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QUANTITATIVE CONTENT ANALYSIS OF THE UNITED NATIONS SEABED DEBATES: METHODOLOGY AND A CONTINENTAL SHELF CASE STUDY*

by

R. L. Friedheim
J. B. Kadane

with the assistance of
J. K. Gamble, Jr.**

*The ideas expressed in this paper are those of the authors. The paper does not necessarily represent the views of either the Center for Naval Analyses, the United States Navy or any other sponsoring agency.

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Since 1967, when Ambassador Arvid Pardo of Malta drew the attention of the General Assembly to the inadequacy of international arrangements for the uses of the ocean, this inadequacy has been a subject of discussion and sometimes intense debate within the United Nations. These debates have included the question of how to delimit the outer edge of the legal continental shelf, the spectrum of ocean arms control possibilities, proposals to create a declaration of principles governing the exploration for and the exploitation of seabed minerals resources, proposals which insist that exploitation take place only if it "benefits mankind as a whole," especially the Developing states, and consideration of schemes to create international machinery to regulate, license, or own the resources of the seabed and subsoil. These discussions and debates began in the First Committee of the 22d Assembly and proceeded through an Ad Hoc Committee to the 23d and 24th Assemblies. The creation of a Permanent Committee on the Seabed as a part of the General Assembly machinery attests to the importance members of the United Nations attribute to ocean problems.

The states of the international system will be faced in the foreseeable future with finding solutions to a host of substantive oceanic problems. When these decisions will be made is not known. But they cannot be long postponed, especially in the light of passage by the 24th Assembly of a resolution which calls for the convening of a new international conference to deal with a wide range of law of the sea problems.¹

The U.N. seabed debates are the most comprehensive single body of data available on the attitude of states on the problems of managing the uses of the ocean. They are the only available body of data through which, without piecing together an enormous number of scattered bits of information, we can get an overview of the patterns of state opinions on ocean questions. As such they should be useful in trying to illuminate the possible outcomes of the debate. We believe that patterns of state preference have emerged and are discoverable through the analysis of the seabed debates. Further, we believe that we have developed a method of analysis of the data which is appropriate to the problem. The technique is a particular application of quantitative thematic content analysis. How and why this technique can be applied to U.N. debate material, the nature and problems of the method, a case study demonstrating some of the substantive results that were reached, and a statement of our future research priorities we believe to be subjects which will interest other scholars of the United Nations.


Quantitative Content Analysis of U.N. Materials

There are considerable advantages to using U.N. debate documents as data (verbatim and summary records and/or provisional verbatim and summary records of floor proceedings of General Assembly plenary sessions, sessions of main committees, ad hoc committees, and working groups). Some advantages are characteristic generally of all U.N. debate records, but others apply to the specific ocean debates and make them peculiarly advantageous for our purposes.

One general advantage of U.N. records is that the data are susceptible to being compared. The speakers were addressing each other using a common set of spoken languages and using a reasonably common set of symbols. Another is that the data are public and accessible to anyone within reasonable distance of a U.N. repository library. Third, there are few problems of accounting for all the data, since the documents are numbered serially. Thus there are no problems of physically missing data, e.g., a missing telegram, a diplomatic diary which a late diplomat's family will not release necessary for a study of diplomatic interaction, etc. The most important advantage of using the ocean debates for a project on ocean problems is the fact that the debate data are comprehensive. By this we mean that a large number of countries discussed virtually all the known issues of ocean problems. Another specific advantage of the ocean debates is that there is no necessity of sampling (with its concomitant problems), the body of data not being so large that sampling is required (but we are aware of the fact that the U.N. materials are themselves a "sample" of a larger universe of materials on state attitudes on ocean problems). In short, we had a reasonably large but manageable body of data—approximately 85 documents containing over 4000 pages so far.
While useful for providing the basis of an overview of ocean problems and how states view them, U.N. debate records also present a number of problems as data—problems we believe can be overcome. First, the U.N. record may not be representative of what state officials truly believe, as revealed in other available documents. This is possible for several reasons. It can be argued that it is a common practice for states not to say what they mean or mean what they say in U.N. debates. Often it is argued that some states have a special set of propaganda responses prepared for use of the U.N. and quite different statements of policies for the "real world." While there is some truth in these accusations, that states propagandize and are not always truthful in the U.N., their general point of view comes through in the constant re-statement of the case. Only particulars can be concealed, not the general thrust of a state's position. And the way a state uses the U.N. for propaganda is in itself significant.

In the case of the seabed debates the possibility that the U.N. records might be unrepresentative and might mislead the investigators is reduced by one of the writers' close acquaintance with the subject and the debates—both through study and his attendance at some of the sessions.

A second set of problems is related—-the necessity of taking into account, if possible, general peculiarities of the United Nations that affect the records of its debates. It is well known that meaningful negotiations and exchanges of views take place off the Assembly floor and are not directly reflected in the record. It is also known that on occasion, because of late instructions, a lack of instructions, a personal dramatic flair, a personal commitment to another delegate, a state
commitment to its bloc, a mistake, or a host of other possible explanations, a speaker's statements may be repudiated overtly or covertly by his state. There is also the problem of esoteric and technical languages that are difficult for an outsider to decipher. U.N. discourse is carried on by use of a set of symbols that are not transparent to the uninitiated.

We believe we can design our research to take into account the peculiarities of the U.N. system. First, what took place off the floor will eventually show up in the record in most cases, if the problem is a continuing one, as ocean problems are. Second, a state's repudiation of a previous position will show up later in the record, or, if not, the uncharacteristic position of the state will often be glaringly obvious. As to esoteric and technical language, we believe we have successfully deciphered it and have conveyed the meanings to the coder, thus making U.N. discourse transparent.

The documents also may contain potential problems as documents. Errors may be made by a speaker, a translator, or a summarizer. For example, a speaker may not be speaking in his native tongue and may not be totally facile or idiomatic in the working language he was using. A translator may also introduce other errors. Since some of the documents we are working with are summary records rather than verbatim transcripts, the summarizer may also have contributed to misrepresenting a speaker's words. We will argue that most such errors are minor. They could become an important problem if too detailed a research design were used, which required an accurate rendering of whole sentences or a specific word count. We did not proceed this way, partly for this reason, using instead a technique to capture themes.
A third problem is relating the type of data to the use of the data. It can be argued that statements of preference in general debate are not good indicators of what a state will do at decision time when it must take into account more factors than its own optimal preferences. At the very least, those who take this line argue, one must be extremely cautious in using data from general U.N. debates to project or predict future positions or actions of states. Where possible, the argument continues, an investigator would do better to concentrate on the kind of data which indicates how a state put itself on the line on a decision in the past. Thus voting data, if available, might be preferred for these purposes. But voting data, except for a few votes at the end of the 24th Assembly session, are not available. We believe that debate data are useful when their limitations are taken into account.

In sum, we think U.N. debate records can be used successfully for our purposes—to reveal the patterns of state opinion on ocean problems. (1) The body of data is large and representative enough of a state’s public statements on the problems. (2) We take account of as many sources of error in designing our method as possible. (3) We do not represent our data base as the universe, but only as the single best source for gaining insight into the problem.

Once it is decided that United Nations debate records will be the data base for a research project, the researcher has already limited his choice of appropriate method to some form of content analysis, either qualitative or quantitative.

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One of the investigators did factor analyze votes on ocean problems when they were available—at the 1958-60 Law of the Sea Conferences. See R. L. Friedheim, "Factor Analysis as a Tool in Studying the Law of the Sea," The Law of the Sea, ed. by L. M. Alexander (Columbus: Ohio State University Press, 1967).
Qualitative content analysis as a term describing what some scholars do has ranged from merely a label for traditional documentary analysis to a relatively well structured and standardized set of procedures. In the latter form it has been defined by Holsti "as the drawing of inferences on the basis of appearance or nonappearance of attributes in messages...." 6 One of the writers previously engaged in qualitative content analysis of some aspects of earlier law of the sea problems as revealed in the records of the 1958 and 1960 U.N. Law of the Sea Conferences. 7 He drew inferences from the appearance in the records of different attitudes of states and bloc groups. However this method does not capture significance in what was not said as well as what was said. Moreover, even on what was said, by dealing with it only qualitatively, he was not sure that he did justice to the themes revealed because he had no real way, within the confines of the method, to demonstrate that his results are replicable. This is because qualitative content analysis does not necessarily require the disciplined approach that quantitative content analysis does.

Our intent is to discover how states say they stand on ocean issues. We evaluate their stand on a internationalism-nationalism scale, the degree of willingness of the speaker to entertain restraints on national jurisdiction and claims on authority as they relate to the ocean. Because of this we put the weight of our analysis on a measure of a state's internationalism on each variable (intensity) rather than on how often the state

6 Holsti, Content Analysis for the Social Science and Humanities, p. 10.
mentioned the variable (frequency). This emphasis gives us results comparable to the previous qualitative content analysis, and gives substantively interesting results. That some states and individual delegates talk more than others, although possibly interesting or amusing, is not the main focus of our study.
Method of Analysis

The first step in our method is the reduction of the debate to 189 separate themes. Where possible the theme recorded was the individual phrase used by a state in debate to describe its position on some substantive or procedural subject under discussion. On occasion, because of the length or complexity of a thought, we found it necessary to condense some remarks into shortened phrases. The subject of these themes ranged across the entire set of issues on the use of the oceans, especially on the possibility of exploiting natural resources of the seabed and subsoil "beyond the limits of present national jurisdiction." Thematic organization seems especially useful for United Nations debates because the same phrases are used by many states in a debate.

This division of the debate into themes is not public, in the sense that this paper does not include the full text of the debate with the themes marked as they were coded. For this reason it would be useful to have the results of several coders doing the same task, and to have a measure of intercoder reliability. We did not do this, primarily because we did not have the necessary resources. One coder did the initial work, which was spot-checked by the investigators who had read all of the debates. From this spot checking, we concluded that the coding was sufficiently accurate.

Another difficulty with our thematic analysis is the ambiguity in the meaning of a mention of a theme. Although we interpret the mention of a theme as reflecting a country's positive orientation, some speeches were devoted to attacking themes the speaking nation disliked. We believe, however, that national representatives spent most of their effort on themes they favored. One possible solution to this problem in the future is to code
whether the theme was mentioned in a positive or negative light.

The second step in our method is the organization of themes into
general topics, which we call variables, suggested by the internal
evidence of the debates. As is often the case in U.N. debates the
title of the item on the agenda suggests a general topic upon which
the participants in the debates base their remarks. In other cases
the specific phrases were used to comment for or against a particular
proposal. These general topics were comparatively easy to identify. We
created 19 of these general topics to capture the main points of the
seabed debates. From the 19, 3 topics or variables with 26 themes re­
lating to the continental shelf were identified. They are: Variable 1,
the question of whether the continental shelf definition requires re­
vision; Variable 2, the criteria to apply to a revision of the continental
shelf definition; and Variable 3, the mode of proceeding on the continental
shelf question.

The themes in each variable were then ranked on a national-international
continuum; themes appearing high on each list were judged to be more inter­
nationalistic than those low on each list.

In contrast to the division of the debate into themes, the
collection of themes into variables and their ordering are public
and are given in Table 1. The reader may not agree with the way
he did this; at least he can see what decisions were made, and we
can explain why we made the choices we did.

-10-
### TABLE 1

**CONTINENTAL SHELF THEMES AND TOPICS**

**Variable 1: Continental Shelf Definition**

1. Must define seabed area
2. Necessary to define national jurisdiction
3. Necessary to define territorial waters
4. Necessary to define continental margin
5. Not necessary to define national jurisdiction, not affected
6. Not necessary to define national jurisdiction, not alterable
7. Territorial waters not under discussion

**Variable 2: Continental Shelf Criteria**

1. Present international law is not applicable to the seabed
2. Present international law of seabed inadequate
3. "Exploitability" invalid due to technological advances
4. Geneva Convention invalid
5. Revise Geneva Convention
6. Revise in accordance with international law (including other Geneva Conventions)
7. Revise in accordance with established Conventions
8. Geneva Shelf Convention valid
9. Exploitability valid
10. Respect territorial integrity
11. Maintain national jurisdiction as established by practice

**Variable 3: Continental Shelf Mode**

1. Moratorium on claims
2. Define national jurisdiction as soon as possible
3. Define "principles" of exploitation after defining continental shelf
4. Redefine Geneva Convention at 3rd Law of the Sea Conference
5. Define "principles" first, prior to defining seabed area
6. Define national jurisdiction after the "principles"
7. Delay redefinition of continental shelf
8. Maintain national right to extend claims

As an example of our procedure, let us demonstrate why we scaled the themes in Variable 1 as we did. Essentially all these themes related to the question of who had what rights to define which offshore area. The #1 theme represented to us the acme of internationalism. Speakers who used it were saying that only the international community has the right
to define all the various seabed areas, those falling under international as well as national jurisdiction. The second theme is less comprehensive, claiming for the international community the right to define various zones of national jurisdiction. The third is even more specific and restrictive of the right of the international community. The fourth theme starts to edge toward conceding more powers to the nation-states. By claiming that the international community has a right at least to define the continental margin, this argument perhaps concedes that the continental slope as well as the continental shelf can properly be subjected to coastal-state jurisdiction. Themes 5-7, in tones of increasing stridency and hostility, were put forth by speakers who insisted that only the nation-states could be judges of the extent of their own national jurisdiction. The most nationalistic insisted that the unilateral acts of these states were not even fit subjects for international discussion.

Next, a number was associated with each theme—namely the rank of the theme in its variable list in Table 1. Thus each occurrence of "necessary to define territorial waters" was given a score of 3, and "territorial waters not under discussion" a score of 7.

This method is a special case of "artificial measurement", the assignment of numbers to variables one might have thought of as unquantifiable. Without Table 1, the assignment of the number 3 to a theme in a internationalist-nationalist continuum on the variable "continental shelf definition" would have been without operational meaning. With Table 1, however, the meaning of such an assignment is unambiguous. Artificial measurement was used in an earlier study to measure the hostility of nations' actions.8 Using a set of marker actions developed for the study, the authors gave each act a score equal to the number of marker actions that

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act was judged to exceed in hostility. Our case here is simpler because all the themes corresponding to each of the variables are listed in Table 1.

There are several issues about artificial measurement which deserve clarification. First, what might be the effect of an omitted theme? That is, if there were truly eight potential positions on Variable 1, but no one expressed the eighth position, how would our analysis be affected? Clearly 1 would be added to the score of all themes more nationalistic than the omitted theme, which would have minor influence on our results. Even if many errors of this type were made, provided the same number, say \( n \), were omitted between each pair of observed themes, and \( n \) omitted were more internationalistic than the most internationalistic observed theme, the effect would only be to multiply each score by \( n \).

Second, what would be the effect of reversing the order of two adjacent themes? Although this could have some effect, in practice the effect of a single reversal would not be great. An arbitrary reordering of themes in a variable could have drastic effects, of course.

Finally, what might be the effect of various kinds of transformations? Here it is supposed that there is an underlying "true" internationalism of each theme with respect to its variable. Further, the themes are supposed to be in correct order. Then any monotonic transformation of "true" internationalism will leave that order intact, and hence leave the ranks in Table 1 unchanged. Thus our analysis is unchanged by any monotonic transformation of internationalism, and is in this sense treated as ordinal. However once themes have been assigned numbers equal to their ranks, the ranks themselves can be treated as meaningful absolute numbers.
For each state which mentioned any theme, a variable score was then computed by summing the ranks of all theme references made by a state and dividing by the number of theme references; it is a number which represents a state's average or typical view on a topic or variable. For example, if country X mentions the theme "necessary to define national jurisdiction" once and "necessary to define territorial waters" twice and these are the only references for Variable 1, then the average rank for variable or topic 1 for country X is

Var 1 for country X is 

\[
\frac{2 \times 1 + 3 \times 2}{1 + 2} = \frac{2 + 6}{3} = \frac{8}{3} = 2.67
\]

The major alternative way to define a variable score is by the median theme score for that variable and state. Because theme scores are not widely dispersed (going from 1 to 7, 1 to 11 and 1 to 8) means are well-behaved, and acceptable as variable scores. The medians are well-behaved also; in fact we believe that the mean and the median are close and our analysis could have used either. We chose the mean.

A useful way to explore the relationship between two variables is to plot them. For example, Figure 1 shows Variable 1 plotted against Variable 2.

(Figure 1 about here)
FIGURE 1

STATES' SCORES ON CONTINENTAL SHELF ISSUES

VARIABLE 1 CONTINENTAL SHELF DEFINITION & VARIABLE 2 CONTINENTAL SHELF CRITERIA
Because Variable 2 has more themes than Variable 1, the scores for Variable 2 tend to be larger and more dispersed. To allow direct comparison between variables the country-variable scores were transformed in the following way: The average and the standard deviation over states for each variable were computed. The score for each state on each variable was transformed by subtracting the above mean and dividing the difference by the above standard deviation. Transformed scores of 1 on Variables 1 and 2 for State X mean roughly the same thing: State X's typical or average view on Continental Shelf Definition and Continental Shelf Criteria are both one standard deviation higher (more nationalistic) than is average for states. Table II gives the transformed scores for all variables.

(Insert Table II here)

Such a transformation has only the effect of shifting the axes and stretching or contracting them. Figure 2 shows Transformed Variable 1 plotted against Transformed Variable 2.

(Figure 2 about here)

This transformation, although commonly in use for data invariant except for linear transformations (interval data), is equally valid for absolute numbers, which averages of ranks of themes are.

The three variables reported here exhibit a high degree of correlation. They correlate with each other more highly than they do with any of the 16 other variables in the larger study. Variable 1 correlates .56 with Variable 2 and .41 with Variable 3; Variable 2 correlates .54 with Variable 3.
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*Where a state did not express itself on a variable, a blank is recorded.*
FIGURE 2

STATES' TRANSFORMED SCORES ON CONTINENTAL SHELF ISSUES

VARIABLE 1 CONTINENTAL SHELF DEFINITION & VARIABLE 2 CONTINENTAL SHELF CRITERIA
In previous studies of this type many authors have recorded the significance level of the test of the null hypothesis that the correlation is non-positive, that is, the probability, if the true correlation were zero, of observing a sample correlation at least as high as that observed. We find a significance level of this type uniformative. The main thing making the significance level close to zero is the sample size. As we already know that the probability above is close to zero, precise computation of it would not materially add to our study.

The following case study interprets figure 2 and similar graphs relating Transformed Variable 1 with Transformable Variable 3 and Transformed Variable 2 with Transformed Variable 3.
A Case Study--The Continental Shelf Issue

The most pressing problem debated in Assembly ocean debates was whether it was necessary to delimit the outer edge of the legal continental shelf, and how to do it.

Unfortunately, the Geneva Convention on the Continental Shelf of 1958 established a standard that has been a source of controversy ever since. Because it is technically difficult to establish a specific borderline in a zone whose geological shapes vary widely, and because the treaty writers attempted to anticipate improvement in man's technological ability to exploit at greater and greater depths, the continental shelf outer edge is defined by dual criteria. According to Article 1 of the Convention, the continental shelf is "the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas."

What is critical about the dual criteria is the theoretical ability of the shore state to lay claim (limited only by "adjacency") to more and more seabed further offshore as it proves to be possible to exploit at greater and greater depths. Many fear that the dual criteria permit removal of not only the continental shelf from "those areas beyond the limits of national jurisdiction" but the continental slope and the continental rise as well. These comparatively shallow seabed areas are those that


have been most thoroughly investigated. Many of them are known to be rich in mineral resources, especially oil and gas. We do not know if the deep seabeds are as well endowed with resources. But if they contain major resources of raw material they are likely to be "ocean type" resources rather than the "land type" resources of the continental shelf. Moreover, because of the depth of water the technical problems of deep sea mineral resources exploitation (with the possible exception of manganese nodules) seem prohibitive for the foreseeable future.

The threat of complete national control of the continental margin composed of the continental terrace (shelf and slope) and continental rise is real if the legal continental shelf delimitation problem is not solved. If all seabed areas down to the floor of the deep ocean seabed are brought under national control, discussion of exploitation in the interest of mankind will have little relevance. If most of the known resources are under national jurisdiction, there will be little incentive to establish an international agency to monitor seabed activities. Thus the outcome of the shelf delimitation question is critical to the solution of a host of related problems.

The subject of seabed resources has been of considerable concern to the United Nations, see: UNESC Introduction and Summary: Resources of the Sea, February 21, 1968 (E/4449); UNESC Part One: Mineral Resources of the Sea Beyond the Continental Shelf, February 19, 1968 (E/4449/Add.1); UNESC, Part II: Food Resources of the Sea Beyond the Continental Shelf Excluding Fish, February 7, 1968 (E/4449/Add.2); UNESC, Mineral Resources of the Sea, June 2, 1969 (E/4680); UNGA, Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction, Economic Considerations Conducive to Promoting the Development of the Resources of the Sea-Bed and Ocean Floor Beyond the Limits of National Jurisdiction in the Interests of Mankind, March 4, 1909 (A/AC.138/6); UNGA Committee on the Peaceful Uses of the Sea-Bed and The Ocean Floor Beyond the Limits of National Jurisdiction, Study of the Question of Establishing in Due Time Appropriate Machinery for the Promotion of the Exploration and Exploitation of the Resources of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction, and the Use of These Resources in the Interests of Mankind June 18 and 30, 1969 (A/AC.138/12 and A/AC.138/12/Add.1).
The most direct comparison we can make on the way in which states expressed themselves on continental shelf issues is to compare variable 1 (on the question of the need for redefinition of the continental shelf) with variable 2 (on the criteria for redefinition). To make the relationships easier to understand we can take the data on these two variables from Table I and plot them. This was done in figure 2.

The most distinctive aspect of the seabed debate that emerges is the rather extreme nationalistic positions taken by the Latin American states, the core of which are the "CEP states," Chile, Ecuador and Peru. They are found neatly grouped in the Northeast quarter of the figure. Their basic preference in the 22nd and 23rd session debates was to avoid the discussion of continental shelf delimitation. As their response on variable 1 shows, the Latin Americans did not wish to redefine the edge on the legal shelf; they did not wish to discuss any aspect of offshore rights. They regarded discussions of the continental shelf delimitation as an oblique attack upon their other idiosyncratic offshore claims. In rejoinder they grouped all offshore claims under their own notions of "national jurisdiction," "sovereignty," and "territorial waters." What they did in effect was to use "general purpose zone" concepts to respond to a debate about the inadequacy of a definition of the outer boundary of a "special purpose zone." General purpose zones are those characterized by sovereignty wherein the shore state reserves all but a few limited rights such as innocent passage for itself, while special purpose zones are those in which the shore state claims for itself only a limited right or rights, usually to gain control over particular functions. Thus, under Article 2 of the 1958 Continental Shelf Convention, sovereign rights
The data on variable 2 provide a good set of indicators of how the Latin Americans are likely to respond if there is a demand to reform the continental shelf delimitation. No particular depth or distance is likely to satisfy them. What they want is for "national jurisdiction to be established by practice." What they mean, of course, is that since they already "practice" 200 mile general purpose zones, for them, a 200 mile claim would be sustained by their practice. In any effort of the international community to regulate the shelf boundary, the Latin Americans insist that an exception be made on their behalf in order that their "territorial integrity"--as they interpret it--be respected.

Their ardent defense of their general position and their subsuming discussion of the continental shelf under that general position can be interpreted as a clear indication that they are laying the core concepts of their nationalism on the line before the forum of world opinion. We do not think it likely that they will give them up. Certainly we do not believe they will budge publicly; we are even dubious that a compromise proposal acceptable to them could be constructed; while we hope otherwise, we are not even sure that it is possible to get any degree of cooperation from them. If the states of the world are able to take action on the question of the delimitation of the continental shelf, they probably will have to do it without the acquiescence or participation of the nationalistic Latin Americans, with all of the difficulties such a step would imply. The data indicate that the Latin Americans have isolated

Footnote 12: For a fuller discussion of general and special purpose zones see R. L. Friedheim, Understanding the Debate on Ocean Resources, p. 5, 10.
themselves. They probably will not be able to swing other states to their extreme position, but they are in a good position to block other states from reaching agreement without them. The Latins not only took an extreme stand but also spoke loud and long on offshore problems. The pattern of their participation indicates possibly they viewed the continental shelf discussions as the critical portion of the seabed debates. Nine Latin American states with high positive variable values on the three continental shelf variables (as seen in Table II) well exceeded the mean of all states on the number of references they made on these three items. Argentina, Brazil, Chile, Colombia, Ecuador, El Salvador, Honduras, Peru and Uruguay had a mean of 3.2 references on continental shelf issues as compared to an all-participating states mean of 1.2. If the continental shelf issue is brought to a new international conference for definitive solution, we ought to expect that the Latin Americans will continue their vociferous opposition to having the international community define for them any aspect of their "national sovereignty." If matters go this far, we might expect the solution to the continental shelf problem to be as elusive as the solutions to the territorial sea and fisheries problems.

Figure 2 also shows the formation of another group which for convenience we may call the "moderate reformers." This group is composed of those states with negative values on both variables. They are located in the southwest quarter of figure 2. They are primarily European and Asian states—-Austria, Belgium, Norway, Finland, Rumania, Cyprus, Pakistan, and Japan. They grouped together on the two dimensions because they expressed opinions favorable to reform
of the Continental Shelf Convention. On variable 1 they were inclined to support the necessity of defining the continental margin, or defining territorial waters. Obviously they supported the redefinition of the edge of the shelf so that the end of the area of national jurisdiction would be known. On themes related to variable 2, the members of this group tended to express the belief in the necessity of revising the Convention, claiming that in its present form it is invalid, primarily because the "exploitability" clause of the dual criteria has been outmoded by technological advances.

In the northwest quadrant we find a very loose, small and, as a group, probably not too significant collection of states we will call the "moderate conservatives"--Ceylon, New Zealand, the Byelorussian SSR and Indonesia. These states seem to agree that the continental shelf definition needs revision (variable 1) but are more cautious about what that reform should consist. They would apparently prefer to see the Continental Shelf Convention revised in accordance with international law and other existing conventions. The importance of this group is not which states fall into the category "moderate conservative" during the 22d and 23d General Assemblies but which themes might attract states toward this position as the debate develops further.

In the southeast corner we find only two states: Malta and India. They stand out by their lonely eminence and--using our knowledge of the substance of debates--by their importance in the debates. It is therefore worth making some educated guesses as to why they find themselves exposed in conspicuous positions.
Malta, whose ambassador was so instrumental in getting the seabed issue placed prominently on the U.N. agenda, attempted to play a leadership role. As a leader in the debate, Malta tried very hard to press for reform without antagonizing any substantial group whose non-cooperation would make reform more difficult. We believe this is reflected in figure 2. On variable 1 we believe Malta was trying to indicate that reform would not imperil any state's "national jurisdiction," while insisting on variable 2 that either there is no present international law applicable to the seabed or that what little there is, is inadequate. In any case the "exploitability" criterion for the edge of the shelf is invalid.

India is a different case, and interpreting her position requires more speculation. She too had a prominent role in the debates, with her delegate, Mr. R. C. Arora, as vice-chairman of the Economic and Technical Working Group of the Ad Hoc Committee. But India appears to have an equivocal position on the question of continental shelf reform. On the one hand she mildly supports positions such as revision of the continental shelf in accordance with international law and established conventions (variable 2). On the other hand she has recorded her opposition to any attempt to have the international community "define" her "national jurisdiction" (variable 1). It is not unreasonable to speculate that India might be reserving her position so that she may make a larger offshore claim than at present if the U.N. seabed debates do not lead to a resolution of the question of the continental shelf that she claims meets her needs.

In this debate, where are the superpowers? Like Sherlock Holmes' dog that was significant because it did not bark in the night, the United States
and USSR are most conspicuous because they did not bark—or did not bark loudly. For both superpowers, the continental shelf aspects of the seafloor debates were occasions to say as little as possible. They certainly made no attempt to lead. The silence and lack of leadership are probably indications that either they have not made up their minds or they are experiencing internal decision-making difficulty because a single definite position on the breadth of the shelf would not protect all of their interests.\footnote{\mbox{Two contradictory proposals on the seafloor delimitation problem have already been published in official and quasi-official U.S. Government reports. See: Commission on Marine Science, Engineering and Resources, Our Nation and the Sea (Washington: Government Printing Office, 1969), pp. 143-146 and E. D. Brockett, Chairman, Petroleum Resources Under the Ocean Floor (Washington: National Petroleum Council, Committee on Petroleum Resources Under the Ocean Floor, 1969), p. 113.}}

The United States does show on the plot, having a variable value of -0.4 for variable 1 and 0.0 for variable 2. The United States did weakly support the necessity of defining "national jurisdiction," and other moderate phrases indicative of a need of reforming the continental shelf definition. But on the question of the criteria for a new definition in variable 2, the United States suggested that revision be made in accordance with present international law and established conventions.

The silence of the Soviet Union, we suspect, is not an accident. She chose not to speak. It is worth noting that of the 19 variables we have been able to identify, the Soviets chose to speak on 16 of 19. Two of the three subjects on which she did not speak directly concerned the continental shelf (and the third, also characteristically, concerned who shall benefit economically from seabed exploitation). Only on variable 1 did they take a mildly reformist position. In contrast the USSR was quite voluble in the 16 subjects she chose to discuss, making an average of 4.4 references in each of those categories.
The relative silence of the superpowers makes difficult any prediction of the outcome of the continental shelf debate. Thus far, the debate has been driven by the outlook of the Latin Americans and the group we will call the "mainstream reformers." When the United States and USSR finally make up their minds it will have to be in the face of a number of states that have probably locked themselves into an unchangeable position.

Another conspicuous absence is that of the African states. There was no discernible cluster of opinions in the transformed scores that could be established as characteristic of the states south of the Sahara. This is despite the vigorous participation in the debates of certain individual African states, notably Tanzania. If and when the Africans do adopt a distinctive set of opinions on the continental shelf question, their sheer weight of numbers is likely to make their position a critical factor in evaluating the outcome of the controversy.

Figures 3 and 4 show similar patterns to those of figure 2 with the Latin Americans having positive (or nationalistic) variable values on both variables in the northeast sector.

Overall, these latter two figures, which use variable 3 on "how to proceed" on the continental shelf problem, demonstrate a fact long known about the United Nations--that you get behavior patterns on questions involving process or procedure similar to those on substantive questions.14

14 This has been clearly demonstrated for formal procedural votes under U.N. voting rules. Using factor analysis techniques, procedural votes factor directly into the clusters on substantive issues. See R. L. Friedheim "Factor Analysis as a Tool in Studying the Law of the Sea," 53.
FIGURE 3

STATES' TRANSFORMED SCORES ON CONTINENTAL SHELF ISSUES

VARIABLE 2 CONTINENTAL SHELF CRITERIA & VARIABLE 3 CONTINENTAL SHELF MODE
On the continental shelf debate this tells us that most of those who want to reform the continental shelf criteria wished to act soon. They preferred to adjust the shelf delimitation criterion before acting on a resolution outlining the principles of exploitation of the deep seabed. The states most committed to "international" causes wanted to proclaim or impose a moratorium on national claims to the seabed. There was little debate on how such a ban would or could be enforced. (They would eventually succeed in the 24th Assembly; a resolution proclaiming a moratorium on seabed claims passed by a 62-28-28 vote.)

However, these two figures show more clearly some elements of the seabed debate that were worthy of comment. First we must note the complete absence of the superpowers. Also worthy of comment are the positions of some states with nationally peculiar stands. Finally, we will examine the noticeable group of states we have called the "mainstream reformers."

We have noted before the possible major reasons for the generally weak stands of the United States and USSR. But it is remarkable that both were silent on "process," which included discussion of when the subject of continental shelf would be handled. Clearly neither was prepared at the time of the debates to make a decision on the critical question of where national jurisdiction over seabed resources would end and some other form of jurisdiction would begin and preferred to defer the decision to the future.

There were a number of states that took positions on figures 3 and 4 which made them visually obvious. Some were taking positions which were consistent with their traditional law of the sea stands and are therefore easy to explain.
The Republic of South Africa and the Philippines, found in the far northeast quadrant of both figures, are here taking stands consistent with their known policies. South Africa, with high positive transformed scores on both sets of variables, is merely conservative. She is a mineral producing state aware of the potential value of mineral resources off her shore and wishes to bring as many of these as possible under her national jurisdiction. There already is offshore mining activity off of South Africa. Little wonder she prefers to state that national jurisdiction is not alterable (variable 1), that "exploitability" as a criterion for shelf delimitation is adequate (variable 2), and that the redefinition of the shelf ought to be delayed, and that in any case that national right to extend claims further offshore ought not be limited (variable 3).

Similar substantive positions were taken by the Philippines. She probably took these stands in order to protect her "archipelago" theory. This theory would allow states like the Philippines and Indonesia, composed of many islands, to draw a line around the outer edge of the island group to mark the place where their territorial sea begins. What is most important about the archipelago theory is that it would reduce all waters inside the line to internal waters over which the coastal state normally has a greater degree of control than the high seas or even the territorial sea. If this theory is accepted, the Philippines has little need for a continental shelf concept, since most of the rights granted by this limited zone concept would be swallowed up by the swollen general purpose zone created by the archipelago theory.

What is worthy of note in these debates is the fact that Indonesia has not joined the Philippines in the protection of her traditional
position. She has instead taken a mildly internationalist position on variable 1, a mildly nationalist position on variable 2, and a mildly internationalist position on variable 3. Thus she has supported the idea of defining the seabed area, attacked "exploitability", supported a moratorium on claims, and called for a third law of the sea conference. Has she given up her archipelago claim? We cannot tell from this body of data. But the data do suggest that Indonesia might not be as rigid as in the past, and that some form of exploratory negotiations on the subject with Indonesia might prove fruitful. ¹⁵

Figures 3 and 4 highlight the group of states--the mainstream reformers--that have been in the forefront of the demand for revision of the Continental Shelf Convention. The group is composed of Malta, the UAR, Sweden, Norway, Finland, Australia, Rumania, India, Malaysia, Tunisia, and Somalia. The author of this paper who observed some of these debates got the impression that the leadership role in the whole debate was taken essentially by two groups--the Scandinavians and the Commonwealth states. ¹⁶ They were consciously acting as surrogates and agents of the "Developing states." The figures provide partial confirmation of that observation.

¹⁵ This tentative conclusion, first made in January 1970, has been partially validated by the March 1970 signature of a treaty between Indonesia and Malaysia delimiting their territorial sea boundaries in the Strait of Malacca. In the treaty, at least for this strait, Indonesia has abandoned her archipelago theory. New York Times, March 18, 1970, p. 12.
Gathered in the southwest corner of the figures, most of these states hover just above and below -1.0 on the two dimensions plotted. As a result they cannot be characterized as extreme radicals but rather as steady proponents of preventing national boundaries from spilling over into the now non-national areas of the seabed. They wanted to define the limits of national jurisdiction (variable 1), they found the "exploitability" clause inadequate to preserve the interests of the world community (variable 2) and they wanted to correct this situation soon (variable 3). Some even advocated a moratorium on claims. The insistence of these states that the continental shelf delimitation criterion be reformed, and that the growing number of offshore exploitative activities requires action soon holds much promise for reform, and also a considerable element of danger. Much will depend upon the sophistication of their understanding of the political relationship and problems. They may well recruit other states to the banner of reform (principally, no doubt, from among the Developing), but if they proceed to neglect the interest of the Developed entirely, and pass reform resolutions over the protests of the Developed, they may well force the Developed to flout the reform resolutions or not cooperate in drawing up new ocean conventions. Their victory could be hollow.

One other relationship that might bear on the future outcome of the continental shelf debate was exposed in another step in the analysis. We subjected the whole body of data on the seabed debates to a stepwise multiple regression program.\(^\text{17}\) Although we do not wish here to enter the debate over the appropriate uses, if any,\(^\text{18}\) of factor analysis, suffice it


to say that we used stepwise regression instead because we were looking for single explanatory variables rather than linear combinations of variables. Stepwise regression allowed us to examine the 19 variables to see if a relationship existed that was not revealed by the simple correlation matrix. We found a number of interesting relationships among the variables. But one in particular is relevant here. The stepwise regression analysis revealed that after Variable 2 was eliminated from consideration, the greatest percentage of the variance for Variable 1 could be best explained by another variable, which for convenience we will call Variable 4. It was not a topic which deals directly with continental shelf problems. Rather, topic or Variable 4 was a collection of themes on the adequacy of the general law of the sea and seabed. The themes that are collected under Variable 4 and their ranks on the international (higher numbers)-national (lower numbers) continuum are shown below:

**TABLE 3**

**VARIABLE 4: ADEQUACY OF PRESENT LEGAL FRAMEWORK**

1. Nonexistent
2. Unjust or outdated since created and in interest of Developed
3. Unjust or outdated by technology
4. Vague or inadequate
5. Lacking firm basis for exploration and exploitation rights
6. Provide some basis
7. Adequate

At first glance, it would seem reasonable that a topic which concerns a specific reform (Variable 1: the need for a redefinition of the continental shelf) would correlate highly with a topic that concerns the need or lack of need for reform generally in the law of the seabed (Variable 4).
That they are related does make good sense. But it would be tempting, and incorrect, based on the relationship, to make the corollary assumption that most of those states who had "nationalist" scores on one would tend to have nationalist scores on the other; that those who favored reform in general would favor reform on the continental shelf delimitation problem. The correlation, -.50, indicates otherwise. The transformed scores are plotted below:

Figure 5 about here

In the northwest sector we find a collection of states, moderately reformist on the continental shelf delimitation, who felt impelled to defend the law of the sea and seabed from the attacks of those who claimed the law of the past was useless or had little meaning. This group included the superpowers, many European states, some Africans and some Asians.

On the opposing side, in the southeast quadrant, are the Latin Americans. They complained fervently that the present law was nonexistent or unjust, and ripe for reform. When, however, faced with the most critical short-run reform in the law of the sea--delimiting the end of nationally controlled continental shelf area--they would have none of it. The continental shelf debate was not without its ironies.
FIGURE 5

STATES' TRANSFORMED SCORES ON CONTINENTAL SHELF & RELATED ISSUES

VARIABLE 1 CONTINENTAL SHELF DEFINITION
&
VARIABLE 4 GENERAL LAW ADEQUACY
Future Research Priorities

Although this method was designed specifically to illuminate the ocean debates, the debates are not unlike many others at the U.N.; therefore knowledge of what we did might be useful to other researchers in designing their research projects.

We hope to refine the method and substantive results further in the following four stages of this project: (1) A complete analysis of all the 19 variables. We hope to show which issues are related to other issues through correlation coefficients, and see where states stood on these issues through use of transformed scores. (2) Aggregation of the transformed scores of states into bloc groupings. This will allow us to look at the general drift and direction of the debate with overall bloc scores as well as bloc scores on each of the 19 variables. The bloc correlation matrix will allow us to see how bloc opinions relate to each other. (This work is now in progress.) (3) We hope to add the data from the 24th Assembly to our data base. This will allow us to update the previous tentative conclusions. We should now have enough data to evaluate trends in state or bloc opinions. (4) We hope to compare our conclusions about state opinions on ocean problems with results derived from one or more independent sets of data on the same subject. We are now actively seeking other bodies of data on ocean problems susceptible to quantification. Comparison of the bodies of data would be helpful in allowing us to evaluate the usefulness of our methods and the soundness of our conclusions.
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