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Identifying National Types: A Cluster Analysis of Politics, Economics, and Conflict*

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This article is founded on the assumption that cluster analysis can be used to complement regression-based techniques to obtain further improvement in systematic understanding of the nexus of politics, economics, and conflict. It assumes such variables form part of a yet to be understood, non-linear, time-dependent interactive system. Cluster analysis is used to classify entities into groups and aims toward explanations based on characteristics cutting across the objects in which they are embedded; thus, the analysis seeks a more compelling account of the complex linkages between and among economic, political, and conflict-related variables. Cross-sectional data for 1967, 1974, 1981, 1988, and 1995 from the Dataset on National Attributes is used in the cluster analysis. The data analysis identifies clusters of states based on a range of characteristics. As expected within a time-dependent system, there is evidence of consistent clustering of countries within and across years, along with evidence of change. Several clusters, such as the advanced states, are very stable and indicate patterns that should be explored further with regression analysis.

Introduction: National Attributes and International Conflict

Various avenues of inquiry in the scientific study of international conflict have converged in recent years along several dimensions. Neoliberal thinking about the

democratic peace gained prominence with Doyle (1986; see also Maoz & Abdolali, 1989), and the most recent scholarship concerns a wider range of issues including civil rather than international peace (Hegre et al., 2001), formal implications of spreading democratization (Hess & Orphanides, 2001), and reciprocation of conflict (Prins,

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Moore, Michael Mousseau, Anil Puri, Rudolph J. Rummel, Eric J. Solberg, Paul G. Wolfson, and three anonymous referees. They are not responsible for our views or our errors. We also are grateful to Yasemin Akbaba for research assistance. Please address any correspondence to Patrick James: jamesp@missouri.edu. Appendices A and B can be found at <http://www.prio.no/jpr/datasets.asp>.

2002). Logistic regression models, with the presence or absence of conflict in dyad-years as the dependent variable, and a series of neo-Kantian independent (e.g. democracy) and control (e.g. proximity) variables, have assumed near-paradigmatic status in the systematic study of international relations (Russett & Oneal, 2001).

A closer examination of national attributes and international conflict may produce a more nuanced story (Gleditsch & Ward, 1997: 380–381). In particular, national attributes in political, economic, and conflict dimensions may coalesce in a manner not previously considered. Classification of regimes along various dimensions depends on the purpose at hand. If we wish to understand the full range of interactions among political, economic, and conflict-related variables, it is appropriate to begin without imposing too many restrictions on the analysis.

This process unfolds in five additional sections. First, we discuss how national attributes are related to each other. Next, we outline the mechanics of cluster analysis. Third, data and measurements are presented. The fourth section offers results. The final part of the article provides conclusions and some directions for research.

Theoretical Perspective: Interaction of National Attributes

Cluster analysis is useful in examining complex relations among national attributes and international conflict. When internal linkages are too complex to model under a single-equation regime assuming causal relations, it might be better to be guided by the data themselves rather than impose a test equation on them.¹ We will not assume any

¹ See Rummel (2001); classic works in the general area, which primarily apply factor analysis, include Rummel (1963), Russett (1967), Wilkenfeld (1973) and, most comprehensively, Rummel's *Dimensions of Nations (DON) Project* (1975, 1976, 1977, 1979, 1981).

one variable (for instance, regime type) is causal in relation to others (such as trading behavior or conflict proneness). Instead, the theoretical premise is that variables from economics, politics, and conflict show *bidirectional* and *fully interactive* effects upon each other (Cai, 1999: 880). Thus, cluster analysis complements regression-style studies where exogenous and endogenous roles are designated from the outset.

A thought experiment is in order. Suppose countries have three dichotomous attributes: attitudes towards conflict (neutral versus militaristic), regime type (democratic versus non-democratic), and trade status (autarkies versus traders). Now suppose, excluding two out of eight possible profiles, six countries embody different aspects of these attributes: (1) neutral, non-democratic trader (such as Hong Kong under both British and Chinese rule); (2) neutral, democratic trader (such as Switzerland); (3) neutral, democratic autarkies (such as the United States in the 1930s); (4) militaristic, non-democratic autarky (such as North Korea); (5) militaristic, democratic autarky (such as the USA at various times in the 19th century); and (6) militaristic, non-democratic trader (such as some Arab states). Two-thirds of the time, neutrality and trade go together and neutrality and democracy go together, while two-thirds of the time, militarism and autarky go together and militarism and non-democracy go together. However, if we attempt to argue that democracy and trade are positively related to peace, there is a problem. While democracies tend to be neutral traders, two-thirds of traders are undemocratic and two-thirds of democracies are autarkic. If we focus on traders, we find that two-thirds of these countries are neutral and two-thirds are undemocratic. Does this mean traders tend to be neutral non-democracies? That violates the suggestion that democracy and trade lead to peace. If variables are interrelated in a complex manner, causality is difficult to discern.

While this distribution of attributes appears well suited to regression analysis, the conclusions drawn depend on the way the variables are grouped as independent or dependent. No *a priori*, non-controversial theoretical reasoning exists to define independent and dependent variables. Theory often relies on a debatable assumption that one variable is independent and another dependent. Political scientists and economists tend to see political and economic variables, respectively, as causal. The problem is aggravated by the introduction of each successive variable and compounded by the complexity of the international system.

Perhaps democracy and trade foster peace. This is the thesis of several important and reinforcing studies (Oneal & Russett, 1997; Rioux, 1998; Russett & Oneal, 2001). *Mutatis mutandis*, we might also conclude, with Polachek (1980; Polachek & Robst, 1998), that trade fosters peace. Mousseau (2000), however, suggests the democratic peace is conditional on economic development, and liberal models of peace have been underspecified. Maybe democracy is fostered by peace and hampered by trade, although not without complications. The era of imperial expansion in the last half of the 19th century illustrates these possibilities. Beginning with the Congress of Vienna, the European powers generally became more democratic. While some wars took place, none lasted long enough to produce a reversal of the secular trend toward democratization in the era prior to World War I. World imperialism, as manifested most directly through the empires of Britain, France, and other states, produced a one-sided trading system based on colonization, with generally adverse implications for democracy.

Another possibility is trade is fostered by peace but hindered by democracy. The widespread popular opposition to the North American Free Trade Agreement (NAFTA)

in the United States and Danish and British opposition to the EEC/EU illustrate this point. Popular opposition to trade liberalization is rooted in the fact that expected losses are short-term and observable (such as the closing down of uncompetitive industries), while gains are long-term and more abstract (e.g. greater efficiency) (Olson, 1965; Lusztig, 1996). Peace, by contrast, is good for trade because all forms of comparative advantage are exploitable among all participants. Embargoes and other obstacles to economic exchange are expected by-products of international conflict.

All of the preceding conclusions about interaction effects between and among political, economic, and conflict-related variables are derivable from our thought experiment. It is not hard to find real-world instances supporting each preceding inference. Thus, the a priori designation of one class of variables as (a) causal and (b) uniform in direction of effects tells only part of the story.

Complex connections involving trade, conflict, and regime type suggest much more work is needed before definitive conclusions can be reached (Reuveny & Kang, 1998; Schneider, Barbieri & Gleditsch, 2003). Indeed, in the real world, countries do not exhibit unalterable characteristics but instead can change dramatically over time. We look at the underlying basis of these characteristics to see if stability emerges in those areas.

Constructing Clusters: Agglomeration by Euclidean Distance

The search for coherent clusters is not a quest for how *few* variables explain a result, but how similar groups are and in what ways they resemble each other. Profligacy can be overdone as much as parsimony. Sometimes one variable seems decisive in defining distinct clusters, but frequently it is necessary to form a judgement about where to draw

the line between groupings and conclude they are distinct entities.

Cluster analysis refers to various procedures to classify entities into groups based on (a) how close their attributes are to each other and (b) how far they are from others (Hair et al., 1995; see also Kendall, 1973).² It begins with attributes and creates groups of objects that most closely resemble one another and least resemble others.

Selection of variables dictates the scope and validity of the analysis. Aldenderfer & Blashfield (1984), Everitt (1980), and others stress the importance of theory in guiding variable selection. The researcher should possess some precursory knowledge about theoretical linkages between variables and have a good understanding of the data. Our cluster analysis of political, economic, and conflict variables amounts to a search for coherent groups of states. We use Statistica 5.1, a statistical package, to perform cluster analysis using a series of menus without writing computer code.

When doing cluster analysis, three basic decisions need to be made. The first decision is what type of clustering method to employ. One can use a K-Means method (in which we determine in advance the number of clusters to generate) or an agglomerative method (in which we begin with each observation being a single cluster and then amalgamate them) of cluster analysis. (A third type, known as a divisive method, begins with a single cluster and then divides it into several distinct clusters, but Statistica lacks this capability.) With no *a priori* reason to suggest a particular number of clusters will be found, we employ an agglomerative method (see Hair et al., 1995: 441–442 for alternatives).

Statistica provides five agglomeration clustering methods. Single linkage and

complete linkage measure distance between clusters by examining individual pairs of points between the clusters. Each method has some disadvantages. Single linkage measures distance between clusters via the distance between the two points in the clusters nearest to one another. Complete linkage measures the distance between clusters through the distance between the two points in the clusters furthest from one another. Single linkage tends to cause clusters to be merged, even when the clusters are naturally distinct, so long as proximity between their outliers is close, while complete linkage results in separate clusters, even if they fit together naturally, by maintaining clusters where outliers are far apart. Centroid linkage techniques attempt to determine the 'center' of the cluster. One issue is that the center will move as clusters are merged. As a result, the distance between merged clusters may actually decrease between steps, making analysis of results problematic. This is not an issue with single and complete linkage methods.

Ward's method (1963) is based on a sum-of-squares approach and tends to create clusters of similar size. The only method to rely on analysis of variance, its underlying basis is closer to regression analysis than the other methods. It tends to produce clearly defined clusters. Clear definition, however, comes at a price, because Ward's method tends to find patterns where none exist. Other linkage methods tend to suffer from the opposite problem, namely, not recognizing clusters where they do exist.

A final method is average linkage, which comes in two varieties in Statistica. These are unweighted and weighted pair-group averages. Average linkage clustering uses average distance between all possible pairs of points; it has an advantage over single linkage, centroid linkage, and complete linkage methods in that average distance between clusters continues to increase as

² For applications, see Jorgensen (1980, 1983), Romesburg (1984), and Holloway & Tomlinson (1995).

clusters are merged. Weighted pair-group average emphasizes larger groups, and thus, larger clusters are drawn together more often than smaller ones, thereby creating clusters of uneven size. This can be a (dis)advantage depending on the desired outcome.

The third decision is choice of distance measurement. Statistica provides several different possible distance measurements. Percentage disagreement is useful when data types are categorical. However, data used in this study are ordinal or cardinal in nature, so this distance measurement is inappropriate. Power distance requires the user to assign a weight to each variable, leading to some variables being treated as more important than others. We see no *a priori* reason to do this. Chebychev distance takes the maximum discrepancy on any individual variable as the distance measurement. Manhattan or City-Block distance takes average distance across variables, while Euclidean and Squared Euclidean methods utilize the raw data to determine distances, by representing each variable as being a set of points in a single dimension in an n -dimensional Euclidean space, where n is the number of variables under consideration. Squared Euclidean measurement places greater emphasis on outliers to generate distance patterns. Since it was believed that grouping of countries should be based on a great deal of similarity across all variables and that distinctions should be formed based on outliers, it was decided to use Squared Euclidean measurement in this study. This decision required standardized variables that represent the number of standard deviations away from the mean. If not, a variable with a larger scale would have a greater weight than another similar variable. This would mean that, without standardization, the economic variables would dominate the clustering. Additionally, variables in the Polity III database using a 1-7 scale would have a greater weighting than those using a 1-5 scale.

Agglomerative methods start from a situation in which each observation on a variable is a cluster unto itself. The next step creates clusters based on the most closely associated elements using the chosen linkage method. These clusters, in turn, are clustered with others, occasionally back-tracking to include clusters formed earlier. The process continues until all of the observations are agglomerated into a single cluster.

Although one can use an agglomeration schedule (a tabular summary of the clusterings detailing where cases and clusters are combined) to determine clusters, a visual aid often is preferred. The *dendrogram* is a tree diagram showing cluster agglomeration. The base of the tree has all of the individual branches leading to different cases. As one moves up the tree, these individual cases combine into groups based upon the number of steps required to form them using the agglomeration method selected. At first, groups quickly coalesce, but later it becomes more difficult to group clusters, as indicated by a large gap in the normalized distance where each group forms. A significant gap between group formations can be used to determine where a breakline will be drawn to define groups in a visually intuitive manner.

Data and Measurement

We study national attributes for five selected years – 1967, 1974, 1981, 1988, and 1995 – to compare countries at the same time and place them into meaningful groups. Since differences across countries during the same time period generally are greater than those within a country over time, it is likely that otherwise, groupings would be collections of various years for the same country. However, it is meaningless to say that Australia in 1975 resembles most closely Australia in 1972. It is also unclear whether it is worth saying Australia in 1972 resembles New Zealand in

1975, given that conflict can occur only at a specific temporal point.

One possible remedy is examining every single year, but that is a complicated endeavor. It is doubtful that such a research design would provide much added value for the additional workload required. At the other extreme, it is preferable to select individual years rather than *averaging* results across time, because (1) averaging can hide key details resulting from system-level change and (2) the reasons for groupings may have more to do with how countries are at different temporal periods than during the same period.

We present, in Appendix A,³ the Dataset of National Attributes (DNA), in both Statistica 5.1 and Excel 2000 formats. The DNA is a synthesis of data from major projects in the fields of economics and politics, which include the Extended Penn World Tables, Penn World Tables 6.1, Polity IV, the World Military Expenditures and Arms Transfer dataset, the Material Capabilities Dataset, *The World Factbook* (CIA, 2003), and the Uppsala Conflict Data Project, incorporating up to 127 countries. All of the variables in the DNA are standardized; they represent the number of standard deviations from the mean for each variable across all countries for each year of the DNA. Thus, each variable is measured against the prototypical 'average' country in the DNA for any given year. Standardization ensures biased results do not emerge because of differences in measurements for each variable; also, one can continue to compare meaningfully different countries within the same time period or use the DNA as a dataset for standard regression analysis. For our cluster analysis, standardization allows us to balance all variables, so relative importance is

based on the degree to which they have non-uniform values.

To balance the requirements of providing robust results along with the inevitable cost of compiling information, the DNA takes information from respective databases once every seven years, commencing in 1953 and ending in 1995. However, a lack of information on the capital/labor ratio prior to 1967 limits the analysis to the years from 1967 to 1995. Similarly, a lack of information on the capital/labor ratio means Russia is not examined (although China is) for the years in question.

Appendix B⁴ provides a full treatment of the important issues related to the aggregation of data used in the analysis to follow, so what follows is a brief description of the generally familiar variables appearing in our analysis, and their definitions are, for the most part, taken directly from the codebooks for the corresponding datasets. Those interested in exact definitions of all variables should read the appropriate documentation for the relevant datasets.

Six variables from the Polity IV dataset are included in the analysis (the Polity IV dataset and manual may be found at <http://www.cidcm.umd.edu/inscr/polity/>): XRREG, XRCOMP, XROPEN, XRCONST, PARREG, PARCOMP. The first three variables represent the method by which chief executives are recruited, while the fourth focuses on constraints. The other two variables from Polity focus on key elements of political participation. In only one case did a country exhibit a 'transition' code that deviated from the standard 1 to 5 or 1 to 7 scale for these variables. That one case was deleted from the analysis. Standardization of the variables eliminated the distinction that was created artificially by having different scales for each variable.

³ Appendix A can be found at <http://www.prio.no/jpt/datasets.asp>.

⁴ Appendix B can be found at <http://www.prio.no/jpt/datasets.asp>.

Three variables are taken from the Penn World Tables (Heston, Summers & Aten, 2002), found at <http://pwt.econ.upenn.edu/>. OPENK is the degree of openness of the economy as measured by the formula $(\text{exports} + \text{imports})/\text{GDP}$. The other two variables are computed using Penn data combined with *The World Factbook* (CIA, 2003). POPERSIZ is population per square kilometer of territory. GRWTH is the average real GDP increase over the previous two years. As data for several countries are missing throughout the period (e.g. China) and the capital/labor ratio is not available in the Penn World Tables for 1995, these data are supplemented with information from the Extended Penn World Tables (Marquetti, 2002) in order to provide the capital/labor ratio for each country (KAPW) and the real GDP per capital (RPPGDP).

We add one further variable, PREVYRMI, which is the percentage of GDP spent on the military in the previous year. This data is from the Material Capabilities dataset (Singer & Small, 1999), supplemented by the annual *World Military Expenditures and Arms Transfers* (USACDA, 1973, 1980, 1987, 1994).

Six variables pertaining to internal and external conflict are taken from the monadic dataset found in the Uppsala Conflict Data Project (Gleditsch et al., 2002). These variables are Types 1 to 4, dealing with the type of conflict a country is involved with in a particular year. Higher values represent greater conflict. We have recoded the conflict type on a 0 to 2 scale from a 0 to 3 scale, combining intermediate armed conflict with war. We also have incorporated the Location variable and again have recoded it on a 0 to 2 scale. The sixth and final variable, Count, represents the number of conflicts within a country.

While 18 variables cannot tell the whole story of politics, economics, and conflict, those included cover a wide range of charac-

teristics playing important roles in many data analyses focusing on conflict, crisis, and war. At the political level, key elements concerning executive recruitment, competition, and constraints, along with participation, are recognized. Basic economic traits, such as trade openness, capital in relation to labor, GDP, and growth, are included, along with related attributes such as population density and the percentage of spending on the military.

The analysis includes six variables each from the three basic categories: politics, conflict, and economics. This equal representation means there is no inherent bias in the data analysis toward weighting one type more heavily than others in the search for pattern recognition.

A Cluster Analysis Using the DNA

We attempted each method that could produce a visual representation of clusters in Statistica on the 1967 data and found only Ward's Method and complete linkage provided distinct groups with a relatively large membership within each group. (The centroid methods were not completed because they provide only amalgamation schedules and not tree diagrams when the number of cases exceeds 50.) This is important because, if there are many small and low-membership groups, cluster analysis is not very meaningful. Low-membership groups imply there is not a lot of similarity in the data. Using the other years of data, we found only Ward's Method continued to perform well by providing distinct groups with a relatively large membership within each group. Complete linkage was uneven, sometimes producing a large number of small-membership clusters and sometimes producing a small number of large-membership clusters. It was, therefore, abandoned in favor of Ward's Method.

Figures 1–5 reveal clusters of states for

1967, 1974, 1981 1988, and 1995, respectively, based on Ward's Method. In producing labels for respective clusters, apparent anomalies must be addressed. The anomalies, collectively speaking, serve as a reminder that 18 variables are enough to reveal patterns in the data, but not sufficient to produce mutually exclusive categories.

While there are exceptions to this general rule, cluster analysis is diagnostic rather than definitive in nature. The fact that countries do not appear to group perfectly, as would be expected by intuition, points to possible limitations in the data gathered. In addition, as attributes change, clusters will shift so that countries that are most similar in one year may not be in another year. Some relatively small, 'one time only' clusters should be expected as states go through transition phases reflecting considerations impacting upon just a few of them at any given time.

Appendix A contains data files used by Statistica to perform the cluster analysis. There are also Excel 2000 files for those who do not have access to the Statistica program. Numerical scores above 0 indicate results above the mean value in that year for that particular variable. Thus, when a country has a positive score for XCONST, it imposes more constraints on the chief executive than the average country, while those with negative scores have fewer constraints. The greater the score on an absolute basis from zero, the greater the degree to which this country differentiates itself, relative to this variable, from the average country in the dataset.

One profound limitation of cluster analysis as opposed to other types of analysis (e.g. regression analysis) is that there is no standard practice to determine where clustering should occur (unlike the 95% test for significance in regression analysis, for example). As such, clusters are formed using a method by which the researcher draws a line across the tree diagram and identifies

clusters based on the groupings that appear below that line. Although it may appear to be an arbitrary decision, the researcher ultimately must balance the desire to have a limited number of groups with the inherent loss of precision that accompanies data reduction using the clustering method. We have provided the dendrograms produced by the clustering procedure so that other researchers may examine them to determine the reasonableness of the clusters, just as researchers may question the inclusion or exclusion of specific variables or the choice of time periods used in other forms of data analysis (e.g. regression) that may be regarded as subjective decisions.

One beneficial use of cluster analysis is for diagnostic and data reduction purposes, in conjunction with standard regression. For example, cluster analysis can group similar countries without appealing to an ad hoc solution. Then, instead of using all of the variables identified herein, one can represent each group of countries with a dummy variable and incorporate it into standard regression models. The value of these clusters for prediction is revealed by the significance of the dummy variables.

Changes in clusters will be apparent across years and are to be expected, because type of government, along with levels of development and conflict involvement, will vary over time. Thus, the number of clusters, their precise labels, and membership can be expected to change across a time interval such as seven years.

From a macro standpoint, two points stand out with respect to the results conveyed by the dendrograms in Figures 1-5. First, three clusters persist across all five years, with two present for four years, two for two years, and several others being restricted to one year. Second, the number of clusters shifts from seven in 1967, up to eleven in 1974, and back down to eight in 1981, 1988, and 1995. Taken together, these results suggest a

Figure 1. 1967 Tree Diagram for 63 Cases, Ward's Method, Squared Euclidean Distances

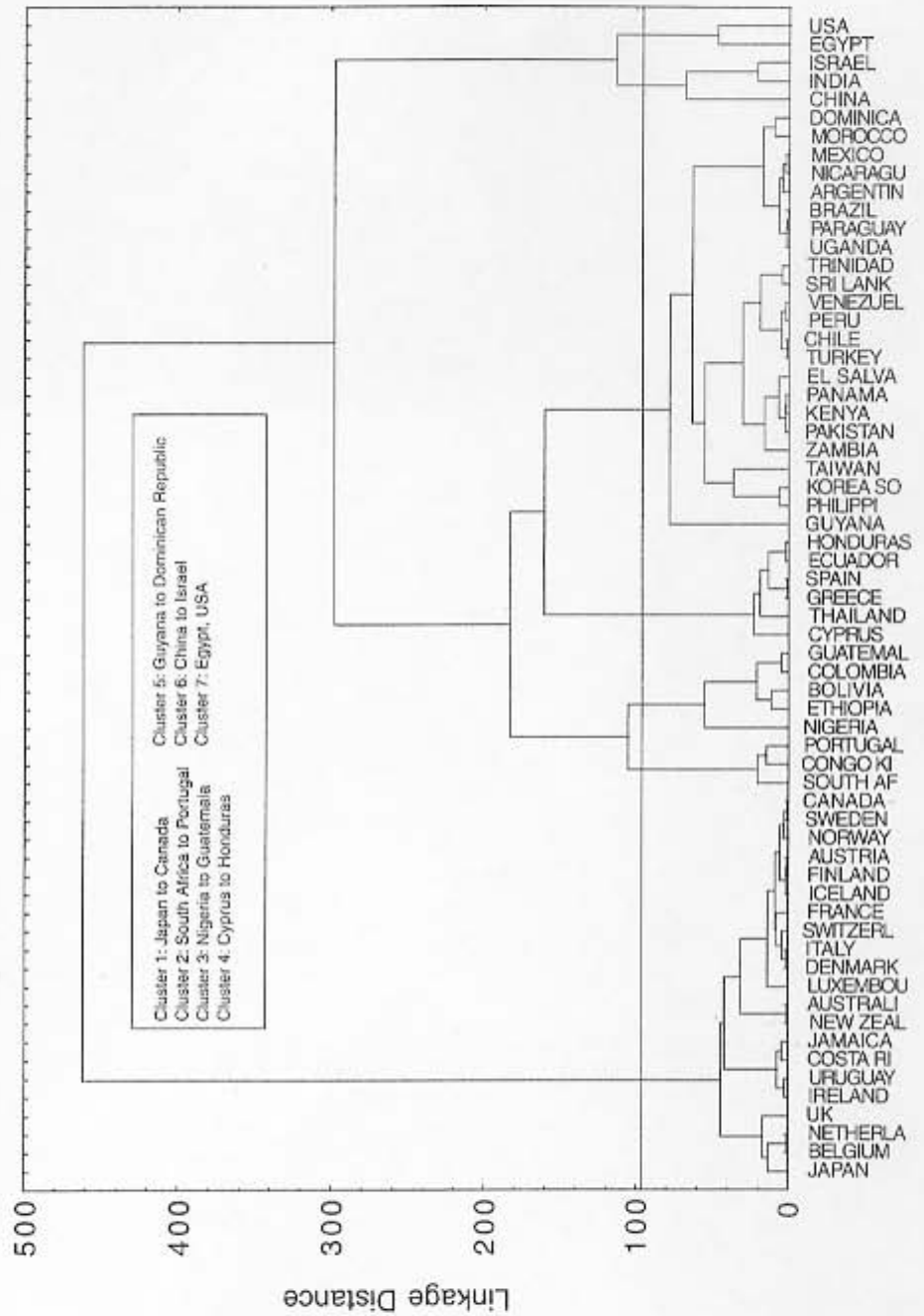


Figure 2. 1974 Tree Diagram for 94 Cases, Ward's Method, Squared Euclidean Distances

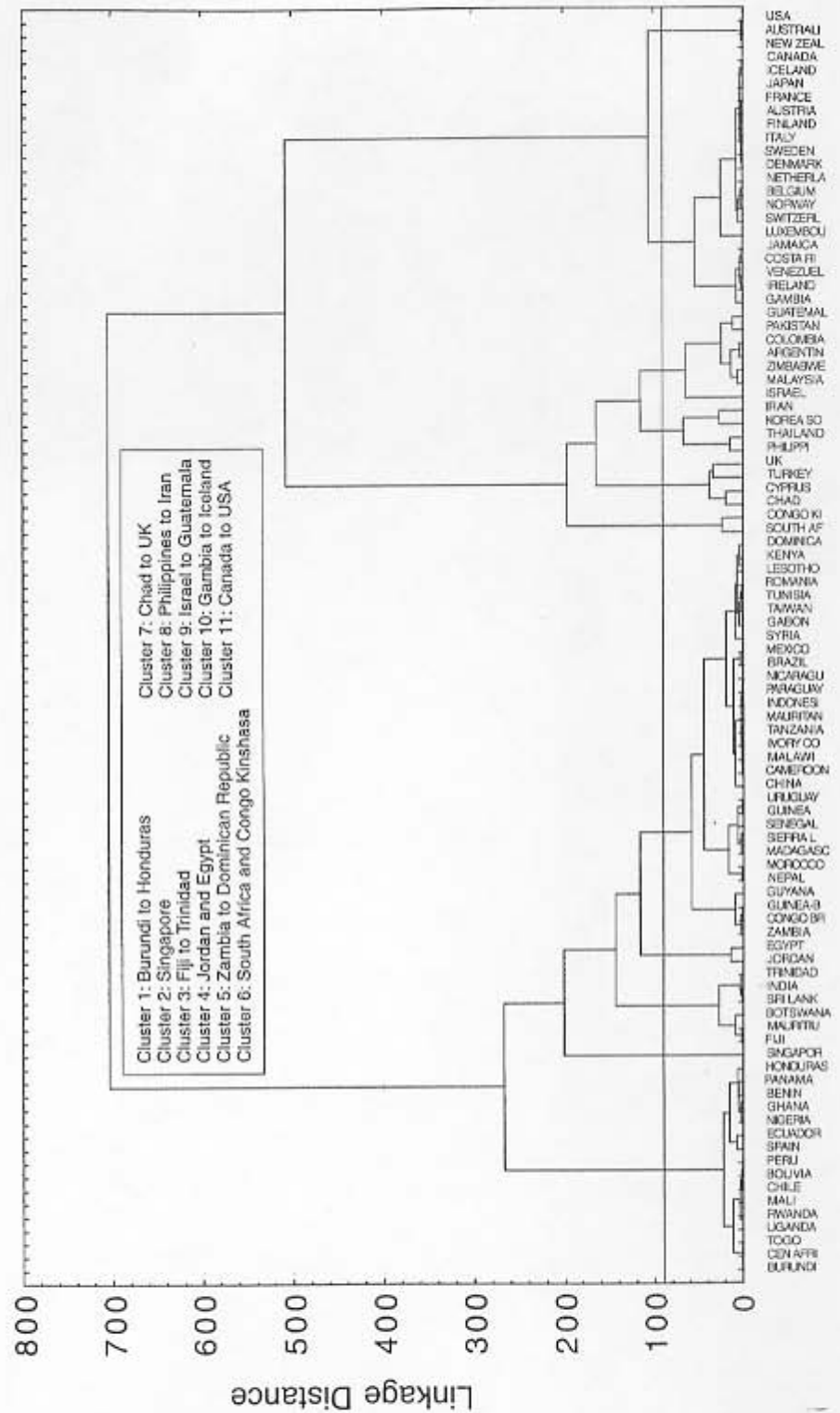


Figure 3. 1981 Tree Diagram for 94 Cases, Ward's Method, Squared Euclidean Distances

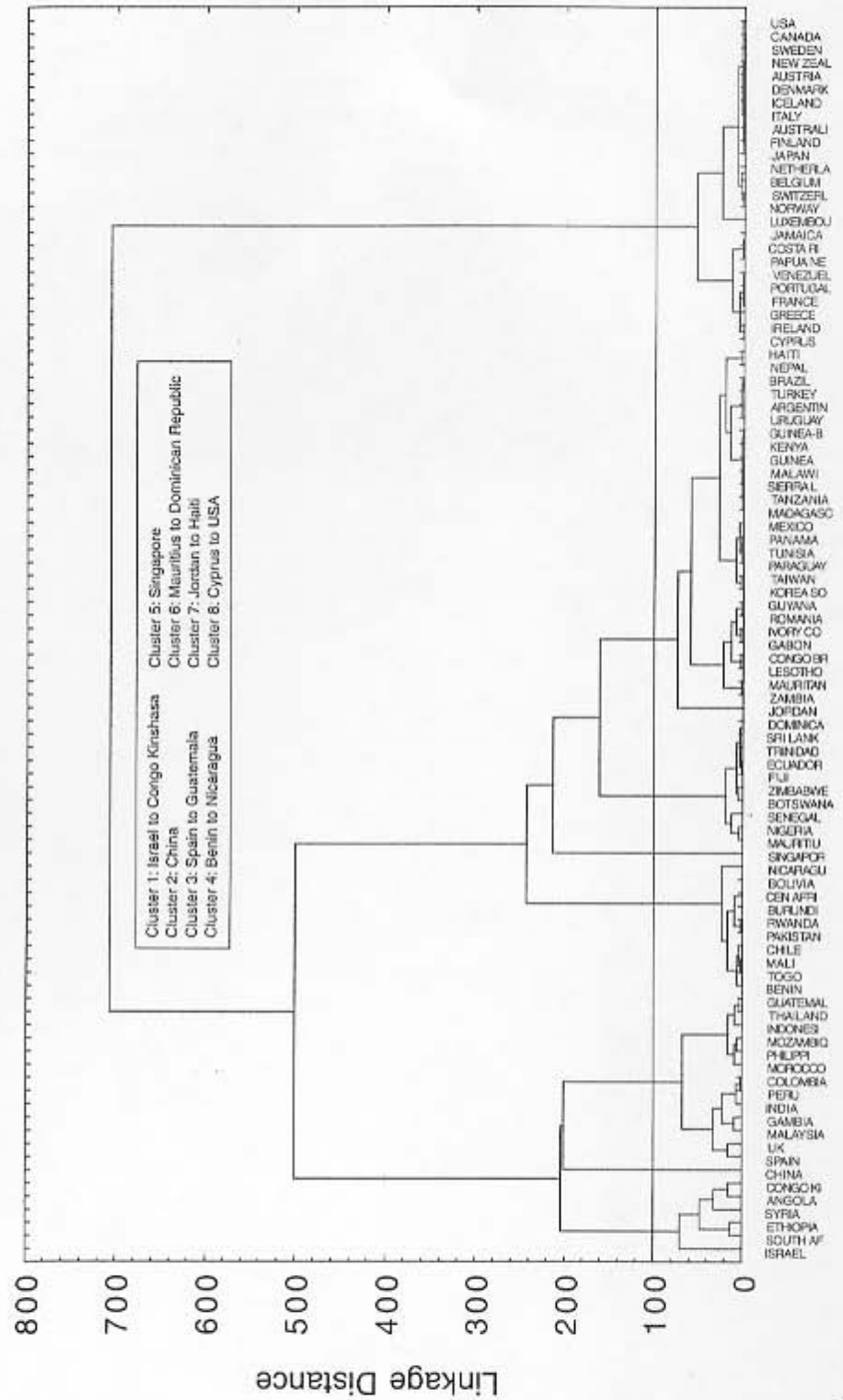


Figure 4. 1988 Tree Diagram for 99 Cases, Ward's Method, Squared Euclidean Distances

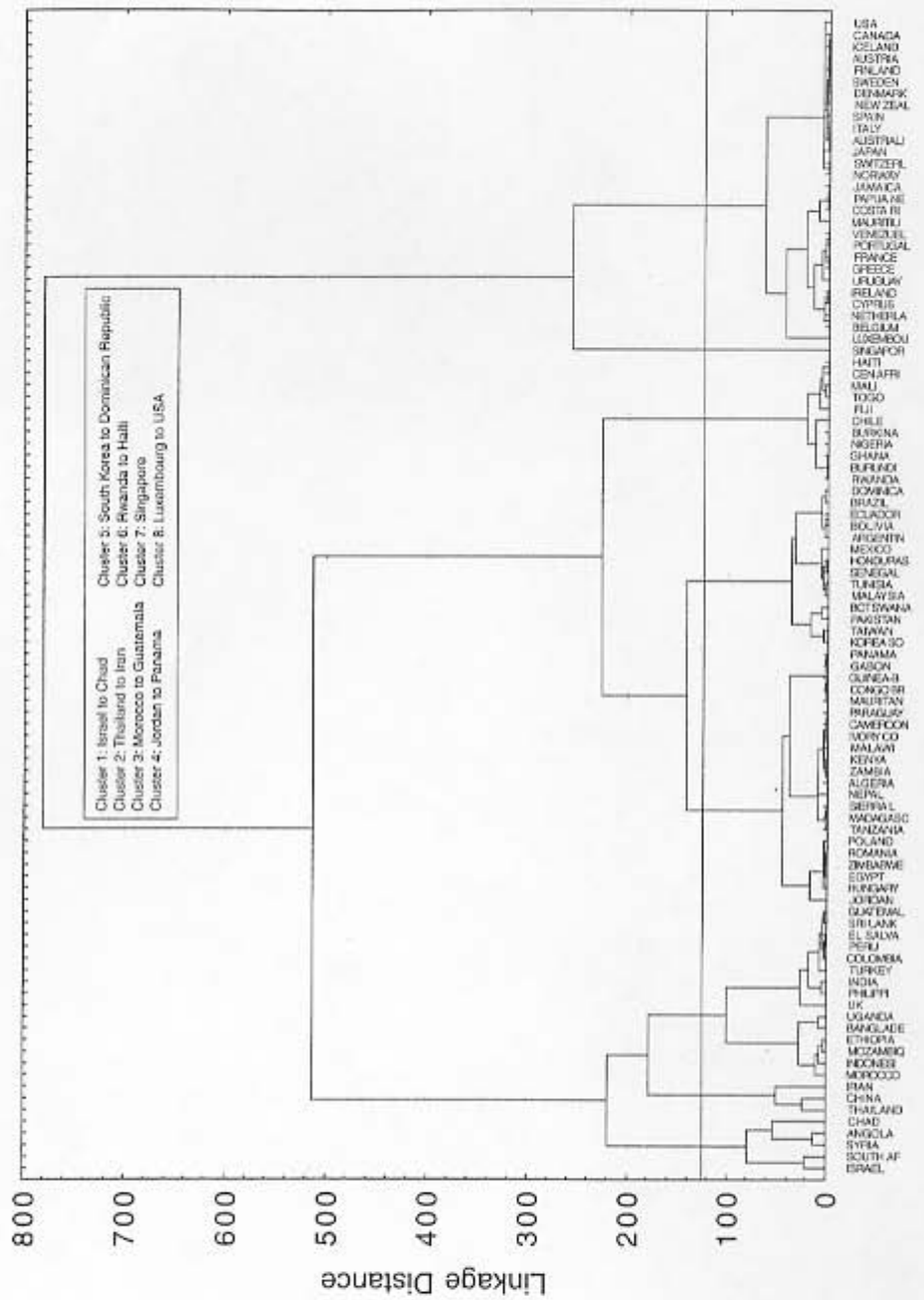
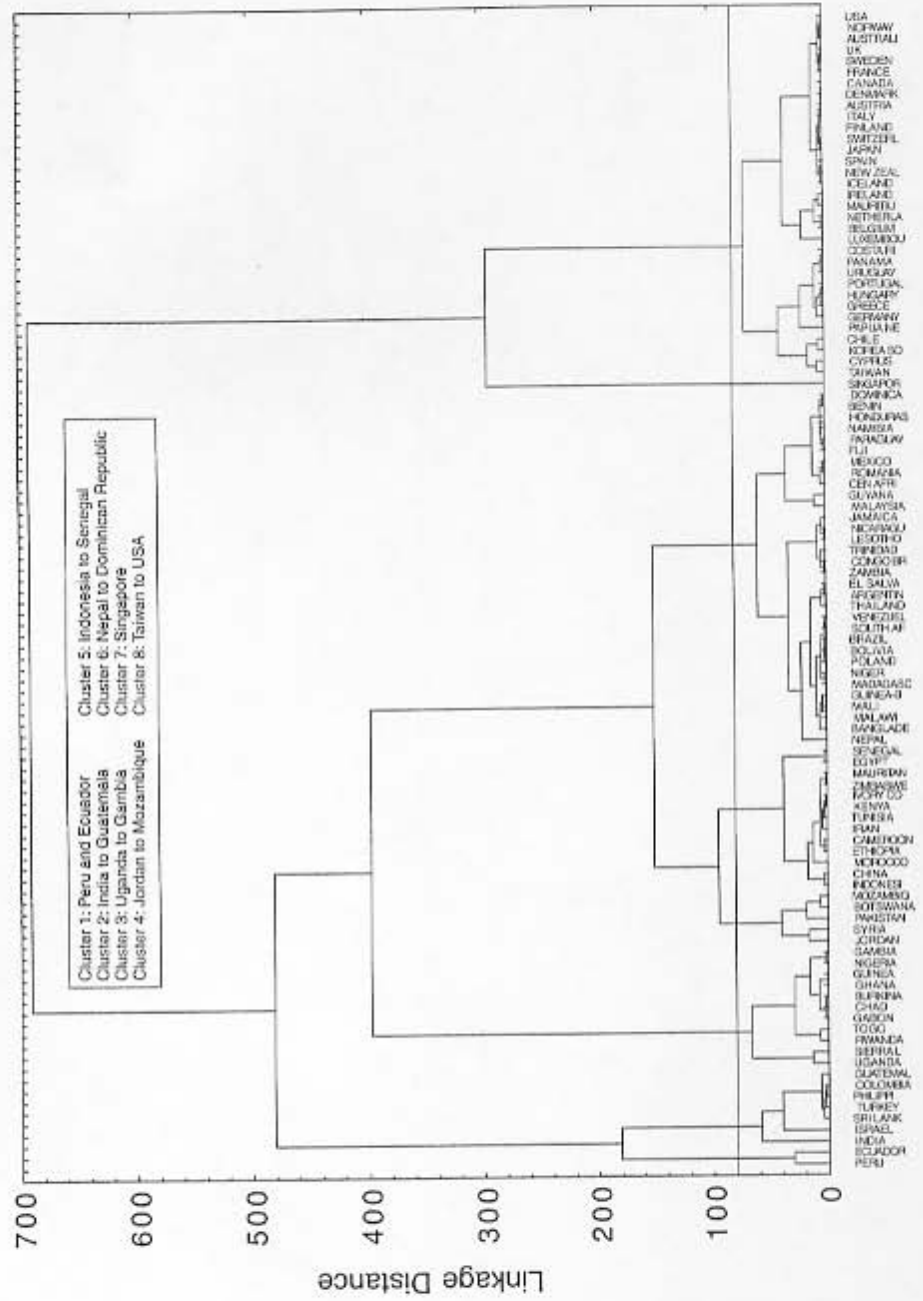


Figure 5. 1995 Tree Diagram for 104 Cases, Ward's Method, Squared Euclidean Distances



degree of consistency in the results over time, along with the diversity naturally reflecting the changing nature of the states populating the international system. The analysis continues with a description of the three most persistent clusters, followed by the others just noted.

One type of state is *advanced*. Members of this cluster are wealthy democracies with low conflict involvement. (The years, cluster number [i.e. order of appearance among clusters for a given year in each respective figure], and N for each cluster will appear in parentheses: for example, for the advanced states, 1967, 1, 21 [i.e. 'first cluster in 1967, with 21 members']; 1974, 10, 19; 1981, 8, 25; 1988, 8, 28; 1995, 8, 33.) This is a relatively large group of states that expands to 33 members by 1995. The persistent distinguishing variables for the cluster are low conflict of all kinds, democraticness across all dimensions, and high GDP and capital/labor ratio. Sample members are France and Ireland.

Another type of state is *poor, anocratic with low conflict involvement* (1967, 5, 23; 1974, 5, 30; 1981, 7, 28; 1988, 4, 22; 1995, 6, 32), with 32 members by 1995. While these states do enjoy low conflict involvement and military expenditures (and relatively low population density), unlike the elite members of the previous category, they have low capital/labor ratio and GDP, along with political systems that mix democratic and autocratic traits. Poland and Kenya are sample members.

The third of the fully persistent types is *poor autocracies with low conflict involvement* (1967, 3, 5; 1974, 1, 16; 1981, 10, 10; 1988, 6, 11; 1995, 3, 11), with a convergence toward about ten members. These states resemble those in the previous category except for the form of government and are somewhat fewer in number. A sample member is Nigeria.

One type of state appears in four years

and is distinguished as *prone to internationalized interstate conflict* (1967, 7, 2; 1974, 7, 4; 1981, 1, 6; 1988, 1, 5). This profile, which highlights one particular type of strife, is no longer in evidence by 1995, although that is not to say conflict proneness itself is gone from the system. Sample members are Chad and Cyprus.

Perhaps the most curious result, present across four years, concerns the *wealthy, high growth anocracy*, namely, Singapore (1974, 2, 1; 1981, 5, 1; 1988, 7, 1; 1995, 7, 1). Data on Singapore are missing for 1967, so this cluster is in evidence from 1974 onward and might well have been in evidence as a unique datapoint even earlier. Singapore is distinguished by low conflict involvement and anocracy, with high GDP, capital/labor ratio, growth, and population density. For such reasons, it is the archetypal 'trading state'. Only one other state, China in 1981, stands alone for even one year, which makes the uniqueness of Singapore even more compelling.

One of the two-year clusters is made up of states that are *poor and anocratic with low conflict involvement and population density* (1988, 5, 14; 1995, 5, 13). This is a relatively new type of state, coming onto the scene in 1988, and the two years show some flux in membership. Sample members are Senegal and Egypt.

Another two-year cluster consists of *poor, closed anocracies with internal conflict* (1981, 3, 13; 1988, 3, 15). These states also feature low capital/labor ratio. The two years of the cluster's existence are in the 1980s; the states in this grouping have re-formed into others since then as a result of changes along one or more of the basic dimensions related to economics, politics, and conflict. Peru and Indonesia are among this temporary cluster's membership.

Constraints on space prevent detailed coverage of the 15 clusters that appear just once. These are, respectively: *anocracies with*

internal and colonial conflict (1967, 2, 3); *autocracies with low conflict involvement, high growth, and low population density and military expenditure* (1967, 4, 6); *closed, interstate conflict-prone with high military expenditures* (1967, 6, 3); *poor democracies with low conflict involvement and military expenditures* (1974, 3, 6); *poor anocracies with low growth and population density with high military expenditures* (1974, 4, 2); *closed, low density states with high colonial conflict* (1974, 6, 2); *poor anocracies with high interstate conflict* (1974, 8, 4); *high internal conflict* (1974, 9, 7); *wealthy democracies with high interstate conflict and low population density* (1974, 11, 3); *poor, closed with high militarized expenditures and interstate conflict proneness* (1981, 2, 1); *poor anocracies with high internal conflict* (1981, 3, 13); *poor anocracies with high interstate conflict* (1988, 2, 3); *poor, closed with high interstate conflict* (1995, 1, 2); *poor democracies with high growth and internal conflict* (1995, 2, 7); and *poor anocracies with low internal conflict and high military expenditures* (1995, 4, 5).

Some of the clusters just listed, such as those involving colonial conflict in 1967 and 1974, reflect the winding-down of that aspect of the international system. Others, like the anocracies that experienced high internal conflict in 1981, moved into other groups as their domestic problems receded. The three new clusters from 1995, all of which feature poor states with either high levels of conflict or military expenditure, may point to a future trend in which a relatively small number of very troubled states persist outside of the system encompassing the modern world.

One way to highlight the presence of both change and stability in clusters is to focus on the evolution of the world's quasi-hegemon, the USA. In 1967, it is in a small cluster with Egypt identified by high interstate conflict and military spending, immediately calling to mind Vietnam and the Six Day War for

each actor, respectively. By 1974, the USA is in transition; once again, it is in a small cluster, with Australia and New Zealand, but this time a larger number of variables stand out. These three are high on the indicators associated with advanced states, but also feature high involvement in interstate conflict, which reflects the winding-down phase of the Vietnam War. The USA joins the advanced cluster in 1981, but is an outlier on military spending and continues to be quite high on that indicator in 1988 and 1995. Perhaps the ongoing presence of the USA in the advanced cluster, but with a very high level of military spending, effectively confirms its role as a quasi-hegemonic state, even after appearance among a large and expanding community of states within a neo-Kantian security community.

Conclusions and Directions for Future Research

In retrospect, only a rigorous statistical analysis can group states in a non-ad hoc manner. Additionally, this work initially came about because of our unease with the practice of granting primary causal status to political institutions. Insufficient theory exists to justify interpreting economic relationships and conflicts in purely political, regime-oriented or anthropomorphic nationalistic terms. Returning to our initial thought experiment, the cluster analysis serves to complement the findings from single-equation regressions. For example, the fully persistent clusters are defined by variables taken from *all three* of the basic categories of politics, economics, and conflict. The next step should be to revise regression studies to include the preceding national types as system-level manifestations, to complement the democracy-autocracy spectrum that enjoys primacy in peace science thus far.

For example, it might be sensible to

narrow the approach to a single cluster at a time and study the conjuncture of variables within that group. It then would be possible to extend the intensive study beyond the summary statistical methods and inquire into the political and cultural history at work. Standard hypotheses from the neo-Kantian literature could be evaluated in a new way. Finally, if researchers attempt a grand scale inquiry into, say, the causes of war across both time and space, they might choose to incorporate the clusters of national types as variables in regression or non-parametric analysis.

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