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A Joint Action Model for Semi-Enclosed Seas: A First Cut

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A JOINT ACTION MODEL FOR SEMI-ENCLOSED SEAS:

A FIRST CUT

A paper prepared as a requirement
for the Master of Marine Affairs
Program, University of Rhode
Island.

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MASTER OF MARINE AFFAIRS
UNIV. OF RHODE ISLAND

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THE CHALLENGE

Dr. Lewis Alexander of the University of Rhode Island authored a most informative and incisive paper concerning the relationship of regionalism and the Law of the Sea. (1) In this paper Alexander focused on the special case of the semi-enclosed sea and suggested that the potential for joint action of nations surrounding these seas is worthy of special interest and study. He specifically issued the following challenge:

"What is needed, perhaps, is the creation of some sort of analytic model of significant aspects of relationships among states bordering a semi-enclosed sea so far as the potential for joint action concerning the use and control of that sea is concerned. Such a model could be used at any point in time to test the general "climate" of the area in order to predict coming developments with respect to joint activities affecting the marine region." (2)

The proposal concerning the joint action model is the confluence of Dr. Alexander's observation that semi-enclosed sea regimes harbor potential as complementary use regions. He opined that regional tendencies within a semi-enclosed sea area could portend joint, regional action relevant to that sea. The recommendation in regard to the model appears to be a requirement for devising an objective-tending means to predict if and when groups of nations surrounding a semi-enclosed sea will initiate joint action to control, use,

1. Lewis M. Alexander, Regionalism and the Law of The Sea, Pamphlet, University of Rhode Island (undated).

2. IDID., p. 15.

"presence" to all parts of the globe. Access to straits, certain territorial waters, and selected semi-enclosed seas becomes a requisite for the Soviet power play. Concomitantly, the United States requires continued access for to traditional areas in order to maintain her maritime status. One of the most critical components of modern strategic deterrence is the nuclear ballistic missile submarine. The oceans provide the essential cover which lends virtual invulnerability to the submarine weapon system.

Within the shadow of the growing reliance on the oceans and its environs several important political situations bask:

- Recently, disadvantaged and developing nations have forcefully embraced the "common heritage" of the ocean theme as an adjunct to their apparently inexhaustible drive to emphasize and enhance their national pride and self interests. Poor nations, landlocked states, countries with a paucity of natural resources are awakening to the possibilities of improving their quality of life through ocean resources. The expectations, coupled with the available international forums, publicizes and tends to legitimate their aspirations.

-- Awareness and international forums serve as the backdrop to present tendencies of "creeping jurisdiction" over ocean spaces. The recent call in the United States to extend territorial jurisdiction over coastal fisheries is indicative of a general worldwide tremor to increase

national predominance over the resource-plentiful continental shelf where fish, oil, gas and mineral potential is the greatest. In addition to leanings toward broader territorial seas, some nations are claiming special or historic rights to certain bodies of water. Canada, the Soviet Union and Indonesia are prominent examples.

- The frustrations, anticipations, needs and conflicts represented by the merging of ocean potential with nationally perceived needs coalesce in the current Law of the Sea negotiations. Voting blocs and alignment at conferences can be generally interpreted as reflecting the historical national interests of the participant nation. Thus, the Law of the Sea negotiations appear to be prompting the formation of regional thinking, and perhaps, some degree of regional action.

WHY STUDY AND MODEL THE SEMI-ENCLOSED SEA?

Professor Alexander established the following parameters for delineation of the "semi-enclosed sea."

1) Must have an area of at least 50,000 square nautical miles.

2) It must be a primary sea rather than an arm of a larger semi-enclosed sea.

3) At least 50% of its circumference should be occupied by land.

4) The width of the connection with the open ocean must not represent more than 20% of the sea's circumference.

Employing the constraints above designates 25 bodies of water as semi-enclosed seas. The 25 seas have 78 different countries bordering on one or more of them. The semi-enclosed seas included by the definition encompass over 50% of the world's continental shelf out to 200 meters. Annex A provides a listing of the 25 seas and their bordering nations.

Even a cursory review of a geographic atlas reveals that the 25 seas under consideration constitute rather definitive, logical, potential regions. Nations bordering a particular semi-enclosed sea assume at least one commonality immediately, - the bordered sea. Such commonality theoretically infers that there is complementary use of that sea as well as a shared environmental influence among the nations bordering it.

It might be hypothetically inferred that nations surrounding a semi-enclosed sea share relatively common heritage, tradition, and history of development. These inferences could lead to the premise that the similarities and complementary aspects of nations littoral to a semi-enclosed sea are prime candidates for eventual regional organization and action relative to that sea.

The potential of oceans and semi-enclosed seas for resources, coupled with the possibility of regionalism by bordering nations, leads to the prospect of joint action by regional groups relative to the sea.

The term "joint action" has thus far been used quite freely without definition. The concept of ~~joint~~ joint action must now be defined so that the scope of the investigation can be held to realistic and useful limits.

A joint action relative to a semi-enclosed sea is an action that directly affects one or more outer semi-enclosed sea nations; has sufficient weight as the result of the number of the nations, or the political power of the nations, supporting the action; is credible; involves activity and relations directly influenced by the sea.

The following hypothetical and general instances of joint actions relative to a semi-enclosed sea are provided as examples to the definition.

- 1) Restrictions to straits passage
- 2) Extension of territorial claims on the sea
- 3) Imposition of exclusion or regulatory rights
- 4) Regulation of scientific research
- 5) Pollution control
- 6) Coordination of exploitation
- 7) Navigation and passage restrictions
- 8) Shipping restrictions

Of obvious importance to the present analysis is the realistic usefulness of a model to predict joint action of semi-enclosed sea nations. Several representative uses for the predictive results could be:

- In international politics secrecy and veiling of intentions can often be a valuable tool, or constitute a distinct disadvantage, according to your vantage point. Outer semi-enclosed sea nations would do well to anticipate

certain joint actions in semi-enclosed seas where they have vital interests.

- If semi-enclosed sea joint action can be predicted with some degree of certainty then the outer-sea national actors will gain time in which to exercise decisionmaking apparatus relative to the anticipated action.

- Prediction of joint action relative to a semi-enclosed sea can provide valuable input to information gathering for military plans, economic analysis, and diplomatic strategy.

- An estimate of the prospect for bordering nations to take joint action would be a valuable component to a comprehensive area assessment of a semi-enclosed sea.

WORKING TOWARD A MODEL

The avowed goal of this analysis is to propose a model which will predict joint action prospects of nations bordering a semi-enclosed sea. Models, in the analytical sense, are a tool that uses mathematics to idealize, describe, portray and imitate a portion of the real world. As such, a model can run the gamut from the very basic to the inextricably complex.

As a simple example of a model, consider rolling two die. Let X be the number of dots appearing on the "up" side of one die; Y be the number of dots on the other. The total number of dots is represented by $T=X+Y$. In this case, the

real situation of rolling dice is depicted by the formula $T=X+Y$, which constitutes a basic analytic model. On the other hand, there are models so complicated that the formulas and accompanying variables can only be processed by computer.

It is an elementary concept of modeling that the thing being represented, that is, the part of the real world being expressed, must be fully understood prior to selection of the final model. Additionally, the form and substance of the model will necessarily depend on the question or questions it is intended to answer. Political systems and actions are among the most difficult situations to model since understanding and analyzing the political areas of life are most subjective endeavors.

In the objective world a die falls on one of six sides and the resulting number of dots nicely fit into a model. In the subjective world, however, judgement of the degree and efficacy of power, influence, stability, and success, for example, is highly dependent on the "eyes of the beholder." Thus, it is an interesting, and often frustrating, challenge for the political analyst to attempt modeling a political reality in an analytic manner. To do so demands keen insight into the very core of the political system as well as a wide overview of the system functions, patterns and relationships relevant to the area of analysis.

The foregoing being established, it is necessary to present one view of how the semi-enclosed sea system appears as it relates to the potential for joint action regarding that sea. Annex B is a tabled visualization of the semi-enclosed sea. The attempt has been made to depict the sea through three major functions:

- The basic system inputs
- The dynamic interaction of the sea
- The outputs which affect joint action potential

It is important to note when considering the system in the annex that the output elements are those which have a primary influence on the prospect for the semi-enclosed sea to manifest joint action.

THE JOINT ACTION MODEL

The system definition is a prelude to the establishment of the analytic model itself. The analytic characteristics of the model featured in this paper requires rigorous and objective definition, in so far as possible, considering the subjective elements of the system.

The objective of the model is to process information concerning a particular semi-enclosed sea to arrive at a joint action index that can be compared among the 25 semi-enclosed seas to determine relative potential for joint action involving the semi-enclosed sea. The proposed model is not intended to be unique for its purpose, rather, it is

a type, a suggested method, a first cut at analytic analysis of the political realities of the semi-enclosed sea.

In general the model processes a number of functions, relations and data, called variables, which portend to directly affect the joint action potential of an area. The process considers two primary types of variables; those which enhance the potential for joint action, and those which detract from that potential. Pure quantitative measures of the variables are converted to a standard point value, processed by an algorithm (a formula) and are then converted to a joint action index for each of the 25 semi-enclosed seas. Finally, the model orders the indexes to determine comparative standing of the seas. Annex C is a schematic of the model as described above.

Assumptions are required in a model to limit the scope of the study, resolve inherent uncertainties, and provide a technical basis for the analysis. The assumptions for the joint action model are:

1. Each of the 25 semi-enclosed seas under investigation have the potential for degrees of regional action, in particular, joint action relative to the sea.

2. The semi-enclosed sea can be evaluated as a whole. The joint action index reflects the general or average trend of the area.

3. The theory of the average applies to the variables used for the joint action model. Thus, if there is an average tendency toward joint action, then there is a potential for joint action. For example, if half of the nations in a semi-enclosed sea have attributes that indicate a low tendency toward joint action, and the remainder show strong indications of joint action, the sea will measure a medium joint action index.

4. National statistics follow a logical, steady and continuous pattern. Thus, in tables where most recent information is not available for a particular datum, entries from previous years may be analyzed and interpolated to derive a good estimate of the present status.

5. The computation of each variable will assume area homogeneity. Then for any one variable, the average measurement for the sea (the total of the measurements divided by the number of nations) will be assumed to represent the entire semi-enclosed sea.

6. Territorial possessions and client states will follow the political "line" of the parent or sponsoring nation.

7. Semi-enclosed seas with only one bordering nation constitute special cases and can only be compared to other one-nation seas.

The variables are the paramount elements, the building blocks, of the model. As mentioned previously, the choice of

variables has much to do with determining the validity of the analysis. Selecting the appropriate variables for the joint action model was the most difficult part of the study. One can easily conceive of the pieces of data that would be optimum for predicting joint action. For example, a copy of minutes of most recent meetings held in bordering nations where the semi-enclosed sea was discussed would provide a very reliable means for predicting joint action potential. It is absurd to build a model on the assumption of obtaining such information. There are three factors which constrain and indeed drive the selection of variables for an analytic political model:

1. The variables must be quantifiable.
2. Recent information and statistics relevant to the variables must be readily available.
3. Each variable must have an influence, direct or indirect, on the modeled political action.

With these constraints in mind the Major Variables listed below were finally selected after a lengthy trial and error period:

- A1 - Dependence on the Semi-Enclosed Sea and the Ocean
- A2 - Regional Tendencies
- A3 - Jurisdictional Tendencies
- A4 - Foreign Influence in the Semi-Enclosed Sea
- A5 - Interest in Ocean Matters
- A6 - Disunifying and Destabilizing Factors

The
The following pages provide the assumptions used for each of the six major variables and describe in detail the subvariables assigned to each. The descriptions include an enumeration of the point values assigned to each possible raw value of datum. Instructions for computing the subvariables are included. Accompanying and explanatory notes are found at Annex D. Annex E contains the references used to gather the information used in the model.

It is important to note that major variables A4, Foreign Influence, and A6, Disunifying Factors, are characteristics that detract from the potential for joint action.

VARIABLE A1

W1 = 22

DEPENDENCE ON THE SEMI-ENCLOSED SEA AND THE OCEAN

Assumptions:

- a. The possibility of regional action concerning a semi-enclosed sea will vary directly with the amount and value of resources derived from the sea.
- b. The semi-enclosed sea gains importance as the bordering nations become linked to ocean usage.
- c. Marine oriented dependence will prompt semi-enclosed sea nations to devise a firm and deliberate policy relative to the ocean and the sea.
- d. Economic activity based on use of the sea denotes dependence on that sea.

SUBVARIABLE A1(1) Reference: 15 W1(1) = 1.85

Average size of national merchant fleets registered to the semi-enclosed sea nations. (in thousands of gross tons; nearest whole number)

<u>RAW VALUE</u>	<u>POINT VALUE</u>
more than 10,000	5
4100 to 9999	4
1000 to 4099	3
550 to 999	2
0 to 549	1

- - - - -

SUBVARIABLE A1(2) Reference: 11 W1(2) = 1.25
 Note: 4

Per-nation average of shipbuilders located on the semi-enclosed sea. (The total number of shipbuilders on the semi-enclosed sea divided by the number of nations for which data was recorded. Two decimal places)

<u>AVERAGE</u>	<u>POINT VALUE</u>
more than 15.00	5
5.00 to 14.99	4
.75 to 4.99	3
.10 to .74	2
0 to .09	1

- - - - -

SUBVARIABLE A1(3)

Reference: 4,18
Note: 5

W1(3) = 1.70

Per nation average number of major navy craft owned by semi-enclosed sea nations. (nearest whole numbers)

<u>AVERAGE</u>	<u>POINT VALUE</u>
more than 800	5
200 to 799	4
90 to 199	3
20 to 89	2
0 to 19	1

- - - - -

SUBVARIABLE A1(4)

Reference: 14
Note:6

W1(4) = 1.60

Per cent of bordering nation ports that are located on the semi-enclosed sea being rated. (one decimal place)

<u>PER CENT</u>	<u>POINT VALUE</u>
60 to 100	5
40 to 59.9	4
25 to 39.9	3
5 to 24.9	2
0 to 4.9	1

- - - - -

SUBVARIABLE A1(5)

Reference: 5
Note: 7

W1(5) = 1.15

Per nation average of per capita annual consumption of fish. (sum of bordering nation per capita consumption divided by the number of nations; in kilograms; one decimal)

<u>AVERAGE</u>	<u>POINT VALUE</u>
more than 21	5
11 to 20.9	4
9 to 10.9	3
6 to 8.9	2
less than 6	1

- - - - -

SUBVARIABLE A1(6)

Reference: 15
Note: 8

W1(6) = 1.45

The average total annual fish catch for bordering nations. (inner and outer semi-enclosed sea catch. Sum of national catches divided by the number of nations; thousands of metric tons; whole numbers)

<u>AVERAGE</u>	<u>POINT VALUE</u>
more than 6000	5
1100 to 5999	4
800 to 1099	3
200 to 799	2
less than 200	1

- - - - -

SUBVARIABLE A1(7)

Reference: 19
Note: 9

W1(7) = 1.00

The per cent of semi-enclosed sea nations conduct distant water fishing. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
90 to 100	5
70 to 89	4
50 to 69	3
10 to 49	2
0 to 9	1

- - - - -

VARIABLE A2

W2 = 19

REGIONAL TENDENCIES

Assumptions:

a. Common membership of semi-enclosed sea nations in intergovernmental organizations of proven effectiveness implies a willingness and ability for states bordering the sea to cooperate and work together.

b. Agreement on important issues concerning the sea as well as participation in bilateral, multilateral, and regional arrangements are a logical basis for predicting increased and far reaching combined policy and action.

c. Trade and military interdependence among the bordering seas breeds regionalism and provides a fertile environment for joint action.

SUBVARIABLE A2(1)

Reference: 21

W2(1) = 1.60

The geographic concentration of trade. The per cent of the semi-enclosed sea nation's export trade going to other nations bordering the same sea. (thousands of U.S. dollars; one decimal)

<u>PER CENT</u>	<u>POINT VALUE</u>
24 or more	5
10 to 23.9	4
3.5 to 9.9	3
1 to 3.4	2
less than 1	1

- - - - -
SUBVARIABLE A2(2)

Reference: 16
Note: 10

W2(2) = 0.95

Commonality of membership in intergovernmental organizations. Let N be the total number of instances of semi-enclosed sea nations with membership in selected intergovernmental agencies without regard to redundancy. Let M be the number of different intergovernmental agencies to which the bordering nations belong. Let the Index of Commonality, $IC = M/N$. The degree of commonality in the selected agencies increases as the index decreases. For example, if the nations of a sea had 10 instances of membership in the agencies (some being redundant) yet there was only 2 agencies represented in the total memberships, then there would be an IC of $2/10$ or $1/5$. (two decimal places)

<u>INDEX</u>	<u>POINT VALUE</u>
less than 30	5
.31 to .50	4
.51 to .70	3
.71 to .90	2
greater than .90	1

- - - - -
SUBVARIABLE A2(3) Reference: 3 W2(3) = 1.30

Commonality of Law of the Sea policy. Let N be the total number of draft articles proposed by bordering nations at the 3d LOS without regard to redundancy. Let M be the number of different articles proposed by the nations. Then the index of commonality is $IC = M/N$. The degree of commonality increases as the index decreases.

<u>INDEX</u>	<u>POINT VALUE</u>
less than .50	5
.50 to .69	4
.70 to .79	3
.80 to .95	2
greater than .95	1

SUBVARIABLE A2(4) Reference: 4,16,17 W2(4) = 1.40

Per cent of different bordering nations involved in bilateral or multilateral arrangements with other bordering nations relative to the rated sea. (note that the variable is not concerned with instances of arrangements but rather the per cent of participation in at least one; whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
90 or greater	5
80 to 89	4
50 to 79	3
10 to 49	2
less than 10	1

- - - - -
SUBVARIABLE A2(5) Reference: 8 W2(5) = 1.05
 Note: 11

Greatest per cent of semi-enclosed sea nations claiming the same territorial sea breadth. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
90 or greater	5
60 to 89	4
45 to 59	3
10 to 44	2
less than 10	1

SUBVARIABLE A2(6)

Reference: 13
Note: 12

W2(6) = 1.05

Greatest per cent of semi-enclosed sea nations sharing the same stand on the economic zone. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
90 or greater	5
70 to 89	4
50 to 69	3
10 to 49	2
less than 10	1

- - - - -
SUBVARIABLE A2(7)

Reference: 4
Note: 13

W2(7) = 1.15

Is one or more of the bordering nations receiving military aid from another bordering state?

<u>RESPONSE</u>	<u>POINT VALUE</u>
YES	1
NO	0

- - - - -
SUBVARIABLE A2(8)

Reference: 1,17,20
Note: 13

W2(8) = 1.50

Is there an existing regional arrangement relative to the rated semi-enclosed sea?

<u>RESPONSE</u>	<u>POINT VALUE</u>
YES	1
NO	0

VARIABLE A3

W3 = 13

JURISDICTIONAL TENDENCIES

Assumptions:

a. National claims to, and policy positions on territorial seas, the economic zone, resource sharing and special rights are cogent and timely indicators of regional willingness to impose restrictions relevant to the semi-enclosed sea.

b. The military posture of the semi-enclosed sea reflects the area potential for imposing and enforcing jurisdiction.

c. As degradation of semi-enclosed sea resources is perceived, action to control those resources is probable.

d. Offshore oil and fish resources in the semi-enclosed sea will cause nations to tend toward establishing jurisdictional measures.

SUBVARIABLE A3(1)

Reference: 13
Note: 14

W3(1) = 1.10

The current economic zone position for the semi-enclosed sea.

Positions: A. Economic zone with coastal state control over both scientific research and pollution; or, a 200 mile territorial sea rather than an economic zone.

B. Economic zone with coastal state control over either research or pollution, but not both.

C. Economic Zone with no coastal state control over research or pollution.

D. No economic zone.

Assign points to positions as follows: A = 4, B = 3, C = 2, and D = 1. Let X(A), X(B), X(C), X(D) be the number of bordering nations embracing positions A,B,C,D, respectively. Let $SUM = 4X(A) + 3X(B) + 2X(C) + X(D)$. Then the current, or average, semi-enclosed sea stand on the economic zone issue is denoted by: $STAND = SUM/\text{number of bordering nations}$.

<u>STAND</u>	<u>POINT VALUE</u>
4	4
3 to 3.9	3
2 to 2.9	2
1 to 1.9	1

- - - - -

SUBVARIABLE A3(2)	Reference: 13 Note: 15	W3(2) = 1.15
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Resources sharing position.

Positions: A. Full utilization of living resources.

B. Regional sharing of living resources for developing states.

C. Access for land-locked states.

D. Global access to all living resources for developing nations.

Let SUM be defined as in Subvariable A3(1). Then the current semi-enclosed sea stand on the resource sharing issue is

denoted by: $STAND = \text{SUM} / \text{number of bordering nations}$.

<u>STAND</u>	<u>POINT VALUE</u>
4	4
2.5 to 3.9	3
2.0 to 2.4	2
less than 2.0	1

- - - - -
 SUBVARIABLE A3(3) Reference: 4,18 W3(3) = 1.05
 Note: 16

The per nation average of active military manpower for bordering nations. (total number of active military in semi-enclosed sea area divided by the number of nations; whole numbers)

<u>STRENGTH</u>	<u>POINT VALUE</u>
800,000 or greater	5
160,000 to 799,999	4
130,000 to 159,000	3
60,000 to 129,999	2
less than 60,000	1

- - - - -
 SUBVARIABLE A3(4) Reference: 7 W3(4) = 0.85

Average national share of the difference between the annual fish catch potential for the semi-enclosed sea and the actual annual catch from that sea. (whole numbers)

<u>SHARE</u>	<u>POINT VALUE</u>
less than 10,000	5
10,000 to 54,999	4
55,000 to 84,999	3
85,000 to 249,999	2
250,000 or greater	1

- - - - -
 SUBVARIABLE A3(5) Reference: 6 W3(5) = 1.20

Claims to exclusive fisheries. (one decimel)

- Claims: A. Greater than 12 miles
 B. 9 to 12 miles
 C. 4 to 8 miles
 D. 3 or less miles

Assign weights and define SUM as in A3(1) and A3(2).
 Then the average claim to exclusive fishing rights is
 expressed by: CLAIM = SUM/ number of bordering nations.

<u>CLAIM</u>	<u>POINT VALUE</u>
3.0 or greater	4
2.4 to 2.9	3
2.0 to 2.3	2
less than 2.0	1

- - - - -
 SUBVARIABLE A3(6) Reference: 8 W3(6) = 1.35

Claim to territorial sea breadth.

- Claims: A. Greater than 12 miles
 B. 10 to 12 miles
 C. 4 to 9 miles
 D. 3 miles

Assign weights and define SUM as in A3(1), A3(2) and A3(5).
 The average semi-enclosed sea territorial sea claim is
 denoted by: CLAIM = SUM/ number of bordering nations.

<u>CLAIM</u>	<u>POINT VALUE</u>
4.0	5
3.0 to 3.9	4
2.3 to 2.9	3
2.0 to 2.2	2
less than 2.0	1

- - - - -
 SUBVARIABLE A3(7) Reference: 8 W3(7) = 1.30

Is there 25% or more of the bordering nations claiming
 special or historic rights on all or part of the rated sea?

<u>RESPONSE</u>	<u>POINT VALUE</u>
YES	1
NO	0

SUBVARIABLE A3(8)

Reference: 7

W3(8) = 0.95

Per nation average of fish caught in the rated semi-enclosed sea. (thousands of metric tons; whole numbers)

<u>AVERAGE</u>	<u>POINT VALUE</u>
400,000 or greater	5
275,000 to 399,999	4
80,000 to 274,999	3
15,000 to 79,999	2
less than 15,000	1

SUBVARIABLE A3(9)

Reference: 10

W3(9) = 1.05

The offshore oil production in the semi-enclosed sea.

(millions of barrels; one decimal)

<u>PRODUCTION</u>	<u>POINT VALUE</u>
over 70	3
.1 to 70	2
0	1

VARIABLE A4

W4 = 17

FOREIGN INFLUENCE IN THE SEMI-ENCLOSED SEA AREA

Assumptions: a. On the average, territorial possessions will be reluctant to be a formal party to, or acquiesce in, attempts to enact policy to restrict its parent nation's activities relevant to the semi-enclosed sea.

b. Military aid binds the recipient to an implied agreement that the benefactor will participate in no action which would be detrimental to the national interest of the nation providing the aid.

c. Export trade traffic to outer semi-enclosed sea nations generally implies a degree of dependence on those nations.

d. The crucial nature of important straits to worldwide trade and military interests infers that their presence on a semi-enclosed sea will expose that sea to foreign use and influence.

SUBVARIABLE A4(1)

Reference: 4,18
Note: 17

W4(1) = -2.1

Average number of instances of bordering nations receiving military aid or assistance from outer semi-enclosed sea nations. (number of instances divided by the number of nations; one decimal place)

<u>AVERAGE</u>	<u>POINT VALUE</u>
1.4 or greater	5
1.0 to 1.3	4
.6 to .9	3
.1 to .5	2
less than .1	1

- - - - -

SUBVARIABLE A4(2)

Reference: Geographic Atlas

W4(2) = -2.2

Per cent of bordering nations that are territorial possessions or client states of outer semi-enclosed sea nations. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
100	4
25 to 99	3
1 to 24	2
0	1

- - - - -

SUBVARIABLE A4(3)

Reference: 21

W4(3) = - 1.9

Per cent of total semi-enclosed sea annual trade going to non-bordering nations. (one decimal)

<u>PER CENT</u>	<u>POINT VALUE</u>
more than 99	5
96.5 to 99	4
90 to 96.4	3
76 to 89.9	2
less than 76	1

- - - - -

SUBVARIABLE A 4(4)

Reference: 1,12

W4(4) = - 2.0

Number of important straits connecting the semi-enclosed sea with the open sea or another semi-enclosed body of water.

SUBVARIABLE A4(5)

Reference: 15

W4(5) = -1.8

National average of external trade goods loaded and unloaded at bordering states ports annually. (not limited to rated sea's ports only; thousands of metric tons; whole numbers)

<u>AVERAGE</u>	<u>POINT VALUE</u>
200,000 or greater	5
90,000 to 199,999	4
50,000 to 89,999	3
17,500 to 49,999	2
less than 17,500	1

VARIABLE A5

W5 = 14

INTEREST IN OCEAN ORIENTED MATTERS

Assumptions: a. National concern for the ocean environment presages an attitude of willingness to cooperate and work with bordering neighbors relative to the semi-enclosed sea.

b. Membership on special-emphasis United Nation committees concerned with ocean matters implies interest in ocean matters.

c. The number of educational institutes sponsoring marine research in a semi-enclosed sea area is an index to national interest in the oceans.

SUBVARIABLE A5(1) Reference: 9 W5(1) = 2.3

Per nation average of marine related institutions. (total number of institutions divided by the number of bordering nations; one decimal)

<u>AVERAGE</u>	<u>POINT VALUE</u>
more than 75	5
25.0 to 74.9	4
9.0 to 24.9	3
2.0 to 8.9	2
less than 2.0	1

- - - - -
SUBVARIABLE A5(2) Reference: 2 W5(2) = 2.4

Per cent of bordering nations belonging to the U.N. Committee of Peaceful Uses of the Seabed and Ocean Floors Beyond the Limit of National Jurisdiction. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
100	3
65 to 99	2
less than 65	1

- - - - -
SUBVARIABLE A5(3) Reference: 20 W5(3) = 2.6

Per cent of bordering nations belonging to the U.N. Intergovernmental Maritime Consulting Organization. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
100	3
70 to 99	2
less than 70	1

- - - - -
VARIABLE A6

W6 = 15

DISUNIFYING AND DESTABILIZING FACTORS

Assumptions: a. Intra-semi-enclosed sea histories of armed conflict, existing confrontations, and boundary disputes work against efforts at joint action relative to the sea.

b. Major instances of internal disorder manifested in unscheduled change in leadership, or ruling parties, riots or civil conflict, will focus national concern and resources on internal rather than regional matters.

c. Instances of pairs of bordering nations that are not trading partners portends a general lack of cooperative spirit.

d. The outlook for agreement on semi-enclosed sea policy and resolution in policy enactment diminishes as the number of sovereign nations that are parties to negotiations increases.

e. A great disparity of per capita income among bordering nations provide the potential impetus for discontent and lack of harmonious relations.

f. Nations bordering on more than one semi-enclosed sea will have to divide their interest and effort between those seas. Thus, dual bordering nations cannot be expected to focus more than a portion of the impetus for joint action relative to any one sea.

SUBVARIABLE A6(1)

Reference: 4

W6(1) = -2.0

Per Cent of bordering nations presently involved in offshore or territorial boundary disputes with another semi-enclosed sea nation.

<u>PER CENT</u>	<u>POINT VALUE</u>
more than 65	4
51 to 64	3
1 to 50	2
0	1

SUBVARIABLE A6(2)

Reference: 21
Note: 19

W6(2) = -1.8

Per Cent of instances of non-trading among bordering nations.
(whole numbers)

The total number of non-redundant pairings of bordering nations is mathematically defined as $\binom{N}{2}$, where N is the total number of semi-enclosed sea nations on the rated sea.

$\binom{N}{2}$ is defined as $\frac{N!}{2!(N-2)!}$, or more simply, $\frac{N^2 - N}{2}$.

For example, with 5 nations there will be $\frac{25 - 5}{2}$ or 10 possible pairings. Let M be the number of instances where

semi-enclosed sea nations are not trading partners, then $\frac{M}{\binom{N}{2}}$, or $\frac{M}{\frac{N^2 - N}{2}}$, or $\frac{2M}{N^2 - N} (100)$ is the per cent of non-trading instances.

<u>PER CENT</u>	<u>POINT VALUES</u>
more than 45	4
20 to 45	3
1 to 19	2
0	1

SUBVARIABLE A6(3) Reference: 4,16,17 W6(3) = -1.6

Per Cent of bordering nations experiencing unscheduled change of leadership or internal disorder within the last 8 years. (whole numbers)

<u>PER CENT</u>	<u>POINT VALUE</u>
more than 59	4
35 to 59	3
1 to 34	2
0	1

- - - - -
SUBVARIABLE A6(4) Reference: 15,17,4 W6(4) = - 1.7
Note: 20

The ratio of the average difference from the mean and the mean per capita income of bordering nations. Let m be the mean (average) per capita income for the sea. Let d_1, d_2, \dots be the absolute (non-negative) difference of the per capita income for country 1,2, . . . from the mean income m .

Now let A be the average difference and be defined as

$$A = \frac{d_1 + d_2 + \dots + d_n}{n}, \text{ where } n \text{ is the number of}$$

nations bordering the rated sea. The ratio of the average difference from the mean and the mean is A/m .

<u>A/m</u>	<u>POINT VALUE</u>
over 90	5
70 to 90	4
50 to 69	3
35 to 49	2
less than 35	1

- - - - -
 SUBVARIABLE A6(5) Reference: 12 W6(5) = -1.4
 Note:20

Divergence of interests. Total number of semi-enclosed seas contiguous to nations bordering the rated sea divided by the number of bordering nations. The computation yields the per nation average of semi-enclosed seas contiguous to nations bordering the rated sea.(one decimal)

<u>AVERAGE</u>	<u>POINT VALUE</u>
4.0 or greater	4
3.0 to 3.9	3
2.3 to 2.9	2
less than 2.3	1

- - - - -
 SUBVARIABLE A6(6) Reference: 1,8,20 W6(6) = -1.5

The maximum number of possible bilateral negotiations or relationships among the bordering nations. (see A6(2) for method of computing possible number (maximum) non-redundant pairings; whole numbers)

MAXIMUM PAIRINGSPOINT VALUES

more than 75	5
20 to 74	4
5 to 19	3
2 to 4	2
1	1

THE ALGORITHM

Having identified and defined the variables and the manner of attributing point values to accompanying data, the algorithm used to process the variables into a joint action index must be devised. Conceptually we say that the joint action index, denoted by I, is a function of the six major variables. In mathematical notation

$$I = f(A_1, A_2, A_3, A_4, A_5, A_6) .$$

As explained earlier, each of the major variables is a subset comprised of subvariables so that in set notation:

$$A_1 = \{A_1(1), A_1(2), A_1(3), A_1(4), A_1(5), A_1(6), A_1(7)\}$$

$$A_2 = \{A_2(1), A_2(2), A_2(3), A_2(4), A_2(5), A_2(6), A_2(7), A_2(8)\}$$

$$A_3 = \{A_3(1), A_3(2), A_3(3), A_3(4), A_3(5), A_3(6), A_3(7), A_3(8), A_3(9)\}$$

$$A_4 = \{A_4(1), A_4(2), A_4(3), A_4(4), A_4(5)\}$$

$$A_5 = \{A_5(1), A_5(2), A_5(3), A_5(4)\}$$

$$A_6 = \{A_6(1), A_6(2), A_6(3), A_6(4), A_6(5), A_6(6)\} .$$

The portion of the model defining the variables provides a guide for assigning point values to each of the 39 subvariables. The alignment of point values with sets of data was determined as follows. Consider variable A1(3), the average number of major navy craft owned by semi-enclosed sea nations.

First; the number of major navy craft owned by each of the 78 bordering nations was determined using the applicable reference.

Second; the average number per nation was found.

Third; The average values were ordered by magnitude, rendering an ordered list of 25 values ranging from 0 to 2749.

Last; the list was divided into ordered groups of groups five averages each. It need be noted that it is not possible for all subvariables to obtain groups of ordered data with five entries each. This is due to the fact that the measurements are not uniformly distributed and clustering of values occurs. Thus, common sense and logic are required to determine the divisions.

In essence, the point value technique gives us a method to assign quantitative values that indicate the quintile in which the rated semi-enclosed sea falls for the measured variable. in cases where 5 possible point values are available to rate the subvariable. The rationale for selecting

5 values is based on the fact that five ratings for 39 variables will provide adequate discrimination of measurement. In some instances less than 5 point values are used due to the clustering of data or the nature of the question.

Turning to the formula that processes the point values we let $PVA_i(j)$ be the point value for subvariable $A_i(j)$. We note that i can take on values 1,2, . . . ,6, representing the six major variables; j denotes the subvariable designator. We define $W_i(j)$ as the weight of subvariable $A_i(j)$. The weighting value is provided as a tool to allow the analyst latitude in affecting the importance or "weight" of the subvariable on determination of the major variable.

Major variable A_4 , for example, has five subvariables. Suppose that the analyst is of the opinion that the fourth subvariable far "outweighs" the others in determining the overall, major variable. In fact, he is particularly opinionated concerning the relative importance of the entire set of five subvariables and he establishes an order of preference as follows: $A_4(4)$, $A_4(2)$, $A_4(1)$, $A_4(3)$, $A_4(5)$. It is stipulated that $\sum_{j=1}^5 W_i(j) = 10$ for all i . The sum of 10 is arbitrarily chosen and depends on what size numbers you wish to obtain from the computation. The key is that 10 is used to evaluate each major variable. In the cited example the analyst might choose to distribute the 10 weight points as indicated below:

A4(1)	W4(1)	= 1.5
A4(2)	W4(2)	= 2.5
A4(3)	W4(3)	= 1.0
A4(4)	W4(4)	= 4.5
A4(5)	W4(5)	= 0.5

Note that the weights confirm the stated emphasis and sum to 10.

Thus far it has been shown that we use the variable definition to obtain the point value $PVA_i(j)$ for variable $A_i(j)$. The definition assigned a weighting value, $W_i(j)$. If the two are multiplied, $(PVA_i(j))(W_i(j))$, we have the weighted point value reflecting the analyst's judgement and interests. The total weighted point value for a major variable is found by simply adding the weighted point values of the subvariables which in mathematical notation is:

Total value of $A_i(j) = \sum_{j=1}^k (PVA_i(j))(W_i(j))$
 which is defined as $(PVA_i(1))(W_i(1)) + (PVA_i(2))(W_i(2)) + \dots + (PVA_i(k))(W_i(k))$, where k depends on the number of subvariables in a major variable.

At this point a complication is introduced. We observe that there are unequal numbers of subvariables and thus unequal total possible point values in each major variable. Hence, we need a means to standardize the measure for major variables. This can be done by forming a ratio of the sum of the earned weighted points values to the maximum possible weighted points. Let $MPV_i(j)$ be the maximum number of points

that can be awarded subvariable $A_i(j)$. Then the maximum possible points that can be given major variable A_i is the sum of the products of the $MPV_i(j)$ s and the $W_i(j)$ s, or

$$\sum_{j=1}^k (MPV_i(j))(W_i(j)).$$

Then the ratio of the calculated to the maximum points, call it RM_i for major variable A_i , is

$$RM_i = \frac{\sum_{j=1}^k [(PVA_i(j))(W_i(j))]}{\sum_{j=1}^k [(MPV_i(j))(W_i(j))]} .$$

Note that the limits of the summations depend on the number of subvariables in each major variable.

To this point we have calculated a ratio measure that gives a relative, standard measure for each of the major variables. Just as we placed emphasis and priority by weighting the 39 subvariables, we now do so for A_1 through A_6 . Let the weighting functions be W_1, W_2, \dots, W_6 , for variables A_1, A_2, \dots, A_6 , respectively. The constraint $\sum_{i=1}^6 W_i = 100$, is arbitrarily imposed.

By multiplying the major weight by the RM for a particular major variable we obtain a subindex. The subindex for variable A_i is defined as $(W_i)(RM_i)$.

Finally, all that is needed to determine the joint action potential index for a semi-enclosed sea m , $m = 1, \dots, 25$, is to sum the 6 subindexes so that

$$I_m = \sum_{i=1}^6 (W_i)(RM_i) .$$

The result of the foregoing analysis is a formula that converts point values assigned to raw data into a joint action potential index for each semi-enclosed sea.

$$I_m = \sum_{i=1}^6 \left\{ [W_i] \left[\frac{\sum_{j=1}^k (PVA_i(j))(W_i(j))}{\sum_{j=1}^k (MPV_i(j))(W_i(j))} \right] \right\}$$

where $k = f(i)$.

THE FINDINGS

The joint action model was applied to 25 semi-enclosed sea areas using the assumptions previously delineated. The table below outlines the findings by showing the overall order of the results; listing the order of the sea for each of the major variables; showing the numerical joint action index; and suggesting a quintile grouping. For this table, "1" denotes the highest joint action potential. Note that the one-nation semi-enclosed seas are entered separately.

SEMI-ENCLOSED SEA	INDEX Im	ORDERING						
		Over all	A1	A2	A3	A4	A5	A6
<u>SPECIAL CASE *</u>								
KARA	38.42	1	1	1	1	2	1	2
GULF OF ST. LAWRENCE	33.27	2	2	1	2	2	3	1
HUDSON BAY	32.30	3	3	1	3	1	2	1
<u>REGULAR CASES</u>								
NORTH	39.04	1	3	1	6	3	3	1
BLACK	37.08	2	7	7	1	1	2	3
BALTIC	33.64	3	5	2	18	2	8	8
GULF OF MEXICO	27.93	4	8	11	3	2	4	9
BERING	27.21	5	5	19	12	10	1	1

TIMOR/ARAFURA	26.48	6	10	3	2	15	2	10
OKHOTSK	26.35	7	2	21	8	11	1	6
JAPAN	22.25	8	1	17	4	11	10	13
BISMARCK	21.10	9	12	15	5	4	7	5
MEDITERRANEAN	21.05	10	9	5	17	5	11	14

EAST CHINA/YELLOW	20.50	11	4	14	9	17	12	12
SOUTH CHINA	19.30	12	6	6	16	6	14	18
SULU	19.11	13	14	12	7	13	5	11
CELEBES	18.29	14	17	9	13	14	6	13

CARIBBEAN	17.75	15	19	4	19	7	13	11
ANDAMAN	17.08	16	15	10	15	15	8	10
BAFFIN BAY/DAVIS STRAIT	15.85	17	13	22	21	12	2	2
SOLOMON	15.48	18	11	18	14	18	7	4

RED	13.50	19	20	13	20	9	7	15
JAVA/FLORES/BANDA	9.91	20	18	20	10	19	9	7
GULF OF ADEN	8.03	21	16	16	11	16	15	17
PERSIAN GULF	7.81	22	21	8	22	8	16	16

* Special cases ordered only within the subset.

INTERPRETING THE FINDINGS

The three seas bordered by only one nation have indexes which rate them within the top six for potential toward joint action relative to the semi-enclosed sea. That result tends to confirm the general assumption that one-nation seas have increased potential for monolithic behavior regarding the sea.

The ordering of the regular case semi-enclosed seas should be viewed as a means of dividing the 22 nations into joint potential quintiles following the trend established in the model to assign point values based on ordered quintiles. Therefore, the results can be most accurately be used to indicate relative groups of joint action potential. According to the results of the model, it would be deduced that the North, Black, Baltic, Bering Seas and the Gulf of Mexico together have the greatest potential for joint action relative to the sea. The index can be used, but with more caution, to suggest the ordering of potential within each group.

It is important to observe that the joint action index is a measure of relativity only; the quantitative distance between seas, as indicated by their indexes, does not imply how near or far the seas may be from one another regarding joint action potential.

It is interesting to note that the Gulf of Mexico is in the first quintile of the regular cases. This appears to be an anomaly since obviously the United States and Cuba have no recent history nor near-future indications of cooperation. The situation illustrates an earlier premise that was set prior to the computations of the model: that joint action potential reflects the dominant tendencies of the area, and in no way denotes 100% participation by the bordering nations.

EVALUATING THE MODEL

As announced when outlining the objective of the model, it is intended to be a first cut, pilot effort to describe the political complexities of the semi-enclosed sea. As such, the model was not expected to be flawless, rather, it is a framework from which further effort may be launched.

A most important aspect of the evaluation of the model is to determine if Dr. Alexander's challenge, the impetus for the paper, was met. In so far as the proposal was to derive an analytic model to test one particular semi-enclosed sea at a point in time, the present work misses the mark. Within a short time after beginning research it was evident that the first cut model could have meaning only in a relative sense; that is, analyzing and comparing all the semi-enclosed seas to determine some standard index. Thus the model described in this paper is a step toward, but not the answer

to, the challenge.

The model has several problems which plague the process for its use:

1. The chosen variables and subsequently the accuracy of the prediction depend on the availability of data. Thus, selection of variables is dictated by reference sources.

2. Gathering and processing data as prescribed by the model requires tedious hours of research and arduous calculations. Execution of the model necessitates collection of 1248 pieces of data. Each of the subvariables requires some sort of mathematical computation, in order to determine point values and use the algorithm.

3. The model is far from objective. The selection of variables and the determination of weighting functions are subjective processes that largely determine the model output.

Employment of the joint action model revealed several interesting characteristics that tend to imply potential for models of this nature:

1. The model is flexible in that variables may be added, deleted, or exchanged with little effort once the initial data and tabulation has been done. Thus, as an example, the results of the current Law of the Sea negotiations could be used as a subvariable.

2. The research required to use the model submerges the analyst in almost every applicable aspect of the semi-enclosed sea. Thus, knowledge is gained, organized and viewed in an efficient structure through use of the model.

3. Once the initial collection and tabulation is complete, updating the model requires minimum effort.

4. The concept and format provided by the joint action model can be adapted to many political circumstances and questions. Slight modification and arrangement of variables, and an adjustment of weighting functions could yield a predictive model for coastal area regionalism.

WHERE DO WE GO FROM HERE?

Dr. Alexander's proposal has opened Pandora's Box. His challenge has been partially answered with the joint action model proposed in this paper. Yet, there is much to be done before the process will prove to be an effective and timely method of prediction.

- The 39 proposed variables must be analyzed by correlation techniques to determine if some may be eliminated due to redundancy. As a case in point, the number of merchant ships registered by a nation and the number of ports on the semi-enclosed sea may have a high correlation, indicating that one or the other variable would suffice for the model thus reducing information gathering and computations.

- The proposed variables and their associated assumptions should receive an interdisciplinary evaluation by social, political, economic, and resource experts, to determine their validity as indicators of joint action potential.

- The results of the model as presented by the table should be compared to independent surveys of "experts" who have been asked to provide an ordered list, based on their experience and judgement, of the 25 semi-enclosed seas and their potential for joint action.

- A computer program for the model should be established so that work with the process can more easily be accomplished, changes more readily made, and updating done frequently.

- Work should be done to understand the impact of subjectivity on the outputs. In this line, sensitivity analysis should be performed on the weighting functions to see how changes in their values will vary the outputs in the form of indexes.

ANNEX A
THE SEMI-ENCLOSED SEAS AND
THEIR LITTORAL STATES

THE SEA	THE LITTORAL STATES
Gulf of Aden	Yemen Aden, Somalia, Afars and Issas (France)
Andaman Sea	Burma, Thailand, Malaysia, Indonesia, Andaman and Nicobar Island (India)
Baffin Bay/ Davis Strait	Canada, Greenland
Baltic Sea	Sweden, Denmark, W. Germany, E. Germany, Poland, Finland, Soviet Union
Bering Sea	United States, Soviet Union
Bismark Sea	Papua/New Guinea, Bismark Archipelago (both Aust)
Black Sea	Turkey, Bulgaria, Romania, Soviet Union
Caribbean Sea	Mexico, Guatemala, Honduras, Nicaragua, Cuba, Costa Rica, Panama, Colombia, Venezuela, Dominican Republic, Haiti, Jamaica, Trinidad and Tobago, Barbados, Granada, Belize (UK), Island Territories of the U.S., UK, France and the Netherlands.
Celebes Sea	Philippines, Malaysia, Indonesia
East China/Yellow	Peoples Rep. of China, Taiwan, Japan, N. Korea, S. Korea.
Hudson Bay	Canada
Sea of Japan	Japan, S. Korea, N. Korea, Soviet Union
Java/Flores/Banda	Indonesia, Portuguese Timor
Kara Sea	Soviet Union
Mediterranean Sea	Spain, France, Monaco, Italy, Malta, Albania, Yugoslavia, Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Egypt, Libya, Tunisia, Algeria, Morocco, Gibraltar (UK)

ANNEX A (cont)

THE SEA

THE SEMI-ENCLOSED SEA AS A SYSTEM THE LITTORAL STATES

Gulf of Mexico	United States, Mexico, Cuba
North Sea	United Kingdom, France, Belgium, Netherlands, w. Germany, Denmark, Norway.
Sea of Okhotsk	Soviet Union, Japan
Persian Gulf	Iran, Iraq, Kuwait, Saudi Arabia, Qatar, Bahrain, United Arab Emirates, Oman.
Red Sea	Egypt, Israel, Jordan, Saudi Arabia, Yemen Aden, Yemen San'a, Sudan, Ethiopia, Afars and Issas (France)
Gulf of St. Lawrence	Canada
Solomon Sea	Papua/New Guinea (Aust), Bismark Arch. (Aust), Northern Solomon Islands (Aust), British Solomon Islands (UK)
South China Sea	Malaysia, Thailand, Cambodia, S. Vietnam, N. Vietnam, Peoples Rep. of China, Philippines, Indonesia, Singapore, Hong Kong (UK), Brunei (UK), Macao (Port)
Sulu Sea	Philippines, Indonesia, Malaysia
Timor/Arafura Seas	Indonesia, Australia, Papua/New Guinea (Aust)

A-2

DYNAMIC INTERACTION OF THE SEMI-ENCLOSED SEA

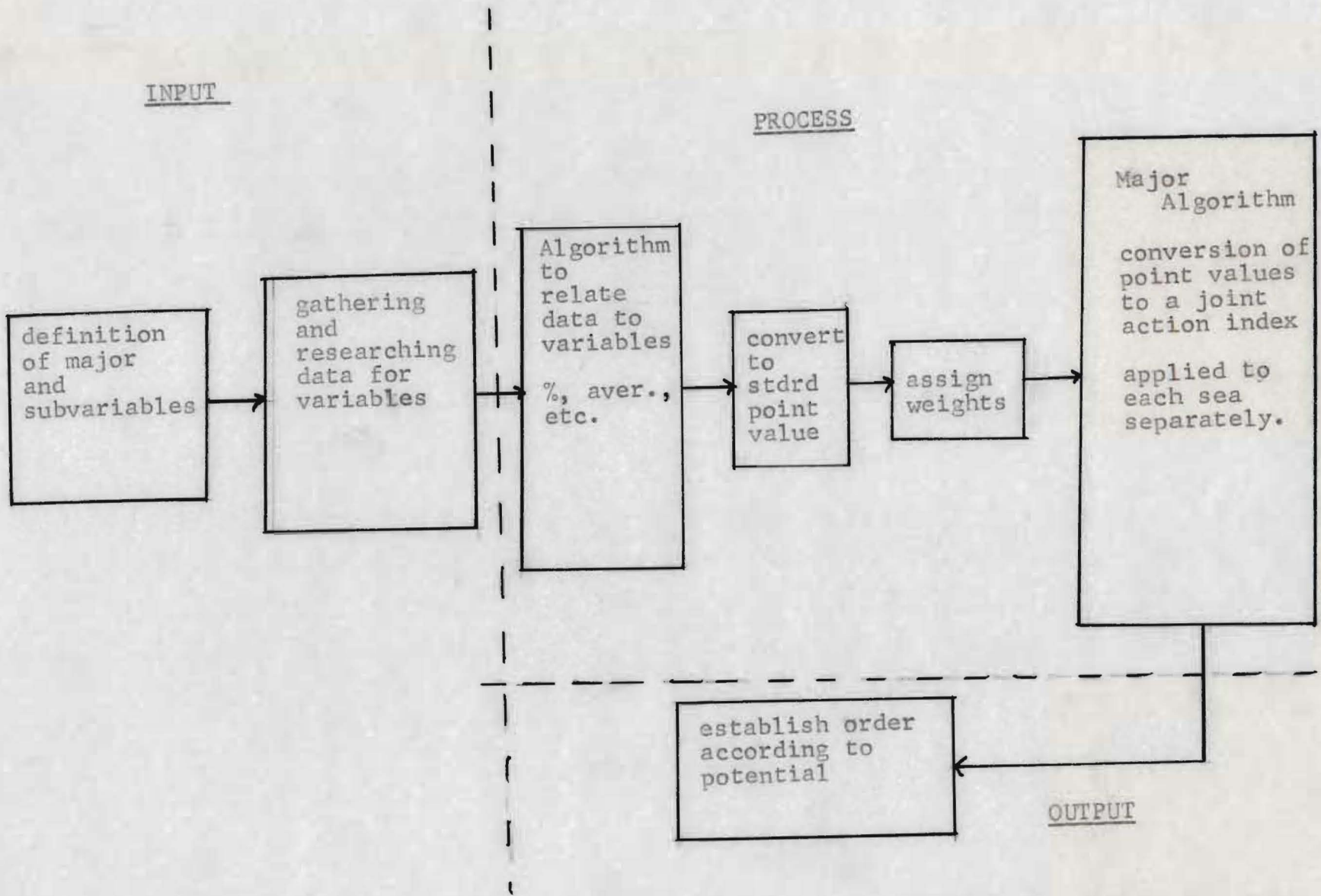
Economic Activities

ocean trade
 inner trade
 banking system
 bargaining

Political Relations

internal
 informal
 agreement/treaty system

A-1



INPUT

PROCESS

OUTPUT

ANNEX C
MODEL SCHEMATIC

ANNEX D
EXPLANATORY NOTES

1. 1. When no information is available for a nation or territory for a given variable that requires averaging, the state is not included in computations, That is, if there are 6 states bordering a sea but information is only available for 5 for a certain variable, the sum of the data is divided by 5 instead of 6.

2. Due to the great disparity in the resources, national wealth, technological advances and military status among the 78 bordering nations it is not proper, without considerable analysis, to attribute a statistical distribution to the datum.

3. In the few cases where information and data are not available for certain variables not requiring averaging, the middle point value will be assigned.

4. Only those shipbuilders actually located in nations adjacent to the rated sea are recorded. Therefore, territories will not reflect shipbuilders located on parent-country territory.

5. Numbers include both active and inactive craft.

6. Total port count for each nation includes major river ports since they are necessarily linked to ocean transport. River ports are not included in the semi-enclosed sea count.

7. Per capita consumption is based on projections for 1975 through 85 time period.

Explanatory Notes (cont)

8. Includes fish caught in and out of the semi-enclosed sea being rated.

9. Distant water fishing is defined as that fishing conducted more than 100 miles from the home shores.

10. Intergovernmental agencies with more than 50 members are not included in those chosen for the variable. The following organizations were selected: African Development Bank, ANZUS, Arab League, Asian Development Bank, Asian and Pacific Council, Association of Southeast Asian Nations, Benelux, Caribbean Free Trade Association, Central American Common Market, Central Treaty Organization, Colombo Plan, Commonwealth of Nations, Council of Europe, Council for Mutual Economic Assistance, East Africa Community, Inter-American Development Bank, Latin American Free Trade Association, Nordic Council, NATO, Organization of African Unity, Organization of American States, Organization of European Cooperation and Development, Organization of Petroleum Exporting Nations, SEATO, South Pacific Community, Warsaw Pact, Western European Union, Federation of Arab Republics.

11. Where information is not available concerning the seaward claim of a territorial state it is credited with the same sea breadth as the mother nation. In the case of the sea with only two littoral states only a 0% or 100% can be awarded.

Explanatory Notes (cont)

12. See variable A3(2) for list of possible stands. As with variable A2(5), seas with only two states will record 0% or 100%. A "no stand" by any bordering state will be considered as not complying with the trend of the sea.

13. Seas with only one bordering state receive a point value of 0.

14. A "no stand" for a bordering country is classified as a "D".

15. Same as above.

16. Includes Army, Air Force, Navy and in some cases police and militia when these forces are quasi-military.

17. Each instance of military assistance or special arrangements is counted separately. Thus, country X receiving aid from outer nations A and B will be counted as two instances.

18. A pair of semi-enclosed sea nations involved in a boundary dispute counts as two instances.

19. Where trading information is not available for certain nations remove that nation from the computation of both $\binom{N}{2}$ and the %.

20. When considering territories and client states, count the number of semi-enclosed seas contiguous to the parent state.

ANNEX E
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