

**Shifting Alliances in International Organizations:
A social networks analysis of co-sponsorship of UN GA resolutions, 1976-2012**

Eugene Lee ¹
Pieter E. Stek²

While general belief is that the military alliances are stable and rigid, the authors argue that the states are far more flexible in their behavior and often act against their alliances. This paper looks at states' behavior in the UN GA and looks how it is reflected in participation in military alliances during three periods of history since 1976 to this day. The authors illustrate the need to consider the network representation of co-sponsoring groups in General Assembly votes. They find significant support for their argument, indicating that social aspects can be extended beyond alliances. An application of social network analysis shows some unexpected affiliations in UN GA. If the UN GA is the "true" nature of these countries' alliance strategies, then it might suggest some significant defections and interesting association.

Keywords: military alliances, communal networks, UN GA co-sponsorship voting, social network analysis

Introduction

Although the concept of alliance is a major feature and a pillar in structural realism, the relationships between the states in these alliances often understood according to the perspective's premises (Holsti et al. 1973, Kann 1976, Rothstein 1968, Singer and Small 1966, Waltz 1979). As states behave rationally by forming strategic alliances, the structure of an alliance generally is perceived to be as rigid. And a common belief is that the shifts in the alliances do not happen often, as the states are not willing to take up the occurring costs from these shifts easily. The expectation is, that in international organizations, there would be a certain cohesion in the behavior of a group of allied states and the stronger state ("a pole") would enjoy a relative freedom, as it is structurally predetermined (Walt 2009).

First, in alliances, according to Scott (1991: 4), "structures are built from relations", so the

¹ Sungkyunkwan University, South Korea

² Delft University of Technology, Netherland

relational aspects of these alliances, it is argued, play an important role. Based on this view, we propose examining alliances with the focus on the means of connections between the states. The importance of these connections has already been noted in international relations literature (Embairbayer and Goodwin 1994, Jackson and Nexon 1999,) but remained rather limited. It is here where this study aims to make its contribution.

Second, the argument is being developed on the concept of an institutional community, or a group of states with relatively stable pattern of cohesive voting as a group. Here, the major strands of realism are juxtaposed with different theoretical approach applied in this paper, which is based on English School of international relations (Adler and Barnett 2002, Bull 1977) in the attempt to explain states behavior as a networked group. This framework emphasizes that the states do their best to keep alliances malleable, which is counted as irregular. The data, reflecting states behavior in support (co-sponsorship) for resolutions in United Nations General Assembly (UN GA), illustrates these irregularities. As a result, the patterns of the voting in three periods between 1976 and 2013 seem to go against the postulated beliefs – the states do shift alliances and their behavior does go against the interests of the alliances. This paper aims to explain when these shifts occur and under what conditions.

We also propose a model of micro defection, which explains behavior where states in their actions may seem to be in alliance, but still may be or act against it. It doesn't mean that the alliance is breached, but utilizing a margin of trust, they may use it to advance its interests versus other states and inadvertently go against the clauses of the alliance without leaving it.

The paper is structured as follows. The next chapter summarizes the literature and presents major concepts and premises for our model that analyses the shifts in the alliance. The third chapter outlines our research design which relies on measuring and defining these communities using the network-analytic tool design (Wasserman and Faust 1994). In the following part we present the empirical results produced by applying network analysis which strongly supports our argument. The fourth, final chapter presents the discussion of findings and the implications arising as a result of this study.

Alliances as networks vs. Institutional communities

Our understanding of alliances today extends far beyond the classics (Holsti et al. 1973, Liska 1962, Walt 1987). One of the main premises of structural realism is that the states are rational utility-maximizers seeking to tweak rules and behavior in accordance with their national interests (Yong 1986: 118-119). How they decide to form and maintain an alliance depends on number of variables, starting from the perception of threat and power to the probability of miscommunication (Long et al. 2007). While building on this body of literature by explaining the difference between states' relations in alliances and states' relations in international organizations the goal set here is to bridge it with other body of research that focuses on the roles of communities and other indirect ties in international relations.

There is a rising interest in research on institutional communities. Most of the works focus on organizations as venues for communication and development of organizational communities (Cordery et al. 2014, Gilpin et al. 2013, Lee et al. 2011, Kirkman et al. 2013). A small strand of works looks at the changes in the UN voting. Dreher and Jensen (2013) look at the dynamics of

state voting. Dreher and Vreeland (2013) examine the influence of the UN SC voting patterns on other institutional community, namely, the World Bank. Smith (2014) argues that the change in the UN voting is likely being caused by a leadership turnover in the member-country. A smaller body of work that directly examines the UN GA as a group of communities. Macon et al. (2012) study the community structure of networks representing voting on resolutions in the United Nations General Assembly. Holcombe and Sobel (1996) argue that that United Nations voting is stable because the states are members of larger ideological blocs. Recent work by Ferdinand (2014) finds an increasing UN voting cohesion between states of Asia Pacific as a result of development of the coherent regional identity. The networked aspects of foreign policy of formations between countries are also been investigated (Flemes 2013).

Analyzing and judging the UN voting patterns by ideological or only regional association oversimplifies the complexity of the intricacies of a state identity and importance of institutional communities, as a result, loses sight of the ways in which state behaves even among states that are in alliance with each other. We argue that state identity creates significant costs of conflict in addition to those created by the levels of other connections between states, such as regional cooperation, trade and etc. In addition, the networked effects of interstate connections are heightened within groups of states we call “co-sponsorship communities.” We define a co-sponsorship community as a group of states that vote cohesively as a group as a result of networked structure of such community. We develop this argument in two parts. First, we explain how thinking of communal relationships not as allied independent bilateral or multilateral affiliation but as a complex network allows us to see how it affects co-sponsorship. Second, we explain why the mechanisms by which networked community allows states switch co-sponsorship communities by investigating the relationship between co-sponsorship communities and networks.

How UN voting communities are built?

According to Katzenstein (1996: 5) norms ‘play two particular roles within international organizations and regional mechanisms’. Norms prescribe the proper enactment of an already defined identity, thus having ‘regulative’ effects that specify standards of proper behavior. This means that the regulative effects of norms contribute to constraining the activities of the members. The norms that are inbuilt in the UN GA co-sponsorship practices (Mower 1962: 662), to a varying degree, have been utilized in the alliances. In particular, such norms as *trust* not fixed according to their definition and functions, but rather open to be structured and restructured in the member states’ own intent and interest. As Katzenstein (1996: 5) continues, norms not only regulate behavior, but they also constitute new interests and identities. According to Kegley and Raymond (1990), the norm of *trust* plays a crucial role in relationships between the states. Therefore, we argue that the norm of trust viewed in the constitutive context is a factor that sets limits to the state action. Also, the existing stability of an alliance is the distance between the members’ level of trust. That is, the effect of a given party on an alliance’s strength depends on the trust in the coalition; the more trust the coalition, the less likely its action is to deviate from its normative behavior. Much richer social environment in the UN GA creates different condition for the network interaction. On that Chadwick (2014: 84) points out that such interaction depends on ‘a number of factors: (1) degree of issue interest, (2) national policy (whether close enough to majority to permit negotiation), (3) national ties outside the organization, (4) working relationships of individuals in

different delegations, and (5) individual delegate characteristics (perception of parliamentary process, knowledge of issues, personality)'. Therefore, we would argue, states may temporarily defect from a given alliance to the extent that (a) the alliance's integrity is less similar to the other state's trust, and (b) there exist other networks that offer a state a higher expected utility.

As a result of socialization in the international organization the states create a network. We apply *social network analysis* (SNA) methodology in order to shed more light on the dynamics of states behavior in forming alliances in UN GA resolution co-sponsorship. The SNA is relatively new methodology that offers a number of benefits (Maoz 2012: 247). With growing trend, different variations of SNA been introduced to the fields of social sciences and the field of international relations in particular (Cranmer et al. 2012, Kim, Lee and Feiock 2011, Schich et al. 2014, Cao 2012), while linking the networked understanding of relations between the states and alliances offered through the Network Theory in alliance formation (Barbasi and Frangos 2014, Schnegg and Stauffer 2007). Following the suggestion of Li and Thompson (1972) on clustering in the alliances, the same logic is applied to our understanding of the shifts in the alliances. That the UN GA is reflective of international opinion, and that the alliances within the UN GA are therefore more normative. It is "talk" and not necessarily "action". So these are alliances of "talk".

We argue that this difference between the two types of networks, - alliances and co-sponsorship, - is crucial. The extent to which national interests in military alliances affects state behavior in ways that create opportunity costs and negative externalities may also be affected by other factors within a particular group of states.

A significant limitation of the existing literature is its lack of comparison between the military alliances and international organizations and almost exclusive attention to interstate relations in either alliances or international organizations. It likely happens due to a general assumption that state's behavior in alliance is mirrored in the behavior in international organizations. (Mansfield and Pevehouse 2000).

We utilize SNA to trace the trend and pattern in which the alliance network restructures itself to reflect three points in world politics: post-oil shocks, the collapse of the Soviet Union and the present day. A key advantage of modeling these periods of transition separately is that we are then able to compare the driving forces of alliance formation and dissolution across the periods. This approach not only allows us to evaluate our argument, but also allows for period-to-period heterogeneity in parameter values.

Methodology

Data Sources

To study alliances in international organizations the co-sponsorship of GA resolution is used as the main indicator. Whereas co-sponsorship for a GA resolution can be regarded as an indicator of countries maintaining a common political position (Voeten 2013: 54–66), co-sponsorship requires active participation by countries in the drafting process and therefore represents a much deeper commitment akin to being in an alliance, rather than merely maintaining friendly relations. However, GA resolutions are not legally binding and are only a recommendation, as defined in Chapter 14 of the UN Charter. Yet this recommendation, especially when adopted by a significant majority of UN member states, provides a political platform to advance a shared goal, be it in the

area of peace and security (Arend and Beck 2014), or public health (Mamudu, Yang, and Novotny 2011). The co-sponsorship of resolutions is therefore a significant action within the international political system.

Bibliographic information about the co-submission of draft resolutions at the GA is extracted from the UN Bibliographic Information System (UNBISnet), which is an online database maintained by the Dag Hammarskjöld Library at UN headquarters in New York, NY, USA. It can be accessed at <http://unbisnet.un.org>. Currently, UNBISnet lists information about draft resolutions starting with the 31st session of the GA (1976-1977) until the most recently completed 67th GA session (2012-2013). Therefore, data is available for the period from late 1976 to early 2013 (approx. 37 years). During these period countries submitted 1,481 draft resolutions at the GA, excluding revisions and amendments.

To extract the data 'UN Doc. Symbol / Sales Nos.' were searched for the phrase "A/31/L", where the number is the GA session, i.e. "A/31/L" refers to the 31st GA session. This was done for sessions 31 through 67. Excluded were the phrases "Rev" and "Add", referring to revisions and addenda. Only the '(B02) resolutions/decisions (UN) - draft' type of material was searched. This search yielded draft resolutions submitted by countries or by other UN bodies. Only the resolutions submitted by country are included in the analysis.

The formatting of the raw data was automated using simple macros programmed in BASIC and run in LibreOffice Calc, an open source spreadsheet program. Some of the problems encountered were the misspelling of country names, non-standardized use of country names and countries changing their name. To solve this problem, all countries were codified using ISO 3166 codes. ISO 3166 codes are created by the International Standards Organization (ISO) and in consultation with a number of UN agencies. They can therefore be considered authoritative with respect to the UN. During the study period some countries changed their names but kept their codes, e.g. Zaire became the Democratic Republic of the Congo, Upper Volta became Burkina Faso. Other countries stopped existing and so their codes stopped being used. These countries include the Soviet Union, Czechoslovakia and Yugoslavia. New countries were also created, such as Russia, Serbia, Kazakhstan and Timor-Leste, and these countries received new codes.

In addition to countries, some resolutions were submitted by groups of countries such as the Group of 77, the Group of African States, the Non-Aligned Movement and the Organization of the Islamic Conference. These groups are considered independent actors because they represent voting blocks that are mobilized on particular issues, while on other issues their members may act more independently. If these groups are separated out into their constituent countries, independent actions by member countries become less visible. A number of group members maintain extensive alliances with non-group members and minimal alliances with group members, for example: many Asian and Islamic countries do not maintain a strong alliance with African countries, which form the bulk of Group of 77 memberships and who do maintain alliances with each other.

Upon codifying the resolution sponsors, a co-occurrence analysis is carried out using the free TI co-word analysis software developed by Leydesdorff (Leydesdorff 2004) . This program generates a normalized co-occurrence matrix which is further analyzed using the free network analysis software Pajek developed by Batagelj (Nooy, Mrvar, and Batagelj 2005).

Some resolutions, for example those admitting a new member state, or reaffirming a commitment to some of the basic principles of the UN, have very broad co-sponsorship and are

therefore less interesting for the present analysis. We therefore remove all lines with a value < 0.5 , thus removing all links that co-sponsor less than half of the maximum co-sponsorship links. Note that the removal of the links does not affect the identification of clusters.

Clusters are identified using the VOS Clustering function (multi-level coarsing + single refinement) in Pajek (Batagelj and Mrvar 1999) with standard starting and iteration parameters. The network layout is generated using the Kamada-Kawai algorithm (separate components) (Kamada and Kawai 1988). The Social Network Analysis is a widely used technique for evaluating links between subjects in social context. The Network analysis in IR sees the relationships between the states as a mode of organization (Hafner-Burton et al. 2009).

Analysis

The analysis is divided into three time periods. Our rationale for the division is in following two reasons. First, it is easier to detect changes in the data through comparing between several sets of it (three in our case). And second reason as the breakpoints between the periods roughly coincide with three major historical events that have largely influenced international politics: the oil shock of 1972 (Ajami 1993, Braun and Raddatz 2009), the collapse of the Soviet Union (or, the end of the Cold War) (Janos 2001, Koslowski and Kratochwil 1994) and the terrorist attacks on New York in September 11, 2001 (Cottey 2001, Mastanduno 2005). These events are not just important in themselves, they have defined major shifts in world politics. Period I lasts from 1976 to 1990 and covers the last decade and a half of the Cold War era. Period II lasts from 1990 to 2001 and covers an interim period following the end of the Cold War which left the US as the world's only super power. This period is perhaps best described as *Pax Americana* (Brutents 2000, Nye 1990). Period III is the current period and starts from the September 11th, 2001 terrorist attacks in New York City and Washington DC and subsequent US-led wars in Afghanistan and Iraq. These events sparked considerable opposition to US foreign policy around the world and the formation of new international alliances.

The changes in the alliance networks during the three periods are summarized in table 1. The network statistics clearly indicate that the structure of the alliance networks in Period I and Period III are quite similar. Compared to Period II the other two networks are of lower density (0.0956 and 0.0862 respectively), have higher *betweenness centrality* (0.2168 and 0.3280 respectively), and have relatively strong clustering or sub-group formation (VOS Quality of 0.8959 and 0.9135 respectively). From the perspective of social network analysis, networks of lower density and with a lower average degree tend to function less efficiently, i.e. there may be lower levels of trust and it may be more difficult to reach a consensus (Wasserman and Faust 1994). However, a higher betweenness centrality, despite lower network density, suggests that vertices (countries) are connected to each other through a small number of bridging vertices (countries). This is also confirmed by the higher VOS Quality during Period I and III, which is indicative of stronger sub-groups. The existence of strong sub-groups is typically a situation that benefits bridging vertices, as they hold a strategic position as brokers between sub-groups.

Table 1. Statistical summary of networks in periods I, II and III.

Period	Vertices (connected)	Arcs	Density	Betweenness Centrality	VOS Quality
I (1976–1990)	151 (136)	2180	0.0956	0.2168	0.8959
II (1990–2001)	183 (177)	4002	0.1195	0.0968	0.8409
III (2001–2013)	191 (175)	3144	0.0862	0.3280	0.9135

Sub-groups can essentially be considered as communities: relatively strong internal relations within the subgroup suggest that political consensus is frequently found (Wasserman & Faust 1994). If sub-groups are close together, i.e. they are relatively interconnected, then the sub-groups may share certain political interests, or a number of their members' interest regularly aligns with the other sub-group. It is likely that bridging countries, i.e. those that connect sub-groups, play an important role in creating broad-based consensus and that they act as brokers between sub-groups.

In this analysis the focus is therefore on sub-groups' membership and their ties to other sub-groups and bridging countries. Put simply, the formation of new sub-groups in the resolution co-sponsorship network suggests the creation of new alliances, while some countries move in and out of different groups. Closely connected sub-groups suggest that two or more alliances are often in agreement. We consider the alliances/resolution co-sponsorship networks below.

Period I (1976-1990) “Cold War”

Figure 1. Resolution co-sponsorship network during period I (1976-1990)

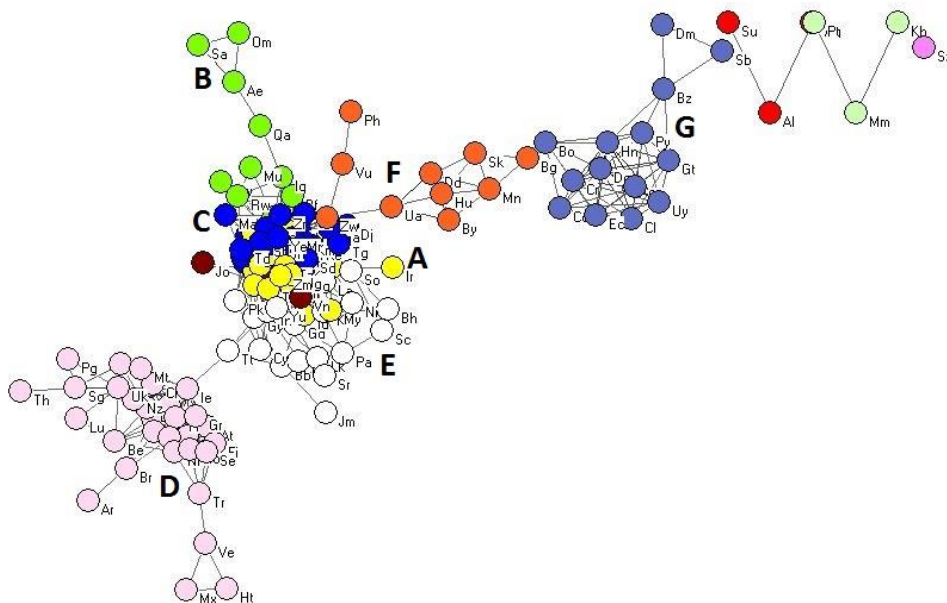


Table 2. Sub-groups during period I

Sub-group	Countries
A (yellow)	“Non-Aligned Countries” : Afghanistan, Algeria, Cameroon, Cuba, Ethiopia, Ghana, Indonesia, Iran, Liberia, Malaysia, Mozambique, Nigeria, Sierra Leone, Syrian Arab Republic, Tunisia, Uganda, United Republic of Tanzania, Zambia.
B (green)	“Non-Aligned Countries” Botswana, Burkina Faso (pre-1984: Upper Volta), Burundi, Iraq, Mauritius, Oman, Qatar, Rwanda, Saudi Arabia, United Arab Emirates.
C (blue)	“Non-Aligned Countries” Angola, Benin, Cape Verde, Chad, Comoros, Congo, Democratic Yemen, Djibouti, Egypt, Equatorial Guinea, Gabon, Guinea-Bissau, Guinea, Kenya, Madagascar, Mali, Mauritania, Morocco, Niger, Sao Tome and Principe, Senegal, Sudan, Togo, Zaire.
D (pink)	“Western Bloc” Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Denmark, Fiji, Finland, France, Germany, Greece, Haiti, Ireland, Italy, Japan, Luxembourg, Malta, Mexico, Netherlands, New Zealand, Norway, Papua New Guinea, Singapore, Sweden, Thailand, Turkey, United Kingdom of Great Britain and Northern Ireland, Venezuela,
E (white)	“Non-Aligned Countries” Barbados, Bangladesh, Bahrain, Cyprus, Grenada, Gambia, Guyana, India, Jamaica, Kuwait, Lao People's Democratic Republic, Sri Lanka, Nicaragua, Panama, Pakistan, Seychelles, Somalia, Suriname, Trinidad and Tobago, Yugoslavia.
F (red)	“Communist Bloc” Bulgaria, Belarus, German Democratic Republic, Hungary, Mongolia, Philippines, Czechoslovakia, Ukraine, Vanuatu, Zimbabwe.
G (purple)	“Latin American Countries” Bolivia, Belize, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, Guatemala, Honduras, Paraguay, Solomon Islands, El Salvador, Uruguay.

The network presented in Figure 1 and the sub-groups listed in Table 2 suggest the GA indeed reflected the bipolarity of the Cold War order, with the US-led Western Bloc (D) aligned at the opposite end of the USSR-led Communist Bloc (F). At the center of the network is the bulk of the UN membership: relatively recently decolonized countries. Although divided into several sub-groups (A, B, C and E) these countries could be considered part of a larger sub-group that broadly overlaps with membership of the Non-Aligned Movement (NAM) (Ayooob 1989). Although many members of NAM did in fact support either the Western or Communist Blocs during the Cold War, the central position of the NAM in the GA during the Cold War is an indicator of its cohesiveness and strength.

The Latin American countries (G) are separate from all other groups and can therefore be

seen as a relatively independent (and possibly isolated) force within the GA. Their lack of ties to other sub-groups can be an indication that their position within the GA is less important.

In terms of sub-group membership, it is interesting to note that membership of the Communist Bloc (F) is much smaller than that of the Western Bloc (D). The Western Bloc includes a number of large Latin American and Asian countries such as Argentina, Brazil, China, Japan, Mexico, Thailand and Venezuela. China's "membership" of the Western Bloc is particularly noteworthy given that it is a communist country. China has especially strong ties with France (0.7001), as well as with Italy, Japan, Germany, Australia, Canada, Greece and Malta.

The Communist Bloc (F) has a far narrower membership consisting mainly of countries directly under USSR control, such as Czechoslovakia and Ukraine. While the Philippines, Vanuatu and Zimbabwe are listed as sub-group members, their relationship is via Zimbabwe, which connects to both Ukraine (and the rest of the Communist Bloc) and various members of the NAM sub-groups.

Sub-group B, which is closely connected to other NAM sub-groups via Iraq, also consists of a number of Gulf monarchies such as Qatar, Saudi Arabia and Oman, which are relatively isolated from the other NAM countries. Their isolation can perhaps best be understood by the divisions within the NAM over the USSR's invasion of Afghanistan in 1979, which they actively opposed.

Within the period I network a brokerage role is fulfilled by the Ireland – Trinidad & Tobago link, which connects the Western Bloc to the NAM, and Zimbabwe, which connects communist countries to the NAM. Ireland is of course a non-NATO member, whereas the origins of Zimbabwe's unique position is less clear.

Finally, it is interesting to note that neither the US nor the USSR plays a significant role in the resolution co-sponsorship network, which suggests that the GA is clearly a forum which is actively used by smaller countries. However, France, the UK and China, also permanent members of the Security Council (SC) do play an active role.

Period II (1990-2001) “Pax Americana”

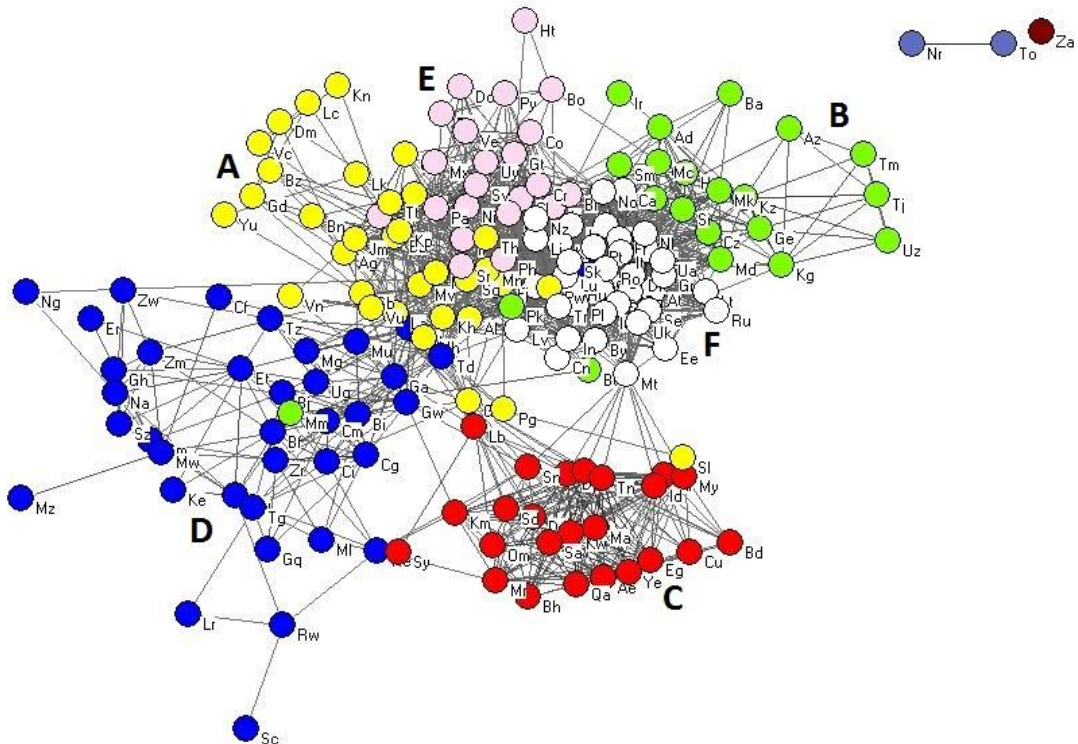


Figure 2. Resolution co-sponsorship network during period II (1990-2001)

Table 3. Sub-groups during period II

Cluster	Countries
A (yellow)	“Caribbean and Asian Countries” Albania, Antigua and Barbuda, Barbados, Belize, Brunei Darussalam, Cambodia, Democratic People's Republic of Korea, Dominica, Fiji, Grenada, Guinea, Guyana, Jamaica, Lao People's Democratic Republic, Maldives, Marshall Islands, Micronesia, Mongolia, Nepal, Palau, Papua New Guinea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sierra Leone, Singapore, Solomon Islands, Sri Lanka, Thailand, Trinidad and Tobago, Vanuatu, Vietnam, Yugoslavia.
B (green)	“Ex-Soviet Countries” Andorra, Armenia, Azerbaijan, Bhutan, Bosnia and Herzegovina, Croatia, Czech Republic, Former Yugoslav Republic of Macedonia, Georgia, Iran, Kazakhstan, Kyrgyzstan, Moldova, Monaco, Myanmar (formerly: Burma), Pakistan, San Marino, Slovenia, Tajikistan, Turkmenistan, Uzbekistan.

C (red)	“Islamic Countries” Afghanistan, Algeria, Bahrain, Bangladesh, Comoros, Cuba, Democratic Yemen, Djibouti, Egypt, Indonesia, Jordan, Kuwait, Lebanon, Malaysia, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Senegal, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates.
D (blue)	“African Countries” Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Democratic Republic of the Congo (1971-1997: Zaire), Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Seychelles, Swaziland, Togo, Uganda, United Republic of Tanzania, Zambia, Zimbabwe.
E (pink)	“Latin American Countries” Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Israel, Mexico, Nicaragua, Panama, Paraguay, Peru, Philippines, Suriname, Uruguay, Venezuela.
F (white)	“Western Bloc” Austria, Australia, Belgium, Bulgaria, Belarus, Canada, China, Cyprus, Germany, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, India, Italy, Japan, Republic of Korea, Liechtenstein, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, New Zealand, Poland, Portugal, Romania, Russian Federation, Sweden, Slovakia, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland.

The network presented in Figure 2 and the sub-groups listed in Table 3, when placed within the context of Period I and Period III, suggests a GA that is in flux, with new ties being created and older ties being weakened. Relatively central during the post-Cold War GA is the Western Bloc (F), which is closely linked to Caribbean and Asian Countries (A), Former Soviet Countries (B) and Latin American Countries (E). We can thus argue that during this period of *Pax Americana* there was a broad policy consensus centered on the Western Bloc. But already moving away from the core group are a sub-group of African States (D), and a group of mainly Islamic countries (C), many of which are also members of the Organization for Islamic Cooperation (OIC) (Kizilbasj 1982).

In terms of membership of the respective sub-groups, China, India and the Russian Federation are surprising members of the Western Bloc. China's membership is a continuation of period I, while Russia's membership (and also that of Bulgaria, Romania, Ukraine, etc.) can be understood in the context of deep-seated economic and political reforms that align it more closely with the Western Bloc. However, India's membership remains surprising. It retains particularly strong ties with Turkey (0.6138) and China (0.6183), as well as many other countries in sub-groups A, E and F. Its “membership” of the Western Bloc should therefore be seen within the context of the broad consensus within the GA during this period. “Defections” from the Western Bloc by Argentina, Brazil, Mexico and Thailand to sub-groups A, B and E should also be seen in that context.

Because of the broad consensus during period II the role of bridging countries is much less important.

Period III (2001-2013) “Current”

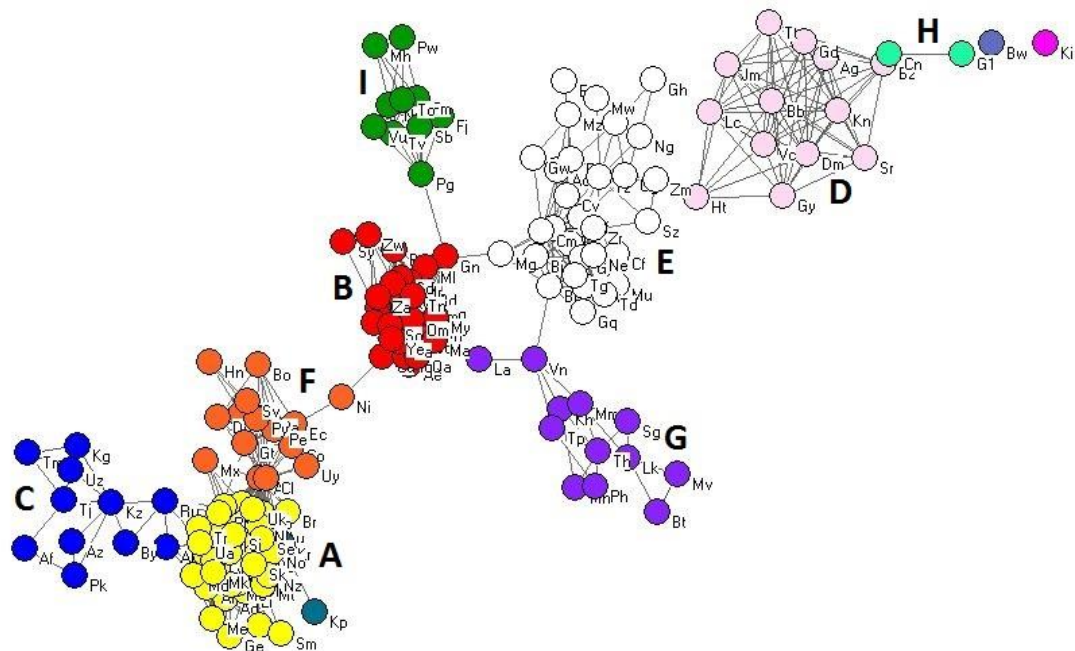


Figure 3. Resolution co-sponsorship network during period III (2001-2013)

Table 4. Sub-groups during period III

Cluster	Countries
A (yellow)	“Western Bloc” Albania, Andorra, Australia, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, San Marino, Slovakia, Slovenia, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland.
Sub-A (turquoise)	“Koreas” Republic of Korea, Democratic People's Republic of Korea
B (red)	“Islamic Countries” Algeria, Bahrain, Bangladesh, Brunei Darussalam, Comoros, Cuba, Democratic Yemen, Djibouti, Egypt, Guinea, Indonesia, Iraq, Jordan, Kuwait, Lebanon, Malaysia, Mali, Mauritania, Morocco, Namibia, Oman, Qatar, Saudi Arabia, Senegal, Somalia, South Africa, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, Zimbabwe.

C (blue)	“Commonwealth of Independent States” Afghanistan, Armenia, Azerbaijan, Belarus, Kyrgyzstan, Kazakhstan, Pakistan, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan.
D (pink)	“Caribbean Countries” Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago.
E (white)	“African Countries” Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Ghana, Guinea-Bissau, Ivory Coast, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Swaziland, Togo, Uganda, United Republic of Tanzania, Zambia.
F (orange)	“Latin American Countries” Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Paraguay, El-Salvador, Uruguay.
G (purple)	“Asian Countries” Bhutan, Cambodia, Lao People's Democratic Republic, Maldives, Mongolia, Myanmar, Philippines, Singapore, Sri Lanka, Thailand, Timor-Leste, <u>Vietnam</u> .
H (mint)	China, Group of 77.
I (dark green)	“Pacific Countries” Fiji, Micronesia, Marshall Islands, Nauru, Papua New Guinea, Palau, Solomon Islands, Tonga, Tuvalu, Vanuatu.

The network presented in Figure 3 and the sub-groups listed in Table 4, when placed within the context of Period I and Period II, suggests a GA that is again crystallizing into a number of sub-groups, primarily along geographic lines.

While the Western Bloc (A) remains, its position is less central. It still is closely linked to members of the Commonwealth of Independent States (CIS), including Russia (C) and Latin American countries (F). It has also experienced “defections” from India and China, both of which are now relatively isolated. China's main ties are now with the Group of 77 developing countries (H), a clear departure from its alignment with the Western Bloc during period I and II. Also interesting is the Republic of Korea, which is closely tied to the Western Bloc, but also to the Democratic People's Republic of Korea (0.5686). This is surprising, given that both countries are technically still at war. We would argue that this outcome can, perhaps, be understood in the context of the Sunshine Policy from 1998 to 2007, which improved relations between the two Koreas.

The Islamic countries (B), although in a central position within the network, have a relatively weak ties with other groups, including Latin American countries (F), linked via Nicaragua and Cuba, Pacific countries (I), linked via Papua New Guinea and Guinea, African countries (E), linked via Guinea and Madagascar, and Asian countries (G), linked via Laos,

Indonesia, Malaysia and Morocco. Caribbean countries (D) are isolated from all other groups, again suggesting that their role in the GA may be limited.

As it is possible to see, the above analysis paints a GA that is very different from the one during period I and period II. The GA in period III has become more fractured, and with far fewer ties between major sub-groups, suggesting that consensus building may have become more difficult. Unlike during the Cold War (period I) when various NAM sub-groups were closely interconnected, NAM membership has split into regional groups or the Islamic group, which may hinder their ability to exercise political power.

A Note on Nodal Variations and Analysis

In addition to the above network analysis, nodal variations were also explored, as recommended by Barabási (2014). The relative weighted degree centrality of the nodes reveals important changes in the country actors that are most active in the co-sponsorship network.

Changes are considered from two perspectives: changes in the 10 countries with the highest nodal weighted degree centrality (Table 5) and changes in the relative degree centrality between the “P5” permanent members of the UN Security Council (China, France, Great Britain, Russia/Soviet Union, United States; see table 6).

Table 5. Nodes/countries with highest weighted degree centralities during Periods I, II and III.

Period I (1976–1990)	Period II (1990–2001)	Period III (2001–2013)
São Tomé and Príncipe (16,412)	Great Britain (24,591)	Great Britain (19,969)
Algeria (15,372)	Italy (15,419)	Bosnia (13,960)
Tanzania(14,032)	Greece (15,210)	Luxembourg (11,483)
Trinidad and Tobago (13,190)	France (15,129)	Portugal (11,478)
India (12,829)	Portugal (14,992)	Slovenia (11,090)
Madagascar (12,619)	Spain (14,969)	Finland (10,909)
Uganda (12,315)	Luxembourg (14,635)	Italy (10,851)
Pakistan (12,312)	Germany (14,340)	Greece (10,727)
Guinea (12,305)	Antigua (14,194)	Germany (10,597)
Nigeria (12,303)	Austria (13,914)	Spain (10,569)

Table 6. Highest weighted degree centralities among “P5” (permanent UN Security Council members).

Period I (1976–1990)	Period II (1990–2001)	Period III (2001–2013)
Great Britain (8,484)	Great Britain (24,591)	Great Britain (19,969)
France (5,138)	France (15,129)	France (10,347)
China (4,359)	United States (12,352)	Russia (7,578)

United States (3,921) Soviet Union (3,125)	Russia (9,660) China (8,224)	United States (6,523) China (6,157)
---	---------------------------------	--

The changes in co-sponsoring activity between Period I and Period II are most profound, with Period I having highly active African and Asian states, whereas in Period II and thereafter European states, led by Great Britain, are most active. This view of developing countries being strong during Period I and weaker during Periods II and III as observed from the network structure is also reflected in the co-sponsorship activity level of these countries. Generally speaking, the most active countries include many small countries such as São Tomé and Príncipe, Greece, Portugal and Luxembourg, which because of their smaller size may naturally be more internationalist in their outlook.

Among P5 countries, Great Britain and France are the most active during all periods, while China becomes least active during Periods II and III. This latter point is interesting as China changed towards a more internationally oriented and market-driven economic policy during Periods II and III, yet appeared to be less active in the UN general assembly: political and economic internationalization may not be working in sync.

The central position of Great Britain in resolution co-sponsorship compared to other P5 countries may be a reflection of its membership of both the European Union and the Commonwealth. In order to maintain the focus, is to present a behavior of particular states in a particular social network, the in-depth analysis of individual states is the best to be reserved for a future research.

Conclusion and discussion

We have studied co-sponsorship communities in network structure formed by co-sponsorship on resolutions in individual sessions of the United Nations General Assembly in three different periods. The growing data on UNGA co-sponsorship provides a unique opportunity in addressing several issues. Understanding state behavior through a social network analysis is one of them. Accordingly, our focus is not just on taxonomic representation of the data but paralleling it with the sociological and political aspects of the UNGA and using it as an interesting and potentially valuable example in which we are able to detect a considerable abnormalities after having constructed networks from the UN Ga co-sponsorship data between 1976 and 2013 in following two ways: (1) by considering co-sponsorship patterns and detecting social networks from them, and (2) by considering the strength and weakness in relations between the states through their analysis.

For each formulation, we detected communities of co-sponsorship acting in a cohort or an orchestrated behavior. Often these communities are subtle and difficult to see and it is here SNA as a method of studying the interstate relations has been a very useful tool. In each period we have also detected clusters and most importantly, member-states that play roles of brokers (catalyzing or initiating processes in the venues of the organization), and states that shift between the clusters of the states in the co-sponsorship communities.

Many scholars have argued that states behavior affects the durability of alliances and their

structural stability. This study sheds new light on the crucial issue of alliance defection in the UN GA. Considering that it is crucial to understand the state behavior in order to predict the possible affiliation of these states, the results of this study are very valuable mainly when complemented with a social network analysis of the characteristics for each separate state.

These results have a number of theoretical implications. Firstly, states do not make decisions about community participation based on their alliances only. Secondly, it appears that analysis of the communities should concentrate less on a state's national interest because it does not seem to be an important reason in voting, and instead focus on network dynamics.

The uncovered irregularities in behavior of states in alliances.

This study has purported to make its input in to the field in at least two aspects. The first one is to our understanding of the dynamics of the alliances, the relationships and behavior of its members, and the second one is to the application of social network analysis to the field of international relations, which echoes with ideas raised in Barabasi (2005). The other critical finding of this research goes against general belief that states form alliances mostly according to the influence of external factors. We found that internal factors play not less important role, if not an equal one.

We argued that the strength of alliances depends on the level of trust between its members. Level of trust, as we saw, may differ between the states, some states are more trustworthy and some are less. The implications are that some states will allow themselves more freedom than usual. We also found that it isn't relative to the perceived power of that state nor to its size. Rather, the result of such behavior is an outcome of a learning process occurring in the interaction with other states, i.e. it is an acquired one. It is too early for us to argue that the set of norms influence the strings in any co-sponsorship network, as more research is needed. Yet, we do see that states tend to affiliate, associate, and eventually, ally with states that have some resemblance, be it cultural or political. Another aspect that came out as a result of this study is that a group of states with shared characteristics acquire new traits to their names which eventually is expressed in a particular behavior. That is, we saw fewer shifts in some alliances than in the others. We attribute the frequency of those shifts to the inclusiveness and fairness of developed norms in that particular grouping.

Having said that, we did find some exceptions to the behavior. Some states intentionally wanted to stay out, or indifferent, to the general trend of affiliation between states to one or the other grouping. As an explanation to that lies in historical events that cause such alienation, or in other cases deep dissatisfaction with current practice that forced such antisocial behavior, and an eventual alienation.

In this paper, we viewed UN GA co-sponsorships as static networks and investigated how their community structure changes over time. This study has yet another a crucial importance as for attempting to parallel the events with the network structure of the co-sponsorship communities and eventually see this network structure rather as a dynamic, than a static one. The present investigation – which goal was the comparison of co-sponsorship data with network representations and military alliances – is a prelude for the more expanding utilization of SNA, as it provides an opportunity to extract from the data and available parameters in combination with other data a much more detailed view for a future analysis.

Along with above-mentioned, this study offers a number of contributions to the literature

on alliances, beyond reaffirming that the states may go against alliances in their actions. We saw non-ordinary behavior in seemingly well-developed alliances. Why was that the case? We put as an explanation to that "a comfort" - a closeness between the states that would allow more freedom of action between the states without threatening the strength of the alliance as the core principles of the alliance were carefully preserved. Yet, the fallback from that behavior, even in advanced alliances, may carry an element of complacency - that is, if states in alliance too often defect from it temporarily, the overall meaning, importance and strength of the alliance may come into a question.

Network reconstruction of a complex enterprise, if it is used for understanding, diagnosis and prediction of complex systems. In order to alleviate negative aspects of it mentioned in Angulo et al. (2015) and Li et al. (2015), a specific attention has been paid to conditions in node reconstruction along with the temporal characteristics of networks evolutions.

The other limitation of this study is that the focus purposefully has been made just on connections between the states. In order to maintain the simplicity of the argument the issues of density and strength were left out for the future research.

Some questions still remain that may be addressed in the future research. If to list the main three ones, these would be as followed: 1) identification of the main motives in forming sponsorship alliances and the extent of realization of such motives, 2) analysis of the internal dynamics of alliances and mechanism of alliance's interference with member's identification 3) analysis of learning processes within the network and an overlap with alliance in creating a competitive strength and overall performance of the alliance.

Bibliography

- Adler, Emanuel and Michael Barnett, (eds). (1998) *Security Communities*. Cambridge: Cambridge University Press.
- Ajami, Fouad. (1993) Running on Empty. (rise in Oil Prices Causes Shift in International Relations in 1973) (U.S. News & World Report: 60th Anniversary) (Cover Story). *U.S. News & World Report* 115, no. 16: S55.
- Alger, Chadwick. (2014) Interaction and negotiation in a committee of the United Nations General Assembly. In *Chadwick F. Alger*, pp. 87-104. Springer International Publishing.
- Angulo, M.T., Moreno, J.A., Barabási, A.L. and Liu, Y.Y. (2015) Fundamental limitations of network reconstruction. arXiv preprint arXiv:1508.03559.
- Arend, Anthony Clark and Robert J. Beck. (2014) *International law and the use of force: beyond the UN Charter paradigm*. Routledge.
- Ayoob, Mohammed. (1989) The Third world in the system of states: Acute Schizophrenia or growing pains? *International Studies Quarterly* 33(1):67-79.
- Barabási, A.L. (2005) Network theory--the emergence of the creative enterprise. *Science*, 308(5722): 639-641.
- Barabási, A-L. (2014). *Linked: How everything is connected to everything else and what it means for business, science, and everyday life*. New York, Basic Books
- Batagelj, Vladimir and Andrej Mrvar. (1999) Pajek Program for Analysis and Visualization of Large Networks Reference Manual List of commands with short explanation version BE.
- Braun, Matias and Claudio Raddatz. (2008) The politics of financial development: evidence from trade liberalization. *The Journal of Finance* 63(3):1469-1508.
- Brutents, Karen. (2000) In Pursuit of Pax Americana (I). *Russian Social Science Review* 41(3):37-66.
- Bull, Hedley. (1977) *The Anarchical Society*. New York: Columbia University Press.
- Cao, X. (2012) Global networks and domestic policy convergence: A network explanation of policy changes. *World Politics* 64(03): 375-425.
- Cordery, John L., Edward Cripps, Cristina B. Gibson, Christine Soo, Bradley L. Kirkman, and John E. Mathieu. (2015) The Operational Impact of Organizational Communities of Practice: A Bayesian Approach to Analyzing Organizational Change. *Journal of Management February* 41:644-664. doi:10.1177/0149206314545087.
- Cottey, A. (2002) 11 September 2001, One Year On: A New Era in World Politics? *Contemporary Politics* 8(4):271-284.
- Cranmer, Skyler J., Bruce A. Desmarais, and Justing H. Kirkland. (2012) Toward a Network Theory of Alliance Formation. *International Interactions* 38:295-324.
- Dreher, Axel, and Nathan M. Jensen. (2013) Country or leader? Political change and UN General Assembly voting." *European Journal of Political Economy* 29(C):183-196.
- Dreher, Axel, Jan-Egbert Sturm, and James Raymond Vreeland. (2009) Development aid and international politics: Does membership on the UN Security Council influence World Bank decisions?. *Journal of Development Economics* 88(1):1-18.
- Emirbayer, Mustafa, and Jeff Goodwin. (1994) Network analysis, culture, and the problem of agency. *American journal of sociology* 1411-1454.

- Ferdinand, Peter. (2014) Foreign policy convergence in Pacific Asia: the evidence from voting in the UN General Assembly. *The British Journal of Politics & International Relations* 16 (4):662-679.
- Flemes, D. (2013) Network Powers: strategies of change in the multipolar system. *Third World Quarterly*, 34(6): 1016-1036.
- Gilpin, Dawn R., and Nina K. Miller. (2013) Exploring complex organizational communities: Identity as emergent perceptions, boundaries, and relationships. *Communication Theory* 23(2):148-169.
- Hafner-Burton, Emilie M., Miles Kahler, and Alexander H. Montgomery. (2009) Network analysis for international relations. *International Organization* 63(03):559-592.
- Holcombe, Randall G., and Russell S. Sobel. (1996) The stability of international coalitions in United Nations voting from 1946 to 1973. *Public Choice* 86(1-2):17-34.
- Holsti, Ole R., P. Terrence Hopmann, and John D. Sullivan. (1973) *Unity and disintegration in international alliances: Comparative studies*. New York: John Wiley & Sons.
- Jackson, Patrick Thaddeus, and Daniel H. Nexon. (1999) Relations before states: substance, process and the study of world politics. *European Journal of International Relations* 5(3):291-332.
- Janos, Andrew C. (2001) From eastern empire to western hegemony: East Central Europe under two international regimes. *East European Politics and Societies* 15(2):221-249.
- Kamada Tomihisa, and Satoru Kawai. (1988) An Algorithm for Drawing General Undirected Graphs. *Information Processing Letters* 31:7-15.
- Kann, Robert A. (1976) Alliances versus ententes. *World politics* 28(04):611-621.
- Katzenstein, Peter. (1996) *The Culture of National Security: Norms and Identity in World Politics*. New York: Columbia University Press.
- Koslowski, Rey, and Friedrich V. Kratochwil. (1994) Understanding change in international politics: the Soviet empire's demise and the international system. *International Organization* 48(02):215-247.
- Kegley, Charles W., Jr. and Gregory A. Raymond. (1990) *When Trust Breaks Down: Alliance Norms and World Politics*. Columbia: University of South Carolina Press.
- Kim, Hyung Min, Deokro Lee and Richard C. Feiock. (2011) Network Power and Militarized Conflicts. *Armed Forces & Society* 38:291, doi: 0095327X11410857.
- Kirkman, B. L., Cordery, J. L., Mathieu, J., Rosen, B., & Kukenberger, M. (2013) Global organizational communities of practice: The effects of nationality diversity, psychological safety, and media richness on community performance. *Human relations* 66(3):333-362.
- Kizilbash, Hamid H. (1982) The Islamic Conference: Retrospect and Prospect. *Arab Studies Quarterly* 138-156.
- Lee, Seungyoon, and Peter Monge. (2011) The coevolution of multiplex communication networks in organizational communities. *Journal of Communication* 61(4):758-779.
- Leydesdorff, Loet. (2004) The university–industry knowledge relationship: Analyzing patents and the science base of technologies. *Journal of the American Society for Information Science and Technology* 55(11):991-1001.

- Li, Richard P.Y., and William R. Thompson. (1978) The stochastic process of alliance formation behavior. *American Political Science Review* 72(04):1288-1303.
- Li, A., Cornelius, S.P., Liu, Y.Y., Wang, L. and Barabási, A.L. (2016) *The fundamental advantages of temporal networks*. arXiv preprint arXiv:1607.06168.
- Liska, George. (1962) *Nations in Alliance: The Limits of Interdependence*. Baltimore, Md.: Johns Hopkins University Press.
- Long, Andrew G., Timothy Nordstrom, and Kyeonghi Baek. (2007) Allying for peace: treaty obligations and conflict between allies. *Journal of Politics* 69(4):1103-1117.
- Macon, Kevin T., Peter J. Mucha, and Mason A. Porter. (2011) Community Structure in the United Nations General Assembly. *Physica A* 391:343–361.
- Mansfield, Edward D., and Jon C. Pevehouse. (2000) Trade blocs, trade flows, and international conflict. *International organization* 54(04): 775-808.
- Mamudu, Hadii M., Joshua S. Yang, and Thomas E. Novotny. (2011) UN resolution on the prevention and control of non-communicable diseases: an opportunity for global action. *Global public health* 6(4):347-353.
- Maoz, Zeev. (2012) How Network Analysis Can Inform the Study of International Relations. *Conflict Management and Peace Science* 29(3):341-369.
- Mastanduno, Michael. (2005) Hegemonic order, September 11, and the consequences of the Bush revolution. *International Relations of the Asia-Pacific* 5(2):177-196.
- Mower, A. Glenn. (1962) The sponsorship of proposals in the United Nations General Assembly. *The Western Political Quarterly* 661-666.
- Nooy, W. de, Mrvar, A., & Batagelj, V. (2005) *Exploratory Social Network Analysis with Pajek*. Cambridge: Cambridge University Press.
- Nye, Joseph S. (1990) The changing nature of world power. *Political Science Quarterly* 177-192.
- Rothstein, Robert L. (1968) *Alliances and small powers*. New York: Columbia University Press.
- Scott, John. (1991) *Social Network Analysis: A Handbook*. London: Sage Publications.
- Singer, David, and Melvin Small. (1966) Formal alliances, 1815—1939 A Quantitative Description. *Journal of Peace Research* 3(1):1-31.
- Smith, Alastair. (2014) Leader turnover, institutions, and voting at the UN general assembly. *Journal of Conflict Resolution* 0022002714532689.
- Schich, M., Song, C., Ahn, Y.Y., Mirsky, A., Martino, M., Barabási, A.L. and Helbing, D. (2014) A network framework of cultural history. *Science*, 345(6196): 558-562.
- Voeten, E. (2013) Data and analyses of voting in the United Nations General Assembly. *Routledge Handbook of International Organization*. London: Routledge.
- Walt, Stephen M. (2009) Alliances in a Unipolar World. *World Politics* 61: 86-120.
- Walt, Stephen M. (1987) *The Origins of Alliances*. Ithaca, NY: Cornell University Press.
- Waltz, Kenneth N. (1979) *Theory of International Politics*. New York: McGraw-Hill.
- Wasserman, Stanley, and Katherine Faust. (1994) *Social network analysis: Methods and applications*. Vol. 8. Cambridge: Cambridge University Press.
- Young, Oran R. (1986) International Regimes: Toward a New Theory of Institutions. *World Politics* 39(01):104-122.