT scale), degree of choice open to resource-short unit vis-a-vis selection of a logistically relevant resource supplier (CHOICE scale), and a continuous model of access-cost minimization (PROX scale).

Assessing Interactive Effects

To assess these variants of H1, we must use appropriate tests. To clarify, assume Q and Z are dummy variables and that the value "1" indicates the presence of trait Q while "0" its absence in a given case. Likewise, assume a comparable scoring procedure for Z. Given this, we can take a unit's score on Q times its score on Z, i.e., "QxZ", to represent a first-order interactive term between Q and Z. If only one trait is present in a given case, "QxZ" will be "0." Only if both Q and Z are present in a given case will QxZ equal "1". The multiplicative term Q x Z therefore generates quite a different variable from either Q or Z by itself.*

This simple multiplicative term QxZ may not have any significant relation with a dependent variable (C) after controlling for variables Q and Z. If it does, though, this is evidence for an interactive relation between Q and Z (i.e., QxZ) vis-a-vis C.**

*Unless there is a great overlap in the distributions of variables Q and Z themselves. In that case, there will be a high degreee of correspondence (correlation) between Q, Z and QxZ.

**Although partial correlation is the basic technique for assessing these interactive (and other) hypotheses, here, I undertook a set of regression "checks" on the results -- following H. Blalock (1969:158n). These two approaches (regression and partial correlation) led to extremely convergent findings, thus increasing confidence in them. Appendix 2 summarizes the regression tests.

CHART 6.1

COMPONENTS OF SELECTED INTERACTIVE TERMS

| LABEL FOR INTER-ACTIVE TERM | H1 VARIANT | RESOURCE COMPLE-MEN-TARITY | | LOGIS-TICAL RELE-VANCE | | CHOICE RES-SHORT STATES HAVE RE SUPPLIERS | | DISCON-TINUOUS MODEL OF ACCESS-COST MINIMI-ZATION | | CONTIN-UOUS MODEL OF ACCESS-COST MINIMI-ZATION | # OF COMPO-NENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -- | H1M | LL/SP | | | | | | | | | 1 |
| LPC | H1I | LL/SP | x | CONT | | | | | | | 2 |
| DEP1 | H1A | LL/SP | x | CONT | x | CHOICE | | | | | 3 |
| LPC-CLOSE | H1Bi | LL/SP | x | CONT | x | -- | | CLOSE | | | 3 |
| DEP1-CLOSE | H1Bii | LL/SP | x | CONT | x | CHOICE | x | CLOSE | | | 4 |
| LPC-PROX | H1Ci | LL/SP | x | CONT | x | -- | | -- | x | PROX | 3 |
| DEP1-PROX | H1Cii | LL/SP | x | CONT | x | CHOICE | | -- | x | PROX | 4 |

This basic logic can be extended in a variety of ways (see H. Blalock, 1969:155-165), but the appropriate basic test for an interactive effect revolves around the principle just sketched. It is the one used here.

Chart 6.1 lists the interactive effects to be assessed. Each H1 variant is also broken into "component" terms. See Appendix 3 for a detailed discussion of the procedures used to control for component terms in the various tests for interaction undertaken in these analyses.

H1M-H1Cii: Initial Results

Table 6.1 presents initial tests of the several hypotheses relating resource-dependence and cooperation.* At the zero-order level, all the resource-dependence scales except LL/SP relate fairly well in each year to joint dyadic trade. The same pattern holds in predicting elite political interactions, although generally only at the latter two time points. In predicting shared IGOs, however, only H1Ci and H1Cii perform even minimally well.

Clearly, zero-order analyses only initiate any serious assessment. A number of dyadic traits need to be controlled for;

*Using a one-tailed test of significance, a first-order partial (r) is significant (with N=153) at the .05 level if it achieves a value of at least .133 (in the appropriate direction), while even a 14th order partial is significant at .05 level where r=.140 (in the right direction). At the .01 level, the minimum values of r for a first-order partial = .179; for a 14th order partial: .187. To simplify presentation in the tables of empirical results in this chapter, and to reduce risk of a Type (II) error (so to minimize the chance of accepting a false hypothesis), I use 14th order minimums as the minimums for any given correlation (regardless of its order) to achieve significance (at the .05 or the .01 levels), i.e., .05 level = .14; .01 level = .19.

TABLE 6.1

ZERO ORDER TESTS OF RESOURCE DEPENDENCE MODELS
(Correlation Coefficients)

| PROPORTIONAL MEASURE OF: | H1M LL/SP Scale | H1I LL/SPxCONT i.e. LPC Scale | H1A LPCxCHOICE i.e. DEP1 Scale | H1Bi LPCx CLOSE Scale | H1Bii DEP1x CLOSE Scale | H1Ci LPCx PROX Scale | H1Cii DEP1x PROX Scale |
|---|---|---|---|---|---|---|---|
| JOINT TRADE | | | | | | | |
| 1962 | -05 | -28** | -33** | -39** | -36** | -23** | -23** |
| 1965 | -05 | -29** | -32** | -40** | -35** | -24** | -24** |
| 1968 | -05 | -35** | -38** | -43** | -42** | -26** | -26** |
| ELITE POLITICAL INTERACTIONS | | | | | | | |
| 1962 | -15* | -12 | -09 | -21** | -10 | -33** | -33** |
| 1965 | -17* | -31** | -32** | -38** | -32** | -41** | -42** |
| 1968 | -10 | -26** | -24** | -43** | -26** | -42** | -42** |
| SHARED IGO MEMBERSHIPS | | | | | | | |
| 1963 | -18* | -07 | -04 | -15* | -03 | -19** | -19** |
| 1967 | -18* | -08 | -05 | -17* | -05 | -22** | -21** |

*in predicted direction and significant at .05 level.
**in predicted direction and significant at .01 level.

these can usually be divided into two separate groups for these interactive hypotheses. Testing for an interactive relation requires at least controlling for the additive (main) effects of the traits presumed to interact vis-a-vis the dependent variable. In addition, careful analysis demands additional controls for any other plausible rival predictors of the dependent variable. In practice, we do not know all the "rival predictors" of the cooperative interactions measured here.* But table 6.2 does present the results of controlling each test coefficient in table 6.1 for the potentially confounding effects of both the relevant "primary component" terms as well as the other potential rival predictors of inter-state cooperation which were operationalized in Chapter Four.

*Also, although we will control zero-order test-coefficients in table 6.1 for most primary component terms hypothesized to interact in H1I through H1Cii, we have not controlled for the logically exhaustive set of such primary components in all cases.

H1M-H1Cii: Full Controls

The "fully controlled" test results of H1M-H1Cii can be sketched quite quickly.* Note that the hypothesized direction of every coefficient in table 6.2 is inverse (negative). In predicting joint dyadic trade, H1A and H1Bii are the only hypotheses supported by these test results; in predicting dyadic elite political interactions, H1A is the only variant to receive any support; finally, no support whatsoever emerges here while using shared IGO memberships to indicate differences in dyadic cooperativeness.

The only "models" relating resource-dependence and cooperativeness which receive support from these tests are H1A and H1Bii. Moreover, corroborating evidence at all three time points examined exists only with cooperativeness viewed as joint dyadic trade relations: support with cooperativeness seen as elite political interactions is not consistent, and there is no favorable evidence with cooperativeness as shared IGOs. Before interpreting these

*The set of "full controls" exerted vis-a-vis each of the test-coefficients in table 6.2 (and in table 6.4) requires some elaboration here. In short, the control variables applied to any given test-coefficient in this table include all the independent variable indicators used in operationalizing hypotheses One through Five except for the particular independent variable indicator whose relation with measures of cooperativeness is being examined via the given test-coefficient in the table. There is one caveat regarding this discription, however: none of the seven indicators of dyadic similarity of traditional cultural characteristics developed in Chapter Four is included as a control upon the test-coefficients in these tables. The reasons for this exclusion are quite simple: (1) controlling these test-coefficients for the simultaneous potentially spurious effects of all seven of the traditional culture indicators by themselves yielded wholly inconsequential changes in the coefficients; and (2) adding these seven indicators into the already quite bulky set of control variables for a simultaneous controlled assessment of each coefficient would have been far too cumbersome.

TABLE 6.2

FULLY CONTROLLED TESTS OF RESOURCE DEPENDENCE MODELS
(Partial Correlations)

| PROPORTIONAL MEASURES OF: | H1M LL/SP | H1I LL/SPx CONT | H1A LPCx CHOICE i.e.DEP1 | H1Bi LPCx CLOSE | H1Bii DEP1x CLOSE | H1Ci LPCx PROX | H1Cii DEP1x PROX |
|---|---|---|---|---|---|---|---|
| JOINT TRADE | | | | | | | |
| 1962 | 01 | -00 | -24** | 28 | -25** | 29 | 45 |
| 1965 | 02 | -01 | -19** | 27 | -17* | 31 | 45 |
| 1968 | 01 | -07 | -21** | 31 | -23** | 35 | 50 |
| ELITE POLITICAL INTERACTIONS | | | | | | | |
| 1962 | -05 | 14 | -03 | -04 | 03 | 07 | 07 |
| 1965 | -06 | -01 | -25** | 05 | -02 | 20 | 31 |
| 1968 | 07 | 13 | -08 | -08 | -02 | 21 | 25 |
| SHARED IGO MEMBERSHIPS | | | | | | | |
| 1963 | -04 | 11 | -01 | -10 | 17 | 01 | 01 |
| 1967 | -03 | 11 | -00 | -10 | 13 | 06 | 05 |

*in predicted direction and significant at .05 level.
**in predicted direction and significant at .01 level.

results, we now turn to the empirical evidence concerning hypotheses two through five.

H2-H5

Table 6.3 depicts results of zero-order tests of hypotheses two through five. The hypothesized direction of coefficients relating to H2 and H5 is inverse; that for coefficients bearing on H3 and H4 is positive.

H2 Geographic Distance

Table 6.3 indicates moderately strong zero-order support for H2 with cooperativeness measured either as trade or elite political interactions. This support is evident at each time point whether contiguity or proximity (inter-capital distances) is used to measure geographic distance. Generally weak support for H2 is evinced when using shared IGO memberships to indicate dyadic cooperativeness: in fact, only with geographic distance viewed as inter-capital distance is there any support at the .01 level of significance.

H3 Resource Capabilities

As Table 6.3 clearly shows, there is not even the vaguest hint of support for H3 from these data, regardless of the time point or indicator selected.

H4 Cultural Homogeneity

Table 6.3 also offers zero-order tests of H4 using religious homogeneity as an indicator of cultural homogeneity (Table 6.3A provides zero-order tests of H4 using the seven indicators of "traditional cultural homogeneity" discussed in Chapter Four).

TABLE 6.3

ZERO ORDER TESTS OF
HYPOTHESES TWO THRU FIVE
(Correlation Coefficients)

| | H2 | | H3 | | H4 | H5 |
|---|---|---|---|---|---|---|
| PROPORTIONAL MEASURES OF: | CONTIG-UITY | PROX-IMITY | MASS | MOBL | RELIGIOUS HOMOGENEITY | ELITE EDUCATIONAL HOMOGENEITY |
| JOINT TRADE | | | | | | |
| 1962 | -38** | -22** | 04 | -07 | 18* | -07 |
| 1965 | -39** | -23** | 02 | -08 | 18* | -10 |
| 1968 | -42** | -24** | 00 | -03 | 20** | -14* |
| ELITE POLITICAL INTERACTIONS | | | | | | |
| 1962 | -21** | -35** | -54 | 13 | 03 | -65** |
| 1965 | -38** | -41** | -37 | 03 | 17* | -53** |
| 1968 | -43** | -42** | -41 | 03 | 15* | -51** |
| SHARED IGO MEMBERSHIPS | | | | | | |
| 1963 | -12 | -20** | -64 | 07 | 04 | -44** |
| 1967 | -14* | -23** | -61 | 06 | 03 | -49** |

*in predicted direction and significant at .05 level.
**in predicted direction and significant at .01 level.

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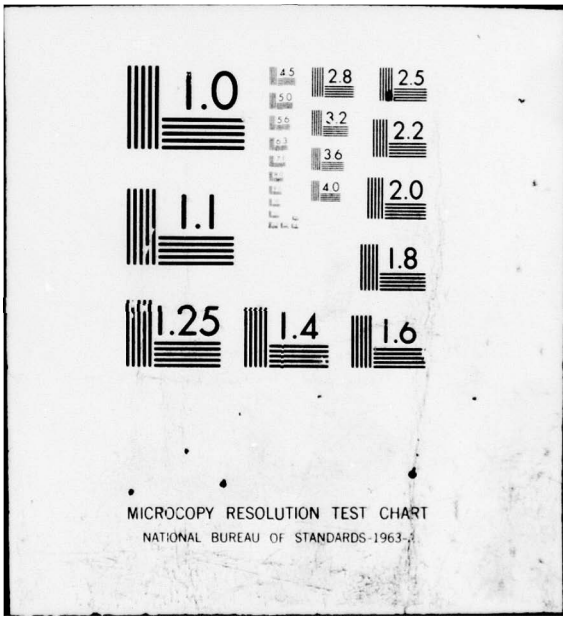
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 6.3A

ZERO-ORDER TESTS OF HYPOTHESIS FOUR USING MEASURES OF "TRADITIONAL CULTURAL HOMOGENEITY"
(Correlation Coefficients)

| PROPORTIONAL MEASURES OF: | SETTLEMENT PATTERNS | DESCENT PATTERNS | HIERARCHY ABOVE FAMILY | ORGANIZATION | INHERITANCE RULES | MARRIAGE RULES | AUTHORITY PATTERNS |
|---|---|---|---|---|---|---|---|
| JOINT TRADE | | | | | | | |
| 1962 | -13 | -05 | -13 | -11 | -04 | 11 | 10 |
| 1965 | -15* | -07 | -13 | -10 | -05 | 10 | 08 |
| 1968 | -15* | -08 | -13 | -10 | -04 | 08 | 08 |
| ELITE POLITICAL INTERACTIONS | | | | | | | |
| 1962 | -13 | 01 | 21 | 12 | 07 | -01 | -07 |
| 1965 | -12 | -05 | 13 | 04 | 09 | 09 | -08 |
| 1968 | -13 | -05 | 20 | -01 | 08 | 08 | -01 |
| SHARED IGO MEMBERSHIPS | | | | | | | |
| 1963 | -09 | 04 | 27 | 13 | 10 | 03 | -03 |
| 1967 | -09 | 04 | 25 | 13 | 10 | 05 | -04 |

*in predicted direction and significant at .05 level.

The expected direction of test coefficients using the religious homogeneity indicator is positive, while the hypothesized direction of coefficients in Table 6.3A is inverse.

Table 6.3 indicates that H4 (religious homogeneity) garners mixed support at the zero-order level: the most consistent corroboration emerges with cooperativeness viewed as trade relations, but some support is also evident when using elite political interactions. On the other hand, with cooperativeness conceived as shared IGO memberships, we find no trace of favorable evidence for H4 (religious homogeneity) at the zero-order level.

Table 6.3A presents a rather different picture vis-a-vis H4, however: there is not a single test-coefficient in the table that is both in the hypothesized (inverse) direction and significant at or beyond the .01 level.

H5 Elite Educational Socialization Homogeneity

Finally, H5 adduces considerable zero-order support here, at least with cooperativeness viewed either as elite political interactions or as shared IGOs. Support well beyond the .01 level of significance is evident at all time points with cooperativeness construed in those terms. However, this same hypothesis fares badly with cooperativeness viewed as high proportions of joint dyadic trade: only one of the three relevant test-coefficients is both in the predicted (inverse) direction and significant at even the .05 level.

Controlled Tests of H2-H5

Tables 6.3 and 6.3A presented zero-order tests of hypotheses Two through Five. Table 6.4 now reviews the results of our efforts to exert a comprehensive set of controls on these zero-order coefficients.

The "fully" controlled tests of H2-H5 depicted in Table 6.4 can be summarized quite briefly. No support remains in these data for H3 (resource capabilities) or for H4 (cultural homogeneity) after controlling for the potentially spurious effects of other independent variables examined in this study. Furthermore, any apparent zero-order evidence for H2 (contiguity) in Table 6.3 has disappeared in these tests. On the other hand, Table 6.4 strongly suggests support for H2 (inter-capital distances) and for H5 (elite educational socialization homogeneity), although it is not entirely unequivocal. H2 (inter-capital distances) receives the strongest, most consistent corroboration with cooperativeness either as joint trade or as elite political interactions; with cooperativeness seen as shared IGOs, the support is quite marginal. H5 does not fare well at all with cooperativeness viewed as joint trade, but tests of H5 using either elite political interactions or shared IGOs as indicators of dyadic cooperativeness evince quite undeniable support.

This chapter has briefly presented results of our empirical tests of the five major hypotheses discussed in previous pages. In the next chapter, we evaluate these findings and relate them to

TABLE 6.4

FULLY CONTROLLED TESTS OF HYPOTHESES TWO THRU FIVE
(Partial Correlations)

| PROPORTIONAL MEASURES OF: | H2 CONT | H2 PROX | H3 MASS | H3 MOBL | H4 RELIG.HOM | H5 ELITE ED. HOMOGEN. |
|---|---|---|---|---|---|---|
| JOINT TRADE | | | | | | |
| 1962 | -13 | -40** | 04 | -07 | 08 | -07 |
| 1965 | -12 | -45** | 02 | -08 | 09 | -10 |
| 1968 | -13 | -48** | 00 | -03 | 10 | -14* |
| ELITE POLITICAL INTERACTIONS | | | | | | |
| 1962 | -07 | -14* | -54 | 13 | 04 | -65** |
| 1965 | -10 | -38** | -37 | 03 | 12 | -53** |
| 1968 | -16* | -32** | -41 | 03 | 09 | -51** |
| SHARED IGO MEMBERSHIPS | | | | | | |
| 1963 | -02 | -16* | -64 | 07 | 06 | -44** |
| 1967 | -02 | -18* | -61 | 06 | 05 | -49** |

*in predicted direction and significant at .05 level.
**in predicted direction and significant at or beyond the .01 level.

our theoretical arguments about sources of inter-national cooperativeness.

# CHAPTER SEVEN

## AN ASSESSMENT OF EMPIRICAL FINDINGS

This study thus far demonstrates some quite tangible empirical support for a model of inter-nation cooperative behavior based upon:

> (1) the resource dependence of one nation vis-a-vis another -- especially given the tests of H1A and H1Bii -- at least where the conditions specified in M2 hold;
>
> (2) the geographic proximity of two nations (as estimated by inter-capital distances) -- H2 PROX;
>
> (3) the similarity of two nation's elite educational socialization experiences, i.e., the evidence from H5.

By contrast, very little evidence has emerged for three propositions rather highly touted in some previous studies, i.e.:

> H2 CONT: sharing an international boundary leads states to greater levels of cooperativeness among themselves;
>
> H3 MASS/H3 MOBL: the greater the average "resource capabilities" of two nations, the more they will tend to cooperate with each other;
>
> H4 Cultural Homogeneity: the greater the cultural homogeneity of two nations, the more they will tend to cooperate with each other.

### H1: Resource Dependence

In this study we have assessed several models relating resource dependence and inter-nation cooperation, but the only fruitful ones were those positing that only very restricted choice for a resource-short state (in its selection of a resource-surplus state) would be likely to induce comparatively high levels of

cooperation between those two states. Even those versions (H1A and H1Bii) were supported only when cooperation was viewed as high trade or as high levels of elite regional political interactions. No support appeared with cooperation viewed as high frequencies of shared IGO memberships (see Table 6.2). Given the failure of several variants of H1 assessed here, it is certain that the specific strategy used to conceptualize resource-dependence matters a good deal.

Clearly, a great deal more work still needs to be done with this type of hypothesis -- using other types of resource-shortages, other settings, and improved measures of component terms (such as access-cost). Yet despite some rather blatantly crude assumptions, this approach has systematically and empirically begun to tap the kind of phenomenon referred to by writers such as Rubin and Weinstein (1974:51):

> Frontiers can affect a country's system of communication, for example, by cutting it off from the sea. A land-locked country must be on good terms with or conquer other countries between it and the sea.

H2: Geographic Proximity

Evidence thus far for H2 PROX (inter-capital distances) appears rather strong, yet is also somewhat perplexing. On the one hand, Table 6.4 suggests that H2 PROX receives the most consistently strong support of any hypothesis examined: all eight "fully-controlled" coefficients are in the predicted direction and

significant at the .05 level; five are even signficant at the .01 level.

However, close analysis reveals two puzzling findings: (1) most support for H2 PROX emerges only after controlling for other terms which include the PROX scale; (2) when these control indicators, (LPC)x(PROX) and (DEP1)x(PROX), are individually used as controls, none of the H2 PROX test-coefficients remains supportive. Finally, in controlling individually for other potential plausible rivals, the only consistent support for H2 PROX emerges vis-a-vis elite regional political interactions.

In short, given this pattern and also given the extremely high multicollinearity among our PROX, (LPC)x(PROX) and (DEP1)x(PROX) scales,* it seems unwise to base any general conclusions about H2 PROX on the fully controlled assessments displayed in Table 6.4. Rather, since test-coefficients of H2 PROX--(other than those involving controls for (LPC)x(PROX) and (DEP1)x(PROX))--strongly suggest consistent support for it only with cooperativeness viewed as high levels of elite regional political interactions, this seems to be the most appropriate evaluation of H2 PROX on the basis of these data.

*The following inter-correlation matrix should suffice to indicate the extent of the multicollinearity problem in this instance:

| | | | |
|---|---|---|---|
| (LPC)x(PROX) | | | |
| (DEP1)x(PROX) | 99 | | |
| PROX | 98 | 98 | |

H5: Elite Educational Socialization Homogeneity

In this study I was able to account statistically for substantial variation in dyadic frequencies of elite regional political interactions as well as of shared IGO memberships by reference to a measure of dyadic similarity as to where students from dyadic members who were trained abroad were in fact trained. But note that this measure of socialization homogeneity also correlated quite highly with a second measure of dyadic similarity of external contacts, i.e., whether members of a dyad had shared (or did not share) a common prior colonial affiliation (r= .89). Note too that a partial correlation analysis of the predictive potency of either one of these two similarity measures vis-a-vis cooperativeness measures -- after controlling for the other -- indicated no independent support for either one.

This suggests, in broad terms, that all those dyadic characteristics which covary strongly with similarity/dissimilarity of prior colonial affiliation within this dyadic sample are likely to be good predictors of the extent of political cooperativeness among this group of former colonies of either Great Britain or France.

Thus, for instance, had I hypothesized that dyadic similarity as to elite fluency in either French (or English) would promote cooperativeness within a dyad from this sample, I almost certainly would have found the same support for that hypothesis that I did in H5. I am arguing, in effect, that support for that hypothesis would also emerge because this linguistic similarity measure

covaries so highly with the measure of similarity of prior colonial affiliation.

Consequently, whether the greater political cooperativeness found among states with high levels of elite educational homogeneity is due to that shared educational socialization cannot be determined empirically from these data.*

H5: Further Considertions

Yet perhaps precisely because of this circumstance vis-a-vis H5, it may be interesting to probe explicitly some of the temporal

*There are undoubtedly many conceptually more comprehensive approaches than that adopted here to measure the potential impact which external pressures/orientations may have on cooperative relations among members of a referent dyad. One such strategy, for instance, could conceivably employ an expanded version of that used in H5. Thus, instead of using the similarity indicator we do for the African dyad A-B, i.e., $|\%A\text{'s }(Xuk)-\%B\text{'s }(Xuk)|$, where Xuk equals students trained abroad who are trained in the United Kingdon (ca. 1963), we might use a measure also incorporating information of A's and B's students trained abroad who were powers in the international system, e.g., in the U.S., the U.S.S.R., France, etc. Such a measurement strategy could perhaps parallel that adopted here in measuring religious homogeneity, e.g.,

$$100-(|\%A\text{'s Xuk} - \%B\text{'s Xuk}| + |\%A\text{'s Xus} - \%B\text{'s Xus}| + |\%A\text{'s Xussr} - \%B\text{'s Xussr}| + |\%A\text{'s Xfr} - \%B\text{'s Xfr}|)/2.$$

As noted in Chapter Four, no such information on French "percentages" was available, but an analysis of H5 using an expanded measure based on student training percentages in the United Kindom, the United States, and the U.S.S.R. yielded no discernible gain in the predictive potency of H5 over and above that achieved with our original measure, i.e., $(|\%A\text{'s Xuk} - \%B\text{'s Xuk}|)$. This finding tends to reinforce our earlier expectation that for this sample of African dyads the relative impact of their former metropoles is very large compared with that of other major national powers in the global system, at least during this time frame and vis-a-vis the cooperative intra-African relations we assessed.

variation in its potency as a predictor of dyadic cooperativeness in this sample. In particular, as Table 6.4 indicated in the last chapter, there was a fairly marked decline evident between 1962-1968 in the predictive potency of H5 when cooperativeness was viewed as elite regional political interaction, while over the same period a tangible increase appeared when cooperativeness was measured by shared IGO memberships.

In assessing these two contrasting trends, we should keep in mind that the measure of elite regional political interactions probably better reflects inter-nation patterns of actual consulation, communication and dialogue than does the measure of shared IGO memberships. After all, shared membership in an IGO may represent little more than intent to coordinate non-violent interactions among the organization's members. By contrast, the elite interaction measure should capture variation in actual day-to-day non-violent inter-nation political interactions.

In light of this, what I want to suggest is that just as these states were initiating new sorts of day-to-day intra-African linkages during this period (i.e., moving away from a set of intra-African political relations which had conformed quite closely to the imperial or metropolitan model), they were also building up formal relationships (via IGO's) which continue to intimate the importance to them of prior metropolitan linkages.

In this vein it would indeed be interesting to speculate about the concrete and potentially complementary roles of these two types of political networks. For instance, these African

leaders may have been attempting to both maintain evidence of continued "metropolitan" linkages (via formal IGO associations) in order to maximize chances of obtaining aid from their respective colonizers without sacrificing the chance to experiment with other types of less formal networks through the elite regional political interactions we have tried to tap in this study.

Nonetheless, my major concern at this point is at least to begin to assess the actual directions taken by these states in their day-to-day regional political interactions. In short, if these interactions conformed less closely to the "imperial" or "metropolitan" model as the decade progressed, was there any fairly clear-cut direction in which they were going?

The decline in predictive potency of H5 re elite political interactions almost certainly resulted from a decisive shift in the distribution of such interactions, not from a change in the pattern of student training within these states. After all, dyadic scores on the independent variable in tests of H5 did not change between 1962 and 1968, whereas there is only a moderate relationship between a dyad's score on the elite regional political interaction measure in 1962 and its score in 1968.*

*Dyads' scores on the independent variable in tests of H5 did not change across the tests in 1962, 1965 and 1968 since the same dyadic scores (ca. 1963) were used for all years. Later data were just not systematically available. More synchronous data might have resulted in a smaller decline in support of H5 vis-a-vis elite regional political interactions, but the chance of markedly different results seems fairly low. Ultimately, of course, a proper empirical assessment is needed to be sure.

Similarly, we find (below) that any major observed change in the strength of association between elite regional political interactons and trade patterns in this sample in not due to a shift in trade patterns: these were extraordinarily stable over the entire period.

Table 5.1 presented the zero-order correlations between the three measures of dyadic cooperativeness, i.e., dyadic trade, elite regional political interactions, and shared IGO memberships during the period 1962-68. By far the most striking shift evident in this table consists of the increasing covariation between dyadic trade and elite interactions: from r = .01 in 1962 to r = .28 in 1968. Yet at least as notable is that the distributions of dyadic trade were virtually identical over the period: r(TR62)(TR65)=.97; r(TR65)(TR68)=.96; r(TR62)(TR68)=.94. Taken together, these two patterns suggest that during this period dyadic elite political interactions themselves shifted loosely into line with highly stable patterns of economic interactions -- rather than vice versa.

This trend becomes the more interesting in light of the speculation (in Chapter Three) that, as resource-short and resource-surplus states gain increasing autonomy in foreign policy decision-making, resource dependence is likely to prompt more cooperative overtures (at least under the conditions of M2). In these terms, if we look at trends in the adequacy of the resource dependence models which did receive noteworthy support (H1A and H1Bii), what do we find? Both models predict dyadic trade fre-

quencies reasonably well throughout the period, and at least one model (H1A) does exhibit more predictive potency vis-a-vis elite political interactions later in the decade (1965 and 1968) than in the immediate post-independence period.

Though the evidence for this shift is not decisive, and is based on very few time points, the general pattern does seem at least reasonably plausible: under conditions of M2, as states gain control over foreign policy, resource dependent states will try to build up amiable relations with resource-surplus states--especially when few alternative suppliers exist.

What connects this line of reasoning with changes in the predictive potency of H5 is the likelihood that, in the process of directing more cooperative political interactions to cope with the exigencies of intra-African questions such as the resource shortages discussed above, they were simultaneously beginning to break from an imperial mold which seemed to dictate a concern with the maintenance of Anglo (or Franco) imperial intra-African political bonds as the sine qua non of intra-African political relations.

## Contiguity, Resource Capabilities and Cultural Homogeneity

The three remaining hypotheses examined here, i.e., H2 (CONT), H3 (RESOURCE CAPABILITIES) and H4 (CULTURAL HOMOGENEITY), have received little support from these data.

H2 CONT

There is clear zero-order support for H2 CONT from these data, at least when cooperativeness is viewed either as relatively intense trade relations or elite regional political interactions (see Table 6.3). Support vanishes, however, after fully controlling for the potentially confounding effects of several other variables (see Table 6.4).

Even though several variables have had a combined confounding effect vis-a-vis our zero-order tests of H2 CONT, the strongest effect appears due to the relationship between the (LPC)x(CLOSE) scale and test variables in H2 CONT. When the (LPS)x(CLOSE) scale was applied as a control vis-a-vis H2 CONT, none of the 6 favorable zero-order test-coefficients remained favorable at .01 or beyond. Consequently, it behooves us to examine this effect in more detail.

(LPC)x(CLOSE) is an interactive scale used to operationalize the independent variable in H1Bi. H1Bi itself did not survive the controlled tests of its plausibility (see Table 6.2). Furthermore, in those tests the strongest confounding variable vis-a-vis H1Bi was contiguity (CONT). Under these circumstances it appears that there is no "independent" support for either contiguity or (LPC)x(CLOSE) as a determinant of dyadic cooperativeness.

But there is at least one further consideration of extreme importance in this analysis of H2 CONT. This concerns the conceptual distinctiveness of the notions contiguity and the interactive relation (LPC)x(CLOSE). In common terminology, a dyad with contiguous members means a pair of units which share a given geographical border. As Chapter Four indicated, the CONT scale divided all dyads into contiguous versus non-contiguous pairs. The (LPC)x(CLOSE) scale, by contrast, divided this dyadic sample into contiguous, land-locked/sea-ported state-pairs in which the ported member was also the geographically closest of the contiguous, ported "options" available to the land-locked member, on the one hand, versus all other dyads, on the other.

Given this, our finding of no "independent" support either for H2 CONT or for H1Bi, i.e., (LPC)x(CLOSE), can be analyzed more clearly. In this setting we found that subset of all contiguous dyads in the sample -- which can also be described both as land-locked/ported and as fulfilling the "CLOSE" characteristic just alluded to -- is able to account for the same variation in dyadic cooperativeness as can the more inclusive group of all contiguous dyads in this sample. Yet the lack of "independent" empirical support for either H2 CONT or H1Bi based on the evidence means that a choice between these two hypotheses (if any is made) must be based on theoretical considerations. Under these circumstances, it appears that H1Bi has more to recommend it than does H2 CONT, for reasons elaborated in Chapters Three and Four.

In sum, though this analysis of H2 CONT clearly needs replication both at different points in time and vis-a-vis different samples, it does rather strongly intimate the potential fruitfulness of a vigorous attempt to actually explain the kind of zero-order correlations between contiguity and cooperativeness as have been routinely and uncritically reported in at least one recent study, i.e., Cobb and Elder (1970:90).

H3 RESOURCE CAPABILITIES

The results offered here vis-a-vis both H3 MASS and H3 MOBL stand in stark contrast to the general pattern found in several sophisticated empirical analyses -- perhaps most notably the Dimensionality of Nations (DON) studies by R. Rummel and associates (cf. Gleditsch, 1970:44). Those studies report moderate to strong support for H3, especially when using an index similar to the MASS index. In other words, those assessments found what appeared to be a strong positive relationship between dyadic resource capabilities and collaborative/cooperative dyadic interactions.

This study, by contrast, located little consistent support for either H3 MASS or H3 MOBL. Where any support was evident it was only vis-a-vis the raw cooperativeness measures. There, however, it should be noted that only two of eight fully controlled tests of H3 MASS were in the predicted direction and significant at or beyond the .01 level. But very little other favorable evidence for H3 emerged, a fact which should have

substantial implications as far as the presumed universality of H3 is concerned. In fact, inspection of Table 6.4 reveals not merely no support for H3 in proportional terms; much more striking is the undeniably strong inverse relationship between the MASS index and all the proportional measures of political cooperativeness.

H4 Cultural Homogeneity

Using measures of both religious homogeneity and of "traditional cultural similarity", this hypothesis received no tangible support. None of the fully controlled test-coefficients was favorable, i.e., in the proper (positive) direction at least at the .01 level (see Table 6.4).* On the other hand, however, we should consider briefly whether the measure of elite educational socialization homogeneity used in H5 can plausibly be considered an indicator of cultural homogeneity, and therefore be subsumable under H4.

Since elite educational socialization rather clearly refers to homogeneity of selected elite cultural values, this re-conceptualization may well be plausible. In these terms, a good case could actually be made that the original indicators of cultural homogeneity used in this study far more clearly represent homogeneity of mass (or general citizenry) values than does the measure of elite educational socialization similarity.

*As noted in Chapter Six, no table of the fully controlled tests of H4 using the seven "traditional culture" indicators is presented here, but the results showed no support whatever for the hypothesis.

Consequently, given support for H5 and complete lack of support for H4, this pattern may provide some empirical evidence that homogeneity of elite cultural orientations has a greater bearing on the likelihood of cooperation among these states than does "mass" cultural homogeneity. Such an interpretation is consistent not only with these data but also with a variety of other studies that emphasize the pervasiveness of a mass-elite gap (both economic and cultural) in the vast majority of these tropical African states.*

*See, for example, Victor Uchendu (1977:70-79).

# CHAPTER EIGHT

# CONCLUSION

One major aim of this research has been to explore several widely discussed hypotheses concerning inter-nation cooperation using a sample of states almost entirely neglected by previous analyses, i.e., sub-Saharan African countries. Three major hypotheses were selected. Specifically, the conjectures that dyadic geographic proximity, high "resource capabilities", and cultural homogeneity would all increase the likelihood of cooperative interactions were assessed using all logical pairs of 18 "Black African" states at each of three separate time points (1962, 1965 and 1968). The findings strongly contradict claims that these hypotheses are unrestricted in scope. In short, the evidence for all three was <u>at best</u> exceedingly weak.

Two other hypotheses were also probed. One asserted a link between dyadic resource dependence and cooperation (under the very specific conditions discussed in Chapter Three). The other posited a relation between dyadic similarity of "external socialization" patterns and cooperativeness. Empirical tests of these latter two hypotheses were moderately supportive of the basic notions. Perhaps most interesting was the apparent effectiveness of several interactive models of resource dependence vis-a-vis dyadic cooperation.

It is true that the outcomes of these hypothesis tests may be specific to the particular indicators used, the sample, time frame

and/or unit of analysis, as well as to the statistical techniques employed.

For example, cooperativeness was measured by reference to high proportional levels of dyadic trade, elite political interactions, and shared IGO memberships. Yet there are certainly other plausible indices. Only if these indicators are representative of other measures of cooperativeness will these results have any general significance even in this setting. It will be of interest to see how well such plausible cooperative indicators as joint treaties signed, diplomatic recognition patterns, similarity of UN voting records, etc., relate to the measures used here.

Likewise, although numerous versions of relations among (1) resource-complementarity, (2) amount of choice available to resource-short states in selecting suppliers, (3) logistical relevance, and (4) second-order preference satisfaction were examined as these factors may affect inter-state cooperation, there are still many other possible formulations. For instance, the "logistical relevance" of a potential supplier was indexed here by whether a sea-ported state was contiguous to the given land-locked state. If it was not, the ported state was viewed as logistically irrelevant to the land-locked state, and hence irrelevant to its distribution of cooperative attempts vis-a-vis actual and potential suppliers. In reality, this contiguity criterion may be too restrictive, despite my belief that alternative criteria are likely to increase the strategic risks

for a given resource-short state. High risk, after all, often is associated with high gain. Alternative general criteria for indexing "logistically relevant" potential suppliers certainly need examination, both conceptually and empirically.

The concept of "second-order preferences" was given only initial treatment too; refinements and extensions seem not merely possible but quite sensible. To reiterate the basic notion, if a resource-short unit has several viable suppliers to choose among in overcoming its resource-shortage, there is reason to believe it will try to maximize other (second-order) values in that process. In this study we empirically examined only the extent to which resource-short units tried to fulfill one and the same second-order preference: minimization of transport-costs in coping with its import/export requirements. At least three basic points are in order here: (1) the measure of transport costs used was very crude; (2) minimization of transport costs may be a less relevant second-order value than other criteria, such as maximizing political or cultural compatibility between the unit and its suppliers; (3) there may be radical differences among resource-short states in the second-order preferences they will attempt to optimize, e.g., transport costs, ideological compatibility, etc.

Among other "independent" variables examined, the measures of geographic propinquity (H2) and resource capabilities (H3) seem reasonably conventional and non-controversial. The specific indicators used to examine H4 (cultural homogeneity) and H5 ("external pressures") are more susceptible to criticism. For

example, the cultural homogeneity indicators included no measures of political ideology, regime structure, linguistic patterns, religious cultural zone, etc.

Similarly, the indicator of similarity of external pressures considers only one type of pressure--educational socialization of elites in "major power" institutions-- as indicative of the whole gamut of external linkages which may bear on the chance of cooperation among two referent states.

In addition to measurement issues, clear limits to these hypothesis tests are imposed by the nature of the sample, the time frame, and even the unit of analysis. The 18 states whose relations were assessed by no means form a _random_ sample of states in the international system. They were drawn as representatively as possible from the set of then politically independent African states for which adequate data on cooperativeness were available. One "data" prerequisite for a state's inclusion in this study was the availability of information on the country's _intra_-African trade relations at all three time points studied. The unit also had to have been among the sub-Saharan states for which extensive socio-political and economic data were compiled in the _Black Africa Handbook_ (Morrison _et al_, 1971). Whether inclusion of other Black African states would affect the results is an open question and one that needs attention.

The analyses in this study were undertaken at three time points during these states' first decade of post-colonial political independence: 1962, 1965 and 1968. The hypothesis

tests evinced very stable results over the period, with a few notable exceptions such as the moderately declining capacity of "external educational socialization" as a predictor of dyadic political cooperativeness. Data are now available to extend analysis into the 1970's. Replications of these tests using additional time points, e.g., 1971 and 1974, could surely provide new insights into processes of inter-African cooperation.

These hypotheses were assessed at the dyadic level using non-directional information about these state-pairs. As numerous scholars argue, the dyad is the fundamental unit of international (indeed social) relations. The dyadic relational unit thus seemed eminently appropriate for an exploratory study. Likewise, the non-directional dyadic unit seemed the most sensible with which to examine these hypotheses, at a minimum because coding the preponderant direction of individual cooperative attempts between members of a dyad while using the interaction data available for this study was exceedingly difficult if not impossible.

Dyadic examination of these hypotheses hardly exhausts the range of potentially useful levels of analysis. Triads are surely the next logical unit. Dependence "networks" involving three (and more) states, for example, have been discussed by several scholars (cf. B. Russett, 1967:130 fn.).

These is no reason that these hypotheses cannot be probed at levels other than the dyadic. A word of caution should be offered, however. There remains a great deal of work to be done at the even dyadic level. For example, in addition to points

already raised, stricter sets of controls now need to be applied to the empirical tests of several variants of the resource-dependence hypothesis.

A study such as this might be criticized on many grounds. The indicators used were not comprehensive, the sample was not a global random one, and the overall variance accounted for is for the most part relatively low. On the other hand, the basic strength of this research lies primarily in the extent to which it has: (1) canvassed a range of suspected determinants of inter-nation cooperation in a setting that had previously received little systematic attention; and, (2) helped lay the foundation for more refined investigation as well as uncovered some seemingly profitable new routes for further inquiry--perhaps most notably the linkages between resource dependence and inter-nation cooperativeness.

To my mind, the study will have been a success if it helps to catalyze further interest in the systematic pursuit of these and related questions. It cannot by itself be an answer to them all.

APPENDIX 1

MEASURING DYADIC COOPERATIVENESS

Overview

Three types of behavior were used to measure cooperativeness; trade flows, shared memberships in IGOs, and elite political interactions. Though hardly comprehensive, these measures include two (trade and shared IGOs) often used to indicate cooperation. The elite interaction indicator, though a less common (and more tedious) approach, may in fact be of more value; this appendix will primarily discuss the procedures used to construct this measure.

Although both "raw" and "proportional" versions of these indicators were used, proportional indicators are the most appropriate for these tests. Nonetheless, test outcomes did not generally vary across the "raw" versus "proportional" distinction.

The specific empirical measures were as follows:

(1) Raw Trade: the total annual trade (in dollars) between a dyad's members;

(2) Raw Shared IGOs: the total number of IGOs both dyadic members jointly belonged to;

(3) Raw Elite Political Interactions: the sum of all such dyadic contacts (defined below) between elites from dyadic members during six months in a given year;

(4) Proportional Trade: Raw Trade divided by the total trade engaged in by both dyad members (with all nations);

(5) Proportional Shared IGO Memberships: Raw shared IGO Memberships divided by the total number of IGOs to which both dyad members belonged;

(6) Proportional Elite Political Interactions: the raw dyadic score divided by the total of such interactions engaged in by both dyad members with any sample nations.

I. Dyadic Trade

Trade data were gleaned from U.N. Trade Series A (Issues 7, 14, 17) and selected African data sources.*

There were two problems with these trade data: (1) discrepancies between two states' estimates of their dyadic trade volume; (2) unreported trade. To deal with estimate divergence I summed the two countries' reported total exports to each other. In general, raw dyadic trade was defined as this sum.** The proportional version simply divided this sum by the members' total imports and exports to all nations.

Unreported trade was more intractable. Estimates of the value of unreported dyadic trade in sub-Saharan Africa run as high as 20 or 30 million dollars (cf. P. Garlick, 1971). Such speculation may be wild or close to the mark. A sensitivity

*See especially the East African Economic and Statistical Review, selected years.

**Where neither export figure was available then two countries; relevant import estimates for the other were used. Where only one of these export estimates was available, e.g., A's exports to B as reported by A, A's import estimate (from B) was used in place of B's estimate of its exports to A. Otherwise the case was excluded from analysis.

analysis of hypothesis-test outcomes over the range of unreported trade estimates was beyond the scope of this research.

## II. Shared IGO Memberships

These scores were coded from selected volumes of the Yearbook of International Organizations. The 200 or so intergovernmental organizations listed in that source include both the "universal" (e.g., the United Nations and its special agencies) and the "regional" type (the Organization of African Unity, Conseil de L'Entente, the East African Common Services Organization, etc.).

## III. Elite, Regional, Manifestly Non-Hostile, Political Interactions

My intent in coding these data was to assess collaborative contacts between high ranking political elites of sample states during events in which African elites were primary actors.

Obtaining these data required a range of decisions -- as to sources, coding procedures, reliability, etc. What follows is a thumbnail sketch of the process.

### A. Sources

Of the two standard Africa-focused news compendia (Africa Diary and African Research Bullentin), only Africa Diary could provide information at all three time points; the Bulletin did not report on African events until 1964. In the three years of

reports used here, Africa Diary drew upon a yearly average of 35 (primarily African) newspapers.*

B. Event Sampling

Using the scheme described below, a coder identified all "manifestly non-hostile" inter-nation interactions between African elites reported during odd-numbered months in each of 1962, 1965 and then 1968. This produced a systematic sample of all such reported events. Since I ultimately wanted merely a representative distribution of such interactions, and since no bias due to six-month sampling of this sort was likely, this procedure seemed adequate.

Coding Procedures

I needed a scheme which would exclude unwanted reports, distinguish appropriately among events of interest, and be sufficiently precise to yield the same results in any trained coder's hands. Three categories of information were crucial: event relevance, participants' identities, and evidence of manifest hostility.

1. Relevant Events

Eligible events included only those (1) reported as "in progress" or "just concluded" (within the month) and (2) in which African states comprised at least half the participating states.

*A tabulation yielded an average of 80% African sources; the remainder were almost entirely English, French, or Indian.

2. Specific Participants

Given an eligible event, a specific state was tentatively identified as a participant if: (1) the state was mentioned by name as participating in (or belonging to) an organization whose members were collectively named as participants; and (2) no reported information indicated that the tentative participating state had only "unofficial" representatives at the event.

3. No Manifest Hostility

Given this set of events, only participants displaying no "hostility" toward other participants during the event were ultimately coded as participants in the event. Indicants of hostility among participants included physical violence, walkouts, and threats of intended damaging action. Which (if any) participants were coded as cooperating in a given event was decided as follows.

> Physical Violence: No such event was included in these analysis.
>
> Threats: If only two participants were involved in the reported event, the whole event was excluded. If more than two participants were reported, and if there was a threat by A toward B but no apparent hostility between A and C or B and C, the event was coded as cooperation between A and C and between B and C only.
>
> Walkouts: Those who did "leave" during an interaction were not coded as participants at all. If there were only two participants at the start, the event was ignored. Otherwise, those who remained were coded as participants.

D. Discussion

The interactions selected by these rules were presumed to reflect, for each time point, an accurate distribution of the comparative dyadic frequencies of elite "regional" political interactions of manifestly non-hostile variety. Other approaches are of cause plausible, such as tallies of cabinet-level man-hours in dyadic collaborative interactions, although that information would have been exceedingly hard to obtain.

As a first attempt, the approach seemed to have the merits of (1) simplicity; (2) operational plausibility; (3) more depth than readily available transactional indicators -- since the measure taps actual day-to-day communication, consultation and non-hostile interactions.

Such data can of course only be useful if they reliably reflect actual distributions of such interactions. A direct assessment of the true distributions of such interactions is impossible. But two sorts of criteria can in principle increase confidence in the quality of these data: high inter-source reliability; high inter-coder reliability.

E. Inter-Source Reliability

The closest I came to an inter-source reliability check was a comparison of the elite interactions scores of selected sample dayads with estimates in the regional integration literature. This comparison was quite encouraging. For example, East African Common Services Organization members (Kenya, Tanzania and Uganda),

were found to have considerably more intense interactions among each other than did members of other dyads in this sample (at all three points in time).*

F. Inter-Coder Reliability

I recoded Africa Diary materials (for 1962 and 1968) without indicating to the original coder which materials I would systematically check. The results were highly encouraging: the correlations between our respective summary dyadic measures of the frequency of manifestly non-hostile elite political interactions were quite high: $r = +.94$ (1962) and $r = +.96$ (1968). Consequently, the original coder's scores were used in these analyses for all three years.

*See, for example; Joseph Nye (1965), and R. Green and K. Krishna (1967).

## APPENDIX 2

## REGRESSION CHECK ON INTERACTIVE HYPOTHESIS TEST RESULTS

Several hypotheses examined in this dissertation stipulate interactive effects between two (or more) variables upon the dependent variable(s). To assess these hypotheses I have utilized partial correlation analysis in this study. The results were presented in Chapter Six. The reasoning behind a partial correlation analysis of these hypotheses was the if r(Y) (QxZ) · (Q)(Z) is significant statistically, this would suggest that the interactive term (QxZ) has predictive power with respect to Y over and above what (Q) and (Z) might themselves account for in Y's variation. Using this approach, several interactive hypotheses received support from these data; others did not.

Partial correlation has not been widely used for this purpose, however, either in political science or in the other social sciences. Multiple regression appears the preferred technique (cf. H. Blalock, 1969:158n), at least if the data plausibly meet the requirements of the analytic tool. This appendix summarizes a regression "check" on the partial correlation results concerning these hypotheses.

These regressions constitute only a selective or sample check on the interactive hypothesis tests assessed while examining H1M-H1Cii. A full check on all those hypotheses (at three time points) would have required over 50 separate regression tests. Instead, I did this analysis only at one time point (1962) for

three hypotheses (H1I, H1A, H1Bii). 1962 was chosen solely since it was the first time point used in the study. I chose these particular hypotheses for two reasons: (1) H1I because it was the first interactive hypothesis discussed in the study; (2) H1A and H1Bii because they were the only variants of H1 to evince any support from the partial correlation analysis.

As the following results will show, the partial correlation tests of these three hypotheses were for practical purposes identical no matter whether we used "raw" or proportional versions of the cooperative measures. It was therefore assumed sufficient merely to offer a regression check on hypothesis tests that employed the raw versions of our cooperativeness measures. The results of these regression tests were completely supportive of those based upon the partial correlation analyses. The remainder of this appendix details this convergence.

## Partial Correlation Results

The partial correlation results for H1I, H1A, and H1Bii for 1962 (using "raw" and then proportional cooperative measures) were divided into zero-order tests and "fully controlled tests". The so-called "full tests" controlled for all independent variables examined in this study. Our partial correlation tests (in 1962) of these three hypotheses yielded the same (following) results using either raw or proportional measures of cooperativeness.

| Full Tests of: | Support |
|---|---|
| H1I | No Support |
| H1A | @ .01 level for trade (predicted direction) |
| H1Bii | @ .01 level for trade (predicted direction) |
| | @ .01 level for IGO63 (wrong direction) |

Full Regressions (raw cooperative measures)

H1I: with component terms as well as the additional variables used in the fully controlled partials of H1I forced into the regressions before the LPC scale, the LPC scale had the following B values and Standard Errors of B associated with it:

| Dependent Variable | B | Standard Error B |
|---|---|---|
| Raw Trade (1962) | -41.248 | 176.76 |
| Raw Elite Pol. Int's (1962) | + .0071 | .1279 |
| Raw Shared IGO's (1963) | - .043 | .151 |

H1A: with component terms as well as the additional variables ued in the fully controlled partials of H1A forced into the regressions before the DEP1A scale, the DEP1A scale had the following B values and Standard Errors of B associated with it:

| Dependent Variable | B | Standard Error B |
|---|---|---|
| Raw Trade (1962) | -173.89* | 65.16 |
| Raw Elite Pol. Int's (1962) | - .0035 | .0498 |
| Raw Shared IGO's (1963) | - .0364 | .0586 |

*Significant @ .01 or beyond and B has the appropriate (-) sign.

H1Bii: Again, with component terms as well as the additional variables used in the fully controlled partials of H1Bii forced into the regressions before the DEP1*CLOSE scale, that scale had the following B values and Standard Errors of B associated with it:

| Dependent Variable | B | Standard Error B |
|---|---|---|
| Raw Trade (1962) | -291.61* | 98.9 |
| Raw Elite Pol. Int's (1962) | - .064 | .078 |
| Raw Shared IGO's (1963) | + .302** | .088 |

*Significant @ .01 or beyond and B has the appropriate (-) sign.

**Significant @ .01 or beyond but B value is (+) and therefore in the wrong direction in terms of the hypothesis. In the partial correlation analysis the partial r here was likewise significant @ .01 but in the wrong direction.

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