Chapter 13 Multilevel Bilateralism and Multilateralism: States' Bilateral and Multilateral Fisheries Treaties and Their Secretariats

James Hollway and Johan Koskinen

Introduction

Actors have many needs and face many challenges that require them to establish relationships with other actors. Take for example the tragedy of the commons, in which an optimal outcome can only be reached through collective management among all users of a resource (see Barkin and DeSombre 2000, 344).

Such relationships can take different forms. Many such relationships are bilateral, existing exclusively between a dyad. Other relationships are more diffuse, taking place as part of multilateral groups. Both bilateralism and multilateralism are regular features of many areas of international politics including security (Hafner-Burton and Montgomery 2006), trade (Ingram et al. 2005), and the environment (Ward 2006). Within these literatures, bilateralism and multilateralism are typically treated as analytically separate: bilateral alliances and collective security arrangements (Snyder and Kick 1979); bilateral investment treaties (BITs) and the WTO (Shaw 2003; Tobin and Rose-Ackerman 2010, 747); and, the environmental example explored here, bilateral and multilateral fisheries agreements (see Kinne 2013, where only bilateral fisheries agreements are included). Yet, despite this analytic division, the relationship between bilateralism and multilateralism has rarely been explored empirically (for an exception in a security context see Cha 2010).

J. Hollway (🖂)

J. Koskinen

Social Statistics Discipline Area, University of Manchester, Manchester, UK

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Department of International Relations/Political Science, Graduate Institute, Geneva, Switzerland e-mail: james.hollway@graduateinstitute.ch

This chapter asks "how different dimensions of cooperative arrangements are linked to each other [and] whether changes across dimensions move in tandem or if they are driven by different factors" (Volgy et al. 2009, 7). In other words, when do actors establish bilateral relationships and when do they join multilateral groups? This is a step towards addressing questions such as when cooperation between individual actors results in new, collective actors.

In this chapter, we take as an example the global fisheries governance complex. Shared fish stocks are important to many countries' economies, but "rarely managed well" (Barkin and DeSombre 2000, 342). Nonetheless, they represent a type of resource that legally and practically cannot be managed unilaterally. Recognizing this, states have long attempted to address issues surrounding shared fisheries by international treaty (Daggett 1934), both bilateral and multilateral. It is thus an excellent example of our case, but one that is focused enough to provide some degree of comparability.

Of this data we ask two sets of questions. First, we are interested in when states choose bilateral fisheries agreements (BFAs) and/or multilateral fisheries agreements (MFAs). Here, as we will explain, we are particularly interested in centralization within each network, and across the two networks. Second, we are interested in what makes some multilateral fisheries agreements more popular than others. In particular, we are interested in the contribution of the "managed" status of some multilateral fisheries agreements—that is, that the agreement is related to a secretariat with the purpose of managing the implementation of the agreement. We also explore the role of similarities between these multilateral fisheries agreements.

We argue here that the interaction between bilateralism and multilateralism can be fruitfully analyzed using a multilevel network paradigm. Actors operate across multiple levels, and some leverage on issues of how actors relate can be gained through multilevel network research. More speculatively, a multilevel network perspective on such issues also raises the potential for investigating the interaction between individual and collective agency (Breiger 1974).

To pursue these issues, we employ recent multilevel exponential random graph modeling techniques to explore the structural patterns of countries' bilateralism and multilateralism in global fisheries governance. We find that there is significant centralization of this behavior, but that there is not necessarily a correspondence in this centralized activity between bilateral and multilateral networks. Moreover, it appears that both design (secretariat), a property of the MFAs, and content (similarity), the relation of the MFAs, are important for the structure of the complex. In particular MFAs with a greater potential for action tend to be more strongly tied to other MFAs. This chapter argues that we need more theory and research exploring and explaining when actors act bilaterally and when they act multilaterally, and particularly research that takes into account how they interconnect in multilevel ways.

Bilateralism and Multilateralism

In this section, we argue that states choose treaties based on efficiency considerations. Efficiency can manifest itself in many ways. First, we consider how states choose either bilateral or multilateral treaties. Second, we consider how countries make choices among multilateral treaties.

Bilateralism or Multilateralism

States pursue international relations through institutions because they cannot achieve their goals unilaterally (Barkin and DeSombre 2000, 340). These institutions can take the form of bilateral agreements or multilateral mechanisms such as treaties and international organisations.¹ These two institutional forms differ in important ways.

Bilateralism is structurally and conceptually the simpler of the two. A bilateral relationship involves the establishment of a private agreement between two parties. This privity compartmentalizes dyadic relationships, enabling the terms of each relation to be differentiated "case-by-case [...] on a priori particularistic grounds or situational exigencies" (Ruggie 1992, 571). Such specificity can be employed to deal with matters concerning only the two parties exclusively, such as maritime delimitation, or for establishing preferential terms, such as special access to fisheries resources straddling maritime borders.

Multilateralism is quite different. Ruggie (1992, 571) defines multilateralism in contradistinction to bilateralism as

an institutional form which coordinates relations among three or more states on the basis of 'generalized' principles of conduct—that is, principles which specify appropriate conduct for a class of actions, without regard to the particularistic interests of the parties or the strategic exigencies that may exist in any specific occurrence.

That at least three parties are implicated has important implications. First, multilateralism can offer significant efficiency gains over bilateral agreements. Negotiating with several parties at a time can increase transparency, information, and the credibility of commitments, and reduce transaction costs providing economies of scale (Cha 2010, 163). Second, reaching multilateral agreement typically requires more complex compromises than bilateral agreements. However, these compromises can be mutually beneficial. In a tragedy of the commons-style situation, for instance, actors recognize that restraint in exploiting a common-pool resource would be beneficial to their own interests, as long as it is matched by others. Fortunately, it is said that the social or normative pressure imposed by "multilateral structures and rules constitute the most effective way to control a state's power and dampen its

¹This is not a comprehensive list of the ways in which institutions have been defined, but it serves our current purposes. (See Ruggie 1992)

unilateralist inclinations" (Cha 2010, 160). Third, these complex compromises also give rise to generalized organizing principles that "entail a[socially constructed] indivisibility among the members of a collectivity with respect to the range of behavior in question" (Ruggie 1992, 571). This indivisibility is generated by the "diffuse reciprocity" of members' commitment to shared goals (Keohane 1986, 19–24). In this respect, multilateralism "refers to the constitutive rules that order relations in given domains of international life—their architectural dimension, so to speak" (Ruggie 1992, 572). In other words, multilateral agreements constitute an issue area.

Multilateralism, though, "is a highly demanding institutional form" says Ruggie (1992, 572), "and if its relative incidence at any time were to be high, that fact would pose an interesting puzzle to be explained". Yet Barkin and DeSombre (2000, 340) state that, because of its evident advantages, "multilateral mechanisms for international environmental management is thus the norm, both logically and empirically". In the case of global fisheries governance, both bilateralism and multilateralism are employed. But do actors employ them in equal measure?

We argue here that bilateralism and multilateralism are distinct but interconnected foreign policies and that actors typically choose to invest in one policy or the other. To investigate this question, we leverage the network concept of centralization. We would expect those states that have many bilateral agreements to make more (see Fig. 13.1a, BILATERAL CENTRALISATION), and those states that have many multilateral agreements to join more (Fig. 13.1b, MULTILATERAL CEN-TRALISATION), but that these will not necessarily be the same states. Instead, states may choose to invest further in whichever form of cooperation they have found useful. This effect will result in a negative tendency for balanced behavior across both forms of cooperation (Fig. 13.1c, i.e. negative ACTIVITY CORRESPONDENCE). Where states engage in both bilateral and multilateral forms of cooperation, they will nonetheless display a preference through asymmetric behavior (Fig. 13.1d, ASYMMETRIC CENTRALISATION).

Managed or Unmanaged Multilateralism

When states negotiate multilateral agreements, they face another decision: whether to establish a treaty secretariat or not. Treaty secretariats "assist the parties in the



Fig. 13.1 Centralisation effects. (a) Bilateral centralisation (AS). (b) Multilateral centralisation (ASA). (c) Activity correspondence (Star2AX). (d) Asymmetric centralisation (StarAX1A)

management and implementation of the treaty" (Sandford 1994, 17). They are the administrative hub, though perhaps not the decision-making authority, of formal international organisations; "palpable entities with headquarters and letterheads, voting procedures, and generous pension plans" (Ruggie 1992, 574). Sometimes they are "large international bureaucracies as in the case of the UN Secretariat", but the secretariats of international environmental treaties tend to be small (Sandford 1994, 19)—just a few professionals and a handful of administrative staff in many cases.

States establish secretariats to fulfill four "managerial" roles. First, they manage informational processes relating to the resource governed and the parties' behavior towards that resource. This role as clearing house for information shared among parties is perhaps secretariats' most important role for, in so doing, they accrue some agenda-setting power, particularly where scientific or behavioral uncertainty is acute (Sandford 1994, 18). Second, they often play a role in monitoring compliance, though this depends in part on the mandate given them by the establishing treaty. Third, they contribute to conflict management by providing formal or informal dispute settlement procedures (Sandford 1994, 28). Lastly, they provide much needed continuity. Governments recognize that they may not be in power in 10 years, and their policies-their legacy-might be undone by their successors. Establishing secretariats can thus help to achieve international objectives across long time horizons (Sandford 1994, 19). Note that none of the above roles necessarily imply that the secretariat has any decision-making authority; we use the term "managed" here to identify that a secretariat has been established and mandated to "manage" the day-to-day practice and strategic continuity of treaty business, not that it necessarily holds a mandate to manage its members independently.

Admittedly, "secretariats are but one small aspect of institutions" (Andresen and Skjærseth 1999, 5). We are also not contending that secretariats are directly influential on activity within their purview (Bauer 2006; Bauer et al. 2009). However, the complex, uncertain, and consequential nature of global environmental politics means that states find themselves increasingly establishing secretariats for the multilateral agreements they negotiate. After all, "there is a long way to go from initial agreement to actual implementation" (Andresen and Skjærseth 1999, 6). Whether or not international environmental treaty secretariats are "significant actors", as Sandford (1994, 17) says, they are part of the process of international environmental treaty implementation and, we argue, also of treaty-making. It is in this later role, as sites for the negotiation of further international environmental treaties, that secretariats become the "organizational glue that holds the actors and parts of a treaty system together" (Sandford 1994, 17).

We explore the impact of secretariats on the dependencies of the multilevel global fisheries governance complex here. First, we investigate the popularity of managed multilateral mechanisms (Fig. 13.2a, MANAGED POPULARITY) compared to unmanaged alternatives (those not relating to any secretariat). Next we consider whether states cluster together around multilateral agreements where at least one is managed (Fig. 13.2b, SHARED MANAGEMENT CHOICES). The results tell us



whether managed multilaterals are associated with more multiple overlaps of multilateral agreements. In a bipartite sense, a prevalence of such four-cycles imply that secretariats want to have strong ties to other MFAs (Robins and Alexander 2004). Such a structure also raises questions about how they are generated. Koskinen and Edling (2012) argue that such four-cycles can be the result of peer referral. Here we can ask whether secretariats act as sites for the exercise of collective agency in negotiating further multilateral agreements, or whether antecedent "unmanaged" treaties blaze a path for later, "managed" versions?²

Multilateral agreements do not only differ in how they are instituted (in other words, their design: Koremenos et al. 2001), but also in what they institute. Moreover, multilateral treaties do not exist in a vacuum. Their content is conceived and negotiated in relation to other treaties, and countries select which multilateral agreements to join with reasonable knowledge about how those documents relate (see Jupille et al. 2013). Some multilateral agreements are more similar in content than others. Like any complex document, multilateral treaties are linked in many interesting ways, including their authors, location, and date. However, one of the distinct features of multilateral treaties is that they are more often responsible for the creation or codification of international customary law and its normative evolution as compared to bilateral treaties (Carr and Scott 1999). The normative structures in which such treaties are embedded are important, for it is through their normative interlinkages that multiple agreements complement or come into conflict with one another (see Zelli and van Asselt 2013). Since multilateral agreements constitute the "architecture" of international life (Ruggie 1992, 572), it is important to note where these agreements complement or come into conflict with one another.

To this end, we include two effects here. First, we consider the popularity of multilateral agreements that are similar to other multilateral agreements (Fig. 13.2c, CHOOSE SIMILAR). Such similarity could be defined in many ways. In the data

²Note that the colored node in Fig. 13.2c indicates that the MFA is a secretariat but the uncolored node is unspecified; that is, it may be either a secretariat or not.

section below, we propose the textual similarity between two treaty documents as a useful general purpose measure of similarity. Since there is no necessary relation to state preferences, we expect this to be non-significant, or possibly negative in sign. Second, we take into account whether states join multilateral agreements that are similar to other multilateral agreements that they have joined (Fig. 13.2d, SIMILAR CHOICES). This is a matter of state preferences, but does not reference the complementarity or conflict inherent in the larger architectural structure. States may view similar choices as 'free' in the sense that they have already committed themselves to similar provisions elsewhere, or they may see a treaty that is similar an unnecessary cost unless it provides some further advantage. This further advantage may come about through MFAs undergoing amendment, which would result in similar treaties and attract the same parties. For this, we also take into account states' clustering around similar multilateral agreements (Fig. 13.2e, SHARED SIMILAR CHOICES). Here we would expect it to be positive.

Data

Following Wasserman and Iacobucci (1991), Lazega et al. (2008), and Wang et al. (2013), we define a multilevel model for the totality of ties between two node sets. We denote a set of countries by $A = \{1, ..., n\}$ and multilateral fisheries agreements (MFAs) by $B = \{1, ..., m\}$. We conceive of these node sets as representing different levels in the global fisheries governance complex.

Countries are tied dyadically through bilateral treaties giving us an undirected one-mode network represented by the adjacency matrix $X_{A\times A}$. MFAs are connected pairwise amongst themselves by similarities in their text represented by the square, symmetric adjacency matrix $X_{B\times B}$. What connects the two levels are the ties created when a country has an affiliation with an MFA. This is represented by a bipartite network of states and MFAs with an affiliation matrix $X_{A\times B}$. In the following we provide a description of how these ties were measured and what nodal attributes are relevant to our model. The multilevel network on all nodes is represented by a biparty adjacency matrix X, that is blocked into the ties in AA, AB, and BB.

Bilateral Fisheries Agreements

The primary actors in global fisheries governance are states. While a statal perspective hardly tells the whole story about global order, the state and its relevance to global governance are unlikely to disappear any time soon (Hurrell 2007, 6). We thus take countries as our nodes *A*. We include all 195 sovereign states, including landlocked states, because articles 124–125 of the United Nations Convention on the Law of the Sea (UNCLOS) state that all countries have the sovereign right to access and fish the high seas. Moreover, some landlocked states still join fisheries





Fig. 13.3 Bilateral fisheries treaty: one-mode network of bilateral fisheries agreements between countries. Node size represents degree and ties associated with *black* node has been treated as exogenous in subsequent analysis

treaties with respect to inland lakes or rivers or to support multilateral norms, which means that there is structural information where there is a lack of participation.

The ties in AA consist of states' bilateral fisheries agreements (BFAs) and the network is illustrated in Fig. 13.3. BFAs tend to represent one of two main themes. For countries with abutting maritime borders, BFAs often clarify the nature and extent of these borders, or determine the allocation of fish stocks that straddle these maritime borders, such as between China and Vietnam (Xue 2005). For countries without adjoining maritime borders, bilateral fisheries agreements tend to involve rich, distant water fishing nations, such as Japan or the EU, trading aid for cheap access to fisheries in less-developed coastal or island countries (Petersen 2003; Witbooi 2008).

The data for this and all other networks was retrieved from the two most comprehensive sources for international environmental agreements, ECOLEX (2011) and the IEA database of Mitchell (2013), and complemented by archival research.

We consider four covariates as potentially relevant to explaining the AA network. First, we use the amount of fish landed by each country to indicate a country's involvement in the exploitation of global fish stocks. This FISHING data was drawn from the Food and Agriculture Organisation's (FAO) data aggregated in the program FishStatJ (FAO 2011). We expect that the more a state's fishing fleet fishes, the more engaged it will be in negotiating bilateral fisheries agreements.

Second, we include the number of THREATENED SPECIES a state has in its marine area (data from the World Bank: Froese and Pauly 2008). We might expect countries that have threatened species at home to want to protect these fish stocks from further exploitation (and perhaps secure access to more robust fish stocks elsewhere). In either case, we expect it to have a positive influence on treaty-making behavior.

Third, we include GDP (logged thousands) to explore how states' fiscal capacity enables them to enter into and maintain many different bilateral relationships. We also investigate whether there is any systematic homophily or heterophily in capacity across dyads. After all, developed states often trade aid for access to fisheries resources or other advantages. This data was recovered from the UN and the World Bank.

Lastly, as countries are embedded in space, we also include a dyadic covariate to control for distance between two countries. We follow the approach of Daraganova et al. (2012) for incorporating distance into ERGMs, namely using logged Euclidean distance as a dyadic covariate, a functional form that has also been used to mimic gravity-dependence in networks of countries (Koskinen and Lomi 2013).

Multilateral Fisheries Agreements

The second nodeset, *B*, consists of a "web of [multilateral fishing] treaties covering the preservation of the marine environment" (Shaw 2003, 554). We follow both Mitchell (2013) and ECOLEX (2011) in including all (multilateral) agreements, treaties, conventions, amendments, protocols and exchanges of letters, allowing for structural importance to operate independently of agreement type (Shaw 2003, 88).³

Ties are considered present when a country, a has signed, ratified, acceded or succeeded to, or been approved in a multilateral fisheries treaty, b (see Shaw 2003, 817–821). This study does not distinguish between signature and ratification nor does it consider the longitudinal aspects of the data here. It also treats as exogenous the major instruments of the law of the sea such as the United Nations Convention on the Law of the Sea (UNCLOS) and what is informally known as the United Nations Fish Stocks Agreement (UNFSA). These were included in the network, for the structure matters, but since they are special cases they are fixed and not modeled. The fixed ties are represented by grey lines in the network graph of Fig. 13.4.

 $^{^{3}}$ A subset of 200 out of 225 MFAs were finalized after we dropped those for which we had no structural data – occasionally the case for very old or very new MFAs – or for which we could not collect texts, since the treaties' texts are important for the construction of the *BB* network.

Multilateral Network



Fig. 13.4 Multilateral fisheries agreements: bipartite network of countries (*round, grey*) and MFAs (*squares*). MFAs with secretariats in *black*, others *white*. Ties that have been treated as exogenous in subsequent analysis in *grey*

As with AA, we include several salient covariates. On the state-side of the network (A), we consider GDP as providing the capacity to enable states' participation in this network. We also investigate whether states' experience of THREATENED SPECIES in their exclusive economic zone motivates their participation in this network.

We also include a covariate on the MFA-side (*B*). Some MFAs provide for the establishment of a secretariat to assist states in the management and implementation of the treaty. This data was also drawn from Mitchell (2013).

Ties Between MFAs

While some recent work has investigated how multilateral environmental agreements relate through citations (Kim 2013), treaty documents are related in varied and subtle ways. Treaties may address similar or quite different subject matter independently of whether it occurs in the same lineage of treaties or refers to the same geographic area. To get at these more subtle similarities, we look at similarity in treaty text.

To construct a network of similarities between treaties' texts it was first necessary to collect the documents of all MFAs. 98 % of all treaty texts in the original dataset were found. These texts underwent some cleaning, and then the textcat package in R was used to construct a matrix of Jensen-Shannon divergences between the *n*gram frequency distributions of each pair of MFA texts (see Hornik et al. 2013). A tie was deemed to exist if the distance d(i, j) < 0.01; a threshold chosen to balance density and detail. In this way, the *BB* network represents the degree to which two treaties' texts call similar vocabulary resources in the pursuit of their aims, thereby arguably accumulating to content. The network is represented in Fig. 13.5.

Treaty text similarity network



Fig. 13.5 Multilateral fisheries agreements issues: one-mode network of MFAs tied by issue overlap. MFAs with secretariats in *black*, others *grey*

One Multilevel Network

Each of these three networks, *AA*, *AB*, and *BB*, is valid and interesting in its own right: *AA* consists of countries' establishing bilateral fisheries treaties with one another; *AB* comprises countries signing or acceding to multilateral fisheries treaties; and *BB* corresponds to content similarity between the texts of the multilateral fisheries treaties in *AB*. Together these three networks are modeled here as a single, multilevel network of three interdependent parts, *X*. The joint modeling of all the ties using Multilevel ERGM (Wang et al. 2013) allows us to explore the interdependencies specified in section "Bilateralism and Multilateralism". In particular it enables us to interpret the ties of one network by how they are embedded in the others.

Results

To find evidence for the processes discussed in section "Bilateralism and Multilateralism", we specify a Multilevel Exponential Random Graph Model (MERGM) for the multilevel network of countries and MFAs. We specify the model with a focus on the main research questions expressed as effects in Figs. 13.1 and 13.2 above, but include a number of additional effects as controls. In choosing relevant configurations we follow the procedures of Wang et al. (2013). These controls have been motivated both substantially as well as to achieve a reasonable goodnessof-fit. We include as control effects a set of configurations consisting of various combinations of attributes and structure. Many structural controls take the form of clustering effects, such as those cross-network clustering effects presented in Fig. 13.6. Though these effects are interesting in their own right, here we only use them as controls, and explore their meaning further elsewhere. There are also a number of covariate-based controls, outlined in the data description above. Detailed explanations of configurations may be found in Wang et al. (2014). Convergence of the estimation process has been assessed by the standard criterion (Lusher et al. 2013).4



⁴Convergence statistics were less than 0.1 in absolute value and there were adequate sample autocorrelations for the statistics.

Table 13.1 Multilevel ERGM parameter estimates for a network on Countries and Multilateral Fisheries Agreements. An asterisk (*) denotes a parameter that is twice the size of its standard error. The model is estimated using MPNet (MPNet names in parenthesis when needed, see Wang et al. 2014)

	Effect	Parameter	(S.E.)
AA	Edge	5.193	1.231*
	Alternating star (AS)	0.368	0.139*
	Alternating triangle (AT)	0.227	0.121
	GDP (log) capacity (activity)	0.412	0.807
	GDP (log) heterophily (difference)	2.722	1.193*
	Threatened species sum (activity)	0.033	0.031
	Threatened species product (product)	-0.002	0.014
	Fishing volume (activity)	0.175	0.027*
	Fishing difference (difference)	0.055	0.038
	Distance (log)	-1.232	0.107*
AB	Edge	-2.008	0.950*
	Alternating star (A-degree ASA)	2.608	0.322*
	Alternating star (B-degree ASB)	-3.346	0.457*
	GW shared A-nodes (ACA)	-0.448	0.036*
	GDP (log) capacity (activity)	-0.867	0.445
	Threatened species sum (activity)	0.127	0.019*
	Secretariat (XEdgeA)	0.817	0.129*
	Shared Managed (Sec) Choices (X4CycleB1)	0.004	0.001*
BB	Edge	Fixed	
	2-star	-0.130	0.098
	Isolate	-0.955	0.796
	Alternating star (AS)	0.310	0.521
	Alternating triangle ($\lambda = 4$) (AT)	2.459	0.251*
	Alternating independent 2-path (A2P)	0.111	0.114
	Alternating edge-triangle (AET)	-0.214	0.091*
x	Activity correspondence (Star2AX)	-0.943	0.304*
	Asymmetric activity (StarAX1A)	0.464	0.152*
	3-Path (L3XAX)	1.178	0.334*
	Cross-level closure (TriangleXAX)	0.086	0.019*
	Activity correspondence (Star2BX)	0.001	0.003
	Cross-level closure (TriangleXBX)	-0.210	0.091*
	Alt. closure (ATXBX)	0.001	0.000*
	Multilevel alignment (C4AXB)	-0.004	0.014

Results are presented in Table 13.1. For effect names we have mostly adhered to standard terminology as used in Lusher et al. (2013) and Wang et al. (2013), except for those effects that we defined in section "Bilateralism and Multilateralism" above.

In terms of our main research question, we find that there is a centralization of treaty-making around particular countries but that it does not necessarily correspond

across networks. Within both the *AA* and *AB* networks, some states appear more active than others. Indeed, the alternating form of the AA and AB star effects shows that this centralization is quite strong. In the case of the *AA* network, the alternating star parameter has a coefficient of 0.37; in the case of the *AB* network, it is 2.61. Interestingly, we do not find that this centralization is driven by capacity (logged GDP) in either network. We do see a pattern of rich countries engaging bilaterally with poor countries however. Countries that fish a lot are drawn by this activity to engage in BFAs, though the fishing activity of their partner appears irrelevant. The status of domestic fish resources spurs countries' involvement in MFAs. This means that while a crisis of conservation does not necessarily motivate bilateral activity, it does seem to motivate multilateral activity, perhaps because this arena has typically attracted more normative goals.

But does bilateral and multilateral activity coincide? In principle, no: the ACTIVITY CORRESPONDENCE (Star2AX: Fig. 13.1c) effect is negative. This means that countries generally carry out a policy of employing either bilateral or multilateral fisheries agreements. However, there are several important caveats to this statement. There is some evidence that there is correspondence where the focal state demonstrates that they have the resources to carry out treaty-making in both contexts (ASYMMETRIC ACTIVITY: StarAX1A, Fig. 13.1d). Nonetheless, this effect does suggest that the activity is asymmetric and states' bilateral and multilateral activity does not appear to be balanced. Countries are generally strategic about where they deploy their resources.

In terms of our secondary research question, it appears that MFA secretariats do affect the structure of this multilevel network. MFAs establishing secretariats are more popular than those that do not (the coefficient of (a) in Fig. 13.2 is 0.82 with standard error of 0.13). There is also evidence that countries appear to cluster around "managed" MFAs, as can be seen with the positive SHARED MANAGED CHOICES parameter (Fig. 13.2b). The introduction of this effect does improve model fit, particularly with respect to bipartite clustering, which suggests this is an important effect worth investigating further.

There is a strong tendency *against* countries being multiply tied to MFAs (ACA). Thus countries do not 'cluster' around MFAs. One exception to this is however when the MFAs share content as evidenced by the alternating closure ATXBX (Fig. 13.2e). Against this background, it is informative that the parameter for SHARED MANAGED CHOICES is positive and statistically significant. This suggests that states only cluster around MFAs with at least one established secretariat (unless the MFAs share content). Possible explanations include that this effect may be driven by secretariats operating as sites for collective agency, leading to the generation of more multilateral agreements. Alternatives could be that the secretariats encourage countries to engage in further MFAs, or that unmanaged treaties pave the way for later secretariats.

Next, we find that countries do not necessarily sign or accede to MFAs because of their similarity to other MFAs (TriangleXBX), and indeed tend to prefer agreements that are dissimilar to MFAs they have already signed. Note that the ties between the MFAs themselves are highly clustered (the alternating triangle statistic AT for *BB* is

large). Together with the negative GW shared *A*-nodes parameter mentioned above, it seems that the MFAs modeled here do not enjoy any popularity or clustering from being similar to other treaties and indeed only have minimal overlap in signatories, *but* MFAs that are similar and already share some signatories *are* more likely to share further signatories (the positive alternating closure parameter). What the combination of these two closure effects may mean is that there are some particularly hot issues for countries that drive signatory overlap.⁵ Lastly, there is no evidence that bilaterally connected countries prefer similar MFAs (C4AXB). Coupled with the closure effect described in the last paragraph, it seems that countries prefer *the same* MFAs instead. We found no significant tendency for or against multilevel alignment, though future research will reveal whether this is simply a feature of the content network chosen for the *BB* network.

This model captured most structural features of the multilevel network well, and sufficiently for our purposes (Robins and Lusher 2013, 184–185). Only for the bipartite network (AB) degree distributions and some higher-order clustering (XACB) could the model fit be improved. These are nested and accounting for them by including them in the model leads to marked model-instabilities and accounting for all the other statistics seems remarkable considering the complexity of the data.

Discussion

This chapter has demonstrated the value of a multilevel network perspective for studying actors' bilateral and multilateral cooperation. In the example considered here of the global fisheries governance complex, the one-mode bilateral network consists of states' bilateral fisheries agreements with one another and the two-mode multilateral network consists of states' membership in multilateral fisheries agreements. Since the multilateral fisheries agreements are complex, normative instruments, we also distinguish them on the basis of whether they are "managed" or not (whether they relate to an established secretariat) and add a further one-mode network representing their similarity in content.

Together this represents a new, genuinely multilevel relational dataset that concentrates on two interlocking architectures of bilateral fisheries agreements between countries (AA) and their overlapping membership in multilateral fisheries agreements (AB) and a third connectionist network of content similarity between multilateral fisheries treaty texts (BB).

A multilevel network perspective on this data considers the small and big ponds of actors' interactions jointly as interconnected subsystems, and indeed they do appear to be connected in interesting and important ways. While all three networks are valid and interesting in their own right, treating them as one multilevel network

⁵Note that we have fixed the most popular treaties here, so this interpretation references other treaties than, say, UNCLOS or UNFSA.

structure reveals additional interdependencies and suggests further mechanisms to explore in future research. We have proposed three statements about this interaction: states prefer to establish either bilateral or multilateral relations; states prefer similar multilateral treaties to those they have already joined; and states prefer "managed" multilateral treaties. All of these statements have been related to states' concerns about efficiency and all have been demonstrated to have some empirical justification.

First, we find that there is a tendency away from any general correspondence of activity, which suggests that states do choose to invest in either bilateralism or multilateralism, rather than balancing these two policies. These policies do not appear to be exclusive, but even where they are mixed there is an asymmetry in their employment.

Additionally, we also found a number of interesting attribute-based explanations. We find that states bilateral treaty activity is driven by how much they fish, but that experience of domestic marine species coming under threat motivates their multilateral treaty activity. This suggests that our thesis that different mechanisms drive the structure of bilateral and multilateral fisheries agreements is well founded. Moreover, it seems that for bilateral agreements, countries prefer partners that are proximate (probably for BFAs establishing maritime borders or regimes governing straddling fish stocks) and more and less developed countries tend to partner (probably for BFAs trading fisheries access for development aid).

Second, we find that states prefer what we call "managed" multilateralism. That is, they prefer multilateral fisheries agreements that either establish or relate to an established treaty secretariat. Such secretariats provide much needed continuity and consistency for actors struggling with complex and consequential issue areas such as that of global fisheries governance. The local dependencies of multilateral fisheries agreements related to secretariats appear to differ from those unrelated to secretariats. The secretariats are more embedded in the multilevel complex, having more signatories and being more strongly connected to other MFAs through multiple overlaps. We cannot tell merely from the binary multilevel network what type of nodes drives what ties, but the contrast between the structural profiles of MFAs endowed with more (secretariats) and less (non-secretariats) agency is telling.

Third, while there is a tendency away from signatory overlap in MFAs, even where their content is related, once related MFAs share several signatories they are likely to share further signatories. We suggest that this indicates that there are some particularly 'hot topics' that proliferate similar multilateral agreements with similar sets of members. In other words, there is a cumulative effect of co-signatories only when they are identified with a specific issue. From the perspective of MFA's content overlap, fewer parties in common entail more content diversity whereas MFAs with many shared signatories see greater content similarity. We cannot tell if either type of tie has precedence from the cross-sectional model employed here, but the systemic nature of the multilevel approach does open up an interesting perspective on the structural features of 'hot topics'.

These are important insights, and suggests plenty of ways to extend the model further. One particularly promising suggestion from the results presented here is to elaborate theories of multilevel structure and agency. Evidently, we need new, multilevel theories of governance complexity to adequately theorize the kinds of multilevel interdependencies identified here for international relations, which is replete with such examples, but also, through the generalization of the mechanisms of bilateralism and multilateralism, to other social contexts.

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