——— (1978) "U.S. support for foreign governments or domestic disorder and imperial intervention 1958-1965." Comparative Political Studies 10 (January):497-527.

——— (1977) "Politische Kultur, Institutionalisierung und Prätorianismus: Uberlegungen zur Theorie und empirischen Forschungspraxis." Kölner Zeitschrift für Soziologie und Sozialpsychologie 29 (3 and 4): 411-437, 657-676.

——— (1975) "Unzufriedenheit, Protest und Gewalt: Kritik an einem makropolitischen Forschungsprogramm." Politische Vierteljahresschrift 16 (September): 409-428.

World Bank (1979) World Development Report. London: Oxford Univ. Press.

Spatial Models and Centrality of International Communities

MEETINGS BETWEEN ARAB LEADERS, 1966-1978

ABRAHAM DISKIN

Department of Political Science
Hebrew University

SHAUL MISHAL

Department of Political Science
Tel Aviv University

In the last two decades, the use of spatial models as a tool of the "behavioral examination first, theory building second" approach has been nicely demonstrated in many studies dealing with interparty distances measured by voters' order of preferences. This article tries to show that it is possible to build a spatial model based on data at the level of the interstate system. As an indicator for a type of behavior which might fit early assumptions regarding proximity between Arab countries, we used the frequency of meetings between leaders of these countries. We found that this indicator indeed confirms the assumption about the leaders' behavior and the political proximity between their countries. A typical example is the increase of Egypt's political status, which is well indicated by the frequency of its meetings with other Arab countries. If our approach is correct, it seems possible to argue that political distance between countries can be measured by combining a behavioral coefficient—such as frequency of meetings—with the use of spatial models.

The study of the relations between countries according to the *political distance* between them is not new to the field of international relations. Most studies however, are often impressionistic and unquantitative. There are several ways of measuring political distances

between countries, but identifying a *parameter* that is at once *accessible, simple, efficient,* and *sensitive to political distance* is not that easy. (For various quantitative measures of political distance see for example Wright, 1965: ch. 35; Russett, 1967; Brams, 1968; and Kent and Wiley, 1978.) In this article we use a parameter that might fulfill these requirements, based on the *frequency of meetings among state leaders*. We also intend to determine the *circumstances* in which this parameter might be a valid and reliable tool for the measurement of political distances between countries.

We have concentrated our analysis on meetings between the executive leaders of 15 of the Arab League's 22 member states: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Saudi Arabia, Sudan, Syria, Tunisia, and the United Arab Emirates (UAE). The period we dealt with, 1966-1978, seems to be of special interest because of the intense political developments which took place during that time. The period started on the eve of the 1967 war and ended with the peace treaty between Israel and Egypt in 1979. The 15 Arab states chosen include all those which have played an important part in the Arab system over a long period of time, as well as some more marginal Arab states on which data were available. The executive leaders on whom we focused were *heads of state* (kings and presidents), *prime ministers, foreign ministers,* and *defense ministers.* However, in two countries we also included key figures who performed a central role in their country's policy on the inter-Arab issue even though they occupied none of these positions. These leaders were Saudi Arabia's Crown Prince Fahed and Iraq's Interior Minister Sadam Hussein, who later became president. The data on which we based our calculations were gathered from the *Arab Record and Report (ARR)* and *The Middle East and North Africa (MENA).*

The only parameter on which we focused was the frequency of meetings between countries i and j during the year t. In order to measure this parameter, we used two coefficients: X_{ijt} and M_{ijt}. The first coefficient (X_{ijt}) measured the *total number* of meetings between the above-mentioned leaders of countries i and j in the year t. The second coefficient (M_{ijt}) gave the number of such meetings as a *percentage* of the total number of meetings between relevant Arab leaders in that year.

The following procedure was used to calculate these coefficients: C_{ijkt} was the coefficient we used for a single meeting k between leaders of two countries (i and j) held in the year t, provided that information about this meeting was included in our sources (*ARR* and *MENA*).

The value of C_{ijkt} depended on the number of countries (n) whose leaders attended meeting k.

$$C_{ijkt} = \frac{1}{n-1}$$

So, for example, a bilateral meeting was calculated as a "whole" (1) meeting ($1/2 - 1$). But if a representative of a third state participated, C_{ijkt} was considered as only "half a meeting" ($1/3 - 1$).

X_{ijt} was defined simply as the sum of the C_{ijkt}'s over a whole year (t),

$$X_{ijt} = \sum_{k=1}^{N_{ijt}} C_{ijkt}$$

where N_{ijt} is the number of meetings in which leaders of both countries i and j took part during the year t.

The total number of meetings between leaders of all Arab states in the year t (T_t) was defined as:

$$T_t = \frac{\sum_{i=1}^{15} \sum_{j=1}^{15} X_{ijt}}{2}$$

Hence we defined M_{ijt} as follows:

$$M_{ijt} = \frac{X_{ijt}}{T_t} \cdot 100$$

Results obtained in attempts to measure proximity on the basis of a smaller range of contacts (for example, heads of state only), or using other coefficients, were essentially similar to those presented here.

A formal institutional approach might have provided different parameters of political distance, such as the level of diplomatic ties or

the number of formal bilateral and multilateral agreements between those countries. Our argument against formal parameters of this kind is that they are not sensitive enough to significant differences in the relations between countries: Full diplomatic relations on the ambassadorial level often exist between countries on the eve of war. More than once, countries have entered into armed conflict not only without declaring war but even before their ambassadors have been recalled for consultations. International agreements—military, economic, or even cultural—might serve as a better indicator of the degree of closeness between countries. However, many agreements are not fully implemented, or are not fulfilled as written. The discrepancy between the declarative and the practical level has often been noted with the Arab world, where, as Kissinger (1979) has pointed out, "reality and imagination are intertwined."

The problems encountered in using strictly formal parameters might encourage the use of more pragmatic ones, such as the level of military or economic cooperation. The advantage of these parameters over the formal diplomatic ones seems obvious. However, relevant information is not always published; in addition, these parameters are often asymmetric in nature. Even economic aid—not to mention trade relations between countries—is not always readily noticeable. Furthermore, the degree of military and economic relations between a country whose resources are limited cannot be symmetrical. This leads to immediate methodological problems when one is dealing with spatial models or measuring any other kind of distance (Coombs, 1964).

From our discussion of the above-mentioned parameters, the advantage of using meetings between executive state leaders as an indicator of behavioral proximity seems clear. Unless such meetings are clandestine, which is comparatively rare, they can easily be counted and they often have a pragmatic character. In addition, their high frequency allows a careful distinction between different pairs of countries, or even between such pairs (i and j) during various periods of time (t).

Hence, our main theoretical hypothesis on the more general level is that *frequency of meetings between political leaders does indeed indicate political proximity.* We argue that this is a hypothesis which requires testing, not an axiomatic statement, since meetings between leaders of state often take place with little regard for actual political proximity. Such meetings may occur, for example, between countries engaged in serious conflict with one another or facing a crisis in their relationship. In other cases, meetings are mainly ceremonial and have

no practical-political purpose. This might be true of several of the meetings between Arab countries whose cultural closeness, religious identity, and common national values have encouraged strong formal ties and even an increase of meetings. However, some observers have tended to endow these meetings with a ceremonial importance of only limited practical political value (for example, Pfaff, 1970: 150-159). Precisely because of this, showing that frequency of political meetings in the Arab world is a measure of political proximity would clearly demonstrate the potential of such a measurement with regard to other political systems in which the ritual side of international relations is considered less important.

We have divided our discussion into four parts. In section I we suggest a series of variables which appear to have determined the proximity between Arab states during the period discussed. We hypothesize that the frequency of meetings, which we examine at a later stage, reflects the position of the Arab states on these variables. In section II we suggest an integrative spatial model for mapping the political distance among all the countries examined, based on the proximity-determining variables. We show that it is possible to present such a spatial model in a two-dimensional configuration, and therefore assume that a two-dimensional configuration based on our empirical testing will not deviate significantly from this model. That is, sections I and II should be viewed as our theoretical framework concerning the Arab world. In section III we present a configuration of Arab states based on the frequency of meetings between them (coefficient M_{ijt} for the year 1978) and compare it to the configuration proposed in the hypothesis of section II. In section IV we examine the centrality and peripherality of the different states according to their frequency of meetings, comparing these results to the hypotheses raised in sections I and II.

In other words, the findings of our study, which are included in the last two sections, should be compared to our theoretical hypotheses about political distance among Arab states which are described in the first two sections.

I. VARIABLES DETERMINING PROXIMITY BETWEEN ARAB STATES

Let us now consider variables by which Arab states can be categorized, concentrating on those from which relations of political

distance or proximity may be derived. Based on various studies of the inter-Arab system in the relevant period (Safran, 1969; Zartman, 1969; Kerr, 1971; Hudson, 1977; Dishon, 1978; Dishon and Ben-Zvi, 1978) one can summarize these variables under four headings:

(1) Centrality versus peripherality.
(2) "Progressive" versus "reactionary" (as a central ideological variable).
(3) Regional proximity.
(4) Position on the Arab-Israeli conflict.

Before estimating political proximity on the basis of these variables, we would like to make two comments. First, it is obvious that different countries were identified with different political camps at various periods of time. Second, it should be made clear that the different variables are often interdependent; the relation of a country to one of the categories of one of the variables might influence its relation to any category of a different variable. For example, the radical "progressive" states show a greater tendency to have a central position in the Arab world than the more moderate "reactionary" states. A militant stand on the issue of the Arab-Israeli conflict is often linked to the degree of "progressiveness." The magnitude of some variables is determined by physical location. Thus for example, events in Jordan and Lebanon attract a great deal of inter-Arab attention despite their relatively small size, limited power, and limited political ambitions because of the border with Israel. Kuwait is another example. It seems as if attention on the inter-Arab level is focused on Kuwait because of its wealth, which is partly due to geography, and because of its location between Saudi Arabia and Iraq. Proximity to Israel led to the term "Confrontation States," which has a direct bearing on at least two of the above variables. Let us turn, then, to describing the variables.

CENTRALITY VERSUS PERIPHERALITY

The characteristic of centrality can be attributed to all those countries which play an active leading role in the Arab world, or which strive for and are close to such a position. Centrality in another sense, however, can be attributed to states that are not leaders and that do not even strive for a position of leadership but, nonetheless, find themselves caught up in the midst of events either (1) because they supply resources or services to other countries, (2) because of the Arab community's interest in specific political developments in the country, or (3) because

of a strong affinity to another country which holds a clear leading position.

Generally, there is no doubt that Egypt should be accorded a central position in the Arab world throughout the period discussed (Ajami, 1979). However, this position was undermined several times, especially following the Interim Agreements with Israel in 1975 and the peace treaty signed with Israel in 1979. Other political developments, such as President Nasser's death in 1970 or the rise of other Arab states, also influenced Egypt's position.

The countries that sought centrality during part of the period discussed include Saudi Arabia, Syria, Iraq, Libya, and Algeria. In this they were encouraged by the relative decline in Egypt's position in the Arab world following the 1967 war. However, these countries often failed to realize their ambitions due to the continuing rivalries and tensions in the Arab world.

In some cases centrality derives from involvement in occurrences of central importance in the inter-Arab system; Kuwait, a prominent source of resources, seems to be a good example. Jordan exemplifies this category in another way, both because of its affinity to leading states or to states with an aspiration for leadership, such as Egypt, Syria, Saudi Arabia, and for being a focus for several political occurrences of all-Arab importance. Lebanon is a clear example of a country whose political circumstances do not allow her relegation to the fringes of the political map of inter-Arab relations, despite its peripheral position. These circumstances are due, among other things, to its having been for many years a center of cultural and financial activity of the Arab world, its involvement in a civil war since 1975 (Hudson, 1978: 261-278), and its geographical proximity to Syria and Israel.

"PROGRESSIVE" VERSUS "REACTIONARY" STATES

This variable is regarded by some scholars as a dominant one in any description of inter-Arab relationships. However, its importance has declined since the 1967 war (Kerr, 1971: 5-7, 129-140; Dishon, 1978: 157-159). This division has usually paralleled the division between pro-Western and pro-Soviet states. With the radical progressive states one can associate Egypt, Iraq, Syria, Algeria, Sudan, and Libya after Qadaffi's coup in 1969. It is unnecessary to point out the fluctuations in the relations between these countries. An example is the problematic and contradictory relationship between the Ba'ath in Syria and Iraq during most of the period under discussion (Dann, 1978; Rabinovich, 1978).

To a large extent the other countries may be considered reactionary. Special proximity between these countries exists perhaps between the monarchies. Somewhat exceptional are Lebanon (Hudson, 1977: 282-285) and Tunisia (Hermassi, 1978: 448), republics which have tended to define their national identity in secular and particularistic terms, a tendency at deviance with the pan-Arab conception.

REGIONAL PROXIMITY RELATIONSHIPS

The last dichotomy is also connected to a regional division. The monarchies included in our study are the oil monarchies of the Persian Gulf and the Arabian Peninsula: Saudi Arabia, Kuwait, Oman, and Bahrain. The importance of these countries has increased since 1974. At the same time, the ties between them have tightened.

Another regional group is that of the Maghreb countries: Morocco, Tunisia, Algeria, and Libya. Group relations were sometimes strained. The most prominent source of tension is the border conflict between Morocco and Algeria.

In East Africa the long affiliation between the Nile Valley countries, Egypt and Sudan, is prominent. Libya at times tried to join them after Qadaffi's rise to power in 1969.

Regional closeness with political-historical significance characterizes the relationships between Syria, Lebanon, and Jordan which centered the concept of a "Greater Syria." The background of the civil war in Lebanon emphasized the closer ties between Syria and Lebanon compared to those between Syria and Jordan. Another regional grouping exists between Iraq, Jordan, and Syria, which make up what is commonly known as the Eastern Front. These states, with Lebanon, comprise the Fertile Crescent.

POSITION ON THE ARAB-ISRAELI CONFLICT

The close relationships and cooperation between Arab countries on the Israeli issue can be viewed as another issue which had a great influence on inter-Arab relations since 1967. Until that year, the progressive countries had been very militant on that issue. The 1967 war placed Jordan and Egypt, the major casualties, at the center of the inter-Arab arena. They were the only Arab countries to accept the Security Council's Resolution 242 despite the sometimes fierce opposition of other Arab countries. In 1970, a number of political developments

(such as the end of the War of Attrition between Egypt and Israel, the Civil War in Jordan, Nasser's death, and Assad's rise to power) influenced the stands taken on the Arab-Israeli conflict. The links between Jordan and Egypt weakened, Egypt's position was to some extent undermined, and a Syrian-Egyptian rapprochement developed in the context of the conflict with Israel. It must be pointed out that this rapprochement cooled between 1967 and 1970, following Egyptian accusations against Syria concerning Egypt's involvement in the war against Israel.

The 1973 war led to a new political configuration in the Arab world around the issue of the conflict with Israel. Egypt, for example, was pushed into a corner at least twice—in 1975 and in 1978—following its willingness to enter into political negotiations with Israel. Iraq, sometimes with Libya's help and sometimes with the participation of Syria and Algeria, represented the tough line of no compromise with Israel (the Rejectionist Front). Sudan, Oman, and Morocco took a moderate stand in this context and shared some kind of readiness to support Sadat's peace initiative, or at least to reconcile themselves with it. Saudi Arabia tried to take a pivotal position between these two extremes.

II. AN INTEGRATIVE REPRESENTATION OF POLITICAL DISTANCE

We have already mentioned that our variables may be interdependent. Notwithstanding, a contradiction might often occur in the relation of the countries to these categories of variables. Thus, interstate jockeying for leadership in the Arab world, for example, might create rivalry that would later lead to aloofness and political differences, whether on the ideological level or on any other level. Countries close to one another geographically might find themselves in conflicting positions on questions of policy such as the Arab-Israeli conflict, or on ideological issues such as affiliation to the progressive or reactionary camps. A further complication is that these relationships may change over time. Nevertheless it seems possible to present overall political proximity by means of the first three variables: centrality versus peripherality, "progressive" versus "reactionary" ideology, and geographical affiliation, in a two-dimensional spatial model, as shown in Figure 1. This figure is a schematic graphical summation of our verbal description of political distance among Arab countries.
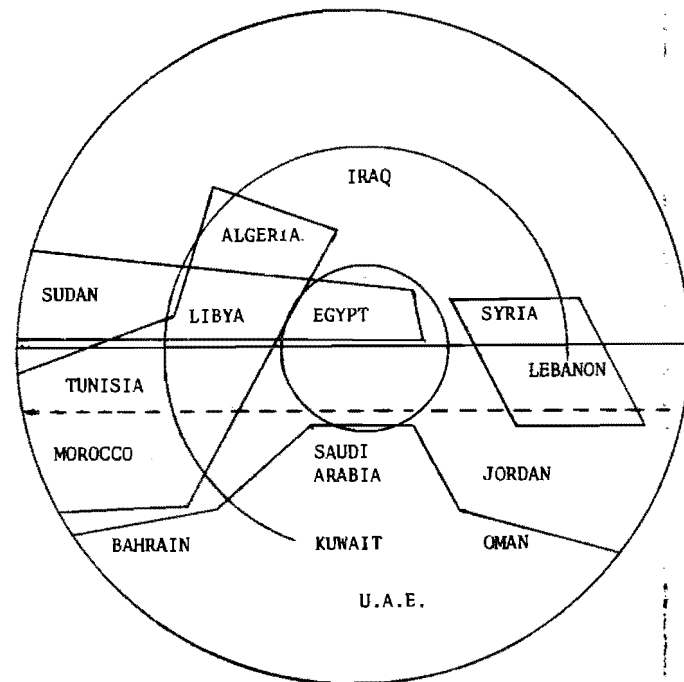
Figure 1: An Integrative Representation of the Arab Interstate Distances

The three concentric circles in Figure 1 represent the division we mentioned according to the variable of centrality versus peripherality. Egypt is situated at the heart of the center. Syria, Iraq, Libya, Algeria, and Saudi Arabia comprise the second circle—those countries which strove for a position of leadership in the Arab world. These countries did not always enjoy a central position. This is especially true of Iraq in part of the period under study, and of Libya until 1969, when the monarchy was overthrown. Between the second circle and the external circle we placed Lebanon, Jordan, and Kuwait—countries close to or involved in occurrences of central significance for the inter-Arab system, as already shown, but not as leaders and with no ambition to be leaders. The third circle contains the countries clearly peripheral throughout the whole period: Tunisia, Morocco, Sudan, Oman, the UAE, and Bahrain.

The horizontal lines represent the ideological division between progressives and reactionaries. Tunisia and Lebanon hold rather a middle-of-the-road position, for reasons already mentioned. The regional proximity relationships are centered, as the diagram shows, in four clusters.

This configuration is problematic in several ways. For example, the tensions and conflicts in which central states such as Iraq and Syria found themselves involved are not expressed, nor is Libya's closeness to the peripheral monarchies prior to 1969. Nonetheless, it seems possible to adjust this configuration so as to give adequate expression to these deviations.

A further difficulty has to do with our ignoring the fourth variable we reviewed: the different stands on the Arab-Israeli conflict. It is obvious that this variable might disrupt our spatial exposition of the inter-Arab system. The many vicissitudes on this issue in the period studied made it impossible to deal with them all in a single model. We therefore will consider now only one individual period.

III. A SPATIAL BEHAVIORAL MODEL OF THE ARAB COUNTRIES ACCORDING TO THE FREQUENCY OF MEETINGS IN 1978

In terms of the Arab-Israeli conflict, 1978—the year following Sadat's initiative—was a most dramatic turning point in inter-Arab relations, not only in the context of the period studied but in the entire period since Israel's establishment in 1948. For this reason, we chose 1978 to verify our hypothesis: If the hypothesis stands under such extreme circumstances, it is reasonable to assume that it would hold in the general case.

Table 1 describes the 1978 M_{ijt} coefficients for the 15 Arab countries studied. Treating these coefficients as proximity coefficients, we used smallest space analysis (SSA) to construct the SSA-1 configuration shown in Figure 2. SSA is intended to represent n items (for example, countries) in a Euclidean space by calculating m coordinates (Y_{ia}; $a = 1 \ldots m$) for each item V_i (Guttman, 1968).

The empirical data to be analyzed may be any coefficients of similarity (proximity), or coefficients of distances within pairs (V_i, V_j) such as correlation coefficients, or our M_{ijt}.

Let D_{ij} be the Euclidean distance between the representative points of two items, V_i and V_j. In the smallest space the dimension m is sought to be as small as possible while satisfying the monotonicity condition

TABLE 1

M_{ijt} Coefficients for 1978

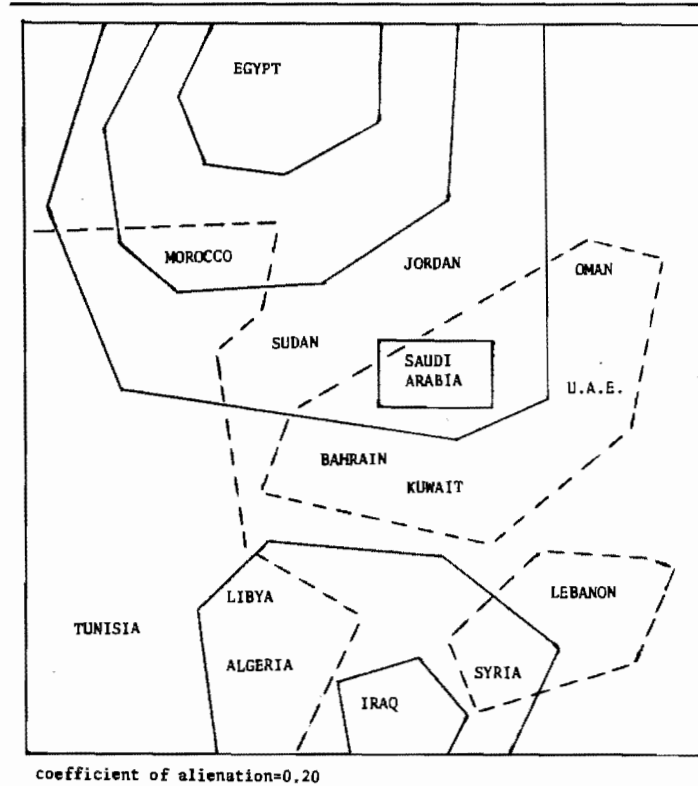|	Syria	Iraq	Saudi Arabia	Sudan	Kuwait	Bahrain	Oman	Jordan	UAE	Algeria	Morocco	Libya	Tunisia	Lebanon	Egypt
Syria	–														
Iraq	.78	–													
Saudi Arabia	3.65	1.85	–												
Sudan	.66	.66	3.17	–											
Kuwait	3.05	1.85	3.75	1.38	–										
Bahrain	.06	.06	1.26	.06	1.26	–									
Oman	.06	.06	3.05	.06	.06	.66	–								
Jordan	.06	.06	3.77	.78	1.38	1.85	.18	–							
UAE	.06	.06	2.57	.78	.78	.06	1.26	.66	–						
Algeria	3.35	.78	.06	1.26	.66	.06	.66	.06	.06	–					
Morocco	.06	.66	1.26	1.26	.06	1.26	1.26	.06	.06	.06	–				
Libya	2.75	1.97	1.85	1.85	.66	1.26	.06	.06	.06	2.15	.66	–			
Tunisia	.06	.06	.06	.66	.06	.06	.06	1.26	1.85	1.85	.06	2.45	–		
Lebanon	6.64	.06	.66	.06	1.26	.06	.06	.06	1.26	.06	.06	.06	.06	–	
Egypt	.00	.00	2.40	3.59	.60	.00	2.99	.00	.00	.00	.00	4.78	.00	.06	–

666

coefficient of alienation=0.20

Figure 2: An SSA-1 Configuration of the Arab States, Based on M_{ijt} Coefficients for 1978

that $D_{ij} > D_{kl}$ whenever the observed data indicate that V_i is closer to V_j than V_k to V_l. Nevertheless the monotonicity required is "weak," since when the observed data show the distance between V_i and V_j to be equal to the distance between V_k and V_l, then D_{ij} should *not* be equal to D_{kl}.

SSA-1 differs in a number of aspects from other approaches to the study of distance relations such as factor analysis, especially since the SSA-1 does *not* use a priori "metric" specifications. Metric approaches usually make use of the following condition: The distance D_{ij} between the representative points should be related to the original distance (for example, M_{ijt}) between the items by some prespecified metric

formula. Focusing directly on monotonicity without further specifications on the relations between D_{ij} and M_{ijt} is in a sense more powerful than metric approaches, since fewer restrictions generally result in smaller space. This smaller space is achieved by use of iterations (Lingoes, 1961). Nevertheless several studies (for example, Diskin, 1980) have proved that spatial models attained using SSA-1 are *not* substantially different from those obtained using other methods (such as factor analysis).

Goodness of fit in an SSA-1 configuration is measured by the "coefficient of alienation." This coefficient varies between 0 and 1. Perfect fit is represented by the value 0 and the worst fit is given by the value 1.

It seems that the issue of the Arab-Israeli conflict exerted a major influence on the frequency of meetings between the Arab countries during 1978. Egypt was relegated from her central position to a peripheral position, as the only country preferring to deal with the conflict with Israel through a peace process. Iraq represented the extreme in objection to such a process, rejecting the Tripoli Summit's decisions against Egypt as insufficiently radical. Most of the progressive countries—Syria, Algeria, and Libya—also demonstrated a clear anti-Egyptian stand but less virulent than the Iraqi stand. This exemplifies the shaky relations within the progressive camp, which were apparent even before the 1967 war but were subsequently more blatant (Kerr, 1971: 77-95, 129-140). Sudan, Morocco, Oman, and, to a much lesser extent, Jordan demonstrated feebler opposition to Sadat's initiative than did the rest of the Arab world.

Saudi Arabia and the Persian Gulf states occupied an intermediate position, as the diagram clearly shows. Within this group, Saudi Arabia holds the most pivotal position in the Arab world. This is expressed in the high Saudi participation in meetings compared to other countries, and particularly in the large number of meetings between Saudi Arabia and Egypt on the one hand and Syria and Iraq on the other.

The regional proximity relations discussed above are also expressed in both Table 1 and Figure 2. We see the proximity between Egypt and Sudan, between Syria and Lebanon, and between the Maghreb countries. In this last group, the clear distance between Morocco and Algeria reflects the border conflict between them in the Sahara, which reached a climax in 1978.

The comparison between Figure 1, which summarizes our hypotheses, and Figure 2, which is based exclusively on empirical findings for 1978, shows the two to be very similar. The differences between them derive from the special circumstances that arose in 1978 and are

primarily connected with the centrality measure. Although we have shown that the source of this deviation is the Arab-Israeli conflict, the importance of the centrality-peripherality question justifies a further and wider examination of the validity of the coefficient proposed for this purpose.

IV. CENTRALITY AND PERIPHERALITY ACCORDING TO FREQUENCY OF 1966-1978 MEETINGS

According to our hypothesis, country i's centrality in the year t can be expressed by the percentage of all meetings in which country i participated in that year, which we call Sit

$$\left(\text{Sit} = \sum_{j=1}^{15} M_{ijt} \right)$$

The mean S_i and standard deviation σ_{si} of this coefficient are presented in Table 2. S_i and σ_{si} are defined as follows:

$$S_i = \frac{\sum_{t=1966}^{1978} S_{it}}{13}$$

and

$$\sigma_{si} = \sqrt{\frac{\sum_{t=1966}^{1978} (S_{it} - S_i)^2}{13}}$$

The mean S_i and standard deviation σ_{si} of this coefficient are presented in Table 2.

This table, too, generally verifies our hypothesis. Egypt appears as participating in most meetings. However, the large standard deviation

TABLE 2
The S_i Coefficient as a Measure of Centrality

	S_i	σS_i
1. Egypt	13.2	8.9
2. Saudi Arabia	10.7	2.9
3. Syria	9.8	4.4
4. Jordan	9.6	4.0
5. Kuwait	7.4	3.6
6. Iraq	7.1	3.8
7. Lebanon	6.6	1.3
8. Libya	6.0	3.3
9. Algeria	5.9	2.3
10. UAE	5.3	3.0
11. Tunisia	4.3	2.4
12. Morocco	3.8	2.2
13. Sudan	3.3	2.6
14. Bahrain	2.9	2.0
15. Oman	1.6	1.6

in its percentage of meetings points to the instability of this position.
As expected, Saudi Arabia and Syria take second and third place. The
next six countries include those countries which competed for a position
of leadership: Iraq, Libya, Algeria, and those which have a "proximity
to the center"—Jordan, Kuwait, and Lebanon. The six countries bring-
ing up the rear are outstanding, as expected, not only in the low per-
centage of meetings in which they participated but also in their being
clearly peripheral countries.

Figure 3 shows the changes in the S_{it} values of the three leading
countries over the period studied. This diagram reflects well-known
political developments. Egypt's position worsened over the years.
Egypt's Pearson correlation between the year (t) and its S_{it} coefficient
was -0.54. Syria's and Saudi Arabia's positions rose, and this is ex-
pressed in the increased percentage of meetings in which they partici-
pated (R = 0.53 and R = 0.67, respectively). The decline in Egypt's
position during 1968 after the 1967 defeat, in 1970 with the end of the
War of Attrition and Nasser's death, and especially during 1975 and
1978, are all reflected in the changes in its S_{it} coefficient.

The struggle for leadership of the Arab world intensified after
Nasser's death. Indeed, the fluctuations in the number of meetings in
which Egypt was involved between 1966 and 1971 parallel the fluctu-
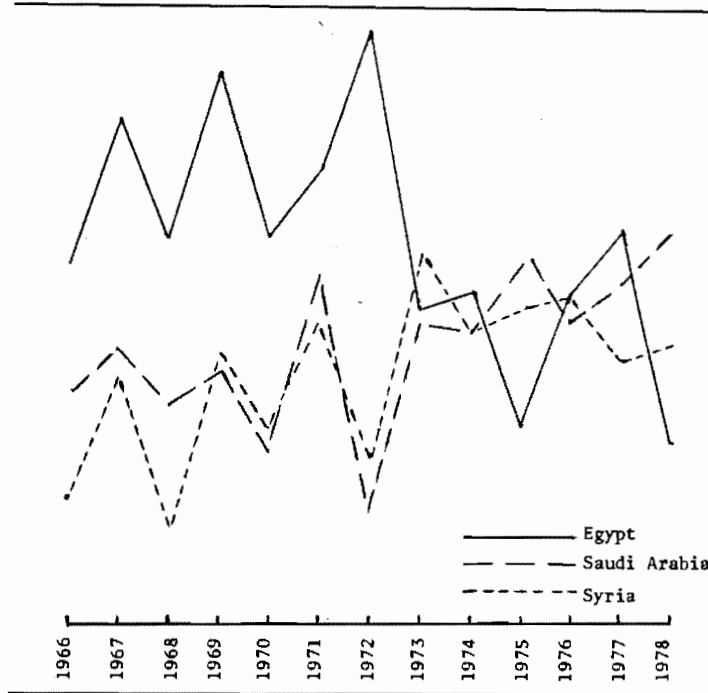ations in the number of meetings in which Saudi Arabia and Syria

Figure 3: S_{it} Coefficients of the Three Leading Arab States, 1966-1978

participated. However, from 1972 onward, a clear contrast developed
between the S_{it} values of Egypt on the one hand and Syria and Saudi
Arabia on the other. Indeed, the correlation between Egypt's per-
centage of meetings, throughout the whole period, is clearly negative
(R = -0.52 and R = -0.29, respectively).

We can define a centrifugal tendency in an interstate system as a
situation in which the number of countries competing for a position
of leadership grows, or at least as one in which the position is disputed.
To ascertain the centrifugal tendencies for all 15 countries, not only
the three on which we have so far concentrated, we calculated the
difference in the number of meetings in which each country partici-
pated for each year separately. This calculation is expressed in the
centrifugal coefficient, σ_t, which is the standard deviation according to
fifteen S_{it} coefficients, during the year t, from the average of S_{it}.

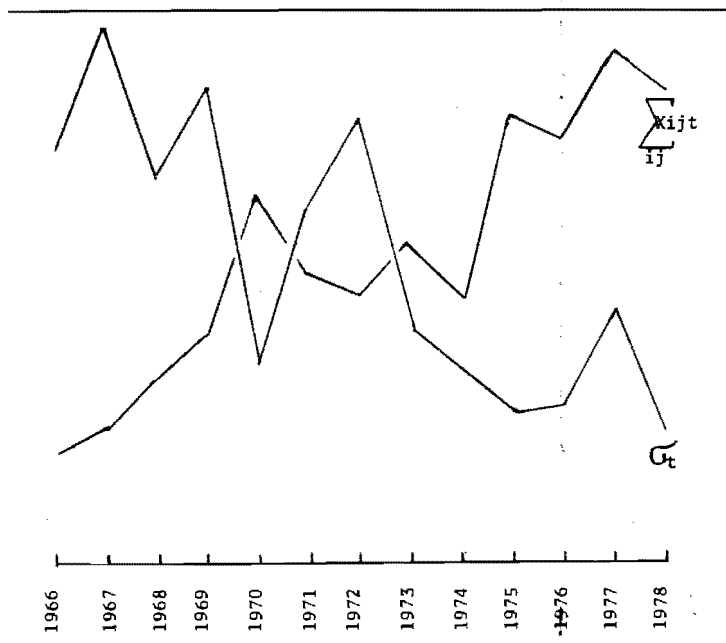Figure 4: Overall Number of Meetings and the σ_t Coefficient as Measures of Centrifugality

$$S_{it} = \frac{\displaystyle\sum_{i=1}^{15} S_{it}}{15} = \frac{100(\%)}{15} = 6\frac{2}{3}$$

$$\sigma_t = \sqrt{\frac{\displaystyle\sum_{t=1}^{15}\left(S_{it} - 6\frac{2}{3}\right)^2}{15}}$$

We hypothesized that as the centrifugal processes in the Arab world intensified this coefficient would assume lower values, while as they weakened the coefficient would assume higher values.

As expected, the centrifugal coefficient σ_t gradually assumed lower values. Interestingly, this decline corresponded to the gradual growth

of the overall number of meetings between the countries examined during the period. This means that the large overall number of meetings in the Arab world indicates a worsening of the struggle for leadership, or at least a lack of clear leadership. In this context, the high correlation (R = 0.90) between Egypt's S_{it} coefficient and the centrifugal coefficient, σ_t, deserves special mention. The year 1970 provides a good example of how the confusion in the Arab world influences the frequency of meetings. During this year there was a significant increase in the overall number of meetings, as opposed to a sharp decline both in the centrifugal coefficient and in the *percentage* of meetings in which Egypt participated. However, it is important to note that the *number* of meetings in which Egypt participated actually increased. In other words, the ambiguity over leadership led to an increase in the number of meetings in which Egypt participated, but its importance declined in comparison to that of other countries.

It might be worthwhile to widen the scope beyond the year 1978, with which we have already dealt at length. Examination of Figures 3 and 4 shows that during that year coordinated tendencies existed which were similar, but stronger, to those of 1970. Despite its polar position (Figure 2), Egypt still belongs to the group of countries participating in many meetings. Except for Saudi Arabia, no country attends substantially more meetings than does Egypt. However, the decline in the percentage of meetings in which Egypt participated was accompanied by a certain monotony of contact; more than half of Egypt's meetings in 1978 were with only two peripheral countries: Morocco and Sudan.

CONCLUSIONS

The use of spatial models as a research tool for the assessment of political distance in the last two decades reflects an attempt to propose a new methodological direction for the study of political behavior. Originally, spatial models were developed on the basis of theory and then tested empirically; a more recent approach has been to examine behavior first and then to construct the theory. Even today, the format of "theory first, empirical testing second" is still used in the examination of the relation between coalition formation and preassumed spatial models of the political systems (for another approach, see Diskin and Wolffsohn, 1980). The second approach to the use of spatial models—that is, "behavioral examination first, theory building second"—had been used in many studies dealing with interparty distances as measured by voter preferences (inter alia, Converse, 1966; Laponce, 1970).

The advantage of spatial models built exclusively on the basis of behavioral data is that they do not require any prior assumptions, except for the assumption that the examined political behavior is significant. Nonetheless, once these models have been constructed on the basis of empirical material, they may be compared with previously accepted theories. Theory verified or constructed through the use of accepted theories. Theory verified or constructed through the use of a spatial behavioral model may be applied in the examination of real political distance. Such proof of the link between behavior that can be empirically measured and real political distance permits the use of behavior measurements as a predictive tool.

In this article we have tried to show that it is possible to build a spatial model according to a type of behavior which is available and easy to measure on the level of the interstate system. As a parameter for a type of behavior which would fit previous assumptions regarding proximity between countries, we examined the frequency of meetings between the leaders of these countries. We found that the use of this tool indeed indicates a correlation between the leaders' behavior and the political proximity between their countries.

The use of such a spatial model deals with *multilateral* relations. However, close examination of the frequency of meetings on the bilateral level shows the wider potential that lies in the study of such behavior: For example, the number of meetings between Egyptian and Syrian leaders reached an unprecedented climax during 1973—a year in which the two countries drew closer together; similarly, the frequency of meetings between Jordanian and Egyptian leaders declined during 1971—a year in which the two countries drew apart to a degree not known since 1966.

We find, therefore, that the frequency of meetings per se—even without classifying them or checking their content—is well correlated with a large variety of types of political proximity.

If indeed our approach is correct, it then seems possible to conclude that political distance between countries can be measured with a behavioral coefficient—such as frequency of meetings—on the one hand and the use of spatial models on the other. Considering its metric character and predictive strength, such an approach might be able to offer a further dimension to the examination of political distance between countries.

REFERENCES

AJAMI, F. (1979) "The struggle for Egypt's soul." Foreign Policy 35: 3-30.

Arab Record and Report (1966-1978) London: Dawson and Goodal.

BRAMS, S. J. (1969) "The structure of influence relationships in the international system," in N. Rosenau (ed.) International Politics and Foreign Policy. New York: Free Press.

CONVERSE, P. (1966) "The problem of party distances in models of voting change," in K. Jennings and H. Zeiglar (eds.) The Electoral Process. Englewood Cliffs, NJ: Prentice-Hall.

COOMBS, C. H. (1964) A Theory of Data. New York: John Wiley.

DANN, U. (1978) "Foundations of the Ba'th regime in Iraq since 1968," in I. Rabinovich and H. Shaked (eds.) From June to October: The Middle East Between 1967 and 1973. New Brunswick, NJ: Transaction.

DISHON, D. (1978) "Inter-Arab relations," in I. Rabinovich and H. Shaked (eds.) From June to October: The Middle East Between 1967 and 1973. New Brunswick, NJ: Transaction.

——— and V. BEN ZVI (1978) "Inter-Arab relations," in C. Legum and H. Shaked (eds.) Middle East Contemporary Survey. New York: Holmes & Meir.

DISKIN, A. (1980) Das Politische System Israels: Eine nämlich-zeitliche Untersuchung 1949-1973. Bohlau, Köln und Wien.

——— and M. WOLFFSOHN (1980) "Coalition behavior in the Weimar Republic." Politische Vierteljahresschrift.

GUTTMAN, L. (1968) "A general nonmetric technique for finding the smallest coordinate space for a collection of points." Psychometrica 33: 469-506.

HERMASSI, E. (1978) "Politics and culture in the Middle East." Social Compass 25: 448.

HUDSON, M. (1978) "The Palestinian factor in the Lebanese civil war." Middle East Journal 32: 261-278.

——— (1977) Arab Politics: The Search for Legitimacy. New Haven, CT: Yale Univ. Press.

KENT, R. S. and W. P. WILEY (1978) "Multidimensional scaling of UN voting behavior," in R. J. Heuer, Jr. (ed.) Quantitative Approaches to Political Intelligence: The CIA Experience. Boulder, CO: Westview Press.

KERR, M. H. (1971) The Arab Cold War: Gamal Abd al-Nasir and His Rivals, 1958-1970. London: Oxford Univ. Press.

KISSINGER, H. (1979) White House Years. New York: Little, Brown.

LAPONCE, J. A. (1970) "A note to the use of left-right dimension." Comparative Political Studies 2: 481-502.

LINGOES, J. C. (1961) "An IBM 7090 program for Guttman-Lingoes SSA-1." Behavioral Science 10: 183-184.

The Middle East and North Africa (1966-1978) London: Europa Publications.

PFAFF, R. H. (1970) "The function of Arab nationalism." Comparative Politics 2: 150-159.

RABINOVICH, I. (1978) "Continuity and change in the Ba'th regime in Syria," in I. Rabinovich and H. Shaked (eds.) From June to October: The Middle East Between 1967 and 1973. New Brunswick, NJ: Transaction.

RUSSETT, B. M. (1967) International Regions and the International System. Chicago: Rand McNally.

SAFRAN, N. (1969) From War to War: The Arab-Israeli Confrontation, 1948-1967. New York: Pegasus.

WRIGHT, Q. (1965) A Study of War. Chicago: Chicago Univ. Press.

ZARTMAN, I. W. (1969) "Military element in regional unrest," in J. C. Hurwitz (eds.) Soviet-American Rivalry in the Middle East. New York: Praeger.

The Decisio[n]
Raid Enteb[be]

DECISION ANAL[YSIS]
CRISIS BEHAVIO[R]

ZEEV MAOZ
Department of Political S[cience]
University of Michigan, A[nn Arbor]

Despite the variety of [
ing one proposition: Rat[
that take place under cris[
Israel's decision during th[
and testable propositions a[
for the group level. A discr[
the decision processes d[
(rational) model of choic[
propositions are derived f[
quality of choice processes[
intragroup conflict and un[
than constraints, the qualit[

Studies of decision[
booming enterprise o[
recent years, some st[
theory of crisis behav[
field (for example, Sn[
and Tanter, 1980). Hc[
paradigms, whose pr[