THE SOCIAL STRUCTURE OF THE WORLD POLITY*

Jason Beckfield

Harvard University

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Abstract

The world polity is conceptualized as a network of international organizations and states. A rapidly growing sociological literature argues that many policies of modern states, such as educational expansion, environmental protection, human rights, and economic liberalization, are shaped by embeddedness in this network, and yet the structure of this network itself is rarely examined. This absence of empirical analysis of the social structure of the world polity is surprising, given that world polity theory, in contrast to traditional realist approaches, argues that the world polity should be an increasingly dense, even, flat field of association. This paper tests these structural claims using a formal network analysis of the complete population of intergovernmental organizations as it has evolved since 1820. The world polity is a bipartite network: States are interlinked through memberships in organizations, and organizations are interlinked through their member states. Analysis of this network structure reveals growing fragmentation—not integration—in the world polity driven by intergovernmental organizations that have become less densely connected by common member states, increasingly centralized around a few prominent organizations, and increasingly heterogeneous in structural position. This fragmentation reflects a recent rise in the regionalization of the world polity.

Research on the possible consequences of globalization has overshadowed research on the forms of globalization. This is particularly true for political globalization, or "the shifting reach of political power, authority and forms of rule" (Held, McGrew, Goldblatt and Perraton 1999, p. 32). We know a great deal about the associations between political globalization and changes in the modern state. For instance, there is evidence that involvement in international organizations is associated with policy in the domains of human rights (Hafner-Burton and Tsutsui 2005), democracy (Wejnert 2005), environmental protection (Frank 1997; 1999; Schofer and Hironaka 2005), same-sex sexual relations (Frank and McEneaney 1999), women's suffrage (Ramirez, Soysal, and Shanahan 1997), education (Bradley and Ramirez 1996; Meyer, Ramirez and Soysal 1992; Schafer 1999; Schofer and Meyer 2005), population (Barrett and Tsui 1999), and women's political representation (Paxton et al. 2006). Much of this evidence comes from models inspired by world polity theory, an institutionalist approach that explains the unexpectedly high and rising level of isomorphism among states as a function of embeddedness in a singular and universalist "world polity" (Boli and Thomas 1997; Meyer, Boli, Thomas and Ramirez 1997), which is conceptualized as a network of states, societies, and international organizations. The network of intergovernmental organizations (or IGOs) in particular has been shown to influence patterns of international trade (Ingram et al. 2005), neoliberal restructuring (Henisz et al. 2005), international conflict (Boehmer, Gartzke, and Nordstrom 2004; Hafner-Burton and Montgomery 2006), and transnational social movement organizations (Smith and Wiest 2005).

This paper examines the structure of that network. Although debates over the effects of the world polity are ongoing (Guillén 2001a, 2001b), and critics highlight the role of power and

inequality in the world polity (Beckfield 2003), the depth of existing knowledge about the policy effects and cultural content of the world polity contrasts starkly against our more shallow understanding of its structure. This contrast is all the more surprising in light of the many claims made by world polity theory (and its alternatives) about the structure of the world polity. The world polity is said to be: "A world of Durkheimian and Simmelian integration" (Meyer et al. 1997, p. 175), a "decentralized world" (Meyer et al. 1997, p. 164), "a unitary social system, increasingly integrated by networks" (Boli and Thomas 1997, p. 172), and "a rapidly growing web of global links that envelop the world without regard for local topography and conditions" (Boli et al. 1999, p. 77). Resonating with arguments in the popular press for globalization "flattening" the world (Friedman 2006), world polity theory makes largely untested static and dynamic assumptions. Statically, the contemporary world polity should exhibit an even, densely interconnected, decentralized social structure. Dynamically, if there is fragmentation, centralization, and structural heterogeneity in the network, these structural characteristics should be in decline.

To explore these implications and build on the sociology of the world polity, I use data on the population of intergovernmental organizations (IGOs) as it has grown since the first IGO was established in the early 19th century. IGOs are one type of social organization, along with international nongovernmental organizations (INGOs), transnational corporations (TNCs), and other civil-society organizations, where "world culture becomes embedded" (Boli and Thomas 1997, p. 172) and diffused through IGO-to-state, IGO-to-IGO, and other kinds of ties among organizations (Boli and Thomas 1999). IGOs, along with TNCs and states, have been characterized as "the dominant global actors" in world culture (p. 173).[1] I analyze IGOs because

[1] Boli (2005, p. 384) identifies the World Trade Organization as one such organization, noting that "while hard-boiled politicking among competing states is surely at work in this process, so too is global cultural construction.

the structure of the IGO field should correspond most closely to the even field of association envisioned by world polity theory, given that inequality in the number of IGO memberships per state has decreased dramatically (Beckfield 2003). IGOs are also essential to the world polity because IGO memberships appear to be "practically compulsory for states" (Boli et al. 1999, p. 76), and a recent "network turn" in international relations scholarship and globalization research has shown that international organizations – and intergovernmental organizations in particular – matter for a range of political and economic outcomes (Boehmer, Gartzke, and Nordstrom 2004; Hafner-Burton and Montgomery 2006; Henisz et al. 2005; Ingram et al. 2005; Smith and Wiest 2005). Still, this network turn has yet to be taken to understand the essential structural properties of the world polity itself. That is, many researchers argue that the network structure matters, but this work has not yet considered the implications of world polity theory and its alternatives for network structure.[2]

I examine the 1820-2000 period to show the complete evolution of the IGO field that began in the early 1800s, well after the establishment of the Westphalian system of sovereign nation-states in the 17th century, and continued through the Concert of Europe during the first half of the 19th century, the major European wars of the late 19th century, early attempts at global governance such as the League of Nations in 1919, the institutionalization of the United Nations system in 1945, decolonization in the 1960s, and the collapse of the Soviet Union in the 1980s. Analyzing the world polity as an evolving social network over this period reveals that even in the context of a declining (and now low) level of heterogeneity in the number of IGO ties per state,

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The WTO's rules and agreements, globally applicable and reflective of universalistic principles, have the character of world law that shapes the context of action for firms, states, and other actors." It turns out that the WTO is one of the organizations at the very center of the network of IGOs shown below in Figure 11.

[2] The analysis below follows previous research in considering a relation that forms world-polity networks: that of membership of states in IGOs. Other relations, such as consultancies and other forms of direct IGO-IGO and state-state ties are not considered; see Slaughter (2004) and Boli and Thomas (1999) for discussions of these and other networks.

there is a rising (and now high) level of heterogeneity in the pattern of states' IGO ties. This social structure reflects, in part, place, as the world polity exhibits significant regionalization along with globalization.[3]

SOCIAL STRUCTURE IN WORLD POLITY THEORY

In an influential programmatic statement of world polity theory, Meyer et al. (1997) argue that "many features of the contemporary nation-state derive from worldwide models constructed and propagated through global cultural and associational processes" (Meyer et al. 1997, p. 144).[4] Contrasting their perspective to "global neo-realism" (see below), they use the imaginary example of a newly discovered island society to illustrate "what has already happened to practically all of the societies of the world after their discovery and incorporation into world society" (p. 146). Focusing on the associational process of integration into the world polity, the "island society would quickly come under the scrutiny of ... international organizations" and "its state and its people would be expected to join international bodies" (p. 165). As the island society grew more deeply integrated into the network, "old institutionalist" and "new institutionalist" forces (Stinchcombe 1997) would work to transform the island state into a legibly modern state with globally-legitimated organizational structures and practices. The state would seek legitimacy through international organizations, while international organizations would certify the rational-legal authority of the state and offer "aid" in the form of agents and material resources (Meyer et al. 1997). Structurally, this process would create dense ties between the state and international organizations, and policy scripts would diffuse more easily

[3] For a sociological conceptualization of place, see Gieryn (2000).
[4] Citation data from the ISI Social Sciences Citation Index indicate the significant influence of Meyer et al. (1997): As of 2007, the article was more frequently cited, at 270 citations, than any other article appearing in the last ten years of the American Journal of Sociology or the American Sociological Review.

from the world polity to the state as the conduits from the world polity to the state grew in size, creating more and more redundant and reinforcing connections. While world polity scholarship has not resolved the controversial question of where world polity scripts come from, it is important to note that policy scripts could as easily emerge, in "bottom-up" fashion, from powerful states.

What international organizations would the island join? For world polity theory, the United Nations (UN) and its agencies (e.g., the International Monetary Fund; World Bank Group; UN Education, Science, and Culture Organization; International Labour Organization; and World Health Organization) represent the ideal-typical international organizations.[5] These organizations influence national policy, distribute resources, and include nearly every state in the international system as members. In the language of social network analysis, in joining the UN, the island state, previously an isolated "node" in the network, would now have ties to other states in the network. This network would be "dense" (every state has a tie to every other state), "decentralized" (every state has the same number of total ties), "cohesive" (states are close together in world polity space), and "clustered" into one very "small world" (Wasserman and Faust 1994; Watts 1999). This two-mode or affiliation network (Breiger 1974) could be represented as a bipartite graph (Faust 2005), where the nodes could be partitioned into a set of IGOs and a set of states.

Of course, the world polity also includes other kinds of international organizations, including organizations that restrict membership by level of economic development (e.g., the Organization for Economic Cooperation and Development), geographic region (e.g., the Association of Southeast Asian Nations), economic sector (e.g., the Organization of Petroleum

[5] The United Nations also has extensive formal and informal ties to INGOs, and the role of INGOs in the UN has grown in the 1980s and 1990s (Pubantz 2005).

Exporting Countries), linguistic heritage (e.g., Francophonie Institutionnelle), religion (e.g., Organization of the Islamic Conference), or geopolitical alignment (e.g., the North American Treaty Organization). This complicates the story. And the complication carries theoretical importance, because world polity theory conceptualizes international organizations as predominantly universalist and inclusive, while other approaches conceive of international organizations as competitive and exclusive. A world of organizations like the UN comes closer to the world imagined by world polity theory, while a world of organizations like the OECD and OPEC corresponds more closely to the world imagined by conflict-centered alternatives (Beckfield 2003).

Using the language of social network analysis, the above examples highlight the "dual" (Breiger 1974) or "bipartite" character of the world polity network. That is, the network formed by IGOs includes two types of nodes, states and IGOs, making it a two-mode network that can be represented as a bipartite graph. The first mode foregrounds the state nodes; it is a network of states that are interlinked through memberships in organizations. The second mode foregrounds the IGO nodes; it is a network of organizations that are interlinked through their member states. Although each mode is part of the same overall network, each will have its own structure, and together, the networks form a bipartite network. Understanding the structure of the world polity therefore requires an examination of its duality—the relational networks of states and organizations. To date, work on the structure of the world polity has operationalized involvement in the world polity as an attribute of states only (Beckfield 2003; Boli et al. 1999; Jacobson, Reisinger and Mathers 1986; Shanks, Jacobson and Kaplan 1996; Rey and Barkdull 2005; Wallace and Singer 1970), although work on international conflict and policy diffusion has recently taken a network turn (Boehmer, Gartzke and Nordstrom 2004; Ingram et al. 2005).

While world polity theory envisions a densely interconnected global network (a strong version of this hypothesis is a maximally-dense network where all states and IGOs are connected), the theory's dynamic implications are actually stronger. World polity theory holds that states are becoming more similar as they are integrating more deeply into the world polity. Nothing in world polity theory or its empirical applications suggests that the world polity has always been densely interconnected, only that it has become more so.[6] Friedman makes a parallel argument for economic globalization in *The World Is Flat*: "I know that the world is not flat…I am certain, though, that the world has been shrinking and flattening for some time now, and that process has quickened dramatically" (Friedman 2006:460). Returning to the evolution of political globalization, the fact that world polity theory is fundamentally a theory of change is evinced by the use of event history analysis and other techniques for longitudinal data in so many studies that test hypotheses drawn from the theory (Boli and Thomas 1999; Frank, Hironaka and Schofer 2000; Hafner-Burton and Tsutsui 2005; Polillo and Guillén 2005; Ramirez, Soysal, and Shanahan 1997; Schofer and Hironaka 2005; Strang and Chang 1993; Wejnert 2005).

For instance, Frank et al. (2000) offer evidence for the institutionalist argument that "the blueprints for nation-state involvement [in environmental policy] are drawn in world society, from where they diffuse to individual countries" (p. 96). The assembly of evidence in their article follows a logic common to much world polity research: The content of world culture in a given domain is examined, and event history analysis is used to examine policy change (in this example, indicators of change include the adoption of environmental impact assessment legislation and the foundation of environmental ministries). The analysis shows that these policy changes are driven, in part, by "the extent to which countries have open conduits to world

[6] Change in the structure of the world polity is said to be reflected both in the increasing connections among states, and in the increasing connections among international organizations (Boli 2005, p. 387). For the structure of the network, this implies increasing density and decreasing centralization in both the inter-state and inter-IGO networks.

society" (p. 105), measured as memberships in IGOs and INGOs. As in many other studies, Frank et al. show significant associations between ties to international organizations and policy change. The interpretation of these associations is debated among sociologists (e.g., Buttel 2000), and it remains possible that unobserved heterogeneity or other omitted variables may bias the event history models. As noted above, world polity theory remains controversial, but it has sparked a good deal of work on the content of world culture and the phenomenon of policy isomorphism.

Recently, debate has turned toward the question of "decoupling" (Meyer and Rowan 1977; Meyer et al. 1997, pp. 154-6), or the frequent disconnect between policy and practice. Buttel (2000), for one, argues that the adoption of environmental policies may reflect mere "window dressing" that has no impact on the environment itself. World polity researchers have marshaled evidence to counter these critical claims, showing that involvement in international organizations improves actual human rights practice and environmental quality (Hafner-Burton and Tsutsui 2005; Schofer and Hironaka 2005), but the debate continues in light of vast inequalities among states in resources and power. Researchers in the world polity tradition (and the new network research that assesses related hypotheses) have also elaborated more complex statistical models in an attempt to control for some of the domestic factors that doubtless matter for the creation, modification, and adoption of policy scripts (Buttel 2000).

Before traveling farther down this road, it is informative to step back from this debate and consider the assumptions about the social structure of the world polity that underlie research on how the world polity affects the national state. Research on the effects of integration into the world polity assumes an increasingly densely interconnected, singular world polity, where policy scripts diffuse smoothly among organizations and states as there is less and less "friction" in the

world polity. These scripts diffuse more easily to those states that have stronger connections to the world polity, and it is argued that all states are increasingly embedded into the world polity. As with the imaginary island society, states increasingly "plug in" to the world polity, joining global organizations like the United Nations. World polity research recognizes the tremendous growth in the population of international organizations (Boli and Thomas 1997, 1999), but these organizations are assumed to be global or at least increasingly global in scope, forming a singular world polity rather than multiple (regional?) polities.[7] If this assumption were true, and international organizations were increasingly global in scope (i.e., increasingly akin to the United Nations), then this would generate an increasingly dense world political structure in both "modes" of the network. That is, the world polity would have both increasingly dense inter-organizational ties through states, and increasingly dense inter-state ties through organizations. However, if this assumption were false, and international organizations were becoming less global in scope (i.e., increasingly akin to the Association of Southeast Asian Nations), then this would generate a world polity that is increasingly fragmented and uneven in its structure. Rather than a singular "flat" or even "small" world, the world polity would be best described as a fractured topology.

Would it mean anything for world polity theory if this assumption of an increasingly densely integrated world political structure were unrealized? To put the matter more sharply, it could be argued that assuming a cohesive social structure is unnecessary for world polity research, given that there are robust empirical associations between states' ties to that structure (whatever it might be) and national policy. It could be the "plugging in," and not the plugging in

[7] Of course, research in the tradition of world polity theory acknowledges that there is a great deal of substantive heterogeneity among international organizations: the world polity is divided into a wide range of sectors (Boli and Thomas 1997). Boli (2005, p. 394) notes that "globalized authority is highly fragmented and differentiated, and within each distinct sector or niche it is sometimes highly effective, sometimes little more than symbolic. It is, nonetheless, very much on the upswing."

to what, that matters for states (cf. Gartzke, Li and Boehmer 2001; Ingram et al. 2005). This is one of the empirical questions raised by conceptualizing and analyzing the world polity in explicitly network terms.

Conceptually, the structure of the world polity should still matter for understanding its effects, for at least five reasons. First, a more complex structure might account for some of the anomalies of world polity research (cf. Cole [2005] and Hafner-Burton and Tsutsui [2005]). Second, accounting for structure might enable a more accurate rendering of the mechanisms through which the world polity impacts states (for example, regional organizations might intervene in the process of policy diffusion). Third, the social structure of the world polity might offer a partial account of decoupling (for example, practice may be more tightly coupled to policy in regional polities that are more densely tied together). Fourth, if it is the intensity of involvement in the world polity and not its social structure that matters for states, then it could be that some third factor explains both involvement in international organizations and the adoption of relatively progressive policies in the domains discussed above. Fifth, if worldwide models, or global "policy scripts," are generated in a world society of international organizations, those policy scripts may cohere better and diffuse more easily among densely interconnected regional organizations (implying highly structured heterogeneity among policy scripts). Indeed, studying the world polity as a network could contribute to a better understanding of alternative processes of policy diffusion by getting closer to the proposed network mechanisms of world polity theory (Dobbin et al. 2007; Simmons and Elkins 2005; Valente 2005).

These arguments suggest that understanding the social structure of the world polity has important implications for world polity theory and research. To date, work on the structure of the world polity, like the research on the effects of the world polity, has operationalized

involvement in the world polity as an attribute of states rather than embeddedness in relational networks of states and organizations (Beckfield 2003; Boli et al. 1999; Jacobson, Reisinger and Mathers 1986; Shanks, Jacobson and Kaplan 1996; Rey and Barkdull 2005; Wallace and Singer 1970). This means that the social structure of the world polity has not been observed.[8] For instance, very different social structures result from a world where states increase their involvement in a growing number of global organizations like the UN, compared to a world where states increase their involvement in a growing number of regional organizations like the European Union. The former world yields a flat, dense, even, cohesive social structure; the latter, a rough, sparse, uneven, fragmented one.

SOCIAL STRUCTURE IN GLOBAL NEO-REALISM

World polity theorists cast their arguments against those of "global neo-realism," a rubric that encompasses approaches from political science, including realist theory from the international relations subfield; and sociology, including world-systems theory (Boli and Thomas 1997, pp. 171-2; Meyer et al 1997, pp. 146-8). The key distinction between world polity theory and global neo-realism – and the signal contribution of world polity theory – is that world polity theory accounts for increasing isomorphism among states by taking world culture seriously. The argument is that states increasingly look alike because they are increasingly embedded in a world polity (an organizational structure) that expresses a world culture (structures of meaning) that constitutes the state as an actor, defining what it means to be a state, and prescribing what states

[8] Wallace (1975) provides an early and partial exception to this tendency by examining the effective distance between dyads of states based on their common membership in IGOs, and Kim and Barnett (2000) examine the network of IGOs in the international telecommunications field. While the network structure of the world polity itself has tended not to be the object of empirical scrutiny, Ingram, Robinson and Busch (2005) and Hafner-Burton and Montgomery (2006) show that IGO network ties are associated with increased international trade and diminished interstate conflict among state dyads with more dense IGO connections.

do. In contrast, global neo-realist approaches downplay or neglect the role of culture, highlighting instead conflict and power. Here, the argument is that the "world polity" reflects and reproduces pre-existing structures of domination, as international organizations serve as "boards of directors for ruling states" (Boswell and Chase-Dunn 2000, p. 238). In contrast, other realist approaches, such as the realist tradition of Waltz (1979) and the intergovernmentalist tradition of Moravcsik, view international organizations as irrelevant and ineffective (Waltz) or mere reflections of interstate bargaining and rational national interests (Moravcsik).

For neo-realist approaches like world-systems theory, intergovernmental organizations are established in an anarchic arena of global competition, where states form and join international organizations to advance their material interests (Boswell and Chase-Dunn 2000). If the United Nations is the paradigmatic IGO for world polity theory, then organizations like the Organization for Economic Co-operation and Development (OECD) that restrict membership to developed countries, and regional organizations like the European Union, are paradigmatic for neo-realism. While the use of IGOs for inter-state competition, especially by non-core states to resist the liberal economic order, has been debated (Krasner 1985), the neo-realist implications for the social structure of the world polity have been explored only as they apply to the level (not the pattern) of world polity involvement (Beckfield 2003; Boli et al. 1999; Jacobson, Reisinger and Mathers 1986; Shanks, Jacobson and Kaplan 1996; Wallace and Singer 1970).

The structural implications of neo-realism follow from the types of IGOs that are established by states. For instance, the Group of 24 (G24) was founded in 1971 by 24 less-developed countries to represent the interests of poor countries in international financial matters and counterbalance organizations like the Group of 7 (or G7, now G8) industrialized countries. To see the structural implications, imagine that the world polity consists of just the G24 and G8.

The network formed would be bipartite, with two IGOs and 32 states. In turn, the bipartite network generates two one-mode networks: A network (here, a dyad) of two IGOs, and a network of 32 states. The IGO dyadic network would be disconnected, since no G24 member also belongs to the G8. Likewise, the inter-state network would also be disconnected, with all G24 states tied to all other G24 states, and all G8 states tied to all other G8 states. These images correspond quite closely to the neo-realist depictions of a world riven by international conflict and competition, where, for instance, European states form IGOs like the European Union and Southeast Asian states form IGOs like ASEAN in pursuit of (geopolitical and domestic) interests. If there were no global organizations like the United Nations and all IGOs were formed based on geographical or other attributes, the world polity as a network would be sparse instead of dense, fragmented instead of cohesive, and, given that resource-rich states belong to more IGOs (Beckfield 2003; Boli et al. 1999), highly centralized and structurally uneven.

Of course, the world polity is shaped both by inclusive organizations like the United Nations and exclusive organizations like the European Union. Thus, nearly all states have at least one tie to nearly all other states (e.g., the UN forms a tie between Germany and Bangladesh), although they may have a greater number of ties to certain states than others. And nearly every IGO is likely to be connected to nearly every other IGO by at least one common member state (e.g., Germany forms a tie from the EU to the UN), but some IGOs may share more member states than others. This suggests that in static terms, the world polity blends structural density with sparseness, decentralization with centralization, homogeneity with heterogeneity, and cohesion with fragmentation. Given their theoretical relevance, it is essential to estimate these static properties. But the dynamics matter more. This is because the theories in question are theories of <u>change</u>. The real conflict between the social structure posed by world

polity theory and the social structure envisioned by neo-realism lies in how the structure has evolved: Has it become more or less dense, more or less centralized, more or less a flat field of association?

Consider once again the newly-discovered island society. Global neo-realism anticipates that the island state would pursue its interests on the global stage by forming strategic alliances with other states and joining international organizations. It would probably seek membership in global organizations like the United Nations, thereby tying itself to nearly every other state in the international system, but, assuming limited economic resources and a location in the Pacific Ocean, it would probably also seek membership in organizations of poor countries like the G24, and regional organizations like the South Pacific Community and Pacific Island Forum. If the example of the island illustrates the incorporation of all national states into the world polity (Meyer et al. 1997, p. 146), then the world polity should exhibit some degree of regionalization.

The degree of this potential regionalization of the "world" polity is unclear. Although debate over regionalization informs studies of economic globalization (Fligstein and Merand 2002; Kim and Shin 2002), scholarship on political globalization tends to neglect the substantial role of place and geography (Nierop 1989; O'Laughlin and van der Wusten 1990; van der Wusten and Nierop 1990). While global neo-realism anticipates regionalization throughout the period, as states consistently pursue local interests, world polity theory suggests that regionalization should peak after World War II, after "extensive universalistic organizing" of global IGOs encourages organizing at the regional level (Boli and Thomas 1999, p. 31). Existing political-geographic research on the question of regionalism in the world polity shows significant and growing regional clustering, but this research is restricted to the 1950-1980 period (Nierop

1989). Further inquiry is required to determine how much the world polity resembles "a world of regions" (Katzenstein 2005).

DATA

To explore the structural implications of the world polity and neo-realist approaches, I use newly available data on the population of intergovernmental organizations assembled and distributed by Pevehouse, Nordstrom and Warnke (2004) as part of the Correlates of War project.[9] The data consist of binary matrices of IGOs and states, where 1s denote membership ties among IGOs and states in a given year, and 0s indicate non-membership.[10] For the purposes of this paper on the evolution of social structure in the world polity, the key advantages of this dataset are its wide historical scope and its comprehensive inclusiveness of IGOs.[11] An IGO is included in the data if it (1) includes at least three member states, (2) holds regular meetings at least once per decade, and (3) has a permanent secretariat and headquarters (Pevehouse et al. 2004). Information on IGOs and their members comes from multiple sources detailed in Wallace and Singer (1970) and Pevehouse et al. (2004), including the Yearbook of International Organizations, published by the Union of International Associations (UIA). The UIA is the standard source for data on world polity ties (Beckfield 2003; Boli and Thomas 1997; Cole 2005). The dataset includes

[9] Pevehouse et al. (2004, p. 103) note that "the broadest understanding of what constitutes an IGO is that the organization (1) is a formal entity, (2) has states as members, and (3) possesses a permanent secretariat or other indication of institutionalization such as headquarters and/or permanent staff. … IGOs are differentiated from nongovernmental organizations (NGOs) based on the fact that the latter organizations' memberships are composed of individual persons, interest groups, or businesses." A description of the project, and the IGO data used here, can be found in the cited article, or on-line at http://www.correlatesofwar.org/.

[10] Ingram, Robinson and Busch (2005) use these data in a study of international trade. Oneal and Russett (2001) and Russett and Oneal (2001) employ an earlier version of the dataset in research on militarized international disputes.

[11] Restricting the sample of IGOs to a limited subset of highly visible and especially influential organizations is an important next step. The social structure of the world polity may vary according to the prominence of the organizations that are analyzed, with prominent IGOs more likely to be global IGOs. Elsewhere, I find that the substantive conclusions reached in this paper are identical in an analysis restricted to prominent IGOs (identifying reference omitted).

information on the memberships of a total of 495 separate intergovernmental organizations that existed at some point since 1815.[12]

The states included are those that meet the criteria for membership in the interstate system, as defined by the Correlates of War Project (2005). The criteria restrict the list to entities that (1) "prior to 1920, … have population greater than 500,000 and have had diplomatic missions at or above the rank of charge d'affaires with Britain and France" and (2) "after 1920, [have membership in] the United Nations or League of Nations, or have population greater than 500,000 and receive diplomatic missions from two major powers." This means that it is possible for the bipartite network to be disconnected because states need not be a member of any IGO to be included in the dataset. The equivalent of the "island society" that enters the world polity de novo is thus observed in this dataset, as the bipartite network is disconnected (and "island societies" are isolates) prior to 1960. Both the list of IGOs and the list of states are time-varying, according to the entries and exits of states and organizations in the international system.[13]

Consistent with the focus of this paper on long-term structural change in the world polity, the analysis uses data at 10-year intervals: 1820, 1830, and so on through 2000. Given the two-mode, or bipartite, structure of the network of IGOs and states, each year of data produces three matrices for analysis: An asymmetrical, two-mode binary matrix where cell x_{ij} indicates the membership status of state j in IGO i (1 or 0), a symmetrical, one-mode valued matrix where cell x_{ij} counts the number of IGO memberships shared by states i and j, and a second symmetrical, one-mode valued matrix where cell x_{ij} counts the number of member states shared by IGOs i and j. In other words, there is a network of IGOs and states, a network of states tied through IGOs,

[12] For the purposes of describing the network, all IGOs are treated as structural equals, which elides important differences among the organizations that populate this field. Including all IGOs in the network arguably biases the results toward supporting world polity theory, because introducing more heterogeneity into the network would likely produce an even more uneven structure.

[13] For further details, also see Small and Singer (1982).

and a network of IGOs tied through states (direct ties between states, such as diplomatic missions and bilateral treaties, and direct ties between IGOs, such as consultative statuses, are omitted). Each network reveals distinct aspects of the social structure of the world polity. The first, two-mode network, which can be represented as a bipartite graph, reveals the density of the world polity as a whole, while the one-mode networks reveal the centralization (or lack thereof) around key nodes, and structural heterogeneity (or lack thereof) among positions in the network. The bipartite graph can then be analyzed for the overall cohesion and clustering of the network. Finally, the network of states can also be examined for evidence that states from the same geographic region share more IGO ties than states from different regions.

Both the network of IGOs and the network of states can be analyzed as a valued matrix, where the cells are counts of ties, or as a binary matrix, where the cells take the value of 1 if there is at least 1 tie. For instance, in the valued IGO network, the value of the tie between the European Union (EU) and the International Monetary Fund (IMF) in 2000 is 15 because all 15 EU member states in 2000 were also members of the IMF. On the other hand, in the binary IGO network, the value of this tie equals 1. Analyzing both valued and binary networks allows for the assessment of the strength of connections as well as the presence of connections. It is important to examine each aspect of the social structure of the world polity, because there may be less structural unevenness in the presence/absence of network ties than in the strength of ties. Moreover, the strength of connections, or volume of conduits to the world polity, is argued to be the network mechanism for the diffusion of policy scripts.

In sum, at each 10-year interval between 1820 and 2000, the root data matrix is two-mode and binary, where the ties are between IGOs and states. From this root data matrix derive five matrices that capture distinct aspects of network structure: (1) A valued matrix where the

cells count ties between IGOs, (2) a binary matrix where the cells indicate the presence or absence of a tie between IGOs, (3) a valued matrix where the cells count ties between states, (4) a binary matrix where the cells indicate the presence or absence of a tie between states, and (5) a bipartite symmetric graph that represents IGO-state connections.

ANALYSIS

To investigate the structural implications of world polity theory and global neo-realism, I use network analytic techniques to examine change in several essential structural properties: density, centralization, heterogeneity, cohesion and clustering.[14] To examine regionalization in the world polity, I calculate correlations between the observed network and a model network where ties are based on region. Analyses were performed using the programs Ucinet 6 (Borgatti et al. 2002) and Pajek (Batagelj and Mrvar 2007).

Density, a fundamental property of social networks, is calculated as the percentage of possible ties in the network that are actually observed (Wasserman and Faust 1994). The numerator is a simple count of ties, but the denominator differs according to the modality of the network. In a one-mode network (e.g., a network of just IGOs), the denominator is the number of nodes in the network, multiplied by the number of nodes minus one (nodes in these networks cannot be tied to themselves). In a bipartite network, ties can only be observed between actors in different modes (here, between IGOs and states), so the relevant denominator is the number of actors in the first mode multiplied by the number of actors in the second mode (Borgatti and

[14] Following the Simmelian insight that triads make more stable groups than dyads, Moody and White (2003, p. 103) operationalize structural cohesion in a social network as a function of connectivity: "structural cohesion is defined as the minimum number of actors who, if removed from a group, would disconnect the group." As with many graph-theoretic properties, connectivity is a property of binary networks that does not extend readily to valued networks such as those analyzed here (Wasserman and Faust 1994, p. 76). Also, this measure of structural cohesion produces trivial results when applied to the inter-state network, because it is disconnected until 1960.

Everett 1997). Density is calculated only for the binary networks, and ranges from 0 (where no ties are observed) to 1 (where all possible ties are observed). It is important to note that network density (or relative density) differs from population density (or absolute density) in that network density measures the realization of possible ties, not the volume of possible ties itself. That is, there is no question that one indicator of world-polity formation is the dramatic increase in the number of IGOs and states in the system – or increase in the absolute density of world polity ties. This distinction is akin to that between an increase in the population of a given neighborhood – and thus an increase in the potential for interaction – and the actual realization of ties among people in that neighborhood.

The centralization of a network is the degree to which it resembles a "star" network, where one central node has ties to every other node, but the other nodes do not have ties among themselves. For instance, if the UN shared a member state with all 329 other IGOs that populated the network in 2000, but these 329 other IGOs did not overlap in their membership, the IGO network would be perfectly centralized. Like density, centralization is a structural property of the network as a whole. It is calculated as:

$$C_D = \Sigma[C_D(n^*) - C_D(n_i)] / [(g - 1)(g - 2)],$$

where $C_D(n^*)$ represents the degree centrality of the most central node, $C_D(n_i)$ represents the degree centrality of node i, and g represents the total number of nodes in the network (Wasserman and Faust 1994, p. 180). Centralization is calculated for binary networks, and ranges from 0 (perfectly decentralized) to 1 (perfectly centralized).[15]

[15] Supplemental analysis indicates that using the binary network to calculate centralization, as is conventional given that centralization for binary networks is bounded to be between 0 and 1 and thus has a ready interpretation, results in understatement of the increased centralization of the IGO network, and overstatement of the decreased centralization in the state network. Using the valued networks, the increase in the centralization of the inter-IGO network is more pronounced, while the decrease in the centralization of the inter-state network is less pronounced. Thus, the figures below can be seen as conservative depictions of the trends in world polity centralization.

While centralization captures one sense of structural heterogeneity or unevenness, it is limited in that networks can have more than one central node. For instance, some networks resemble a core/periphery structure, with a set of tightly interconnected nodes and a peripheral set of sparsely interconnected nodes (Borgatti and Everett 1999). In core/periphery structures, it is possible to assign a "coreness" score to each node that quantifies how "close" each node is to the dense core of the network. In a maximally dense network, all nodes would have the same coreness score, because every node would belong to the dense core, and no sparse periphery would exist. Thus, dispersion in coreness scores can be used to assess overall network-level structural heterogeneity. I use the genetic algorithm developed by Borgatti and Everett (1999) to assign coreness scores, and I use the Gini coefficient to measure dispersion in the scores. The Gini coefficient is a commonly used measure of dispersion (see Firebaugh [1999] for an application) that varies from 0 (perfect homogeneity) to 1 (perfect heterogeneity).

To measure the cohesion of the IGO-state network, I use the bipartite graph to calculate the average path length, diameter, and connectivity of the graph (Wasserman and Faust 1994). A path is the smallest number of ties (or links) between two nodes – for instance, if a policy script must travel from the United Nations to APEC (Asia-Pacific Economic Cooperation) through a shared member state to reach Taiwan, the UN-Taiwan path would be 3 ties long, and the UN-APEC path would be 2 ties long. The average path length is calculated over all dyads in the network. The diameter of the graph is the maximum rather than the average path length. Diameter is useful for comparing bipartite graphs because it measures how far apart the two most distant nodes are. The third measure of cohesion is connectivity: the minimum (node) connectivity of a graph is a count of the number of nodes that would have to be removed from the graph to disconnect it. To provide a baseline for comparison, I also calculate these cohesion

indices for random networks (the random networks were generated by holding constant the size and tie distributions of the networks, and creating random connections between nodes).[16]

I follow Uzzi and Spiro (2005) in calculating the clustering ratio, path length ratio, and small-world Q for the bipartite graphs.[17] Their indices quantify the "small-worldly-ness" of an observed bipartite graph, relative to a baseline random bipartite graph with a constant tie distribution. Small-worldly graphs are marked by the unusual combination of a short average path length and a high level of local clustering (Watts 1999). World polity theory argues for just such a small world: if one IGO is linked to two other IGOs, those two other IGOs should also be linked, and the path from any one IGO to another should be short. For instance, in a completely-linked graph with density equal to 1.0, the clustering coefficient reaches its maximum value of 1.0. Realist approaches also anticipate clustering – friends of friends should be friends if conflict and regionalization drive the system – but a longer path length, since overlap among IGOs through shared member states should be less common. The clustering ratio is the fraction of the observed clustering over the baseline clustering for a random bipartite graph. In turn, the path length ratio is the fraction of the observed average path length over the baseline average path length for a random bipartite graph (in the random bipartite graph, the tie distribution is identical to that of the observed graph). The small-world Q is calculated as clustering ratio / path length ratio. Below, I report all three indices, given that both world polity theory and its realist alternatives predict clustering, but differ on average path length.

Finally, to assess the regionalization of the world polity, I calculate the correlation between the observed network of states and a hypothetical model network where states are interconnected only within geographic regions. The regions are the six "world macro-regions"

[16] The random networks are not used to calculate baselines for the preceding measures, since density, centralization, and heterogeneity are also functions of the tie distributions.
[17] Latapy et al. (2006) develop additional clustering measures for bipartite graphs.

designated by the United Nations: Africa, Asia, Europe, Latin America, Northern America, and Oceania (UN 2005). In the model regional network, all African states are connected to all other African states but to no other states; all European states are connected to all other European states but to no other states; and so on for each region. The Pearson correlation between this model network and the observed world polity network is calculated using the Quadratic Assignment Procedure (QAP) as implemented in Ucinet 6, which randomly reorders, or permutes, the rows and columns of the observed data matrix 2,500 times, recalculating the correlation with the model matrix for each permutation of the observed matrix. This procedure gives a non-parametric test of "statistical significance" that is appropriate for non-independent network data (see Padgett and Ansell [1993] and Kadushin [1995] for applications of the QAP technique). The Pearson correlation ranges from -1 to 1.

Throughout the presentation of results, I compare the characteristics of the observed world-polity networks to three ideal-typical networks to give the reader context for interpretation of the results. The first ideal-typical network is a completely-interconnected and maximally-dense network – this is a strong version of the hypotheses drawn from world polity theory about the structure of the network. The second ideal-typical network is a random network of the same size and density as the observed network – the results for this random network are used to contextualize the centralization and coreness analyses. The third ideal-typical network is a random network of the same size, density, and degree distribution – these results are used in the calculation of the clustering statistics, following the models developed by Newman et al. (2001) and Uzzi and Spiro (2005). As with any ideal-typical or random-network structure, these comparisons are offered as baselines for comparison and to facilitate interpretation. They

underscore the characteristics of the world polity that are relative to a theoretical model, as well as to size- and density-independent stochastic models.

RESULTS

I present the results in a series of figures. Figures 1-9 trace change in the relevant properties of the inter-state and inter-IGO networks as they evolved over the 1820-2000 period, and Figures 10-12 represent these networks as graphs for the year 2000.

Figure 1 verifies the world polity structuration that has been noted in previous work (Boli and Thomas 1997, 1999). The population of IGOs grew slowly from one (the Central Commission for the Navigation of the Rhine, whose members were Baden, Bavaria, France, Germany, Hesse, and the Netherlands) to 67 in 1930, declined to 63 in 1940, and then grew rapidly to a total of 330 IGOs by the year 2000. The 1930-1940 decline in the population of IGOs is consistent with the decline in international trade in the interwar years (Chase-Dunn et al. 2000), and the "steep fall" in the formation of international nongovernmental organizations (INGOs) leading up to the second World War (Boli and Thomas 1997, p. 175).[18] But in the later period, the growth trend in this population of IGOs matches other measures of world polity formation such as growth in the population of INGOs. This was a massive increase in the total volume of world-polity ties, and there is no doubt that the amount of world-polity activity (or what could be called absolute population density of the world polity) increased dramatically over the course of the 20th century (Boli and Thomas 1997; Meyer et al. 1997). Given that the volume of activity is the network mechanism for diffusion identified by world polity theory, there is doubtless a very large potential for policy diffusion in this network.

[18] Interestingly, this correspondence between political globalization (as represented by IGOs and INGOs) and economic globalization (as represented by international trade) offers some support for the argument that international markets demand international rules (Fligstein 2001; Fligstein and Stone Sweet 2002).

FIGURE 1 ABOUT HERE.

Figure 1 also shows the widely-noted increase in the number of sovereign states in the international system. Through the Concert of Europe in the early 1800s and the European wars of the later 1800s, this number grew steadily but very slowly. There was a noticeable increase after the establishment of the League of Nations in 1919, and then the rate of growth changed dramatically around 1940. After 1940, the number of states in the international system grew from 65 to 190 by 2000. The overall trend, especially the rapid increase since 1940, is consistent with institutionalist arguments that the world polity (precisely, through the UN system) legitimizes the state as a form of governance: "World society contains much cultural material authoritatively defining the nation-state as the preferred form of sovereign, rational actor" (Meyer et al. 1997, p. 158).

The rapid growth in the number of states and IGOs in the world polity – the growth in absolute population density in the world polity – could have various consequences for the overall structure of the network. If the new IGOs are universal or nearly-universal in their membership (like the United Nations, founded in 1945), and if states join IGOs upon entry into the international system (like the example of the island society), then the network as a whole should become more densely interconnected and less centralized. States should become more even in their levels of embeddedness in the world polity, and states should become more densely interconnected through their common IGO memberships. Likewise, IGOs should become more densely interconnected through their common member states. Conversely, if the new IGOs are less like the United Nations and more like the European Union (founded as the European

Economic Community in 1957), or if states resist IGO membership, then the network would become increasingly sparse and fragmented. In sum, growth in the populations of IGOs and states does not, by itself, determine the nature of change in network structure.

Figure 2 shows trends in descriptive statistics on IGO involvement – as an attribute of states – to facilitate comparison of these results with results from previous world polity research. Consistent with world polity theory, the average number of IGO memberships held by states increased rapidly, from less than 1.0 through 1860, to 59.1 by 2000 (again, a dramatic increase in the absolute population density of world polity ties). The standard deviation also increased, but not as quickly as the mean. Consequently, the coefficient of variation decreased from 1.68 in 1820 to .59 by 1910, and further to .37 by 2000. These results are consistent with the findings that inequality in IGO and INGO ties decreased from 1960 to 2000 (Beckfield 2003), but they extend this work by showing that there has been an even longer-term trend toward evenness in the depth of states' embeddedness in IGOs.

FIGURE 2 ABOUT HERE.

So far, the results shown here replicate previous work using newly available data compiled by Pevehouse et al. (2004). Next, I turn to the network analysis, which examines involvement in the world polity as a relational network rather than an attribute of states. Figure 3 shows trends in the density (or, network density, as opposed to population density or volume) of three networks: The two-mode network of IGOs and states, the network of states with overlapping IGO memberships, and the network of IGOs with shared member states. The density of the two-mode network decreases from 1820 through 1860, increases and remains at a

higher level from 1870 through 1940, then decreases slightly through 2000. The increase from 1860 to 1870 was driven by the founding of two universal IGOs in the intervening years: The International Telecommunications Union and the Universal Postal Union. The post-1940 decrease in the density of the two-mode network is somewhat surprising in light of the founding of the United Nations and other universal IGOs after World War II. Also surprising (relative to the maximally-dense ideal-typical network) is the relative sparseness of the bipartite network throughout the period: In every decade, fewer than 40% of the possible ties between IGOs and states are realized.

FIGURE 3 ABOUT HERE.

The density of the one-mode inter-state network is more consistent with world polity theory: Very low proportions of possible ties among states are realized until the founding of universal IGOs after 1860, and then the density increases rapidly and to a very high level by the turn of the century. By 1900, fully 88% of possible ties among states are realized. With the exception of two slight dips, the density of the inter-state network continues to increase through 2000, to 97% of possible ties realized. This means that nearly every state holds at least one IGO membership in common with every other state (unsurprising, given the near-universal membership of the United Nations). If density eases institutional diffusion and enhances normative emulation (DiMaggio and Powell 1983, p. 152; Henisz et al. 2005, p. 876), world-polity models circulate easily among states in the international system. Of course, it is important to emphasize that density is calculated for binary networks, so that information on the strength of ties is reduced to a binary indication of the presence/absence of at least one tie.

Turning from ties among states to ties among IGOs, we find a trend in density that is almost the mirror image of the trend in the density of inter-state ties: IGOs are very densely interconnected through their member states at first, but this density slowly declines through 1940, then declines more rapidly through 1990, when it appears to level off at just over 50% of possible inter-IGO ties observed. While this remains a fairly dense network in a static sense, the pattern of change is more consistent with global neo-realism than world polity theory. The decreasing density of the IGO network suggests a more fragmented world polity, with fewer connections among organizations. This means that the pattern of IGO ties contrasts starkly against the number of IGO ties: While states are growing more even in the number of IGOs they belong to, they increasingly belong to different IGOs. In contrast to a world of UNs, WTOs, ILOs and World Banks, the decreasing density of the IGO network results from a world of EUs, NAFTAs, Mercosurs, and ASEANs.

Figure 4 shows the trends in centralization, a measure of structural heterogeneity that assesses how closely a network corresponds to a star-shaped structure with one central node and many peripheral nodes. Again, we find opposite trends for the inter-IGO and inter-state networks. Centralization of the inter-state network drops sharply from 1840 to a low level in 1910, and decreases even further through 2000. In 2000, the centralization of the inter-state network fell to .07, very close to the perfect structural equality of a circle-shaped network where all nodes are interconnected (and actually less than .11, which is the centralization for a random network where size and density, but not the tie distribution, are held equal to that of the 2000 world polity network). Decreasing centralization of the inter-state network is consistent with the image drawn from world polity theory of an increasingly even field of association.

FIGURE 4 ABOUT HERE.

In contrast, the centralization of the IGO network increases throughout the period. The IGO network exhibits no structural heterogeneity until 1880, but the level of centralization then increases slowly through 1940, when the network is 16% as centralized as possible given its size. Centralization then rises more steeply through 1970, and ultimately levels off near 48% (much greater than the 17% centralization in the equivalent-size and -density random graph). This suggests that the IGO network is increasingly star-shaped, with central IGOs that share many member states in common with each other, and peripheral IGOs that share member states in common with central IGOs but not with other peripheral IGOs. This increasing centralization of the IGO network is more consistent with the neo-realist image of a world polity structured by international competition and conflict.

Centralization, like density, is calculated for binary networks, which measure only the presence or absence of ties and waste information on the strength of ties among IGOs and states. Centralization also has limited utility for measuring structural heterogeneity in these networks, because centralization assesses the resemblance of a network to an ideal-typical network with only one central node. Borgatti and Everett (1999, p. 376) generalize this restricted sense of centralization and define a core/periphery structure as one where "the network … consists of just one group to which all actors belong to a greater or lesser extent," where a "center and periphery" can be defined. That is, core/periphery networks can be characterized as having a multi-centric core of nodes that are tightly interconnected, with a surrounding periphery of less-interconnected nodes.[19] The overall level of structural heterogeneity in a core/periphery network

[19] Correlations between the observed valued networks and idealized core-periphery structures (Borgatti and Everett 1999) are substantial. For all years of observation, the correlation coefficients for the valued networks surpass .80.

can then be measured as dispersion in the closeness of the nodes to the core. Figure 5 shows trends in the Gini coefficient, a common measure of dispersion, calculated for the binary and valued inter-state networks.

Figure 5 confirms that the binary network understates the level of structural heterogeneity among states: From 1860 onward, the Gini coefficient is always lower for the binary network than for the valued network. For instance, in 2000, the Gini coefficient for coreness scores in the valued network is .144, while in the binary network, it is .001 (for random graphs of the same size and density, these quantities are .063 and 0). Nevertheless, the trends are similar: In both state networks, structural heterogeneity declines steeply after 1960, to a very low level by 2000. For comparison, the level of inequality in world income has been estimated at a Gini coefficient of .543 (Firebaugh 1999, p. 1613). The level and trend are consistent with world polity theory: All states are nearly equal in position within the world polity.

FIGURE 5 ABOUT HERE.

Figure 6 shows the trends in this measure of structural heterogeneity for the binary and valued networks of IGOs. Again, the IGO dimension appears to be at odds with the state dimension: In both the binary and valued IGO networks, structural heterogeneity trends upward after 1870, with notable growth in the rate of increase in the 1940-1970 period. The level of heterogeneity is, predictably, higher in the valued network (Gini = .578 in 2000) than in the binary network (Gini = .197 in 2000). Both coefficients are much larger than those for random graphs of the same size and density (.087 and .001, respectively). For the IGO network, the level and trend are consistent with the global neo-realist approach: Central IGOs like the UN and

WTO are much closer to the structural core of the world polity than peripheral IGOs like the Baltic Council and the Central Asian Economic Community. The implications for diffusion are that policy scripts diffuse much more easily through the core of the world polity, creating the potential for a fragmented and "bumpy" pattern of policy diffusion.

FIGURE 6 ABOUT HERE.

Figure 7 shows the cohesion indices: average path length, diameter, and minimum connectivity. The average path length (geodesic distance) of the bipartite graph increased at first through the mid-19th century, decreased again briefly, then increased fairly consistently through the 20th century. This is preliminary evidence that the world polity looks less, not more, like a small world, even since the 1940s and the emergence of the UN system. It is worth noting that the average path length for a random graph of identical size and density is 2.298, less than the 2.678 average path length observed in the world polity in the year 2000. This decrease in the cohesion of the world polity is also reflected in the graph's diameter, which grows to 5 links long in the 1950-1990 period (it decreases again to 4 in the 2000 network, which is equal to the diameter of a random graph of the same size and density). The results for connectivity show a network that is disconnected through 1950, after which the connectivity increases. Still, in 2000, only 3 nodes would have to be removed to disconnect the graph. For comparison, a random graph of the same size and density shows a connectivity of 21 nodes. The results for average path length, diameter and connectivity thus suggest that the IGO network more closely resembles the fragmented world of the realist approaches than it does the cohesive world of world polity theory. It is no more cohesive than a random network of the same size.

FIGURE 7 ABOUT HERE.

Figure 8 shows that the world polity has also become less small-worldly over time. The clustering ratio decreases from 1.0 (meaning that the graph is exactly as clustered as a baseline random graph with equivalent size, density, and tie distribution) in the early years to around .94 for the 1890-1940 period, then decreases more rapidly to .84 by 2000. What this means is that the bipartite graph is actually less clustered than would be expected given that states are automatically clustered within IGOs in this bipartite graph. That is, there is less between-IGO clustering than would be expected for a random bipartite graph with this tie distribution. What clustering does exist remains within-IGOs. Interestingly, this decreasing clustering coincides with an increasing path length ratio, meaning that the states and IGOs in the bipartite graph are more distant from each other than would be expected given the bipartite structure of the graph. All this results in a small-world Q that follows a generally negative trend throughout the period, and declines more rapidly after the 1940s. Since this is precisely the period where the development of the UN system could have been expected to produce more cross-cutting ties among states, it would seem that the regionalization of the system in the later period outweighed this development in structural implications.

FIGURE 8 ABOUT HERE.

The above results are consistent with the regionalization of the world polity, but a more direct test is required: How much does the regionalization of the world polity shape its structure?

Figure 9 shows trends in the correlation between the observed inter-state networks and a model regional network (where states share IGO ties only to other states in their geographic region, as defined above).[20] For the binary network, regionalization increases until 1870, decreases until 1950, and stabilizes at a very low level through 2000 (Pearson's $\underline{r}$ = .009). For the valued network, the trend is rather different: Regionalization increases sharply and peaks in 1930, decreases dramatically after 1940 due to the founding of the UN, and increases again after 1960, to a correlation of .365 in 2000. The pre-war peak of regionalization contradicts the argument that universal IGOs dominated the field in the first half of the 20th century, and fostered regional organizations only after the war (Boli and Thomas 1999, p. 31). The overall pattern of findings, especially the contrast between the results for the binary vs. valued networks, suggests that sharing geographic region may not predict the presence or absence of ties among states, but it does predict stronger ties among states. States do have some connections that span regional boundaries, but connections among states are strengthened within regions. More important than the static patterning of inter-state ties is the direction of change: The regionalization of the world polity has actually increased since 1960, and world polity ties have become more rather than less bound to place. This is consistent with Nierop's (1989) finding that the regional clustering of states grew during the post-war period, through 1980. Taken together, the results shown in Figures 8 and 9 indicate that the world polity more closely resembles a "regionalized world" than a "small world."

[20] To assess the sensitivity of these results to the UN's definition of region, I re-estimated the correlations using the alternative, more culturally-oriented scheme of Huntington (1996), as operationalized by Henderson and Tucker (2001). The nine "civilizations" identified by Huntington correspond fairly closely to a strictly geographical grouping, except that some North African and Middle Eastern countries are classified as Islamic, North American countries are classified with Western European states as Western, and the Asian countries are divided among the Buddhist, Japanese, and Sinic civilizations. Using this alternative, semi-regional classification, the results are consistent with those shown: the association between region and IGO ties increases through 1900, decreases through 1920, increases through 1940, falls off sharply through 1970, then increases again (to the level of .325). Details are available from the author.

FIGURE 9 ABOUT HERE.

Before turning to a more detailed examination of the contemporary structure of the world polity, I note two aspects of its long-term evolution in the context of some of the key historical changes in the geopolitics of the period. For nearly all the structural measures, stasis, or at least trend-less fluctuation, characterizes most of the period before the late 19th century. This relative lack of change in the IGO system may reflect the conclusion of the nationalization period of state formation (Tilly 1990, p. 185), when "national interests" surpassed dynastic ones within European states. The static structure of the world polity during this period of modern state formation reinforces the link between national sovereignty and the institutionalization of the world polity (Meyer et al. 1997), and accords with the identification of the late-19th and early-20th century as the crucial period of world polity formation (Boli and Thomas 1999). But the truly transformative geopolitical moment that ripples through the structure of the world polity is the regionalization of the world polity that occurs largely after the establishment of the United Nations system. After 1945, the world polity grows more sparsely interconnected, more centralized, more structurally uneven, and more fragmented by increasingly regionalized IGOs. It resembles less and less one small world. The following three graphs depict the world polity in three images: a unipartite graph of states, a unipartite graph of IGOs, and a bipartite graph that includes both states and IGOs, using data for the year 2000.

The generally place-less, even, flat structure of the inter-state network is shown in Figure 10, which displays the valued inter-state network as a two-dimensional graph. Here, I use a spring-embedding algorithm implemented in the program NetDraw (Borgatti 2002) to position

the nodes such that connected nodes are attracted and placed close together, while disconnected nodes are repelled and placed apart from each other.[21] The spring embedder finds an arrangement of nodes that minimizes the attraction and repulsion "energy" of the network as a system (see Moody [2001] for an application). I use symbols to denote the region where each state is located: Circles for the Americas, squares for Africa, triangles pointed upward for Europe, diamonds for Asia, and triangles pointed downward for Oceania.

FIGURE 10 ABOUT HERE.

The network exhibits a notably even, decentralized, flat structure. The ties (grey lines) are so dense that they cannot be distinguished, as every state is tied to nearly every other state through their common IGO memberships. One exception is Taiwan, located on the right-hand side, or "eastern" edge, of the graph: It is positioned marginally more distant from the other nodes, due to its classification by some IGOs as part of China. Generally, though, the network is densely integrated and decentralized. Moreover, states are tied together without respect to region: In line with the relatively low correlation (.365) between the model regional network and the observed inter-state network in 2000, states from every region appear throughout the graph. For instance, states as diverse as Brunei, Latvia, and Congo (Brazzaville) appear essentially equidistant from Taiwan in the graph. Also of note is that the network neighborhood of the United States in the unipartite projection shown here in Figure 10 includes states such as Antigua, Vanuatu, Vietnam, Rwanda, and Sri Lanka – certainly not the neighborhood anticipated by realist or regionalist approaches. This closeness is substantively meaningful, however,

[21] Arranging the nodes using multidimensional scaling, or MDS (Kruskal and Wish 1978; Laumann and Guttman 1966) does not change the basic shape of the graph, but it does magnify the distance of Taiwan from the rest of the nodes. The MDS graph is available from the author by request.

because it suggests that if one ignores which IGOs tie the world polity together (and thereby ignores the bipartite structure of the network), one would get the mistaken impression that core countries like the US are very close in world-polity space to the archetypal island society of Meyer et al. The bipartite graph, which appears below as Figure 12, shows what is gained by including IGOs in the picture. Still, there is no question that Figure 10 is the densely interconnected world envisioned by world polity theory.

Figure 11 shows a graph of the inter-IGO network, drawn using the same spring embedding algorithm.[22] As above, I use symbols to denote geographic region: "+" for non-regional IGOs, circles for American IGOs, squares for African IGOs, triangles pointed upward for European IGOs, diamonds for Asian IGOs, and triangles pointed downward for Oceanic IGOs. For ease of presentation, the names of the IGOs are suppressed; a graph showing these names is available from the author upon request.

In contrast to the inter-state graph, the inter-IGO graph exhibits clear regionalization. The non-regional IGOs are located in the center of the graph, with African IGOs to the southwest, European IGOs to the north, and American and Oceanic IGOs to the southeast.[23] At first glance, the Asian IGOs appear to be spread throughout the graph, including west of center, but upon closer inspection, the IGOs to the west of center are dominated by Arab and Gulf states (e.g., the Gulf Cooperation Council, Council of Ministers of Health of Arab Gulf States, Arab Maghreb Union, and Islamic Development Bank). The gray areas that surround the center and

[22] Again, arranging the nodes using multidimensional scaling (MDS) does not change the basic structure of the graph. The one notable difference between Figure 11 and the MDS graph is that the MDS graph exhibits a more spoke-like structure with an even closer clustering of the non-regional IGOs at the hub. The MDS graph is available from the author by request.

[23] There are several structurally peripheral IGOs. Appended to the north of the graph, the three upward triangles represent the Baltic Battalion, Baltic Council, and Baltic Environmental Forum. Appended to the northeast of the graph, the two diamonds represent the International Fund for Saving the Aral Sea and the Central Asian Economic Community. Appended to the southeast, the two outermost downward triangles represent the Organization of Eastern Caribbean States, and the Eastern Caribbean Central Bank. Appended to the west, the outermost diamond represents the Arab Gulf Program for United Nations Development Organizations.

insulate each regional cluster represent greater distance among IGOs. There is substantial distance between the center and each of the three regional clusters, and between the regional clusters themselves, which verifies the results from the density and core/periphery analyses above. This regionalization could be a function of demands for regulation and institutionalization created by international trade, given that trade relations are especially dense within regions (Fligstein and Merand 2002; Fligstein and Stone Sweet 2002).

The central, non-regional IGOs include highly-visible, prominent organizations such as the United Nations, WTO, UNESCO, Interpol, World Bank, and IMF. Their visibility and influence accord with their central position within the IGO network. Another prominent IGO, the Organization for Economic Cooperation and Development (OECD), occupies a potentially strategic brokerage position (Burt 1992, 2004) between the center, the European cluster, and the American cluster (to the northeast of the center of the graph). Following Burt (1992, 2004), this suggests that the OECD may act as a "bridge" between these regions, and thus more effectively diffuse policy scripts among them. While the influence of the OECD's structural position on its ability to diffuse policy scripts is of course somewhat speculative, this speculation provides an example of the kind of hypotheses that can be generated and tested by conceptualizing and observing the world polity as a network. Viewing the world polity as a network also generates specific hypotheses concerning how the institutional environment created by international organizations shapes other organizations, such as transnational social movement organizations (Smith 2005; Smith and Wiest 2005).

FIGURE 11 ABOUT HERE.

Figure 12 shows the bipartite graph, which includes both IGOs and states in one depiction of the world-polity network. The graph illustrates how the regional IGOs add structure to the flat state-by-state network shown in Figure 10: The world polity now shows a clearly regionalized pattern, with especially strong regional clustering in Africa and Europe and blurrier boundaries between the Americas and Asia. The regional IGOs, scattered around the edge of the graph, do not share direct connections through member states (although, as noted above, there are of course other relations among IGOs that may exhibit different patterns from those shown here). Two additional findings stand out. First, structurally at least, states may be subject to potentially contradictory pressures from regional and global IGOs, which highlights the importance of disaggregating the IGO field. Second, again because of their structural positions, states can well be "transmitters" as well as "receivers" of policy scripts vis-à-vis IGOs, which highlights the importance of further research on emergence, diffusion, mutation, and adoption of policy scripts.

FIGURE 12 ABOUT HERE.

DISCUSSION

This paper examines the evolution of the social structure of the world polity since 1820, and finds that while states have become densely interconnected through common memberships in intergovernmental organizations (IGOs), the field of IGOs has become less densely interconnected, more centralized, less cohesive, and more uneven in its structure. This seemingly contradictory set of findings results from a crucial distinction between the types of ties that bind the world polity. On the one hand, global and inclusive organizations such as the

United Nations create common ties among (almost) all states; these universalistic organizations are ideal-typical for world polity theory. On the other hand, regional and exclusive organizations such as the European Union and Association of Southeast Asian Nations create common ties among only some states; these particularistic organizations are divided by their non-overlapping membership. The simultaneous growth of global, inclusive ties and regional, exclusive ties has produced a world polity where states are increasingly interconnected through common membership in global organizations, but the field of international organizations is increasingly fragmented. States are coming together. Organizations are coming apart. In sum, the world polity shows no evidence of flattening (cf. Friedman 2006:460). Nor is it becoming a "small world." Instead, the world polity more closely resembles "a world of regions" (Katzenstein 2005).

This heterogeneity, fragmentation, and disintegration is at odds with world polity theory's understanding of world polity structure (Boli and Thomas 1997; Meyer et al. 1997), but it is consistent with the global neo-realist approach to the world polity. World polity theory imagines a world where global organizations such as the United Nations create increasingly dense connections among international organizations through shared member states, and among states through common memberships in international organizations. The image of the social structure created by these connections is "a rapidly growing web of global links that envelop the world without regard for local topography and conditions" (Boli et al. 1999, p. 77). This web is an increasingly even, dense field of association. Conversely, the global neo-realist approach imagines a world where international organizations are created by states in pursuit of their material and symbolic interests (Boswell and Chase-Dunn 2000; Jacobson 1979; Jacobson et al. 1986; Waltz 1979). The image of the social structure created by this conflict-driven process is

an uneven, fragmented field of association. The network approach to understanding world polity ties developed here is one way the debate over conflict within the world polity and the relative roles of international and domestic factors in political change could be advanced (Beckfield 2003; Buttel 2000). That is, a state's position in the network is a better operationalization of world polity embeddedness.

Returning to the global structure of the network, that the social structure of the world polity has evolved toward sparseness and centralization is especially intriguing because it contrasts with the finding that the international trade network grew increasingly dense and de-centralized between 1959 and 1996 (Kim and Shin 2002).[24] This contrast suggests that political globalization and economic globalization may not necessarily be reinforcing processes (cf. Boswell and Chase-Dunn 2000), and it supports Guillén's (2001a, p. 255) call for more research on the relations among the various dimensions of globalization. Ultimately, the potential correspondence between political globalization and economic globalization is an open empirical question. It is merely suggestive that the global structures of the world polity and international trade have evolved somewhat differently in the postwar period, except that both suggest evidence of substantial regionalization.

In addition to the problems of political and economic globalization, the fragmented social structure of the world polity also carries implications for three key debates in the globalization literature.[25] First, there is debate over the very existence of globalization, with Held et al. (1999), Ohmae (1990), and Reich (1991) arguing for extensive or transformative globalization, while Hirst and Thompson (1996), Wade (1996), and Fligstein and Merand (2002) arguing that

[24] Kim and Shin (2002) also find increased regionalization of trade, which they interpret as evidence of the symbiosis of globalization and regionalization.
[25] Given space constraints, I recapitulate only some of the key details, but I refer the reader to the reviews of these and other debates by Brady, Beckfield, and Zhao (2007), Guillén (2001a) and Ó Riain (2000).

"globalization" is better characterized as a process of internationalization or even Europeanization, given its geographical unevenness. This paper contributes to this debate, most of which remains centered on the economic dimension, with evidence that political ties among states and international organizations have become less dense overall, and are substantially structured by geography. This geographical structuring – regionalization – could also be interpreted as "glocalization" (Robertson 1995), as regional forms of international organization spread globally and as regional IGOs model themselves on other IGOs in far-flung regions.

Second, there is controversy over whether globalization causes increasing isomorphism among states, with many arguing for the maintenance of international difference in the face of global institutional pressures for isomorphism (Campbell 2004; Garrett 1998; Guillén 2001b; Hall and Soskice 2001). The fragmented structure of the world polity suggests that these institutional pressures may be channeled through regional polities, which might produce local convergence and global divergence. Third, there is disagreement over whether globalization undermines the sovereignty of the nation-state. Albrow (1997), Evans (1997), and Waters (1995), for instance, note that international organizations and associated neoliberal economic policies favor multinational capital at the expense of the state, while others see globalization as creating demands for new forms of territoriality, sovereignty, and regulation that may reinforce the state (Boswell and Chase-Dunn 2000; Ó Riain 2001; Sassen 1996). Evidence of growing regionalization in the world polity supports the latter perspective, as it may be that states assert and transform sovereignty through the construction of regional polities such as the European Union to forward their interests (Moravcsik 1998).

The findings presented in this paper address the social structure of the world polity, and although they have implications for the content of world culture, they do not speak directly to

that content. A potentially fruitful direction for future research would be to examine the content of global scripts in context of the structure of the world polity, given the implications of social structures for ideational structures (Friedkin 1993, 2001; Martin 2002; Moody 2004). For instance, if policy scripts are generated in international organizations, it is reasonable to expect less variation in scripts within clusters of densely-interconnected IGOs than between these clusters. The network analysis reported above suggests a strategic comparison of the OECD's policy scripts with those of the American, European, and global organizations that it bridges. The analysis also highlights IGOs in the Middle Eastern region as especially distant from the center of the world polity, making these organizations another promising area for the exploration of script content. Information on the social structure of the world polity could be combined with data on the content of specific scripts to explore the relationship between the timing of network formation and diffusion (Moody 2002). Given the argument that it is the strength of ties to the world polity that facilitates diffusion, policies should diffuse easiest in and through the most densely integrated regions. Conversely, it could be that world scripts are reinforced, or at a minimum translated, through densely interconnected regional organizations.

A further limitation of the scope of this paper is that international nongovernmental organizations (INGOs) are not examined. As noted above, IGOs were selected because previous work finds that inequality among states in the number of IGO memberships declined more rapidly, and to a much lower level, than inequality in the number of INGO memberships (Beckfield 2003). In addition to comparing the structure of the IGO network to the INGO network, future work should also examine the effects of network position. Indeed, research along these lines is already beginning to appear (Hafner-Burton and Montgomery 2006; Ingram et al. 2005), suggesting that the social structure of the world polity shapes the structure of

international trade and international conflict. Thus, the growing fragmentation and regionalization of the world polity carry important disintegrative implications for the global political economy, if political globalization "produces waves of conformity with worldwide models" (Meyer 2007). The results shown in this paper strongly imply a regionalization in structure of the world polity that should, in turn, produce regionalized waves of conformity with no implications for truly worldwide conformity. The structure of the world polity, far from producing a homogeneous world, should instead produce a world of "local convergence and global polarization" (Axelrod 1997).

Still, the question remains: How can the social structure of the world polity be reconciled with the substantial body of research showing that embeddedness in the world polity correlates with the adoption of common policies and practices across a wide range of domains? Restated, how are convergent policy scripts generated and diffused by fragmented international organizations? One possibility is that accounting for the social structure of the world polity in institutionalist models of policy diffusion may reveal that the associations between world-polity embeddedness and policy adoption have actually been understated. Ties to global organizations like the UN may have stronger effects than ties to other organizations, which would mean that including all international organizations in a measure of world polity embeddedness would bias the association between embeddedness and policy adoption downward. This conjecture could be assessed by disaggregating the common measures of world polity embeddedness.

A second possibility is that the content of world culture is increasingly independent from the structure of the world polity: Models meant to apply everywhere in the world may float

freely, detached from organizational origins (Strang and Meyer 1993).[26] In this second scenario, it matters less that states are embedded in networks of international organizations, and more that these international organizations suggest the presence of a global level of social reality (Boli and Thomas 1997). The effects of such a strong but diffuse world culture may be more challenging to demonstrate. A third possibility is that memberships in international organizations and the adoption of largely progressive policies in the domains examined by world-polity research may be driven by an omitted, difficult-to-measure factor, such as national or regional ideology, international power imbalances, or domestic political factors. This research could incorporate insights on the interaction of international norms with national contexts (Fourcade-Gourinchas and Babb 2002). Such work would advance the critical debate over whether globalization produces a distinctly global culture, or reproduces existing differences (Guillén 2001a). If the culture of the world polity reflects its social structure, this study of the evolution of the social structure of the world polity since 1820 suggests substantial and growing difference, centralization, fragmentation, and disintegration. The world (polity) is not flat.

[26] This distinction between specific agents and organizations that generate and enforce norms, compared to more diffuse cognitive mechanisms of isomorphism, appears in the general debate between "old" and "new" institutionalisms (Hirsch 1997; Scott 1995; Stinchcombe 1997).

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Figure 1. Intergovernmental Organizations (IGOs) and States in the World Polity

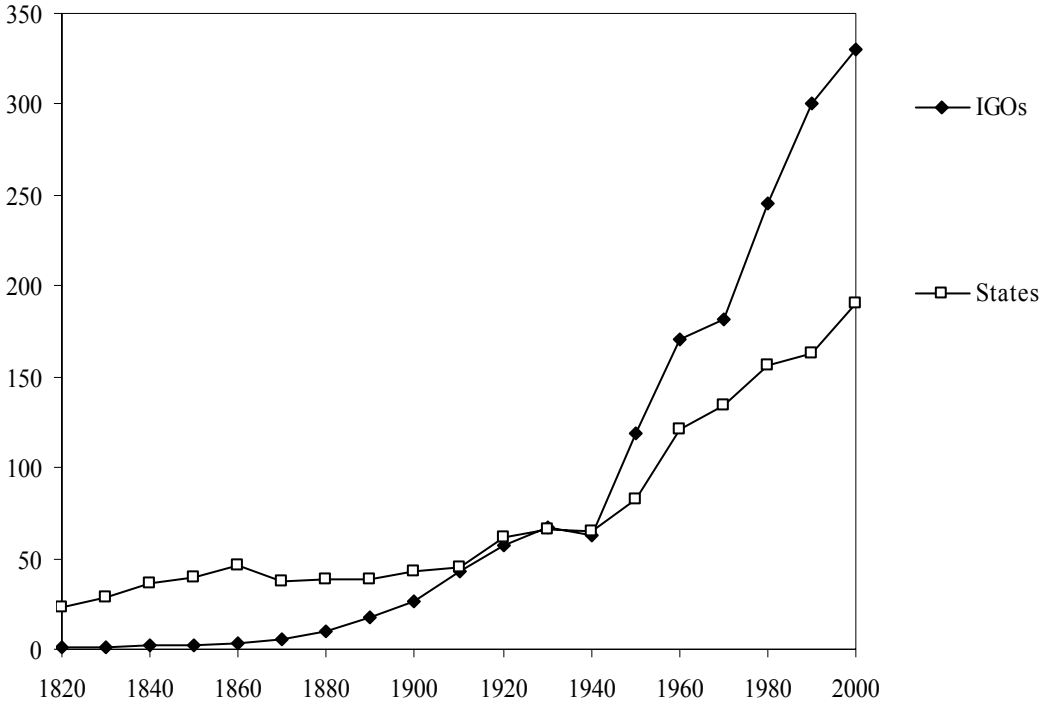


Figure 2. Standard Deviation, Mean, and Coefficient of Variation in IGO Memberships

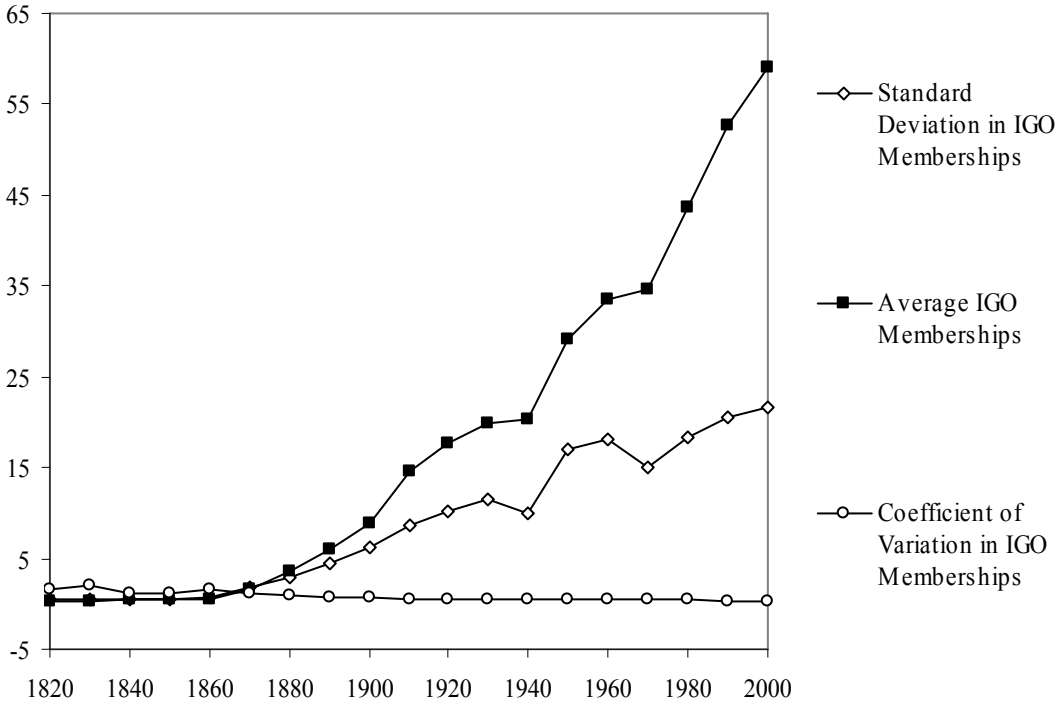


Figure 3. Density of the Bipartite, IGO-by-IGO, and State-by-State Graphs

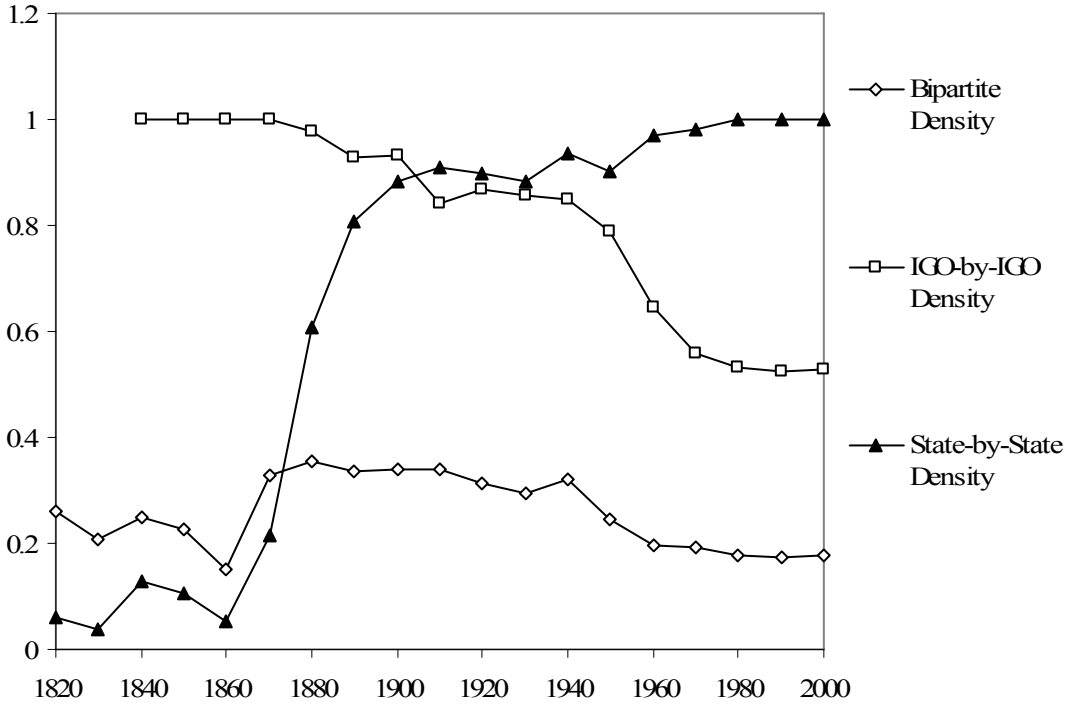


Figure 4. Centralization in the IGO and Interstate Networks

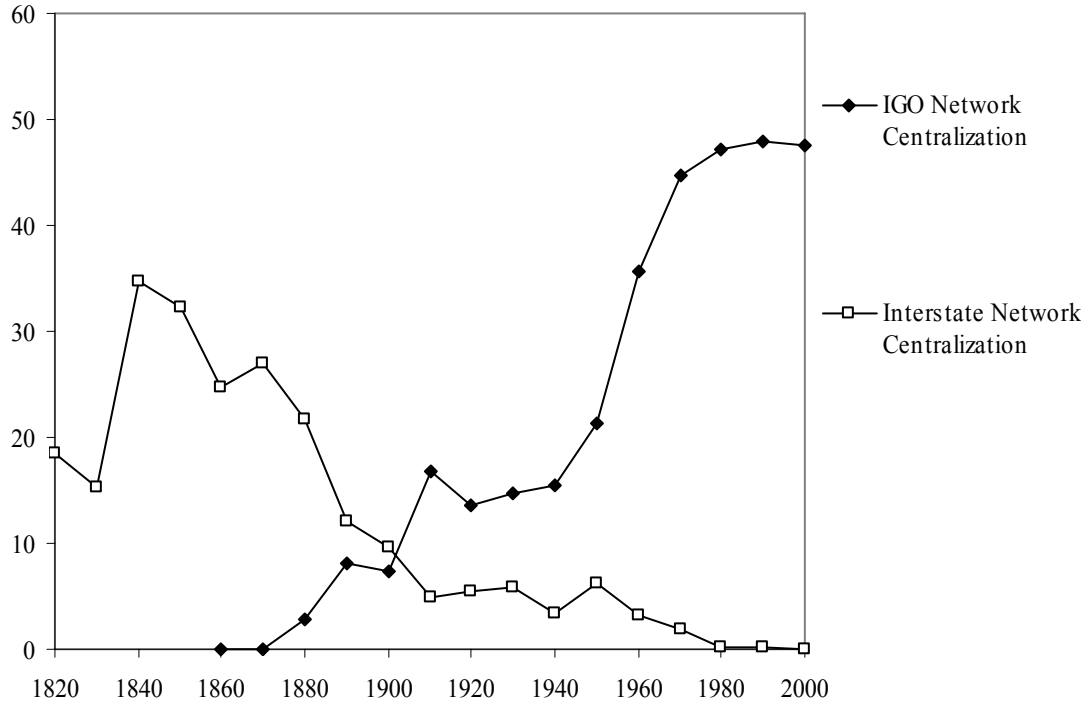


Figure 5. Heterogeneity in Coreness of States

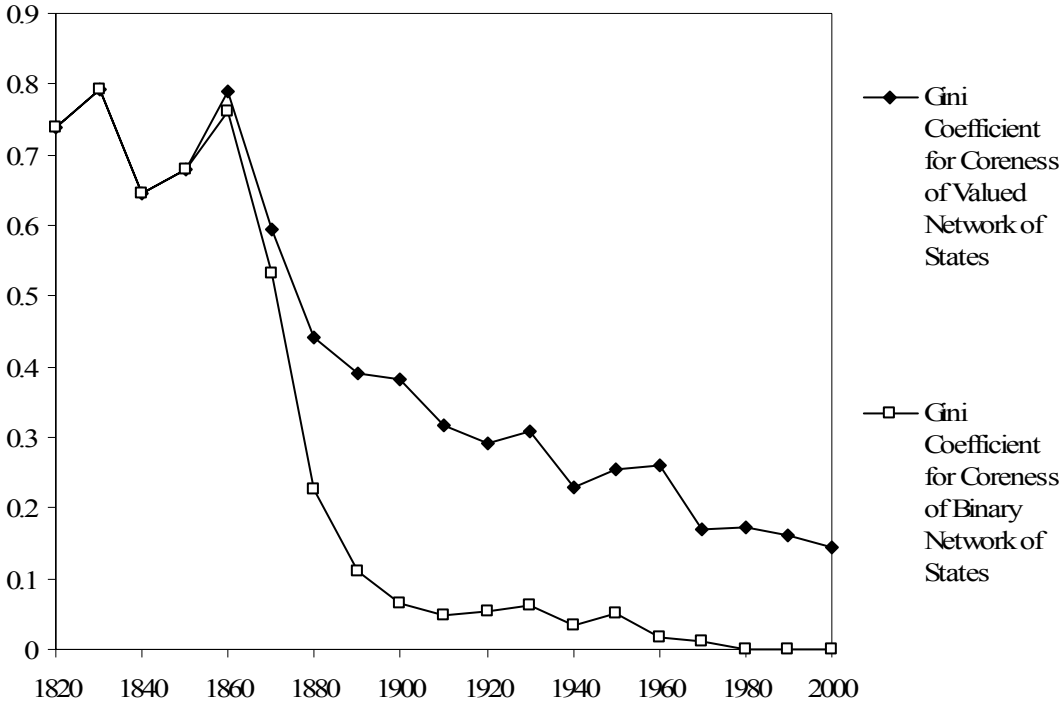


Figure 6. Heterogeneity in Coreness of IGOs

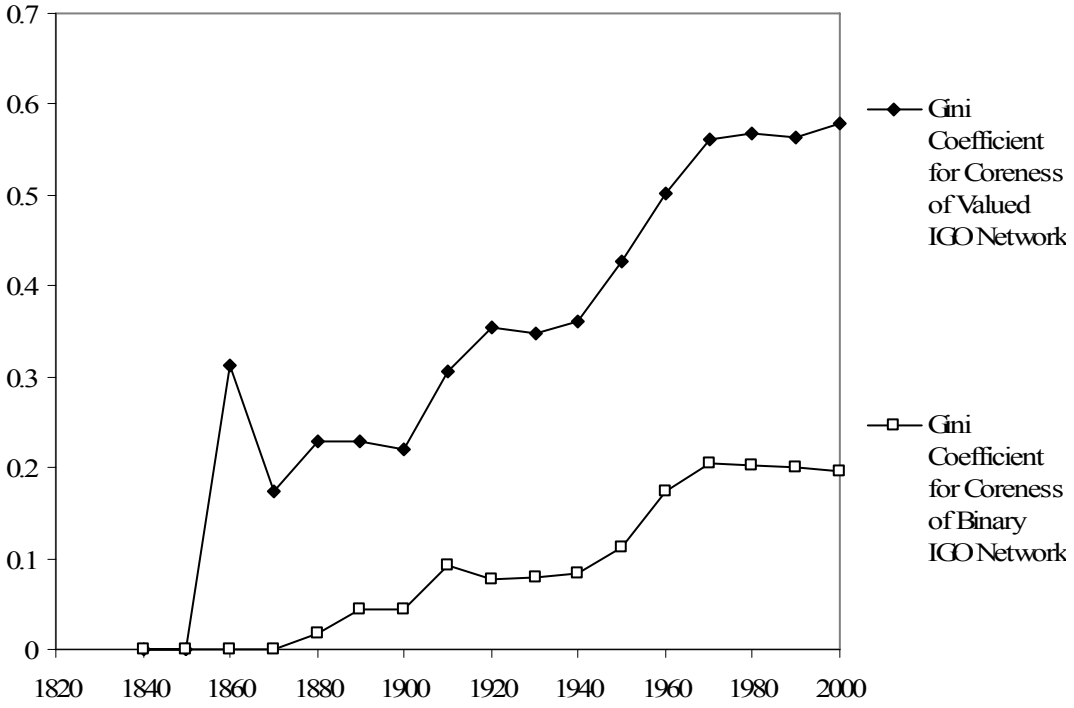


Figure 7. A Cohesive World Polity? Average Path Length, Diameter, and Connectivity

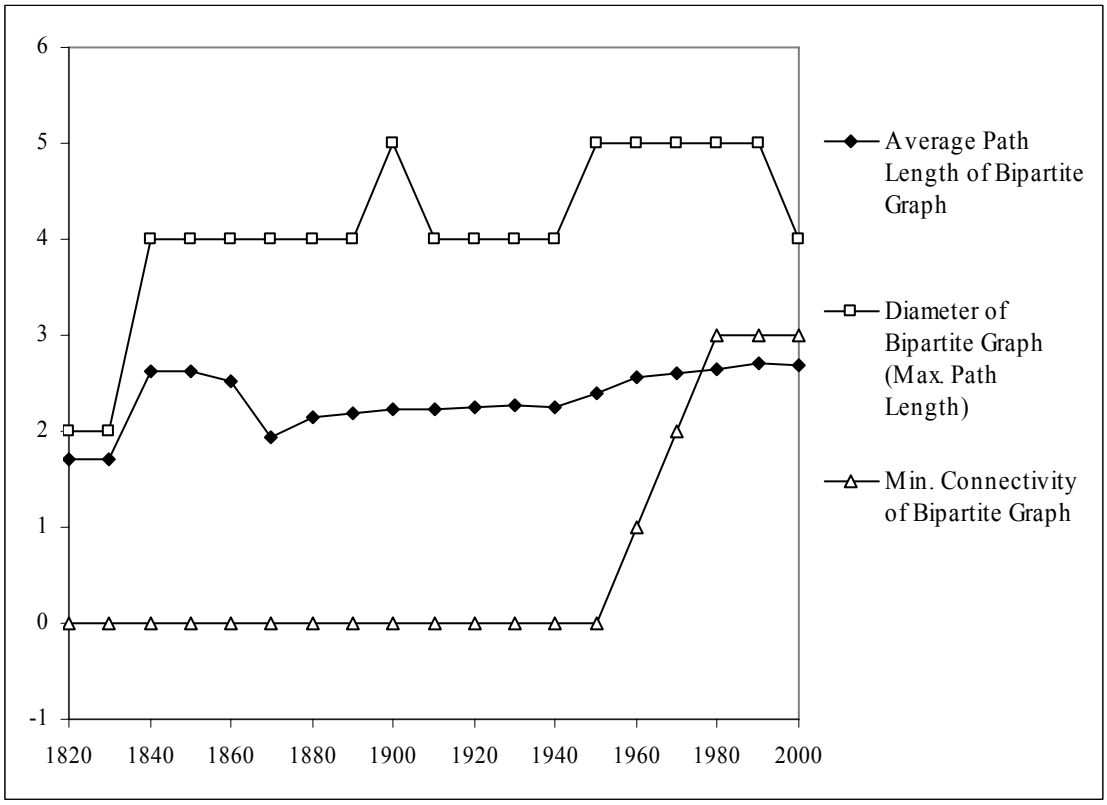


Figure 8. A Small World Polity? Clustering Ratio, Path Length Ratio, and Small-World Q

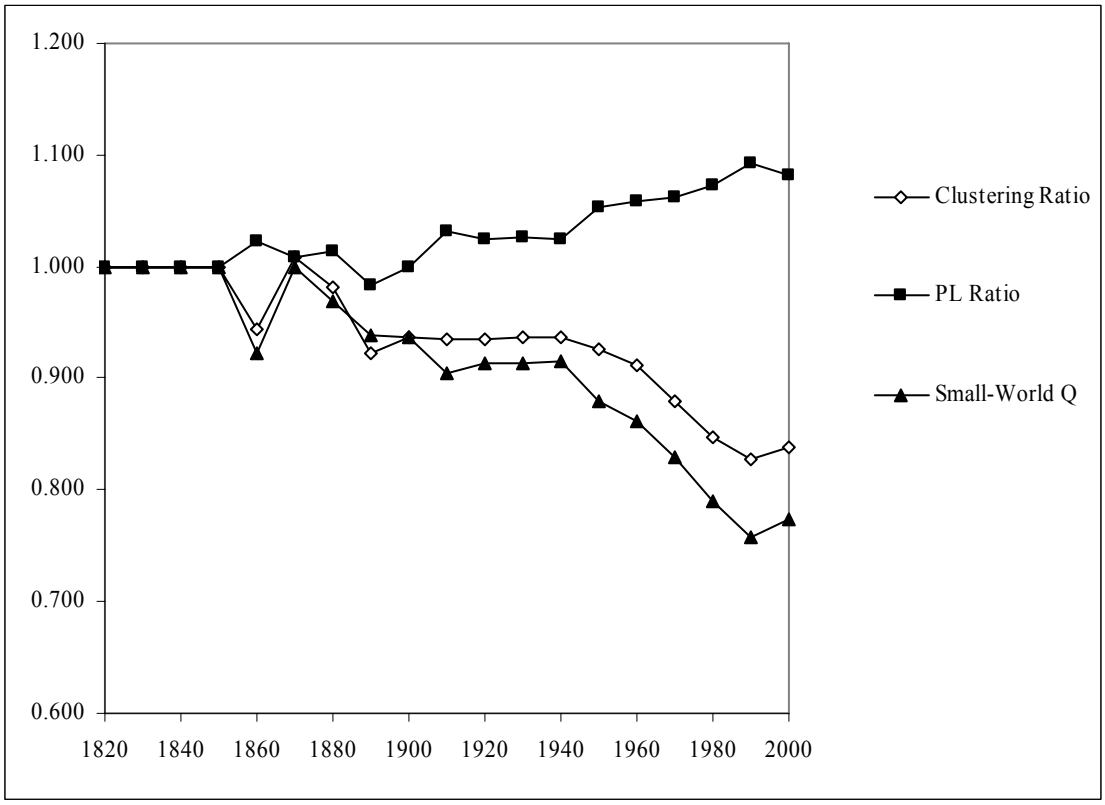


Figure 9. Correlations between Observed Networks and Regional Model Networks

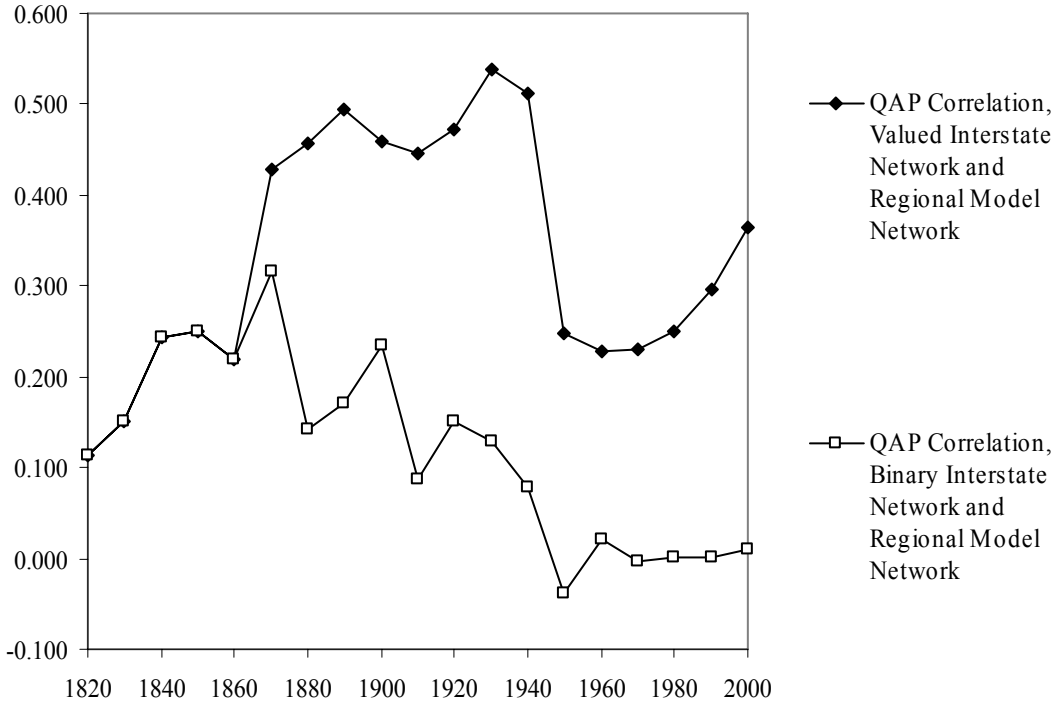
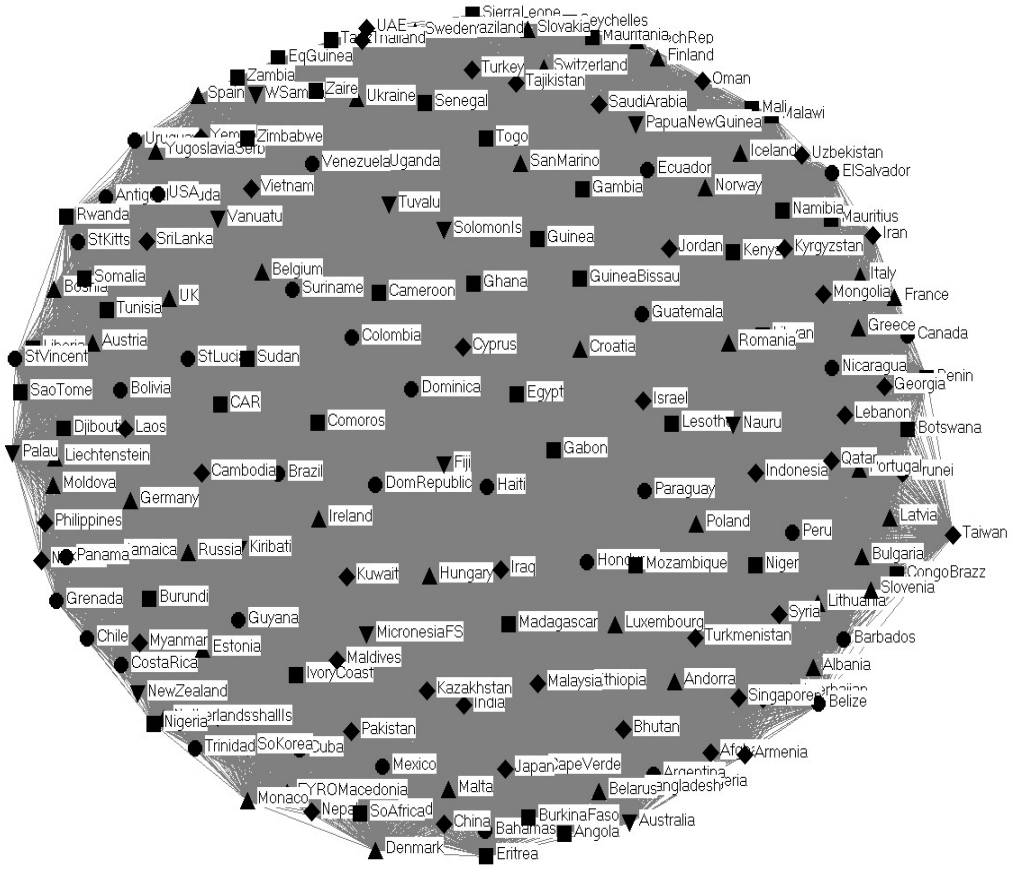


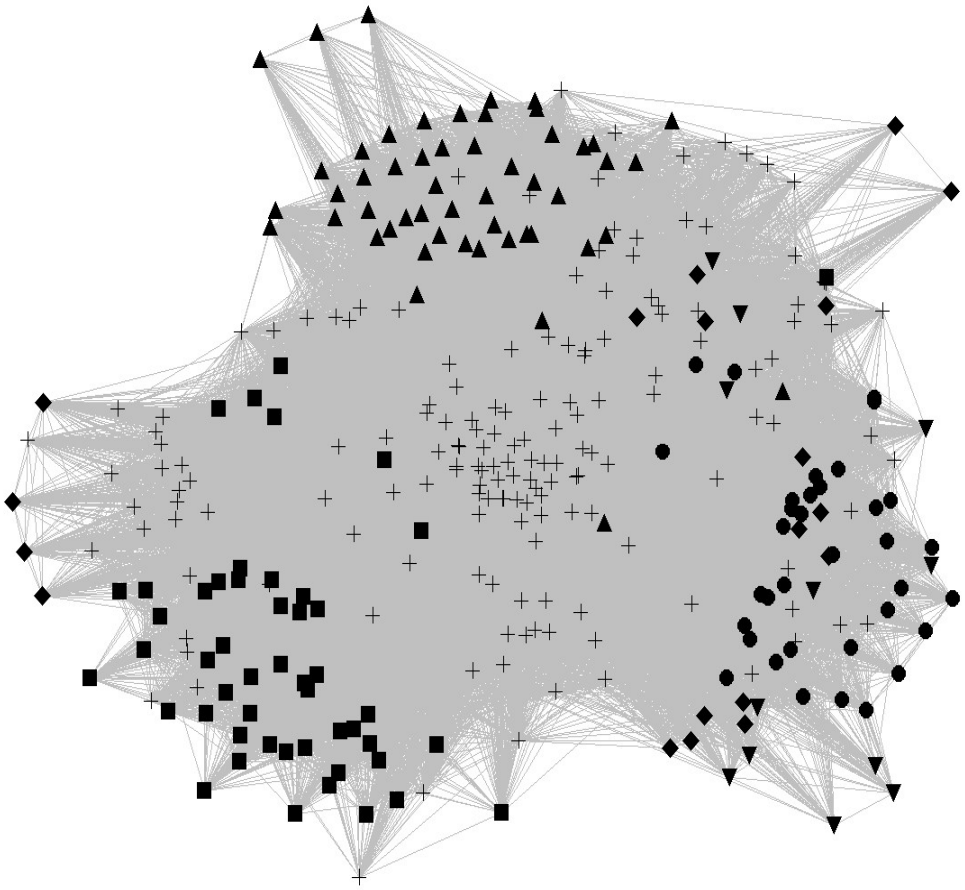
Figure 10. The Network of States Formed by Common IGO Memberships



Notes: Positions based on spring embedding algorithm (distance = geodesic[2]).
Symbols denote geographic region.

- ● = Americas
- ■ = Africa
- ▲ = Europe
- ♦ = Asia
- ▼ = Oceania

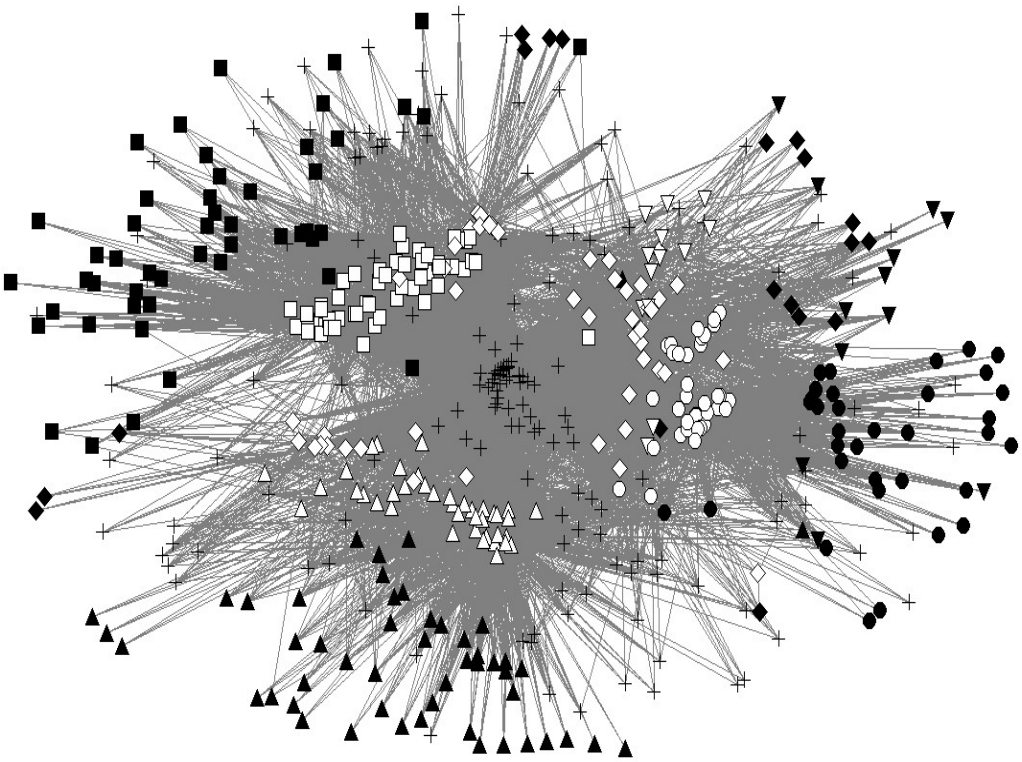
Figure 11. The Network of IGOs Formed by Shared Member States



Notes: Positions based on spring embedding algorithm (distance = geodesic[2]).
Symbols denote geographic region.

+ = Non-regional
● = Americas
■ = Africa
▲ = Europe
♦ = Asia
▼ = Oceania

Figure 12. Bipartite Graph of the World Polity



Notes: Positions based on spring embedding algorithm (distance = geodesic[2]).
Colors denote node type:
Black = IGOs
White = States
Symbols denote geographic region:
+ = Non-regional IGOs (clustered in center of graph)
● = Americas
■ = Africa
▲ = Europe
♦ = Asia
▼ = Oceania