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Quantitative Description**

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Intergovernmental Organization in the Global System, 1815-1964:

A Quantitative Description

MICHAEL WALLACE AND J. DAVID SINGER

INTRODUCTION

IN any field of scholarly inquiry it is recognized that we must *describe* before we can hope to *explain*. That is, we cannot account for the incidence of a certain class of events or conditions until we have identified and described those particular phenomena. If we agree that the current state of theory in the field of international organization leaves much to be desired, this fact may be partly due to our violation of this principle. Whether we deal with all international organizations over a lengthy period of time or a smaller subset based on such inclusion criteria as function or time period and whether we treat such organizations as the dependent, intervening, or independent variable, it is essential that we first acquire the data by which such organizations can be described. The major purpose of this article is to report the results of a first systematic effort to generate this data, so that we may move on in a cumulative fashion toward the empirical testing of propositions, models, or theories in which international organization is a major variable.¹

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¹ We are not, of course, suggesting that no prior work of a quantitative nature has been undertaken in the field. In addition to the numerous studies of voting and influence patterns in the UN and elsewhere and the literature cited in detail in later sections, there is the pioneering effort by Ernst B. Haas,

LIMITS OF THIS COMPILATION

This article is, in one sense, quite final. That is, if we have been thorough, accurate, and operational, the data we have generated should require no further revision. But the adequacy of this data set depends not only on its reliability but on its validity. One criterion of the latter is the extent to which specialists in the field concur that we have indeed measured and described that which we claim to be measuring: in this case it is the amount of intergovernmental organization (or IGO) in the international system. Beyond such "face validity," subsequent research can ascertain the extent to which the data satisfies other and more stringent criteria of validity.² On the other hand, the article is quite preliminary in the sense that it attempts to produce—however precisely—a rather crude and primitive measure. In this first-stage enterprise we present three different measures of the amount of international intergovernmental organization extant in the international system during each of 30 half decades, beginning with the Congress of Vienna. They are: 1) the sheer number of qualifying IGO's in the system during each of these five-year periods; 2) the total number of nation memberships in IGO; and 3) a weighted index of such nation memberships, reflecting the "diplomatic importance" of each nation belonging to any qualifying IGO during each such period. In addition, we compute six different measures of periodic *change* in the amount of IGO. In a later section, we will specify the meaning of each of these measures and the rationale behind our procedures, but we must first discuss two of the limitations that accentuate the preliminary nature of the measures.

These limitations refer to the range of material encompassed by the several exclusion and inclusion criteria we employed. As to *exclusion*, we have not gathered any data on international nongovernmental organizations for three reasons. First, our theoretical interests (and, we suspect, those of most of our colleagues) are more concerned with IGO's than with nongovernmental organizations (NGO's); despite an increasing sensitivity to the importance of units other than national governments, most of us are working with models which recognize the major continuing role which these governmental actors do play. As indicators of change in the structure and culture of the global system, mea-

"System and Process in the International Labor Organization: A Statistical Afterthought," *World Politics*, January 1962 (Vol. 14, No. 2), pp. 322-352. Moreover, there are several provocative studies in which the "amount of international organization," and changes therein, are used to measure a variety of international phenomena. See, inter alia, Paul Smoker, "Nation-State Escalation and International Integration," *Journal of Peace Research*, 1967 (No. 4), pp. 61-73; Bruce M. Russett, *International Regions and the International System: A Study in Political Ecology* (Chicago: Rand McNally & Co., 1967), chapters 6 and 7; and Robert C. Angell, "An Analysis of Trends in International Organization," *Peace Research Society (International) Papers*, 1965 (Vol. 3).

² A valuable summary of the different types of validity and criteria for evaluating international data as to such validity is in Charles F. Hermann, "Validation Problems in Games and Simulations with Special Reference to Models of International Politics," *Behavioral Science*, May 1967 (Vol. 12, No. 3), pp. 216-231.

asures of the amount of subnational and extranational nongovernmental association can certainly be quite important; likewise, any effort to account for trends and fluctuations in such nongovernmental arrangements would require data which describes and measures that type of dependent variable. But as an *independent* variable, one can hardly urge that the amount of NGO is likely to be important in accounting for many of the theoretically interesting phenomena which occurred in the system of the past century or so.

Second, as difficult as it has been to ascertain the existence and membership of IGO's at any point in time, the problem is considerably exacerbated when dealing with NGO's. Not only has there been less scholarly and governmental research into the latter, but the definitional problem is shrouded in much greater ambiguity. Third, if the estimates prepared by the Union of International Associations and others are reasonably accurate, and they appear to be, we find that NGO's have increased in number and size at about the same rate as IGO's.³ To the extent that two sets of data are likely to show a high correlation, considerations of efficiency suggest the acquisition of only one of them, at least until the need for the second set is manifest.⁴

Turning from the limitations which stem from our exclusion of NGO's (and some putative IGO's) there are the limitations which emerge from the absence of discrimination between those organizations that were *included*. What we meant by our earlier reference to the crudeness of our IGO measures is exactly that; we offer no typology by which IGO's might be assigned to distinct classes in order to offer separate measures for each of these separate types of organization. Again, some justification is in order. First, the dimensions along which such distinctions might be made are very much an open question and will depend on the theoretical focus of one's inquiry. Some would discriminate between these organizations in terms of their assigned missions or the size of their budget, staff, membership, or degree of integration. Others might be more concerned with the regionality or universality of membership, the location of decisional authority, their age, or their effectiveness, and so on.⁵ To illustrate the problem, should the United Nations be clas-

³ Estimates of the number of IGO's and NGO's in the system at several points in time are found in: G. P. Speeckaert, *1978 International Organizations since the Congress of Vienna* (Brussels: Union of International Associations, 1958); Robert C. Angell, *Peace on the March* (Princeton, N.J.: Van Nostrand, 1969); and Kjell Skjelsbaek, "Development of the Systems of International Organizations: A Diachronic Study" (Oslo: Peace Research Institute, September 1969) (Mimeographed.)

⁴ Another limitation, in the eyes of some, will be the relatively stringent criteria we employ, leading to a rather small number of qualifying IGO's; using less stringent criteria of exclusion would, of course, produce a considerably larger population.

⁵ Among the extant typologies, and suggestions therefor, are the following: Robert C. Angell; Quincy Wright, "The Mode of Financing Unions of States as a Measure of their Degree of Integration," *International Organization*, Winter 1957 (Vol. 11, No. 1), pp. 30-40; William D. Coplin, *The Functions of International Law* (Chicago: Rand McNally & Co., 1966), p. 152; Adrea Rosenberg, "International Interaction and the Taxonomy of International Organizations," *International Associations*, November 1967 (Vol. 19, No. 11), pp. 721-730; Clyde Eagleton, *International Government* (3rd ed; New York: Ronald Press, 1957), p. 178; Jean Bourcier, "L'organisation internationale du commerce," *International Associa-*

sified with other multifunctional organizations, or the specialized agencies grouped with other uni-functional ones? Regarding the latter, should the World Meteorological Organization (WMO) and the Food and Agriculture Organization (FAO) be grouped together or separately, as proposed in a forthcoming study?⁶ Are the old public international unions functionally equivalent to these post-1945 agencies?

Another example further specifies the problem. One often hears of "scientific" IGO's or NGO's and wonders whether that rubric embraces only those for which research and discovery is a primary objective or also those in which research and discovery are essentially prerequisites to policy decisions. Among the latter, would there be a sharp distinction between those focusing on societal as opposed to biological or physical matters? What if, as is increasingly recognized, the problem is treated as one of ecosystems and is hence quite interdisciplinary? Regardless of criteria, most classifications will only satisfy the needs of some small group of scholars and be of little use to many others. In short, until systematic and empirical study of international organization begins to reveal which classifications would be appropriate to widely divergent research needs, the development of any single typology will not be "cost-effective."

This leads to the second difficulty, which is that of the operational criteria by which such distinctions and classifications might be made. To our knowledge, no extant typology—even if it satisfies the theoretical needs of some portion of the scholarly community—meets the minimal requirements of explicit, visible, and reproducible coding criteria. We have, ourselves, considered and rejected a variety of classifications on one or both of these grounds. In any event, no such scheme is possible until the total population of IGO's has first been identified, and it is to that preliminary but essential task which this article is dedicated.

PRIOR COMPILATIONS

A final introductory point concerns the prior efforts of others to produce data sets similar to those presented here. As the footnotes and appendix make clear, we are by no means the only ones to have decided that some sort of tabulation of IGO's was necessary to the further development of research in the

tions, June 1964 (Vol. 16, No. 6), pp. 335-337; W. J. Ganshof van der Meersch, *Organisations européennes* (Brussels: Établissements Émile Bruylant, 1966); H. T. Adam, *Les organismes internationaux spécialisés* (Paris: Librairie générale de droit et de jurisprudence, 1965); Raymond Spencer Rodgers, "A General Theory of International Organizations," *International Associations*, February 1961 (Vol. 13, No. 2), pp. 88-93; G. I. Morozov, "Notion et classification des organisations internationales," *International Associations*, June 1967 (Vol. 19, No. 6), pp. 407-415; Francis Bowes Sayre, *Experiments in International Administration* (New York: Harper & Brothers, 1919); Joseph S. Nye, "Comparative Regional Integration: Concept and Measurement," *International Organization*, Autumn 1968 (Vol. 22, No. 4), pp. 855-880; and A. J. N. Judge, *The Improvement of Communication within the World System* (Brussels: Union of International Associations, 1969).

⁶ George A. Coddling, *The Specialized Agencies of the UN* (forthcoming 1970).

field. Before embarking on this enterprise we had assumed that there already existed one or more compilations that would suffice for the theoretical purposes of the correlates of war project. In that project, which seeks to identify those factors most regularly associated with fluctuations in the incidence of international war from 1815 to 1964, such a compilation could serve several purposes. First, it would permit us to ascertain the extent to which the amount of IGO (and rates of change therein) was correlated with the amount of war in the system over that 150 year period.⁷ Second, by identifying which nations belonged to which organizations in any given year, such a compilation would permit us to generate a variety of other indicators of system structure and of international bonds; both of these latter types of measure are central to the larger project.⁸

Much to our chagrin, our assumption turned out to be ill founded. Beginning with the many textbooks and scholarly treatises on international organization (in several languages), we indeed found a variety of lists; some even attempted to indicate the nation members as well as the organizations. But very few of the lists were identical, and when they were, it was only because one author had merely accepted another's prior compilation. In none of these sources did we find a list that appeared to be complete; many obvious organizations just were not in them. More important, none of them articulated the criteria which guided the authors in their compilations; without such explicit operations one could have little confidence in the reliability of the data. Admittedly, these lists were usually offered for illustrative purposes only and not for the testing of hypotheses in which IGO was treated as a dependent, intervening, or independent variable.

We had, of course, begun our inquiry by examining the work of the Union of International Associations and the Secretariat of the League of Nations; these organizations were reputed to have compiled a definitive list of all international organizations, both public and private, complete with membership lists, concise histories, and detailed background material.⁹ Indeed, it was the reputation of these sources among the scholars whose work we consulted that

⁷ Using the data presented in this article, some computations have already been made, with two tentative patterns of note emerging. On the one hand, we find that there is almost no correlation at all between the amount of IGO in the system in each given period and the amount of war which began in the immediately following period(s). On the other, we find that there is a clear (and positive) correlation between the amount of war which ended in each period and the amount of new IGO created in the following one. The procedures and final results will be found in J. David Singer and Michael Wallace, *Inter-Governmental Organization and the Preservation of Peace, 1816-1964* (forthcoming). The basic war data and many derived measures are reported in J. David Singer & Melvin Small, *The Wages of War, 1816-1965: A Statistical Handbook* (New York: John Wiley & Sons, forthcoming 1970).

⁸ The nearest thing to a summary of the overall project and its underlying research strategy is found in J. David Singer, "Modern International War: From Conjecture to Causality," in Albert Lepawsky, and others, *Essays in Honor of Quincy Wright* (in press).

⁹ For a complete list of the relevant materials published by these organizations see *International Associations*, August 1967 (Vol. 19, No. 8), pp. 534-540. These and other references used as data sources and in the preparation of the coding rules are listed in the appendix.

originally led us to believe that our own compilation effort would not be necessary. However, there were several crucial flaws which rendered these prior studies unsuitable for our use in their existing form.

For one thing, IGO in the 19th century was sparsely treated. The first set of compilations produced by the Union of International Associations was dated 1905, and this, as well as those for the two subsequent years, was little more than a calendar of the activities of international organizations. The next two volumes (dated 1908-1909 and 1910-1911) were more substantial, listing what may have been all the organizations extant, with their historical background and a chronological account of their membership. However, the information was often vague and incomplete; after listing the founding membership of an organization, they would then report that a certain number of new members had joined up through such-and-such a date, leaving us in the dark as to exactly which nations had been members during any given year. Further, inconsistencies in the dates and membership lists in these volumes raised additional questions as to the accuracy of these 19th century figures.

Although sources were a good deal more complete in the 20th century, problems cropped up nonetheless. In the League of Nations compilations little or no separation was made between governmental and private national membership in international organizations, and their heavy reliance on written questionnaires sent to the organizations themselves left doubts as to the completeness of their listing. Moreover, no edition was published by the League of Nations between 1929 and 1936, leaving a large and important gap. While the more recent sources of the Union of International Associations (especially the *Yearbook of International Organizations*) are models of precision compared to earlier compendia, we nonetheless experienced trying moments with them. For example, even in the 1966-1967 edition of this yearbook one finds the membership of the Afro-Asian Rural Reconstruction Organization listed as "governments of various countries, including . . ." (followed by a brief and partial list).¹⁰

In addition to these general difficulties with accuracy and completeness, there were special problems with the two world wars. For the duration of both wars no standard reference of organizations was published either by an international body or by the Union of International Associations. Even in the postwar years it took the editors a while to "retool"; the first few compilations after each war showed a low (albeit rapidly improving) standard of completeness.

Finally, nowhere in any of these sources were the criteria for the selection

¹⁰ *Yearbook of International Organizations* (11th [1966-67] ed; Brussels: Union of International Associations), p. 32. One source of difficulty has been the absence of any operationally defined typology of national political units, permitting identification of the international system's population; but this reflects less on the League of Nations and the Union of International Associations' staffs than on the scientific orientation of the discipline within which their work has been carried out. On the other hand, the Union of International Associations continues to let each organization define the international system for itself, with the obvious attendant difficulties.

of organizations or the specification of membership explicitly and carefully spelled out, and on inspection it was clear that different rules had been used from year to year and even from page to page. In general, it seemed that the editors had largely permitted the organizations to categorize themselves as well as to define their own founding date, membership, and so forth. Such a procedure, of course, is not conducive to uniformity and comparability. Moreover, such rules as did exist were ill suited to most theoretical purposes. If the need is to measure the amount of international organization extant at any point in time, a periodic list of all bodies whose secretariats responded to a questionnaire would not be either selective or inclusive enough. Some included organizations which had only a nominal existence or whose activities had lapsed or bodies which were merely subordinate bureaus of larger organizations.

Our purpose in these paragraphs, however, is not to cite chapter and verse indicting those who have dedicated themselves to the collection and analysis of information on international organization. This is especially true in regard to the Union of International Associations whose data acquisition procedures have changed markedly—and for the better—in recent years and with whom we have been in fruitful consultation on a variety of coding problems. We mean only to alert others to the problems inherent in certain compilations and to justify the lengthy and costly investment we ourselves have made in this compilation.

ASCERTAINING THE NUMBER OF IGO'S

In trying to ascertain the number of IGO's which exist in the global system at any given point in time, we had to develop classification criteria and coding rules which answered the following questions. First, how do we distinguish IGO's from other pacts, protocols, arrangements, and agreements undertaken between governments? Second, exactly how do we distinguish IGO's from NGO's, given the wide spatial and temporal variations in the boundary between the public and the private sectors? Third, at which point in the often lengthy genesis of an organization shall it be deemed to come into existence, and—what is usually more difficult to answer—when shall it be deemed to have ceased to exist? Fourth, how shall we decide when two IGO's shall be said to be independent of one another, given the modern tendency toward complex administrative connections between them?

The criteria for the inclusion of IGO's are as follows. First, the organization must consist of at least two qualified members of the international system, as defined in the next section. It may be objected, of course, that *bilateral* organizations should not be included on the grounds that they are not "really" IGO's as we usually conceive of them because they result from "contractual" rather than "lawmaking" treaties. There are two points to be made here. One,

this objection is met by us in that mere treaties or pacts are excluded by other criteria; we only urge that an organization's bilateral character cannot of itself be grounds for exclusion.¹¹ Further, such exclusion would not only leave out such important organizations as the North American Air Defense Command (NORAD) but would also force us to drop such *multilateral* organizations as the Rhine River Commission when historical circumstances temporarily reduced their membership to two.¹²

Organizations must meet two additional criteria to qualify. One, the organizations must hold more or less regular plenary sessions at intervals not greater than once a decade. As a matter of fact, many writers have cited the regular meetings of IGO's as one of the most crucial innovations of multilateral diplomacy.¹³ This requirement of one meeting every ten years may seem lax, but we have found more stringent requirements inappropriate for the somewhat less hurried age prior to World War I.

The second additional requirement is a permanent secretariat and some sort of permanent headquarters arrangement. This condition is not particularly strict and does not require that the secretariat be "international" in the UN sense. Many international unions have their secretariats supplied by a single member, and not infrequently these are housed within a single national administration; one of the earliest examples is the Universal Postal Union.¹⁴ An organization also qualifies even if its secretariat personnel are supplied by various members on a rotating basis (as was the case with the International Association of Railway Congresses) or if they are provided by—but not identical with—the secretariat of another organization, a situation which often characterizes the relationship between the large specialized agencies and small organizations in proximate functional domains. The crucial distinction here is between *ad hoc* conferences or series of conferences whose staffs do not function between meetings and true *organizations* (even if labeled conferences or agreements) possessing secretariats which perform ongoing tasks.

Originally we contemplated adding the further requirement that the organization possess some provision for a regular budget, but we found that 1) this would be redundant in that a permanent secretariat would scarcely be possible *without* such arrangements and 2) information on budgetary arrangements was almost impossible to come by in many cases. In those few cases in

¹¹ The requirement that there be more than two participating nations before an organization be termed "international" is, apparently, a well-established definitional convention. Some have pointed out, however, that there is little empirical evidence to support it; see Adrea Rosenberg, *International Associations*, Vol. 19, No. 11.

¹² In this case, Baden and Wurtemberg ceased to be distinct members upon their absorption into Germany, and France lost her riparian territory in the Franco-Prussian war, leaving only the Netherlands and Germany as members between 1871 and 1918.

¹³ For a comprehensive list of international plenary meetings during this period see *International Congresses, 1681 to 1899* (Brussels: Union of International Associations, 1960) and *International Congresses 1900-1919* (Brussels: Union of International Associations, 1964).

¹⁴ Eagleton, pp. 178, 187-189.

which information on the existence of an organized secretariat was missing or confusing but the existence of regular budgetary provisions could be definitely established, such budgetary provisions were deemed to have satisfied the secretariat requirement.

The second set of rules deals with the matter of separating IGO's from NGO's—in other words, determining whether it is governments that are the active participants. The difficulty is that there exist “mixed” organizations, some of whose delegations are appointed by governmental agencies or ministries and some by private bodies such as corporations. This state of affairs reflects the fact that in some areas, such as communications and banking, nations differ widely with respect to the degree of control exercised by the public authority. Following Eagleton, we concluded that it would be unreasonable to exclude organizations simply because a number of their members were not national states. Instead we adopted the criterion employed by the UN Economic and Social Council (ECOSOC): whether or not the organization was created by a formal instrument of agreement between the governments of national states.¹⁵

A third set of criteria serves to set the dates marking the birth, death, and occasional resurrection of each organization. In general, we count an organization as established on the opening date of the first plenary session, which is usually the organizing meeting. This is a more realistic indication of organizational birth than the date specified in the founding instrument, inasmuch as the secretariat of most new organizations begins to function at or shortly after the organizing meetings and continues on a “provisional” basis while awaiting full ratification of its charter. Of course, given the complex gestation of many organizations, it is sometimes difficult to determine which of several meetings marks an IGO's operational beginning. In case of doubt we have used the meeting which resulted in the creation of a permanent secretariat as our date of establishment.

An organization ceases to exist in either of two circumstances. One is the lapse of ten years without a plenary meeting, in which case the date of termination is that of the closing of its last plenary conference. The second refers to circumstances in which one organization is formally replaced or succeeded by another. In this case, the first organization is deemed to cease on the founding date of the successor. These criteria are based on the active, rather than the legal, life of IGO's. For one thing, the exact dates marking the beginning and end of an organization's legal existence are not always easy to determine, given the often prolonged interval between the signing and the ratification of the multilateral instruments which govern the process.¹⁶ Moreover, it is obvious that in many cases the two life-spans will not correspond. On the one

¹⁵ Eagleton, pp. 178-181; and ECOSOC Document E/INF/23, April 30, 1948, p. 16.

¹⁶ The theoretical and practical implications of this lag are discussed in Francis O. Wilcox, *The Ratification of International Conventions* (London: Allen and Unwin, 1935).

hand, not a few organizations are engaged in important tasks prior to their legal establishment, and on the other hand, many organizations—like old soldiers—never die but merely fade away. And it goes without saying that for most theoretical purposes, including our own, the active life-span is by far the more important consideration.

Our final set of criteria is designed to determine when two IGO's are to be classified as independent of one another. Ambiguities are rare in the nineteenth century, but in recent decades IGO's have tended to form liaison associations among themselves (such as the Inter-American Committee for Agricultural Development) and to unite in families (such as the present UN complex). Our coding rules are as follows. First, an association or confederation of IGO's does not count as an additional IGO. Second, an IGO is independent only if two conditions are satisfied: 1) its membership is not selected wholly or in part by another IGO, ruling out, for example, the Economic and Social Council of the UN; and 2) the organization is serviced by administratively distinct secretariat personnel who function under the authority of the organizational plenum. This requirement excludes organizations which are merely subordinate or regional offices of a parent organization (for example, the International Poplar Commission under FAO) as well as those which are merely treaties or agreements administered by the secretariat of another organization, such as the various "special unions" of the International Union for the Protection of Industrial Property. Included are organizations which, while owing their original existence, their personnel, and perhaps even their budget to the actions of a parent organization, exercise autonomous jurisdiction over their own secretariat. Finally, there arises occasionally an overlap problem of another sort: when two separate IGO's claim jurisdiction over the same domain, as do the Commission européenne du régime du Danube with headquarters in Rome and the (functioning) Danube Commission with headquarters in Budapest. In these cases only the organization with evident *de facto* control over the relevant domain is counted.

As anyone who has worked with this sort of data acquisition (or perhaps more accurately, data *generation*) problem can appreciate, the coding rules used here were not merely "dreamed up," nor are they identical to those with which we began.¹⁷ Criteria for inclusion or exclusion of cases or entities in any particular classification and compilation usually emerge out of the interaction between one's *a priori* rules and the empirical realities of the phenomena which are being examined. As we suggested earlier, coding rules based on the often *ad hoc* considerations of the organizations themselves (or those who seek to service them) seldom produce data and measures which are scientifically useful. Hence, the criteria were developed and finalized only after we

¹⁷ A fuller discussion of the problem, in the context of content analysis and simulation research strategies, is in J. David Singer, "Data-Making in International Relations," *Behavioral Science*, January 1965 (Vol. 10, No. 1), pp. 68-80.

had thoroughly examined the Union of International Associations, League of Nations, and UN sources; the many national listings; the scholarly compilations; and monographs; and the records of many of the organizations themselves. The results are, we trust, exhaustive, reliable, and valid.¹⁸ In summary, then, we present in Table 1 the first set of data emerging out of these lengthy operations: the names of those 208 organizations that, during any of the 30 five-year periods of the 150 years under study, satisfied all of the criteria for inclusion in our population of qualifying IGO's.¹⁹

ASCERTAINING INDIVIDUAL NATION-MEMBERSHIPS

Having identified the qualifying organizations, the next step is to ascertain which nations constituted the membership of each during each of the 30 periods under study. This is obviously a two-phase operation, with identification of nation membership in the total international system an essential prerequisite to identification of each organization's membership. Fortunately, phase one has already been completed and needs merely to be summarized here.²⁰ In general, a national political entity, to qualify for system membership, must have the standard attributes of national sovereignty plus a minimum population of 500,000. In addition, it must have the diplomatic recognition of both the United Kingdom and France (the so-called "legitimizers") up through World War I, along with missions at or above the *chargé d'affaires* rank from each. For the post-Versailles period, however, we dropped the population requirement and demanded either the above recognition from any two major powers or membership in the League of Nations or the UN. These inclusion-exclusion criteria (with some *ad hoc* exceptions) produce a system population which ranges from 23 in 1815 to 122 in 1964, with the upward secular trend broken only by the Italian and German unifications and by the territorial occupations and realignments of the two world wars. We also distinguish, from 1815 to 1919, between "central system" nations and those of a more peripheral nature in order to reduce the statistical "noise" which the latter might generate and to permit focusing on those nations which are most closely associated with each other largely through the traditional European state sys-

¹⁸ As with our previous papers which merely present a number of data sets and offer little or no analysis or interpretation of such data, we invite comments and suggestions regarding the quality of the results; given the impossibility of *guaranteeing* that the list is exhaustive, we particularly welcome information indicating organizations *which meet our criteria* and yet may have been omitted.

¹⁹ After some hesitation we decided to use the English title of each organization, and if not indicated, to make our own translation, normally from the French, in order to achieve a modicum of standardization.

²⁰ For a detailed list of the entities qualifying as states members of the international system and an exposition of the coding rules governing their selection, see J. David Singer and Melvin Small, "The Composition and Status Ordering of the International System: 1815-1940," *World Politics*, January 1966 (Vol. 18, No. 2), pp. 236-282; and Bruce M. Russett, J. David Singer, and Melvin Small, "National Political Units in the Twentieth Century: A Standardized List," *American Political Science Review*, September 1968 (Vol. 62, No. 3), pp. 932-951.

TABLE I: QUALIFYING INTERGOVERNMENTAL ORGANIZATIONS, 1815-1964

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
Central Commission for the Navigation of the Rhine	1815	
Superior Council of Health	1838	1914
European Commission for Control of the Danube	1856	1939
International Telecommunication Union	1865	
International Commission of the Cape Spartel Light in Tangier	1865	1959
International Union of Pruth (River)	1866	1914
Universal Postal Union	1874	
International Penitentiary Commission	1875	1944
International Bureau of Weights and Measures	1875	
International Conference for Promoting Technical Unification on the Railways	1882	
International Union for the Protection of Industrial Property	1883	
International Commission for the Navigation of the Congo	1885	1914
International Association of Railway Congresses	1885	
International Union for the Protection of Literary and Artistic Works	1886	
International Exchange Service	1886	1939
Suez Canal Administration	1888	1914
International Boundary Commission (United States-Mexico)	1889	
Pan American Union (Organization of American States)	1890	
International Union for the Publication of Customs Tariffs	1890	
Central Office for International Railway Transport	1890	1939
	1945 ^a	
International Maritime Bureau against the Slave Trade	1890	1914
International Finance Commission at Athens	1898	1914
Permanent Court of Arbitration	1899	
International Commission for the Decennial Revision of the Nomenclature of the Causes of Death	1900	1948
Pan American Sanitary Bureau (Pan American Sanitary Organization) (Pan American Health Organization)	1902	
Sugar Union	1902	1914
International Council for the Exploration of the Sea	1902	
International Secretariat for the Unification of Pharmacological Terms	1902	1914
Permanent International Association of Navigation Congresses	1902	
International Association of Seismology	1903	1922
International Institute of Agriculture (Food and Agriculture Organization)	1905	
Commission for International Financial Control in Macedonia	1905	1914
Radiotelegraph Union	1906	1926
International Prize Court	1907	1914
International Office of Public Hygiene	1907	1947

^a There were three IGO's which failed to satisfy the criteria for continuation during World War II but which resumed activity after the war in their original form.

TABLE I (Continued)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
International Bureau for Information and Enquiries regarding Relief to Foreigners	1907	1921
International Central American Office	1907	1926
International Physiological Laboratories on Monte-Rosa	1907	1939
International Arbitration Tribunal at San José	1907	1916
International Pedological Institute	1908	1941
International Commission on the Teaching of Mathematics	1908	1939
Permanent International Association of Road Congresses	1908	
International Joint Commission (United States-Canada)	1909	
Central Bureau for the International 1:1,000,000 Map of the World	1909	1953
International Institute of Administrative Sciences	1910	
Permanent South American Railway Congress Association	1910	
Postal Union of the Americas and Spain	1911	
International Association for Public Baths and Cleanliness	1912	1923
International Bureau of Commercial Statistics	1913	1939
Inter-American High Commission	1916	1931
Inter-American Trademark Bureau	1917	1944
International Commission for the Scientific Exploration of the Mediterranean Sea	1919 1951 ^a	1939
Inter-American Children's Institute	1919	
International Commission for Air Navigation (International Civil Aviation Organization)	1919	
International Labor Organization	1919	
International Elbe Commission	1919	1939
International Commission for the Oder	1919	1936
League of Nations (United Nations)	1919	
International Institute of Commerce	1919	1939
International Union for Pure and Applied Chemistry	1919	
Reparation Commission	1919	1933
Interallied Rhineland High Commission	1919	1934
International Hydrographic Bureau	1919	
International Institute of Refrigeration	1920	
Imperial Defense Committee	1920	1946
Pacific Cable Board	1920	1948
Imperial Mycological Institute	1920	1933
Imperial Institute of Entomology	1920	1933
Commonwealth Shipping Committee	1920	
Imperial War Graves Commission	1920	
Imperial War Museum	1920	
Benelux Economic Union	1921	1939
International Railway Wagon Union	1921	

TABLE I (*Continued*)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
International Committee of Military Medicine and Pharmacy	1921	
International Railway Union	1922	
International Pacific Halibut Commission	1923	
Commonwealth Economic Committee	1923	
Union for the International Use of Carriages and Vans	1923	
International Criminal Police Commission	1923	
Permanent International Bureau of the Analytical Chemistry of Human and Animal Food	1923	
International Advisory Committee for Long Distance Telephony	1924	1932
International Office of Epizootics	1924	
International Vine and Wine Office	1924	
International Telegraph Consultative Committee	1925	1934
Permanent International Commission of Studies on Sanitary Equipment	1925	1939
International Boundary Commission (United States-Canada)	1925	
International Technical Committee of Legal Experts on Air Questions	1926	1947
Empire Marketing Board	1926	1933
International Relief Union	1927	
International Chemistry Office	1927	1939
Central Pan American Bureau of Eugenics and Homiculture	1927	1947
Commonwealth Agriculture Bureaux	1927	
Inter-American Commission of Women	1928	
Pan American Institute of Geography and History	1928	
International Exhibitions Bureau	1928	
International Meteorological Organization (World Meteorological Organization)	1928 1947 ^a	1939
International Bureau of Education	1929	
Bank for International Settlements	1930	
International Pacific Salmon Fisheries Commission	1930	
International Tin Council	1931	
International Wheat Advisory Committee (International Wheat Council)	1933	
International Tea Committee	1933	
International Commission of Agricultural Industries	1934	
African Postal and Telecommunications Union	1935	
Joint Railway Commission (Bolivia-Brazil)	1937	
International Sugar Council	1937	
Inter-American Radio Office	1937	1957
International Institute for the Unification of Private Law	1939	
Permanent Association of Pan American Highway Congresses	1939	1952
International Cotton Advisory Committee	1939	

TABLE I (Continued)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
Inter-American Indian Institute	1940	
Inter-American Coffee Board	1940	1948
Inter-American Statistical Committee	1940	
Joint Railway Commission (Bolivia-Argentina)	1941	
Anglo-American Caribbean Commission (Caribbean Commission) (Caribbean Organization)	1942	1965
Inter-American Defense Board	1942	
Inter-American Conference on Social Security	1942	
Inter-American Institute of Agricultural Science	1942	
International Monetary Fund	1944	
International Rubber Study Group	1944	
International Bank for Reconstruction and Development	1945	
United Nations Educational, Scientific and Cultural Organization	1945	
League of Arab States	1945	
United Kingdom—Dominion Wool Disposals	1945	1951
Far East Commission	1945	1955
Commonwealth Air Transport Council	1945	
British Commonwealth Scientific Committee	1946	
Inter-Allied Reparation Agency	1946	1951
Tripartite Commission for the Restitution of Monetary Gold	1946	1951
International Whaling Commission	1946	
Institute of Nutrition for Central America and Panama	1946	
Provisional Maritime Consultative Council (Intergovernmental Mari- time Consultative Organization)	1946	
International Refugee Organization	1946	1956
Commonwealth Advisory Aeronautical Research Council	1946	
World Health Organization	1946	
Permanent Commission of the International Fisheries Convention (Northeast Atlantic Fisheries Commission)	1946	
European and Mediterranean Plant Protection Organization	1947	
Sterling Area Statistical Committee	1947	
South Pacific Commission	1947	
International Wool Study Group	1947	
International Patents Institute	1947	
European Customs Union Study Group (Customs Cooperation Council)	1947	
General Agreement on Tariffs and Trade	1947	
Commonwealth Telecommunications Board	1948	
Western European Union	1948	
Indo-Pacific Fisheries Council	1948	
International Rice Commission	1948	
International Sericultural Commission	1948	

TABLE I (*Continued*)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
Organization for European Economic Cooperation (Organization for Economic Cooperation and Development)	1948	
American Committee on Dependent Territories	1948	1956
Danube Commission	1948	
Council for Mutual Economic Aid	1949	
North Atlantic Treaty Organization	1949	
International Authority for the Ruhr	1949	1954
Council of Europe	1949	
European Conference of Insurance Supervisory Services	1949	
Inter-American Tropical Tuna Commission	1949	
International Commission for the Northwest Atlantic Fisheries	1949	
General Fisheries Council of the Mediterranean	1949	
International Red Locust Control Service	1949	
Ibero-American Office of Education	1949	
Commission for Technical Cooperation in Africa South of the Sahara	1950	1965
Scientific Council for Africa South of the Sahara	1950	1958
Council for Technical Cooperation in South and Southeast Asia (Colombo Plan)	1950	
Administrative Center for Social Security for Rhine Boatmen	1950	
Tripartite Commission on the Working Conditions of Rhine Boatmen	1950	
European Payments Union	1950	1961
International Commission on Civil Status	1950	
Hague Conference on Private International Law	1951	
ANZUS Council	1951	
Organization of Central American States	1951	
International Computation Center	1951	
Intergovernmental Committee for European Migration	1951	
Inter-African Phytosanitary Convention	1951	1965
European Coal and Steel Community	1951	
Permanent Commission for the Conservation of the Maritime Resources of the South Pacific	1952	
Intergovernmental Copyright Committee	1952	
International North Pacific Fisheries Commission	1952	
Nordic Council	1952	
International African Migratory Locust Organization	1952	
European Productivity Agency	1953	1961
European Organization for Nuclear Research	1953	
International Regional Organization against Plant and Animal Diseases	1953	
Arab International Tourist Office	1954	
Inter-African Committee on Statistics	1954	

TABLE I (*Continued*)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
European Commission for the Control of Foot and Mouth Disease	1954	
Southeast Asia Treaty Organization	1954	
Arab Postal Union	1954	
Warsaw Treaty Organization	1954	
Central Treaty Organization	1955	
European Economic Community	1955	
European Atomic Energy Commission	1955	
Central American Research Institute for Industry	1955	
European Company for the Financing of Railway Rolling Stock	1955	
International Olive Oil Council	1955	
International Organization for Legal Metrology	1955	
International Center for the Study of the Preservation and the Restoration of Cultural Property	1956	
Nordic Advisory Committee on Films for Children	1956	
Latin American Educational Film Institute	1956	
Asian-African Legal Consultative Committee	1956	
Joint Institute for Nuclear Research	1956	
International Atomic Energy Agency	1956	
International Moselle Company	1956	
Organization for the Collaboration of Railways	1956	
North American Air Defense Command	1957	
European Company for the Chemical Processing of Irradiated Fuels	1957	
European Investments Bank	1958	
European Food Code Council	1958	
International Lead and Zinc Study Group	1958	
North Pacific Fur Seal Commission	1958	
Benelux Economic Union	1958	
Conference of Heads of State of Equatorial Africa	1959	
Inter-American Federation of Cotton	1959	
Inter-American Development Bank	1959	
European Conference of Postal and Telecommunications Administrations	1959	
Permanent Joint Technical Committee for the Nile	1959	
Latin American Free Trade Association	1959	
European Free Trade Association	1959	
International Coffee Organization	1959	
European Organization for the Safety of Air Navigation	1960	
General Treaty on Central American Economic Integration	1960	
Intergovernmental Oceanographic Commission	1960	
Commonwealth Education Liaison Committee	1960	
Organization of Petroleum Exporting Countries	1960	

TABLE I (*Continued*)

<i>Organization</i>	<i>Establishment</i>	<i>Termination</i>
Council of the Entente	1960	
Central African Customs and Economic Union	1960	
Benelux Economic and Social Consultative Committee	1961	
Afro-Malagasy Postal and Telecommunications Union	1961	
African Interstate Tourist Office	1961	
African Postal Union	1961	
Asian-Oceanic Postal Union	1961	
Asian Productivity Organization	1961	
European Space Vehicle Launcher Development Organization	1961	
East African Agriculture and Forestry Research Organization	1961	
Union for the Protection of New Varieties of Plants	1961	
Afro-Malagasy Union (Common Afro-Malagasy Economic Organization)	1961	
International Bureau for the Protection of the Moselle against Pollution	1961	
Afro-Malagasy Industrial Property Office	1962	
Afro-Asian Rural Reconstruction Organization	1962	
Cocoa Producers Alliance	1962	
Desert Locust Control Organization for East Africa	1962	
East African Common Services Organization	1962	
European Space Research Organization	1962	
Latin American Center for Physics	1962	
West African Monetary Union	1962	
International Bureau for the Protection of the Rhine against Pollution	1963	
African Development Bank	1963	
Organization for African Unity	1963	
Niger River Commission	1963	
Commission of the Chad Basin	1964	
International Bank for Economic Cooperation	1964	
Picture and Sound World Organization	1964	

tem. However, we assume (but hope eventually to confirm) that the total system had become sufficiently interdependent after World War I to no longer justify so sharp a distinction between its members.

Once a nation satisfies the criteria for membership in the system as a whole, it is necessary to identify those which qualify it for membership in any given IGO. We employ three criteria. First, a nation must send working delegations to the plenary sessions of the organization, and these must have full voting rights, although of course a weighted voting system will not exclude any nation.²¹ As might be surmised from the earlier discussion, these delegations need not always be accredited by the *governments* of the nations concerned. Second, if a nation ceases to send full voting delegates to two meetings in a row, we deem it to have lost its membership and backdate its departure from its first absence. This rule applies even when the organization, the member concerned, or both, do *not* consider membership to have been terminated. On the other hand, we do not take account of boycotts, walkouts, suspensions, or expulsions unless they last longer than two complete plenary sessions. Our purpose here is to avoid a legalistic interpretation of membership, considering it rather in terms of actual participation in the organization's plenary and other activities.

Finally, IGO's will frequently include territorial entities which are not state members of the international system, such as colonies, protectorates, provinces, or other subnational territorial units. If the metropolitan authority controlling these territories does not itself meet our other membership criteria, but the territory *does*, then we count the metropole as belonging indirectly, via its possession, since in one fashion or another it presumably has control over the possession's delegation. If however the mother country *is* a member, the membership of its possession does not count as an additional one.

Before presenting our nation membership data, a word regarding the five-year clusterings is in order. Our major motivation was that of accuracy, since it was often impossible to determine which nations participated in each plenary session of many of the organizations; thus, the precise year of its entry or departure could not always be reliably ascertained. Given the fact that, for most macro-level theoretical analyses, the five-year observation unit is sufficiently brief, it seemed preferable to make this trade-off between more frequent observations and considerably enhanced accuracy and completeness. (Of course, those who require the precise years for each *organization's* active life will find them in Table 1.) The user of this data should, therefore, bear in mind that if a nation was a member of an IGO at *any* time during one of these half-

²¹ A few modern organizations admit "associate members," i.e., nations which have limited agreements with the organization, enabling them to participate in some of its activities without voting rights. The best-known example is the EEC which has special arrangements with Greece, Turkey, and a number of African states. For a detailed treatment of voting procedures see Wellington Koo, Jr., *Voting Procedures in International Political Organizations* (New York: Columbia University Press, 1947).

decade periods, its membership is added to the total for that period. This leads us to an obvious caveat: the figures cannot be interpreted as if they represented the nation memberships extant at any one instant in time. If, for example, a nation withdrew from one organization near the beginning of a period and joined another toward the end, its total in that period will include both memberships.

In presenting our data we have attempted to give the reader the maximum amount of usable material consistent with limitations of space. The raw data matrix (indicating which of the 150 past and present state members of the system belonged to which of the 208 organizations in each of the 30 periods), requiring as it does an entire computer tape for storage, could not feasibly be presented.²² But since many scholars will be primarily interested in the impact of IGO membership(s) on the behavior and interaction of those members, the form of data aggregation should pose no serious inconvenience. Moreover, for those doing work of a more system oriented nature, the figures found later on in Tables 3 and 4 will be very much what is needed. Turning then to Table 2, we show for each of the 30 periods the number of active IGO memberships held by each nation in the system. If the nation was a qualified system member but belonged to no qualifying IGO's during a given five-year period, a zero appears in that nation column for that period. And if it had not become, or no longer was, a system member, the entry is an x.

AGGREGATING AND REFINING THE NATION MEMBERSHIP INDEX

Once we have determined which IGO's constitute our population for any given year and which nations belonged to each during which specified periods, our basic data acquisition is completed. And even though the figures presented in Tables 1 and 2 can indeed be quite useful in themselves, it is now necessary to generate what might be called some "derived" measures. That is, by combining and weighting the above data sets in a variety of ways, we can markedly increase their usefulness to a larger sector of the scholarly community.

The first and obvious step is to add across the separate national columns for each period in order to ascertain the total number of national IGO memberships in the system for that period. In addition to computing that score for the entire membership of the system, we also do it for the nations which comprise each of the four major geographical subsystems as well as for those which comprise the essentially European, or central, subsystem. Those figures will be shown in Table 3 below, along with a set of more refined figures to which we now turn.

One possible inadequacy in the indices so far discussed is that they are not

²² It is, however, available in deck or tape form from the International Relations Archive of the Inter-university Consortium for Political Research, Institute for Social Research, at the University of Michigan.

TABLE 2: NUMBER OF IGO MEMBERSHIPS IN EACH PERIOD, BY NATION

Period Beginning	United States	Canada	Cuba	Haiti	Dominican Republic	Jamaica	Trinidad	Mexico	Guatemala	Honduras	El Salvador	Nicaragua
1815	0	x	x	x	x	x	x	x	x	x	x	x
1820	0	x	x	x	x	x	x	x	x	x	x	x
1825	0	x	x	x	x	x	x	x	x	x	x	x
1830	0	x	x	x	x	x	x	0	x	x	x	x
1835	0	x	x	x	x	x	x	0	x	x	x	x
1840	0	x	x	x	x	x	x	0	x	x	x	x
1845	0	x	x	x	x	x	x	0	0	x	x	x
1850	0	x	x	x	x	x	x	0	0	x	x	x
1855	0	x	x	0	x	x	x	0	0	x	x	x
1860	0	x	x	0	x	x	x	0	0	x	x	x
1865	1	x	x	0	x	x	x	0	0	x	x	x
1870	2	x	x	0	x	x	x	0	0	x	x	x
1875	4	x	x	0	x	x	x	1	0	x	0	x
1880	4	x	x	1	x	x	x	0	1	x	0	x
1885	8	x	x	2	2	x	x	2	1	x	0	x
1890	10	x	x	4	3	x	x	4	3	x	2	x
1895	12	x	x	3	4	x	x	6	2	1	2	x
1900	10	x	3	5	3	x	x	10	4	4	4	4
1905	25	x	6	6	6	x	x	14	9	7	8	10
1910	26	x	8	7	7	x	x	17	9	7	7	11
1915	27	x	16	12	10	x	x	20	15	11	12	16
1920	32	22	21	17	15	x	x	23	18	14	16	18
1925	30	23	20	16	15	x	x	22	19	14	16	16
1930	42	28	26	20	21	x	x	28	26	19	18	20
1935	45	27	26	21	24	x	x	31	21	17	20	20
1940	53	30	30	26	26	x	x	36	26	25	26	26
1945	71	49	36	31	37	x	x	43	33	26	29	30
1950	72	56	40	33	31	x	x	48	34	29	31	33
1955	73	61	43	37	35	x	x	55	41	36	38	41
1960	71	65	43	39	37	13	11	59	45	38	41	41

x = not a system member 0 = no IGO memberships

TABLE 2—Continued

<i>Period Beginning</i>	<i>Costa Rica</i>	<i>Panama</i>	<i>Colombia</i>	<i>Venezuela</i>	<i>Ecuador</i>	<i>Peru</i>	<i>Brazil</i>	<i>Bolivia</i>	<i>Paraguay</i>	<i>Chile</i>	<i>Argentina</i>	<i>Uruguay</i>
1815	x	x	x	x	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	x	0	x	x	x	x	x
1830	x	x	0	x	x	x	0	x	x	x	x	x
1835	x	x	0	x	x	0	0	x	x	0	x	x
1840	x	x	0	0	x	0	0	x	x	0	0	x
1845	x	x	0	0	x	0	0	0	x	0	0	x
1850	x	x	0	0	0	0	0	0	x	0	0	x
1855	x	x	0	0	0	0	0	0	x	0	0	x
1860	x	x	0	0	0	0	0	0	x	0	0	x
1865	x	x	0	0	0	0	0	0	x	0	0	x
1870	x	x	0	0	0	0	0	0	x	0	0	x
1875	x	x	0	1	0	1	4	0	x	0	2	x
1880	x	x	1	2	1	1	4	0	x	1	1	1
1885	x	x	1	2	2	2	6	1	x	2	3	2
1890	x	x	2	4	3	4	8	3	x	4	5	4
1895	x	x	1	3	2	5	8	3	x	3	5	5
1900	x	x	3	5	4	8	8	4	x	7	7	7
1905	x	x	7	6	8	10	17	7	x	14	15	11
1910	x	x	9	7	10	14	19	11	x	19	18	17
1915	x	x	13	11	15	19	25	16	x	22	23	26
1920	13	13	15	16	17	23	30	18	x	27	27	31
1925	14	13	16	15	16	23	30	16	x	28	27	29
1930	17	19	22	20	25	29	35	20	x	33	35	33
1935	20	19	26	21	25	29	37	21	x	34	37	33
1940	27	25	29	27	31	35	40	28	x	35	38	35
1945	30	33	33	36	33	42	46	29	x	37	42	38
1950	33	35	35	37	36	39	49	33	x	38	48	38
1955	39	37	40	37	41	45	53	32	x	40	50	42
1960	41	42	44	45	45	45	55	35	x	47	52	44

TABLE 2--Continued

Period	United Kingdom	Ireland	Holland	Belgium	Luxembourg	France	Switzerland	Spain	Portugal	West Germany	East Germany	Poland	Austria
1815	0	x	1	x	x	1	0	0	0	1	x	x	0
1820	0	x	1	x	x	1	0	0	0	1	x	x	0
1825	0	x	1	x	x	1	0	0	0	1	x	x	0
1830	0	x	1	0	x	1	0	0	0	1	x	x	0
1835	1	x	1	0	x	2	0	1	1	1	x	x	1
1840	1	x	1	0	x	2	0	1	1	1	x	x	1
1845	1	x	1	0	x	2	0	1	1	1	x	x	1
1850	1	x	1	0	x	2	0	1	1	1	x	x	1
1855	2	x	1	0	x	3	0	1	1	2	x	x	2
1860	2	x	1	0	x	3	0	1	1	2	x	x	2
1865	3	x	4	3	x	5	1	3	3	4	x	x	5
1870	5	x	5	4	x	4	2	4	4	4	x	x	6
1875	6	x	6	6	x	6	4	6	6	8	x	x	7
1880	8	x	7	7	x	9	5	6	7	9	x	x	9
1885	12	x	10	10	x	14	9	11	9	13	x	x	11
1890	14	x	13	14	x	16	11	12	11	15	x	x	13
1895	15	x	14	14	x	19	11	13	11	16	x	x	16
1900	21	x	18	18	x	23	15	17	14	22	x	x	21
1905	29	x	29	27	x	32	23	24	20	30	x	x	31
1910	32	x	32	29	x	36	26	27	23	30	x	x	33
1915	28	x	28	32	x	36	26	24	24	24	x	11	19
1920	47	8	38	46	17	49	35	37	34	28	x	28	24
1925	47	8	37	44	16	46	33	33	32	31	x	28	22
1930	56	12	44	56	22	55	42	42	40	39	x	38	26
1935	53	13	44	51	23	55	42	43	43	41	x	37	26
1940	48	16	34	39	26	43	34	32	33	28	x	0	0
1945	78	25	67	63	44	72	46	33	41	x	x	38	x
1950	85	32	73	76	48	87	53	39	52	x	2	41	x
1955	93	37	83	87	58	98	62	57	61	66	7	51	56
1960	98	42	87	89	62	101	66	66	62	69	8	53	61

TABLE 2—Continued

Period Beginning	Hungary	Czecho- slovakia	Piedmont/ Italy	Malta	Albania	Yugo- slavia	Greece	Cyprus	Bulgaria	Rumania	Russia	Estonia
1815	x	x	0	x	x	0	x	x	x	x	0	x
1820	x	x	0	x	x	0	x	x	x	x	0	x
1825	x	x	0	x	x	0	0	x	x	x	0	x
1830	x	x	0	x	x	0	0	x	x	x	0	x
1835	x	x	1	x	x	0	1	x	x	x	1	x
1840	x	x	1	x	x	0	1	x	x	x	1	x
1845	x	x	1	x	x	0	1	x	x	x	1	x
1850	x	x	1	x	x	0	1	x	x	x	1	x
1855	x	x	2	x	x	0	1	x	x	x	2	x
1860	x	x	2	x	x	0	1	x	x	x	2	x
1865	x	x	4	x	x	0	2	x	x	x	4	x
1870	x	x	3	x	x	0	3	x	x	x	5	x
1875	x	x	6	x	x	3	4	x	x	4	7	x
1880	x	x	9	x	x	5	4	x	x	6	7	x
1885	x	x	13	x	x	7	5	x	x	7	9	x
1890	x	x	15	x	x	7	7	x	x	8	12	x
1895	x	x	18	x	x	8	7	x	x	9	14	x
1900	x	x	22	x	x	8	10	x	x	12	17	x
1905	x	x	31	x	x	13	16	x	10	22	26	x
1910	x	x	34	x	x	15	18	x	14	23	28	x
1915	10	12	33	x	0	22	22	x	16	24	19	0
1920	23	30	43	x	2	34	34	x	23	33	15	10
1925	23	29	41	x	2	33	33	x	22	31	19	8
1930	31	39	52	x	5	41	38	x	28	40	22	12
1935	32	40	48	x	6	41	39	x	30	39	22	15
1940	27	12	35	x	5	33	31	x	27	31	22	13
1945	30	40	55	x	7	35	43	x	27	26	20	x
1950	33	38	64	x	9	41	48	x	27	29	20	x
1955	40	41	73	x	14	51	59	x	35	39	33	x
1960	43	44	80	10	16	57	64	22	39	39	39	x

TABLE 2—Continued

<i>Period Beginning</i>	<i>Latvia</i>	<i>Lith- uania</i>	<i>Finland</i>	<i>Sweden</i>	<i>Norway</i>	<i>Denmark</i>	<i>Iceland</i>	<i>Baden</i>	<i>Bavaria</i>	<i>Hesse Electoral</i>	<i>Hesse Grand Ducal</i>	<i>Papal States</i>	<i>Saxony</i>
1815	x	x	x	0	x	0	x	1	1	0	1	0	0
1820	x	x	x	0	x	0	x	1	1	0	1	0	0
1825	x	x	x	0	x	0	x	1	1	0	1	0	0
1830	x	x	x	0	x	0	x	1	1	0	1	0	0
1835	x	x	x	0	x	0	x	1	1	0	1	1	0
1840	x	x	x	0	x	0	x	1	1	0	1	1	0
1845	x	x	x	0	x	0	x	1	1	0	1	1	0
1850	x	x	x	0	x	0	x	1	1	0	1	1	0
1855	x	x	x	0	x	0	x	1	1	0	1	1	0
1860	x	x	x	0	x	0	x	1	1	0	1	0	0
1865	x	x	x	3	x	2	x	1	1	0	0	x	0
1870	x	x	x	4	x	3	x	0	0	x	x	x	x
1875	x	x	x	5	x	5	x	x	x	x	x	x	x
1880	x	x	x	6	x	4	x	x	x	x	x	x	x
1885	x	x	x	8	x	5	x	x	x	x	x	x	x
1890	x	x	x	9	x	8	x	x	x	x	x	x	x
1895	x	x	x	11	x	12	x	x	x	x	x	x	x
1900	x	x	x	19	x	17	x	x	x	x	x	x	x
1905	x	x	x	24	x	23	x	x	x	x	x	x	x
1910	x	x	x	27	x	24	x	x	x	x	x	x	x
1915	0	0	3	25	22	23	x	x	x	x	x	x	x
1920	13	10	16	37	30	33	x	x	x	x	x	x	x
1925	11	11	13	34	26	33	x	x	x	x	x	x	x
1930	13	14	17	39	30	39	x	x	x	x	x	x	x
1935	19	12	22	37	30	36	x	x	x	x	x	x	x
1940	14	11	19	30	32	30	4	x	x	x	x	x	x
1945	x	x	29	44	50	51	20	x	x	x	x	x	x
1950	x	x	35	51	58	59	25	x	x	x	x	x	x
1955	x	x	45	62	67	68	30	x	x	x	x	x	x
1960	x	x	50	63	69	73	31	x	x	x	x	x	x

INTERNATIONAL ORGANIZATION

TABLE 2—Continued

<i>Period Beginning</i>	<i>Tuscany</i>	<i>Two Sicilies</i>	<i>Warten- burg</i>	<i>Hanover</i>	<i>Mecklen- burg- Schwerin</i>	<i>Modena</i>	<i>Parma</i>	<i>Mali</i>	<i>Senegal</i>	<i>Dahomey</i>	<i>Mauri- tania</i>	<i>Niger</i>	<i>Ivory Coast</i>
1815	0	0	0	x	x	x	x	x	x	x	x	x	x
1820	0	0	0	x	x	x	x	x	x	x	x	x	x
1825	0	0	0	x	x	x	x	x	x	x	x	x	x
1830	0	0	0	x	x	x	x	x	x	x	x	x	x
1835	1	1	0	0	x	x	x	x	x	x	x	x	x
1840	1	1	0	0	0	0	x	x	x	x	x	x	x
1845	1	1	0	0	0	0	x	x	x	x	x	x	x
1850	1	1	0	0	0	0	0	x	x	x	x	x	x
1855	1	1	0	0	0	0	0	x	x	x	x	x	x
1860	0	0	0	0	0	0	0	x	x	x	x	x	x
1865	x	x	0	0	0	x	x	x	x	x	x	x	x
1870	x	x	0	x	x	x	x	x	x	x	x	x	x
1875	x	x	x	x	x	x	x	x	x	x	x	x	x
1880	x	x	x	x	x	x	x	x	x	x	x	x	x
1885	x	x	x	x	x	x	x	x	x	x	x	x	x
1890	x	x	x	x	x	x	x	x	x	x	x	x	x
1895	x	x	x	x	x	x	x	x	x	x	x	x	x
1900	x	x	x	x	x	x	x	x	x	x	x	x	x
1905	x	x	x	x	x	x	x	x	x	x	x	x	x
1910	x	x	x	x	x	x	x	x	x	x	x	x	x
1915	x	x	x	x	x	x	x	x	x	x	x	x	x
1920	x	x	x	x	x	x	x	x	x	x	x	x	x
1925	x	x	x	x	x	x	x	x	x	x	x	x	x
1930	x	x	x	x	x	x	x	x	x	x	x	x	x
1935	x	x	x	x	x	x	x	x	x	x	x	x	x
1940	x	x	x	x	x	x	x	x	x	x	x	x	x
1945	x	x	x	x	x	x	x	x	x	x	x	x	x
1950	x	x	x	x	x	x	x	x	x	x	x	x	x
1955	x	x	x	x	x	x	x	x	x	x	x	x	x
1960	x	x	x	x	x	x	x	x	x	x	x	x	x

31

25

25

22

26

22

x

x

x

x

x

x

x

x

x

TABLE 2—Continued

<i>Period Beginning</i>	<i>Guinea</i>	<i>Upper Volta</i>	<i>Liberia</i>	<i>Sierra Leone</i>	<i>Ghana</i>	<i>Togo</i>	<i>Came- roon</i>	<i>Nigeria</i>	<i>Gabon</i>	<i>Central African Republic</i>	<i>Congo (Brazzaville)</i>	<i>Congo (Kinshasa)</i>
1815	x	x	x	x	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	x	x	x	x	x	x	x
1830	x	x	x	x	x	x	x	x	x	x	x	x
1835	x	x	x	x	x	x	x	x	x	x	x	x
1840	x	x	x	x	x	x	x	x	x	x	x	x
1845	x	x	x	x	x	x	x	x	x	x	x	x
1850	x	x	x	x	x	x	x	x	x	x	x	x
1855	x	x	x	x	x	x	x	x	x	x	x	x
1860	x	x	x	x	x	x	x	x	x	x	x	x
1865	x	x	x	x	x	x	x	x	x	x	x	x
1870	x	x	x	x	x	x	x	x	x	x	x	x
1875	x	x	x	x	x	x	x	x	x	x	x	x
1880	x	x	x	x	x	x	x	x	x	x	x	x
1885	x	x	x	x	x	x	x	x	x	x	x	x
1890	x	x	x	x	x	x	x	x	x	x	x	x
1895	x	x	x	x	x	x	x	x	x	x	x	x
1900	x	x	x	x	x	x	x	x	x	x	x	x
1905	x	x	x	x	x	x	x	x	x	x	x	x
1910	x	x	x	x	x	x	x	x	x	x	x	x
1915	x	x	x	x	x	x	x	x	x	x	x	x
1920	x	x	3	x	x	x	x	x	x	x	x	x
1925	x	x	3	x	x	x	x	x	x	x	x	x
1930	x	x	6	x	x	x	x	x	x	x	x	x
1935	x	x	4	x	x	x	x	x	x	x	x	x
1940	x	x	7	x	x	x	x	x	x	x	x	x
1945	x	x	12	x	x	x	x	x	x	x	x	x
1950	x	x	14	x	x	x	x	x	x	x	x	x
1955	3	x	16	x	18	x	x	x	x	x	x	x
1960	19	22	21	23	48	15	25	38	20	21	24	25

TABLE 2—Continued

<i>Period</i>	<i>Uganda</i>	<i>Kenya</i>	<i>Tanzania</i>	<i>Zanzibar</i>	<i>Burundi</i>	<i>Rwanda</i>	<i>Somalia</i>	<i>Ethiopia</i>	<i>Zambia</i>	<i>Malawi</i>	<i>South Africa</i>	<i>Malagasy</i>	<i>Morocco</i>
1815	x	x	x	x	x	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	x	x	x	x	x	x	x	x
1830	x	x	x	x	x	x	x	x	x	x	x	x	x
1835	x	x	x	x	x	x	x	x	x	x	x	x	x
1840	x	x	x	x	x	x	x	x	x	x	x	x	x
1845	x	x	x	x	x	x	x	x	x	x	x	x	0
1850	x	x	x	x	x	x	x	x	x	x	x	x	0
1855	x	x	x	x	x	x	x	x	x	x	x	x	0
1860	x	x	x	x	x	x	x	x	x	x	x	x	0
1865	x	x	x	x	x	x	x	x	x	x	x	x	1
1870	x	x	x	x	x	x	x	x	x	x	x	x	1
1875	x	x	x	x	x	x	x	x	x	x	x	x	1
1880	x	x	x	x	x	x	x	x	x	x	x	x	1
1885	x	x	x	x	x	x	x	x	x	x	x	x	1
1890	x	x	x	x	x	x	x	x	x	x	x	x	1
1895	x	x	x	x	x	x	x	0	x	x	x	x	2
1900	x	x	x	x	x	x	x	0	x	x	x	x	1
1905	x	x	x	x	x	x	x	2	x	x	x	x	1
1910	x	x	x	x	x	x	x	2	x	x	x	x	1
1915	x	x	x	x	x	x	x	2	x	x	x	x	x
1920	x	x	x	x	x	x	x	4	x	x	15	x	x
1925	x	x	x	x	x	x	x	4	x	x	17	x	x
1930	x	x	x	x	x	x	x	5	x	x	19	x	x
1935	x	x	x	x	x	x	x	6	x	x	21	x	x
1940	x	x	x	x	x	x	x	7	x	x	24	x	x
1945	x	x	x	x	x	x	x	9	x	x	41	x	x
1950	x	x	x	x	x	x	x	11	x	x	44	x	x
1955	x	x	x	x	x	x	x	13	x	x	45	x	28
1960	20	20	24	1	8	10	11	18	12	8	46	24	39

TABLE 2—Continued

<i>Period Beginning</i>	<i>Algeria</i>	<i>Tunisia</i>	<i>Libya</i>	<i>Sudan</i>	<i>Iran</i>	<i>Turkey</i>	<i>Iraq</i>	<i>United Arab Republic</i>	<i>Syria</i>	<i>Lebanon</i>	<i>Jordan</i>	<i>Israel</i>	<i>Saudi Arabia</i>	<i>Yemen</i>
1815	x	x	x	x	x	0	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	0	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	0	x	x	x	x	x	x	x	x
1830	x	x	x	x	x	0	x	x	x	x	x	x	x	x
1835	x	x	x	x	x	1	x	x	x	x	x	x	x	x
1840	x	x	x	x	x	1	x	x	x	x	x	x	x	x
1845	x	x	x	x	x	1	x	x	x	x	x	x	x	x
1850	x	x	x	x	x	1	x	x	x	x	x	x	x	x
1855	x	x	x	x	0	1	x	x	x	x	x	x	x	x
1860	x	x	x	x	0	1	x	x	x	x	x	x	x	x
1865	x	x	x	x	2	2	x	x	x	x	x	x	x	x
1870	x	x	x	x	2	4	x	x	x	x	x	x	x	x
1875	x	x	x	x	3	5	x	x	x	x	x	x	x	x
1880	x	x	x	x	3	6	x	x	x	x	x	x	x	x
1885	x	x	x	x	3	7	x	x	x	x	x	x	x	x
1890	x	x	x	x	4	9	x	x	x	x	x	x	x	x
1895	x	x	x	x	4	8	x	x	x	x	x	x	x	x
1900	x	x	x	x	5	10	x	x	x	x	x	x	x	x
1905	x	x	x	x	7	12	x	x	x	x	x	x	x	x
1910	x	x	x	x	10	13	x	x	x	x	x	x	x	x
1915	x	x	x	x	13	10	x	x	x	x	x	x	x	x
1920	x	x	x	x	12	11	x	x	x	x	x	x	x	x
1925	x	x	x	x	11	13	x	x	x	x	x	x	1	2
1930	x	x	x	x	18	18	4	x	x	x	x	x	0	0
1935	x	x	x	x	13	20	4	17	x	x	x	x	1	0
1940	x	x	x	x	11	18	5	16	x	x	x	x	3	1
1945	x	x	x	x	20	31	16	32	15	18	4	12	6	2
1950	x	x	x	x	22	38	19	34	23	25	11	25	10	7
1955	x	26	17	19	25	51	24	39	28	29	18	35	14	6
1960	16	35	24	28	35	54	29	50	30	39	21	40	19	8

TABLE 2—Continued

Period	Afghan-	China	Mongolia	Taiwan	Korea	North	South	Japan	India	Pakistan	Burma	Ceylon	Nepal
Beginning	istan					Korea	Korea						
1815	x	x	x	x	x	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	x	x	x	x	x	x	x	x
1830	x	x	x	x	x	x	x	x	x	x	x	x	x
1835	x	x	x	x	x	x	x	x	x	x	x	x	x
1840	x	x	x	x	x	x	x	x	x	x	x	x	x
1845	x	x	x	x	x	x	x	x	x	x	x	x	x
1850	x	x	x	x	x	x	x	x	x	x	x	x	x
1855	x	0	x	x	x	x	x	x	x	x	x	x	x
1860	x	0	x	x	x	x	x	0	x	x	x	x	x
1865	x	0	x	x	x	x	x	0	x	x	x	x	x
1870	x	0	x	x	x	x	x	0	x	x	x	x	x
1875	x	0	x	x	x	x	x	2	x	x	x	x	x
1880	x	0	x	x	x	x	x	2	x	x	x	x	x
1885	x	1	x	x	1	x	x	4	x	x	x	x	x
1890	x	2	x	x	1	x	x	3	x	x	x	x	x
1895	x	3	x	x	1	x	x	6	x	x	x	x	x
1900	x	3	x	x	1	x	x	7	x	x	x	x	x
1905	x	7	x	x	0	x	x	16	x	x	x	x	0
1910	x	8	x	x	x	x	x	18	x	x	x	x	2
1915	x	12	x	x	x	x	x	21	x	x	x	x	0
1920	x	16	0	x	x	x	x	31	x	x	x	x	0
1925	x	17	0	x	x	x	x	31	x	x	x	x	0
1930	x	22	3	x	x	x	x	38	x	x	x	x	0
1935	x	17	0	x	x	x	x	32	x	x	x	x	0
1940	x	17	0	x	x	x	x	26	x	x	x	x	0
1945	x	14	4	12	x	x	0	x	38	26	12	19	0
1950	x	0	0	16	x	x	0	35	43	35	20	30	3
1955	x	2	2	24	x	x	2	47	46	40	23	33	4
1960	12	19	5	15	x	3	25	53	56	49	23	40	11

TABLE 2—Continued

<i>Period Beginning</i>	<i>Thailand</i>	<i>Cambodia</i>	<i>Laos</i>	<i>North Viet Nam</i>	<i>South Viet Nam</i>	<i>Malaysia</i>	<i>Philippines</i>	<i>Indonesia</i>	<i>Australia</i>	<i>New Zealand</i>
1815	x	x	x	x	x	x	x	x	x	x
1820	x	x	x	x	x	x	x	x	x	x
1825	x	x	x	x	x	x	x	x	x	x
1830	x	x	x	x	x	x	x	x	x	x
1835	x	x	x	x	x	x	x	x	x	x
1840	x	x	x	x	x	x	x	x	x	x
1845	x	x	x	x	x	x	x	x	x	x
1850	x	x	x	x	x	x	x	x	x	x
1855	x	x	x	x	x	x	x	x	x	x
1860	x	x	x	x	x	x	x	x	x	x
1865	x	x	x	x	x	x	x	x	x	x
1870	x	x	x	x	x	x	x	x	x	x
1875	x	x	x	x	x	x	x	x	x	x
1880	x	x	x	x	x	x	x	x	x	x
1885	2	x	x	x	x	x	x	x	x	x
1890	2	x	x	x	x	x	x	x	x	x
1895	4	x	x	x	x	x	x	x	x	x
1900	5	x	x	x	x	x	x	x	x	x
1905	8	x	x	x	x	x	x	x	x	x
1910	9	x	x	x	x	x	x	x	x	x
1915	14	x	x	x	x	x	x	x	x	x
1920	16	x	x	x	x	x	x	x	21	15
1925	16	x	x	x	x	x	x	x	22	16
1930	24	x	x	x	x	x	x	x	32	18
1935	18	x	x	x	x	x	x	x	26	17
1940	16	x	x	x	x	x	x	x	27	20
1945	19	x	x	x	x	x	18	13	45	40
1950	25	12	6	0	14	x	22	26	51	42
1955	25	16	11	2	20	10	25	29	50	44
1960	33	18	18	5	24	26	31	30	57	46

particularly discriminating. That is, they merely reflect the number of organizations which satisfy our inclusion criteria and the number of system members which belong to them in each period. That rather simple binary code may, of course, be refined in a variety of fashions. One way would be to discriminate between the 208 IGO's to reflect their differing "importance" in, or to, the system. Certainly, the League of Nations is intuitively "more" IGO than the Central Office for Railway Transport; most would also tend to agree that the ILO adds more to the "amount of IGO" in the system than does the Pacific Cable Board. But what about the small but "powerful" Benelux Economic Union vis-à-vis the large but "weak" International Patents Institute? Or the "important" Warsaw Treaty Organization vis-à-vis the "marginal" Latin American Center for Physics? Our point should be clear; the range of criteria by which the amount (or importance) of IGO may be measured is indeed broad. Some indication of the alternatives and their liabilities is found in our earlier discussion of the typology question.

To expand on the latter difficulty briefly, consider the reasonable suggestion that we scale an organization's importance by the size of its budget.²³ In addition to the serious problem of the reliability of available information on budgets, the validity of such a measure would be doubtful. Many IGO's have a number of their functions performed by national bureaucracies, and thus a budget-based index would tend to downgrade their importance. And, even if this problem were overcome, there would still be the matter of comparability over time. Without compensating for changing currency values and rapidly expanding domestic governmental expenditures, size of budget would give us little indication of the relative importance of an IGO in two different time periods.

Given these problems, we turned to an alternative mode of weighting. Rather than basing our measure on the importance of the IGO's themselves, we propose to base it on the importance of the nations which comprise their membership. While there are indeed certain problems common to both approaches, that which focuses on the nations is considerably more tractable than that which focuses on the organizations. Not only do nations seem to be intuitively more comparable to one another than do IGO's, but the traditionally used criteria have (for us) considerably greater face validity. Among the more plausible criteria might be population, military might, industrial capa-

²³ In one of his many papers on international organization, Quincy Wright proposed that the degree to which a political union was "integrated" might be reflected in the source and control of its funds, and if a more fully integrated organization is also *more* such organization than a less integrated one, such a measure might be quite valid. See Wright, *International Organization*, Vol. 11, No. 1, pp. 30-40. A more complex set of criteria is that utilized by Leon Lindberg in a forthcoming study of the European community system, ranking the organizations over time according to the centralization of decision-making in each of 22 functional sectors of activity. His scale was originally devised by William H. Riker in *Federalism: Origin, Operation, Significance* (Basic Studies in Politics) (Boston: Little, Brown and Co., 1964), p. 82.

bility, wealth, diplomatic prestige, or certain types of per capita measures. If we could find a single measure that somehow reflects and combines a number of these power and prestige considerations, we might be justified in offering it as one tentative basis for estimating the relative importance of nations, and hence the "amount" of IGO in the system at a given point in time.

We think that such a measure does indeed exist, and we have already gathered the data upon which it rests. Reference is to the notion of "attributed diplomatic importance" (or "status") and it is calculated by simply counting the number of accredited diplomatic missions in a nation's capital during any particular period. If we consider the wide range of factors (rational and otherwise) that go into governments' decisions to establish a legation or embassy in another capital, the face validity of the measure appears to be far from dubious. Moreover, when such data is assembled and the nations are ranked accordingly, there is a strong similarity between those rankings and ones that we might expect the diplomatic historian, political scientist, or economist to make.²⁴ Beginning with the number of missions received, and dividing it by the number of nations in the system, minus one, we get a normalized score for each nation in each period; ranging as it does from 0.0 (no missions) to 1.0 (missions from *all* other system members), it permits comparison not only between nations but across a large span of time in which the system changed appreciably in size.

To compute the amount of IGO in the system, then, we merely multiplied all of a given nation's IGO memberships during each period by its attributed diplomatic importance score for that same period. The results of these weighting computations are shown in Table 3 alongside the simple (unweighted) scores for each period and for each of the regional and functional subsystems mentioned earlier; the final column offers the simple and the weighted scores, period by period, for the international system as a whole.

MEASURING CHANGES IN THE AMOUNT OF IGO OVER TIME

The lengthy, if not labyrinthine, procedures outlined so far permit us to now describe in three different ways the amount of IGO extant in the international system during each of the 30 periods embraced by our study. First, there is the number of IGO's that satisfy certain minimal criteria of inclusion; second, there is the total number of nation memberships in all such IGO; and third, there is the index reflecting weighted nation memberships. While one

²⁴ While other forms of its validity have yet to be demonstrated, our measure produces, for example, rankings in which the major powers of a given era are consistently at the very top. Certain refinements, such as weighting each mission by the rank of the sending nation, turn out to be reasonable but unnecessary; they produce almost no differences in the rank listings. For a fuller discussion of the procedures and the results see Singer and Small, *World Politics*, Vol. 18, No. 2, pp. 236-282; and Melvin Small, J. David Singer, and David Handley, "The Diplomatic Importance of Nations, 1816-1965: An Extension of the Basic Data" (Ann Arbor, Mich: Mental Health Research Institute Preprint, 1970).

TABLE 3: NUMBER OF NATIONS AND IGO'S,
SIMPLE AND WEIGHTED IGO NATION MEMBERSHIPS

Period Beginning	Number of Nations	Number of IGO's	Americas		Europe		Australasia	
			simple	weighted	simple	weighted	simple	weighted
1815	23	1	0	0.0	6	2.3	0	0.0
1820	23	1	0	0.0	6	1.9	0	0.0
1825	23	1	0	0.0	6	2.0	0	0.0
1830	26	1	0	0.0	6	1.8	0	0.0
1835	28	2	0	0.0	17	5.9	1	0.4
1840	31	2	0	0.0	17	5.5	1	0.4
1845	35	2	0	0.0	17	5.7	1	0.3
1850	38	2	0	0.0	17	5.5	1	0.3
1855	41	3	0	0.0	23	8.4	1	0.3
1860	44	3	0	0.0	20	7.5	1	0.4
1865	39	6	1	0.5	48	19.5	4	0.9
1870	34	7	2	1.4	56	25.6	6	1.9
1875	32	9	13	6.0	82	42.1	10	3.1
1880	34	11	17	6.0	108	52.6	10	3.8
1885	35	17	34	13.2	153	88.5	15	5.7
1890	38	21	63	20.9	185	104.9	19	5.8
1895	38	23	63	24.3	208	124.1	26	8.7
1900	42	30	104	26.4	274	157.7	33	10.8
1905	44	43	186	72.8	400	231.7	50	16.4
1910	44	49	225	97.6	468	277.6	58	19.4
1915	44	51	308	141.1	446	269.9	70	24.3
1920	61	72	422	125.6	769	306.5	123	22.1
1925	63	83	489	158.4	865	444.9	147	30.9
1930	64	89	532	193.5	931	516.3	146	32.7
1935	66	86	576	241.2	940	529.9	150	38.8
1940	62	82	681	306.0	685	410.3	163	41.8
1945	64	120	812	368.1	984	537.8	426	114.5
1950	75	142	859	317.1	1130	523.4	626	187.4
1955	84	167	950	355.6	1474	701.6	744	242.5
1960	107	192	1037	452.6	1608	923.3	982	435.5

or more of these measures will permit a range of theoretically interesting investigations hitherto not possible, they still do not permit other equally interesting investigations. For many purposes, it is more important to know how many new IGO's or nation memberships were created in a given period or

TABLE 3: NUMBER OF NATIONS AND IGO'S,
SIMPLE AND WEIGHTED IGO NATION MEMBERSHIPS—Continued

<i>Period</i>	<i>Africa</i>		<i>Central System</i>		<i>Total System</i>	
	<i>simple</i>	<i>weighted</i>	<i>simple</i>	<i>weighted</i>	<i>simple</i>	<i>weighted</i>
1815	0	0.0	3	1.4	6	2.3
1820	0	0.0	3	1.3	6	1.9
1825	0	0.0	3	1.4	6	2.0
1830	0	0.0	3	1.3	6	1.8
1835	0	0.0	12	4.8	18	6.3
1840	0	0.0	12	4.6	18	5.9
1845	0	0.0	12	4.6	18	6.0
1850	0	0.0	12	4.5	18	5.8
1855	0	0.0	18	7.1	24	8.7
1860	0	0.0	18	7.2	21	7.9
1865	1	0.0	48	19.8	54	20.9
1870	1	0.0	60	27.3	65	28.9
1875	1	0.2	87	44.3	106	51.4
1880	1	0.1	113	55.1	136	62.4
1885	1	0.2	160	91.7	203	107.6
1890	0	0.0	194	108.2	267	131.6
1895	2	0.5	237	139.0	299	157.7
1900	1	0.2	311	177.1	412	205.1
1905	3	0.4	460	264.1	639	321.4
1910	2	0.3	533	315.1	753	394.8
1915	2	0.3	516	311.6	826	435.5
1920	22	0.5	—	—	1336	454.6
1925	27	0.5	—	—	1528	634.6
1930	30	0.8	—	—	1639	743.4
1935	31	0.9	—	—	1697	810.7
1940	31	2.7	—	—	1560	760.8
1945	62	12.0	—	—	2284	1032.3
1950	69	13.6	—	—	2684	1041.5
1955	170	40.6	—	—	3338	1340.3
1960	809	196.8	—	—	4436	2008.2

how many disappeared from the system or to have some other reflection of change. Whether we want to predict *to* or *from* the IGO variable, such changes can provide a more meaningful and sensitive indicator than the mere amount present. Let us turn, then, to the procedures by which this final set of measures might be calculated or derived from the data already available.

Initially, we had thought to compute measures of both the amount of IGO created and the amount lost to the system from period to period. But for the reasons outlined below we came to combine them into an index of *net change* in amount of IGO. This is defined as the amount of IGO created minus the amount terminated or—more simply computed—the amount of IGO extant in the period under consideration minus the amount in the previous period. In *some* respects, this index of net change is less sensitive than indices of amount created and amount destroyed. For example, if two IGO's were created in a particular period and one disappeared, we would obtain the same net change score as if 50 had been created and 49 destroyed. In other words, our net change index will not register situations of high *turnover* in IGO's.

Despite this insensitivity, there were three important considerations in favor of the net change index. First, the amount created and amount destroyed would be zero for many periods in the nineteenth century. Since most correlation coefficients are distorted by a large number of zero values, users would have difficulty discerning the statistical relationship between these indices and others with which they might be working. Second, an index based on the amount of IGO created raises a serious problem of validity. There can and do arise situations in which a high amount established is accompanied by an even higher score for the amount terminated, and the former figure by itself would give the unjustifiable impression that those circumstances were favorable to the growth of IGO. Our net change indicator, taking into account *both* the amount established and the amount terminated, would seem to be a more valid reflection of the situation. Finally, an index of the amount created leads to problems of reliability. One of the most difficult phases of our project was the determination of parentage and succession among IGO's, primarily because the functions of parent organizations have often been divided among several successors or other existing organizations. This creates no problem for the *net* change index, but it would for an index of the amount of IGO created, since a mere successor cannot, of course, be considered as a new organization. These considerations, then, led us to use measures of net change in each of our three basic indices.

But this absolute measure of net change in the amount of IGO in the system also has certain limitations. As the figures in Table 3 make abundantly clear, there is a dramatic upward secular trend in IGO during the century and a half which concerns us. Moreover, the amount by which it increases *also* increases over time, as the net change figures in Table 4 below indicate. For some purposes, it is necessary to remove the effects of these secular trends and to create a measure which is normalized for all 29 interperiod intervals. To do this we merely take the *percentage* rate of change between periods. Using this as our index, a change from 100 to 110 will be the same as one from 10 to 11, eliminating the effects of the absolute increase and of system size. As

Table 4 indicates, this percentage change figure produces a rather different pattern than the one found in the absolute change columns, and it is particularly noticeable when the simple, unweighted columns are compared. Whereas the dominant tendency in the *absolute* change column is one of increasingly large increases (with the war years providing the major exceptions), the percentage change figures reveal many more fluctuations in the size of the changes. In Table 4, then, are perhaps the most useful and sensitive of the indices generated in our inquiry. For each period, we show the amount of increase or decrease in the number of IGO's and the simple as well as the weighted index of nation memberships, computed in terms of both absolute net and percentage net changes.

CALCULATING THE GROWTH RATES

Although our primary purpose here is to present several sets of basic data and not to get into any serious analysis or interpretation, a few simple analyses are definitely in order. As we suggested in the previous section, there has been a strong upward trend in the amount of IGO in the system, especially since World War I. Can we, however, be more precise and also more graphical?

Turning to the latter requirement first, a long column of figures, while useful for statistical analyses, often fails to convey as much information as a graph or chart. In order to give a large amount of information that might be apprehended in a single visual pattern, we have plotted several of our indices in Figures 1 and 2. Using the horizontal axis to represent time, we show in Figure 1 the number of nations in the system at the beginning of each five-year period (dots and broken line) and the number of qualifying IGO's in the system in each period (circles and solid line). Then, in Figure 2 are the two derived indicators—simple nation memberships (crosses and broken line) and weighted nation memberships (asterisks and solid line) in each of the 30 periods. Because of the steep rise in these and for the purposes of analysis described below, these two are plotted on a logarithmic vertical axis.

As is quite apparent, there is indeed a dramatic upward trend in all four of these indices, even with the flattening effect of the logarithmic transformations in Figure 2. One also notes, particularly in Figure 1, that there are rather discernible breaks or accelerations in these trends, suggesting four fairly distinct eras: 1815-1874; 1875-1919; 1920-1944; and 1945-1964.

Shifting from the visual to the statistical mode, how might these data be summarized? A simple and straightforward technique is to compute the product-moment correlation between: 1) the elapsed time since the beginning of the observations (1815 to each observation) and 2) the magnitudes of the several indicators. Thus a coefficient of 1.0 implies a perfect correlation between time and the given indicator, meaning that for every increase in time

TABLE 4: ABSOLUTE AND PERCENTAGE CHANGES IN IGO'S AND NATION MEMBERSHIPS BETWEEN SUCCESSIVE PERIODS

Period Beginning	Absolute Changes			Percentage Changes		
	Number of IGO's	Simple Memberships	Weighted Memberships	Number of IGO's	Simple Memberships	Weighted Memberships
1815	1	6	2.3	—	—	—
1820	0	0	-4	0	0	-17.2
1825	0	0	.2	0	0	9.3
1830	0	0	-3	0	0	12.5
1835	1	12	4.5	100.0	200.0	251.9
1840	0	0	-4	0	0	-6.5
1845	0	0	.2	0	0	2.6
1850	0	0	-.2	0	0	3.1
1855	1	6	2.9	50.0	33.3	49.3
1860	0	-3	-9	0	-12.5	-9.8
1865	3	33	13.0	100.0	157.1	165.5
1870	1	11	8.0	16.7	20.4	38.5
1875	2	41	22.5	28.6	63.1	77.6
1880	2	30	11.1	22.2	28.3	21.5
1885	6	67	45.2	54.5	49.3	72.4
1890	4	64	24.0	23.5	31.5	22.3
1895	2	32	26.2	9.5	12.0	19.9
1900	7	113	47.3	30.4	37.8	30.0
1905	13	227	116.3	43.3	55.1	56.7
1910	6	114	73.4	14.0	17.8	22.8
1915	2	73	114.1	4.0	9.7	28.9
1920	21	510	19.1	41.2	61.7	4.4
1925	11	192	180.0	15.3	14.4	39.6
1930	6	111	108.9	7.2	7.3	17.2
1935	-3	58	76.3	-3.4	3.5	10.3
1940	-4	-195	-49.9	-4.7	-8.1	-6.2
1945	38	724	271.6	46.3	46.4	35.7
1950	22	400	9.1	18.3	17.5	.9
1955	25	654	298.9	17.6	19.6	28.7
1960	25	1098	667.9	15.0	24.8	49.8

there is a constant increase in the indicator.²⁵ In Table 5 we have a correlation matrix showing not only the coefficients between time and these four measures but also the strength of association between all pairs of the measures themselves.

²⁵ For a useful explanation of the computation of correlations and regressions and the reasoning behind them see J. F. Ractliffe, *Elements of Mathematical Statistics* (2nd ed; London: Oxford University Press, 1967), chapter 16.

Figure 1: Number of Nations and IGO's in System in Successive Periods
 (Data for this graph is taken from Table 3)

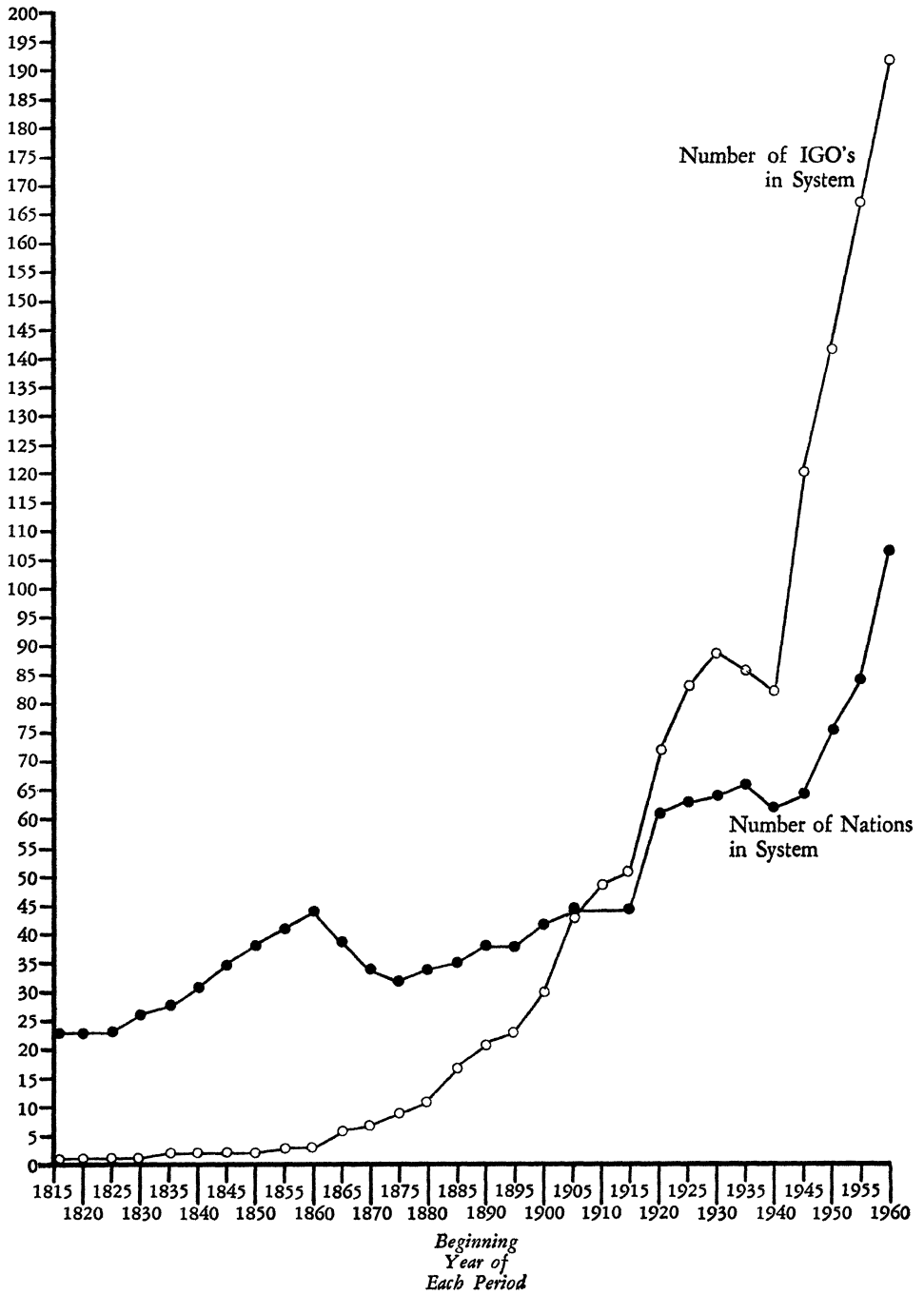


Figure 2: Simple and Weighted Nation Memberships in Successive Periods
 (Data for this graph is taken from Table 3)

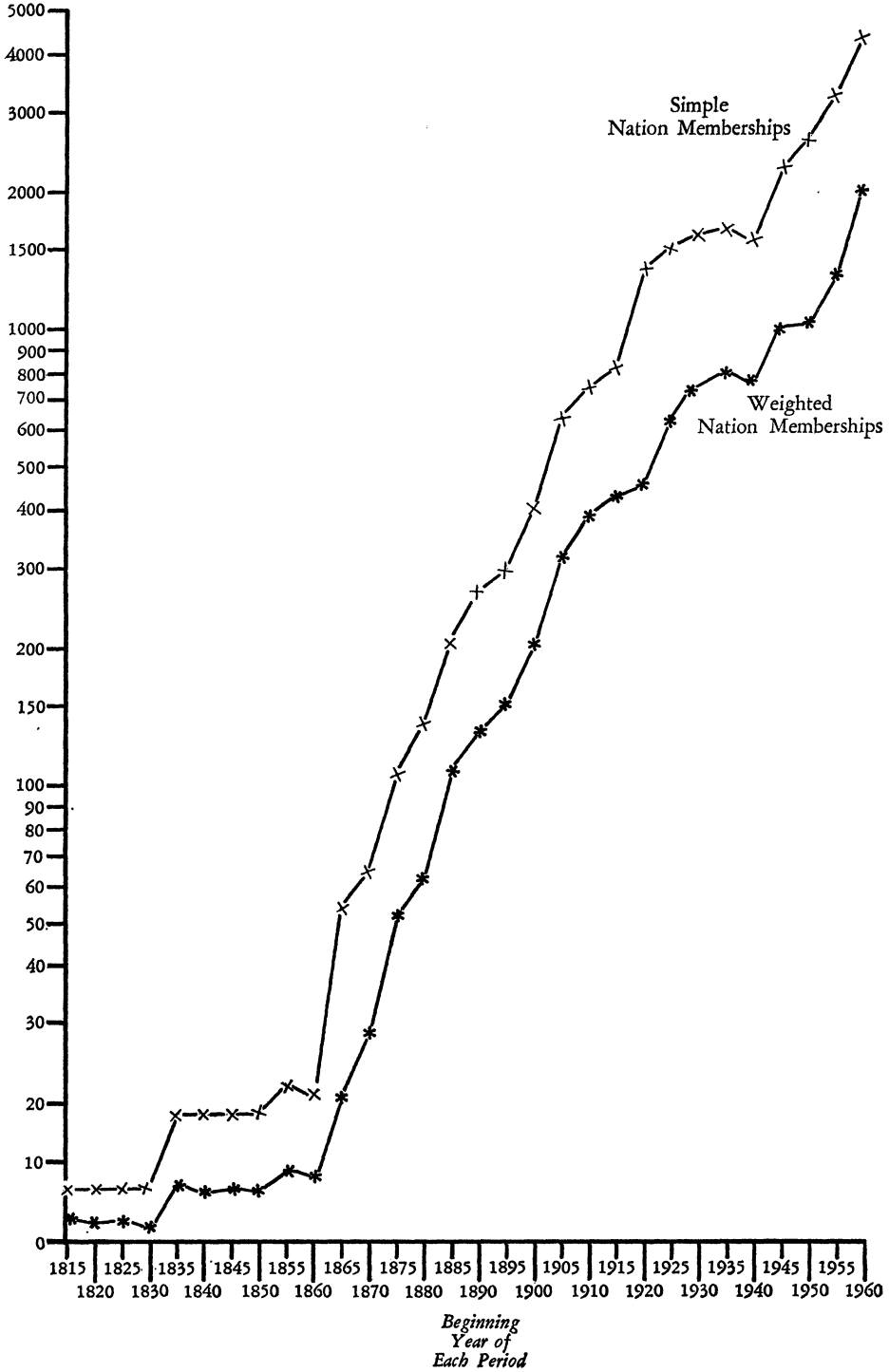


TABLE 5: CORRELATIONS BETWEEN TIME AND VARIOUS INDICES OF AMOUNT OF IGO

	<i>Number of Periods since First</i>	<i>Number of Nations</i>	<i>Number of IGO's</i>	<i>Simple Nation Memberships</i>	<i>Weighted Nation Memberships</i>
<i>Number of Periods since First</i>	1.0				
<i>Number of Nations</i>	.88	1.0			
<i>Number of IGO's</i>	.89	.96	1.0		
<i>Simple Nation Memberships</i>	.84	.96	.99	1.0	
<i>Weighted Nation Memberships</i>	.85	.96	.99	.99	1.0

What these consistently high correlations show is that—regardless of the factors which caused or accounted for these secular trends—they are fairly predictable from time alone. They also show that all of the indicators rise and fall pretty much together over time. Thus, the correlations of .88, .89, .84, and .85 indicate that all three of our IGO measures, as well as the system size measure, increase in an approximately linear fashion with time. And the three correlations of .99 show the remarkable similarity in the upward slopes of IGO growth; this latter is, of course, not particularly surprising, given the extent to which the nation membership figures are dependent on the number of IGO's and the extent to which the number of IGO's correlates with the number of nations in the system. These correlations, then, merely give specificity to the visual patterns found in Figures 1 and 2, in both of which the pairs of lines remain quite close together over the entire 150 years.

Now, as high as the coefficient of correlation is between time and our three measures of the amount of IGO in the system, the fit is far from perfect. This suggests that the relationship between these measures and time is not exactly linear; that is, the *rate* of increase in IGO is not constant over time. That impression is strengthened by the numbers in Table 3 and the IGO growth profile in Figure 1. However, if we reexamine the nation membership profiles in Figure 2, we get (despite the flatness of the line prior to 1865) an impression of fairly strong linearity. But that apparent linearity occurs only because the vertical axis is marked off on a logarithmic scale, in effect "transforming" the data so as to compress the upper intervals and stretch the lower ones. This pat-

tern strongly suggests that the growth rate is not linear but exponential, with the growth *rate* thus tending to increase in each successive period.

Whether this suspicion is well founded or not can be ascertained by a simple calculation. Rather than compute the correlation between time and the three *raw* measures of amount of IGO, we now make this computation for their logarithmically transformed equivalents. If the new coefficients of correlation are higher than the .89, .84, and .85 figures reported above, we can conclude that the relationship between time and the amount of IGO is closer to an exponential than a linear one. This is precisely what happens. When the transformed measures are correlated with the passage of time, the resulting coefficients turn out to be dramatically high. For the number of IGO's and for the simple nation memberships score, the correlations are both .99; and for weighted nation memberships the correlation is .98. Needless to say, such coefficients are so high and the fit so good as to be extraordinarily unlikely to occur by chance alone.

Given this strong evidence that the growth rate in the amount of IGO in the system since 1815 is indeed an exponential one, in which each half-decade's increase tends to be greater than that of the prior one's, can we be more specific about these rates of increase? A useful point of departure is Table 4, in which we presented the absolute (as well as the percentage) changes in these indices between successive half-decades. A glance at the absolute changes in all three columns tends to confirm the exponential growth interpretation. That is, with those few exceptions alluded to earlier in the paper, the dominant pattern is one of increasingly large increments as we move from period to period. More conservatively, the absolute increases in the post-1875 period are generally greater than those of the earlier period, those of the interwar period are greater than those from 1875 to 1919, and those following World

TABLE 6: ABSOLUTE CHANGES IN AMOUNT OF IGO,
FOR AVERAGE PERIODS IN FOUR SUCCESSIVE ERAS

<i>Era</i>	<i>Average Change in Number of IGO's per Period</i>	<i>Average Change in Simple Nation Memberships per Period</i>	<i>Average Change in Weighted Nation Memberships per Period</i>
1815-1874	0.58	5.41	2.40
1875-1919	4.89	84.55	53.30
1920-1944	6.20	135.20	66.88
1945-1964	27.50	719.00	311.88
<i>Total Span</i>	6.40	145.93	69.70

War II generally exceed the increments of all prior periods. Using the cutting points originally selected and comparing the average period in each of these four eras, the evidence becomes even more compelling, as Table 6 makes abundantly clear.

Despite this further support for the exponential growth interpretation, there are two possible objections. First, a careful examination of Table 4 suggests that there are important differences between the *absolute* increments (or occasional decrements) and those computed on a *percentage* basis. One immediately notes that, on shifting to the three right hand columns, the figures show much more fluctuation over the entire time span than do those on the left. This is due, of course, to the fact that each absolute increment is exactly that and is indifferent to the magnitude of the given IGO index during the previous period. An increase of twelve nation memberships between successive periods is quite large (200 percent) when there were only six beforehand (as in 1830-1834), but an increase of 227 when there were already 412 nation memberships (as in 1900-1904) is smaller (only 55 percent) when computed in *relative* growth terms. That point is emphasized further when we examine Table 7, showing the percentage increases for the average period in each of the four eras defined above. No longer do we find, as we did in the previous table, that the average growth per half-decade is greater in each successive period, as it was with the absolute figures. Here, given the fact that there was only one qualifying organization in 1815 and only nine at the beginning of the second of the four eras, the largest average growths occurred in the first or second eras rather than in the fourth one. We should, however, be careful not to overinterpret these fluctuating increments. For certain analytical purposes, a percentage change figure may be much more useful than an absolute one, but it must be interpreted with considerable prudence.

TABLE 7: PERCENTAGE CHANGES IN AMOUNT OF IGO,
FOR AVERAGE PERIODS IN FOUR SUCCESSIVE ERAS

<i>Era</i>	<i>Percent Change in Number of IGO's per Period</i>	<i>Percent Change in Simple Nation Memberships per Period</i>	<i>Percent Change in Weighted Nation Memberships per Period</i>
1815-1874	22.23	33.19	41.60
1875-1919	25.56	33.84	39.10
1920-1944	11.12	15.76	13.06
1945-1964	24.3	27.08	28.78
<i>Total Span</i>	21.65	29.67	34.39

This leads, in turn, to the second possible counterargument. It could also be asserted that none of the increment or growth rate figures takes account of the fact that the system itself was also growing at a rapid rate during much of the entire time span under study here. This is certainly true, as Table 3 and Figure 1 make amply clear. But those same arrays also indicate that the sheer number of IGO's in the system overtook the number of nations in the system about 1910 and thereafter rose at a discernibly faster pace. This, plus the lower number of IGO's than system members before 1910, accounts for the fact that these two trend lines show a rather high correlation; their slopes are not that dissimilar.

To ascertain the effect of system size on these IGO growth rates, however, we *normalized* the three IGO indices and then recomputed their correlation with the constant increment time dimension. In other words, the number of IGO's, simple nation memberships, and weighted nation memberships each half-decade were divided by the number of qualifying nations in the system at that time, thus normalizing their values for system size.

What, if anything, is the effect of these normalizations? A visual check shows that most of the interperiod increments (and decrements) become quite a bit smaller. Nor do they any longer show the strong exponential increase that we found in the nonnormalized data. That is, if plotted on regular graph paper (without logarithmic or other further transformations in their values) all three would probably reveal a steady upward trend, but the slope would be fairly gradual and would still show the occasional downward fluctuations. That these impressions are well founded is confirmed by the correlation coefficients. That is, when correlated with time, the coefficient for the normalized number of IGO's is .95, that for normalized simple nation memberships is .93, and that for normalized weighted memberships is .94.

In sum, there is an incontrovertible growth in the amount of intergovernmental organization in the international system during the century and a half following the Congress of Vienna. Further, and regardless of the index used, the growth rate is an exponential one. However, when we modify these indices and control for the growth in the system itself, the steepness and exponentiality of the slopes tends to wash out, and we once more find the familiar linear relationship between the passage of time and the amount of intergovernmental organization in the system.

A final point concerns the future and the extent to which the present trend lines may legitimately be projected. We believe that such a projection would be quite misleading. First of all, the system is rapidly approaching the point at which no more national states can be created. Thus, unless there is a sharp upsurge in *successful* secessionist movements, the system's size is unlikely to exceed 160; by our count, it is now at about 130. Another possible constraint on future growth of IGO is that of the cost-to-effectiveness ratio. Some ob-

TABLE 8: IGO AND NATION MEMBERSHIP INDICES, NORMALIZED FOR SYSTEM SIZE

<i>Period Beginning</i>	<i>IGO's per Nation</i>	<i>Simple Nation Memberships per Nation</i>	<i>Weighted Nation Memberships per Nation</i>
1815	0.04	0.26	0.10
1820	0.04	0.26	0.08
1825	0.04	0.26	0.09
1830	0.04	0.23	0.07
1835	0.07	0.64	0.23
1840	0.06	0.58	0.19
1845	0.06	0.51	0.17
1850	0.05	0.47	0.15
1855	0.07	0.59	0.21
1860	0.07	0.48	0.18
1865	0.15	1.38	0.54
1870	0.20	1.91	0.85
1875	0.28	3.31	1.61
1880	0.32	4.00	1.84
1885	0.49	5.80	3.07
1890	0.55	7.03	3.46
1895	0.60	7.87	4.15
1900	0.71	9.81	4.88
1905	0.98	14.52	7.30
1910	1.11	17.11	8.97
1915	1.16	18.77	9.90
1920	1.18	21.90	7.45
1925	1.32	24.25	10.07
1930	1.39	25.61	11.62
1935	1.30	25.71	12.28
1940	1.32	25.16	12.27
1945	1.87	35.69	16.13
1950	1.89	35.79	13.89
1955	1.99	39.74	15.96
1960	1.79	41.46	18.76

servers are already calling for a critical reappraisal of the entire IGO strategy, arguing that such organizations have proliferated at a dizzying pace with little rational planning. They would argue now for more consolidation and even some retrenchment, trying to get more efficiency and economy into IGO performance. A third possible constraint may be the ways in which NGO's and other extranational (but nongovernmental) associations begin to assume

certain roles hitherto assigned to IGO's. If, as some of us suspect, the national state is at or near its apogee as the dominant form of human organization, it is unlikely that IGO's—as creatures and servants of the national state—will continue to proliferate and expand. Thus, the most reasonable forecast might be for a decreasing rate of growth into the 1980's and a nearly total cessation of growth by the early 21st century. If these forecasts are generally correct, the slope for the two centuries from 1815 to 2015 will be of the logistic, S-curve variety and not exponential at all. However, and this is critical, the first 50 percent or so of a logistic curve is almost identical to an exponential curve.

CONCLUSION

In the next few years it should become less and less necessary to burden a scientific paper with epistemological arguments. Since that time has not yet arrived, let us recapitulate not only what we have (and have not) done in the investigation at hand but also the justification for that investigation. As is quite clear, we have tested no hypotheses, confirmed no models, and demonstrated no statistical or causal relationships between intergovernmental organization and other phenomena. In the absence of that, some will conclude that this enterprise has added little or nothing to our knowledge concerning the role of international organization in the global system. For those who have not yet discovered that the great bulk of our knowledge regarding physical, biological, and social phenomena has come in small increments, it will appear to have been a rather bootless exercise. If the published and unpublished reactions to earlier work of this sort by ourselves and others is any guide, the armchair scholars will have new grist for their didactic mills. So be it.

This report is intended for those who have wearied of the isolated case studies and the endless speculations which have characterized much of the work in international organization and who want to progress from hunches to hypotheses and from impressions to evidence. With the data presented here, a good many propositions about international organization can now be put to the test. First (in terms of one particular scientific style, at least) a number of "curve-fitting" operations become possible. Is there, for example, any periodicity in the growth of IGO? Are the periodic changes in the amount of IGO random, and could they have occurred by chance alone? Are there any other lawlike generalizations in these data? Second, one might inquire into the events and conditions which affect or account for trends and changes in the amount of IGO in the system. Are these trends and fluctuations largely the result of governmental choice, popular or elite clamor, periodic wars, recurrent business cycles, or technological innovations, for example? To what extent is the creation, maintenance, or dissolution of IGO a function of discrete and conscious decisions, and to what extent is it a function of long-term historical processes over which we have little short-run control?

Third, and perhaps most important to many of us, what are the *consequences* of greater or lesser amounts of IGO and rises or falls in those figures? Does more IGO make the international system more or less predictable? How, if at all, does it affect the decision processes of IGO members and nonmembers? Does it modify the political fortunes of certain parties, factions, and groupings or the world outlook of different generations in different parts of the world? What is the impact of IGO levels and rates of change on other systemic configurations? Does it lead to less alliance formation, freer trade, more or less rigidity in the system? What is its relationship to changes and trends in economic development, political participation, military spending, social justice? Finally, does it correlate with or predict to a stronger or weaker sense of world community? How does it affect the types, intensity, and duration of international conflict? And does it seem to have any impact on our movement toward or away from the precipice of nuclear disaster?

With longitudinal data on the amount of IGO in the system over time, plus indices of the amounts and rates of change, these are just a few of the theoretical and policy questions one might be able to work on, and perhaps answer, if these are combined with other appropriate data sets. If we already *have* answers to such questions, as some will no doubt assert, they are very well-kept secrets. If the questions are unanswerable, as others might assert, social agnosticism may already have carried us beyond the point of worldly redemption. In sum, we think that these are important questions to ask and that it is time we tried to begin answering them with reproducible evidence. Our point, then, is that we do *not* justify the results of this paper on any *intrinsic* grounds. These data sets have not been generated because they are particularly useful in themselves; their major value is an instrumental one. If they open up new research possibilities and lead to an improvement in the quality of, and an acceleration in the acquisition of, findings on the role of international organization, they will have been well worth the investment which they represent.

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