Informal Governance, Network Power and the Politics of Blood Diamonds

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Draft—Comments Welcome!

Abstract

Transnational institutions in which states, firms, and NGOs cooperate to govern the negative externalities of global corporate conduct vary in their institutional designs. Although these regulatory regimes are typically concerned with prisoners’ dilemma-like problems, they often lack the institutional structures required for effectively dealing with them. Rational choice-based theories of international cooperation are weak in explaining such inefficient institutions. I propose a political model of transnational institutional design that places distributional conflict and power asymmetries at the center of analysis. I argue that states, firms, and NGOs use multiple power variants, such as economic, institutional, and network power, to secure favorable institutional choices and that the extent to which different forms of power are effective and efficient means of influence is conditioned by the formality of the institutional context in which bargaining takes place. Integrating case study techniques and network analysis, I draw on data from the Kimberley Process on the regulation of “blood diamonds” to probe the explanatory power of my model.

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Why do transnational public-private governance schemes differ in their institutional designs? \(^1\) Transnational public-private governance schemes are institutions in which states, firms, and non-governmental organizations (NGOs) cooperate to regulate the negative externalities of global corporate conduct. They have been flourishing since the late-1990s and today govern a range of global policy domains including environmental protection, human and labor rights, and conflict prevention and security (Abbott and Snidal 2009a, p. 53-5; Abbott, Green and Keohane 2013, p. 2). In the World Commission on Dams, for example, states, business, and NGOs negotiated international standards for sustainable large dam construction (Brinkhoff 2002). In the security domain, the Voluntary Principles on Security and Human Rights bring together states, extractive companies, and NGOs to govern the security provisions of oil, gas, and mining firms operating in fragile states (Williams 2004).

There has been a growing scholarly interest in transnational governance (e.g. Reinicke and Deng 2000; Hauffer 2003; Borzel and Risse 2005; Abbott and Snidal 2009a, b; Buthe and Mattli 2011; Abbott, Green and Keohane 2013). However, despite the fact that existing research highlights the importance of institutional structures for the outcomes of public-private governance (Ulbert 2008; Liese and Beisheim 2011; Biermann et al. 2012), little work exists that examines the formal design features of transnational tripartite institutions. This is particularly surprising given the prevalence of transnational governance schemes which rational choice theories of international cooperation consider ill-equipped to tackle the substantive problems they were established to resolve.

Transnational public-private governance schemes typically address negative environmental and social externalities of global corporate behavior, such as unsustainable practices in forestry and mining, human rights abuses of private security contractors, or trade in rough

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\(^2\) Kaul (2006, p. 219) and Andonova (2010, p. 25) provide figures that illustrate the progressive growth of tripartite governance schemes in world politics.

\(^3\) See Schaferhoff, Campe and Kaan (2009) for a detailed overview of the literature.
diamonds fueling civil wars in Africa (Vogel 2009; Abbott and Snidal 2001, 2009a). Redressing these externalities is costly. States and companies are required to make substantial departures from their behavior under the regulatory status quo and invest resources they would not invest in the absence of regulation. In other words, transnational tripartite governance often, though not always, involves “deep” cooperation (Downs, Rocke and Barsoom 1996).

Crafting transnational public-private governance schemes is, therefore, plagued by free riding problems. Individual actors have an interest in cooperation but at the same time have incentives to renege on their commitments. In such mixed-motive, prisoners’ dilemma-like situations, rational choice-based theories of international cooperation suggest that monitoring and enforcement capabilities are essential for “achieving cooperation under anarchy” because they increase the likelihood that defection is detected and increase the costs of cheating (Keohane 1984; Axelrod and Keohane 1985; Downs, Rocke and Barsoom 1996).

The empirical record, however, tells a different story. Many tripartite governance schemes have no or very limited monitoring powers. The Voluntary Principles on Security and Human Rights, for example, rely on extractive companies’ self-reports to assess industry compliance (Pitts 2011). Likewise, public-private governance schemes often lack enforcement measures with “teeth”. The Extractive Industries Transparency Initiative, the Voluntary Principles on Security and Human Rights, and the United Nations Global Compact are all void of strong sanctioning mechanisms (Kantz 2007; Hansen 2009; Liese and Beisheim 2011). Thus, the institutional structures we observe in these and other cases deviate from expectations derived from rational choice-based theories of international cooperation. Why?

To explain this puzzle, I propose a political model that places distributional conflicts and power asymmetries at the center of the study of transnational institutions. Specifically, I examine the relationship between the power politics of tripartite bargaining and transnational institutional design analyzed in terms of formal monitoring and enforcement.

Abbott and Snidal (2009a) provide additional examples.
mechanisms. Extant work on the role of bargaining and power in the formation and evolu-
tion of international institutions typically focuses on economic and formal institutional
power (Krasner, 1991; Garrett, 1992; Gruber, 2000; Drezner, 2007). However, the context
in which negotiations over tripartite governance schemes occur is often characterized by the
prevalence of informal governance. I argue that in such a context it is the distribution of
network power, i.e. power based on central and brokerage positions in informal information
exchange networks, that drives the dynamics of tripartite institutional bargaining. Due to
their privileged access to information actors in central network positions face less uncertainty
about bargaining-relevant parameters, dominate agenda-setting and proposal-making, and
can manipulate others’ beliefs and preferences. This allows them to strike favorable deals.
This theoretical framework allows us to unpack the functioning of power in world politics
and to study the micro mechanics of power under conditions of informal governance.

I elaborate on my argument using empirical evidence from the Kimberely Process (KP).
Initiated in 2000, the KP brings together governments, the diamond industry, and NGOs to
prevent the illegal trade in “conflict diamonds” through implementing an intergovernmental
certification scheme for the trade in rough diamonds in combination with a self-regulatory
system administered by the diamond industry (Haufler, 2010; Bieri, 2010). Methodologically,
the paper integrates case study techniques and network analysis. Data was collected through
semi-structured interviews, archival research, and participant observations.

The remainder of the paper proceeds in three steps. First, I outline my theoretical
argument about tripartite institutional bargaining, information, and network power. This
discussion yields a theoretical lens which is then applied to two landmark negotiation episodes
from the KP; its initiation in 2000-2002 and its recent reform in 2010-2012. I conclude by
discussing how the paper adds to our understanding of transnational institutional design and
the functioning of power in global governance.

\[\text{The methodological appendix introduces the technical concepts of network analysis used in this paper.}
\text{Westerwinter (2011) provides a methodological discussion of the strengths and limitations of combining case}
\text{study techniques and network methods.}\]
Bargaining, Information Networks, and Institutional Design

Transnational institutions are the product of distributive conflict and bargaining. Even if states, firms, and NGOs agree that a regulatory issue needs to be addressed and that setting up a public-private governance scheme would make all parties better off compared to a situation of no cooperation, they have conflicting interests over what institutional structures should be selected because different choices vary in how they distribute the costs and benefits of cooperation (Krasner 1991; Garrett 1992; Gourevitch 1999; Gruber 2000; Stone 2011). As a result, states, firms, and NGOs bargain over the institutional design of transnational public-private governance schemes.

Take the Kimberley Process as an example. In the late 1990s, states, the diamond industry, and human rights NGOs agreed to stop trade in rough diamonds to finance civil war in Africa. Apart from this basic agreement, they strongly disagreed about how to exactly organize cooperation. Monitoring was a particularly contentious issue. Some states, such as Russia, China and Israel, rejected any attempt to establish verification procedures that go beyond self-reporting. Industry was also reluctant due to concerns about costs and intrusiveness. NGOs, by contrast, lobbied hard for a centralized monitoring mechanism. They argued that an independent third party auditing system would be essential for the regime’s effectiveness and credibility. These diverging interests gave rise to prolonged bargaining over how precisely the new institution ought to be organized.

Uncertainty is essential to negotiations over transnational institutions (see Snyder and Diesing 1977; Sutton 1986; Fearon 1998; Morrow 1994, 1999). Actors have at best incomplete knowledge about the nature of the regulatory problem they face, what other parties are willing to accept, how costly they deem non-cooperation, and how powerful they are. More fundamental, states, firms, and NGOs have only incomplete information about the wider “state of the world” in which the regulatory problem they deal with is embedded. For exam-
ple, when the “conflict diamonds” issue first entered the political agendas of United Nations diplomats, diamond industry representatives, and human rights activists in the late-1990s it was by no means clear what the exact nature and implications as well as possible solutions to this problem would be. It took quite a while until the different stakeholder groups started to get a grasp on the problem and learned how to position themselves best in negotiations over how to address what seemed to be a new global policy issue (Smillie 2010a; Bieri 2010; Haufier 2010). Thus, creating and managing transnational tripartite governance schemes is a complicated task, involving technical difficulties and political contention (Avant, Finnemore and Sell 2010; Abbott and Snidal 2009a). Due to this complexity, actors are uncertain of the value of the available institutional forms so that it is unclear which institutional design is preferable and what precisely the non-negotiated alternatives are (Morrow 1994).

In addition, negotiating transnational tripartite governance schemes involves elements of distributive and integrative bargaining (Walton and McKersie 1965; Young 1989). In situations of distributive bargaining, actors have accurate knowledge about the location and curvature of the Pareto frontier, i.e. they have a clear understanding of what results particular institutional solutions are likely to produce and how this affects their and others’ preferences. As a result, their negotiation tactics focus on achieving an outcome that is as close as possible to their most preferred solution. Under integrative bargaining, by contrast, negotiators lack a well-defined understanding of the Pareto frontier. Thus, before distributive bargaining can commence, states, firms, and NGOs need to explore the opportunities for mutually beneficial agreements and develop an understanding of the effects of institutional alternatives on actors’ positions. This does, however, not imply that distributive concerns play no role in integrative bargaining. In fact, actors can seek to shape the definition of the “state of the world” and the location and shape of the Pareto frontier such that it is easier for them to achieve favorable outcomes in distributive bargaining (Morrow 1994).
Forms of Power

One way to resolve bargaining problems is through the exercise of power (Krasner, 1991; Richards, 1999; Gruber, 2000; Moe, 2005). Individual actors or coalitions employ their power capabilities to induce cooperation on their most favorable institutional arrangement. In general, “power is the production, in and through social relations, of effects that shape the capacities of actors to determine their own circumstances and fate” (Barnett and Duvall, 2005, p. 8). It allows actors to get others to do something they would not do if power differentials were absent (Dahl, 1957). As Avant and Westerwinter (2014) among many others emphasize, power is intrinsically relational. Rather than flowing simply from the resource endowments of monadic actors, power derives from and is exercised through relationships.

Power has multiple faces (Bachrach and Baratz, 1962; Baldwin, 1979; Barnett and Duvall, 2005). It can be rooted in different sources (e.g. money, information), manifest in different forms (e.g. coercive, structural), and exercised through a range of channels. Different forms of power are not mutually exclusive, but interact with one another. I focus on three forms of power; namely, economic power, institutional power, and network power.

These three forms of power allow actors to affect bargaining through two basic mechanisms: (1) influencing preferences and beliefs; (2) shaping strategic opportunities. Economic power is based on the possession of financial and technical resources. It enables actors to directly manipulate others’ institutional preferences through side payments and issue linkage (Krasner, 1991; Sebenius, 1983). Agreement on a particular institutional design may depend on some form of redistribution of the costs and gains of cooperation. Actors with financial and technical capabilities can offer their opponents side payments as compensation for their agreement to an otherwise unfavorable institutional structure (Krasner, 1991; Moe, 2005). Likewise, combining several disparate issues into a single negotiation package opens up room for agreement that might otherwise not be possible (Axelrod and Keohane, 1985; Sebenius, 1983). Thus, side payments and issue linkage function as direct utility transfers between players in a bargaining game. Multinational companies and industrialized states,
for example, can offer financial support and technical assistance to smaller firms, developing countries, and NGOs to get their concession to a governance structure that otherwise implies significant burdens for them.

Furthermore, actors that hold superior economic capabilities in an issue area may have substantial “go-it-alone” power (Gruber 2000; Abbott and Snidal 2009a; Avant 2013). They are able to unilaterally generate or forestall institutions that, at least partially, meet their interests. If exercised, such outside options impose negative externalities on other actors because the exit of a major power reduces the value of cooperation for others (Stone 2013, p. 8). Thus, compared to side payments and issue linkage “go-it-alone” power has an indirect impact on others’ expected utility of cooperation. The big African producers of rough diamonds, such as Botswana, Namibia, or Zimbabwe, for example, have potential “go-it-alone” power in governing the global diamond trade. Given their sizeable share in the diamond production these states can use the threat to leave the Kimberley Process and establish their own governance scheme as bargaining leverage.

Second, institutional power is constituted by access to negotiation forums, voting rights, veto privileges, and other formalized control rights within a regime. It permits actors to manipulate strategic opportunities by controlling access to negotiations, managing agendas, and making proposals. Actors can use institutional power to block unfavorable decisions or structure negotiations in a more positive fashion. Veto positions are an important aspect of negative institutional power (Tsebelis 2002). Privileged access to decision-making forums, such as steering committees or working groups, and the ability to define agendas and make proposals at early negotiation stages are aspects of positive institutional power (Buthe and Mattli 2011; Stone 2011). Actors that control agendas and draft proposals can constrain others’ choice set at early stages of the negotiation process in a way that enables them to secure favorable institutional structures. In the Kimberley Process, for example, the annually rotating Kimberley Process Chair as well as the chairs of the various working groups have important agenda-setting and proposal making powers. Further, the de facto unanimity-
based voting procedures of the KP confer veto power to every state.

Third, network power derives from an actor’s position in the informal webs of relationships among those involved in governing an issue (Avant and Westerwinter 2014). Networks can be constituted by a range of relationships (e.g. resource exchange, friendship). I focus on informal communication networks that emerge through the exchange of policy-relevant information and advice among states, firms, and NGOs involved in negotiations over the institutional structures of transnational tripartite governance schemes. Communication networks are particularly important for understanding the dynamics and outcomes of institutional bargaining because access to information about, for instance, others’ beliefs and preferences and coalitional patterns are critical for crafting optimal negotiation strategies that avoid bargaining breakdown, while at the same time maximize one’s gains and minimizes loses.

Having many direct relationships (access) or being the only link between otherwise unconnected others (brokerage) in a network enables an actor to affect bargaining by manipulating the information available to negotiators. Specifically, actors with network power have advantages estimating others’ preferences and beliefs, changing others’ preferences and beliefs, and influencing strategic opportunities through agenda-setting and proposal-making. Recall that uncertainty is pervasive in bargaining and actors have limited knowledge about others’ preferences, beliefs, and power. In such a situation privileged positions in information exchange networks constitute a source of bargaining power because they transmit strategically valuable information which help mitigating these uncertainties, designing better negotiation strategies, and affecting how others perceive their expected utilities (Jonsson et al. 1998 p. 326). Actors in central network positions, for example, can use their knowledge about others’ preferences and beliefs to invent institutional arrangements that enjoy their support and, hence, facilitate agreement while at the same time providing them with individual gains (Young 1989).

The same informational benefits of central network positions also provide actors with a first-mover advantage at early stages of institutional bargaining (Buthe and Mattli 2011).
Receiving information about policy problems, available solutions, and coalitional patterns early on enables an actor to shape the negotiation agenda or draft proposals when others are still trying to find out what the problem they are dealing with is actually all about. These informational advantages of central positions in informal communication networks are of particular importance if negotiations occur in a context where more formalized mechanisms of information sharing are lacking.

Networks are also a tool to convey information. The effects of a particular institutional setup are difficult to judge a priori. What exactly is at stake in negotiations over institutional structures and the exact nature of the issue at hand is defined over time as actors engage in information exchange and debate (Jervis, 1988; Morrow, 1994). If a negotiator is uncertain of the value of different possible institutional forms, others can use their communication ties to provide information and shape its perceptions and expectations of a design option. Particularly if mediators are involved in this process this can help increasing the trustworthiness and accuracy of communication (Kydd, 2003, 2006). In 2003, NGOs in the Kimberley Process, for example, used their indirect network connections via the World Diamond Council and other industry representatives to the government opponents to monitoring to influence their beliefs and ultimately preferences in bargaining over the revision of monitoring rules.

Networks also provide strategic advantages. Central actors have privileged knowledge about how others are connected. This is strategically valuable information because it contains knowledge about existing and potential coalitions and how to best forge own and prevent others’ alliances. Further, central hubs can control access to a governance scheme and strategically engineer relationships (e.g. hubs can exclude others from negotiations; brokers can prevent others to communicate directly) (Lake and Wong, 2009).

Informal Governance and the Strategic Use of Power

Bargaining does not operate in a vacuum and what power strategy is most effective and efficient in a particular situation hinges on the characteristics of the political context in
which negotiations occur (Schelling, 1960, p. 22; Keohane and Nye, 1977, p. 11; Snyder and Diesing, 1977; Schachter, 1999, p. 202). Bargaining environments differ with respect to what costs wielding a particular form of power incurs and strategic actors will naturally seek to minimize these costs. Wielding power involves both economic and political costs. Most obviously, deploying economic capabilities or transferring technology requires financial resources. Exercising power also incurs more diffuse political costs related to the reputation of the power wielder vis-à-vis relevant audiences. For example, the overt threat of “go-it-alone” and veto power involves political costs because those who use it can be viewed as spoilers who block actions that are considered desirable by other negotiators or the overall public. Actors can eliminate or substantially reduce these costs by adapting their negotiation strategies to the prevailing context.

In addition to concerns about the costs of power effectively accomplishing political goals is obviously important. Negotiators want to achieve their policy objectives and secure favorable institutional arrangements. Hence, they use the form of power they expect to conduce to influence. I expect strategic actors to craft bargaining strategies in a way that maximizes their prospects for influence over institutional design, while at the same time minimizes costs.

What form of power approximates this twofold strategic requirement of effectiveness and efficiency depends on the characteristics of the environment in which bargaining takes place. I argue that the level of institutional formalization of the negotiation setting is of particular importance. In simplified terms, institutional environments can be dominated by formal or informal governance. Variation in the formalization of the institutional context couples with and filters economic, institutional, and network power in ways that affect the power dynamics of tripartite institutional bargaining.

High formality describes an institutional context in which standard operating procedures (e.g., voting rules, decision-making procedures, membership criteria) are explicitly codified and clearly specified (Stone, 2011, 2013; Helmke and Levitsky, 2004). By contrast, an informal institutional environment operates on the basis of practices and procedures that are
unwritten and unspecific (Stone 2013; Stone and Westerwinter 2014). A prime example of formal international governance are formal international organizations, such as the World Trade Organization, the United Nations, and the European Union, which operate on the basis of highly elaborated formal decision-making frameworks. Examples of informal global governance include informal agreements, informal international organizations, transgovernmental networks (Lipson 1991; Vabulas and Snidal 2013; Slaughter 2004).

Under conditions of formal governance, institutional power is a critical source of influence. If formal rules and procedures impose an explicit, tight structure on bargaining, actors with privileged access to formal negotiation forums, veto positions or otherwise favorable voting power, or the ability to manage the agenda can exert strong influence over the design of transnational public-private governance schemes. In a formal institutional context, the critical steps of negotiating institutional structures, such as agenda-setting, proposal-making, and decision-making, are governed by detailed written rules and procedures that provide actors few possibilities to work their way around those rules; and even if ways to bypass standard operating procedures exist, they are likely to be prohibitively costly. Thus, if formal governance dominates the institutional context in which negotiations occur, actors with institutional power can be expected to achieve favorable outcomes.

If the institutional context is of a rudimentary character, by contrast, institutional power is likely to be less effective. The dominance of informal governance places actors with network power in an advantageous position. Unlike its formal counterpart, informal governance works in a subtle, sometimes invisible, manner which benefits those that occupy central or otherwise privileged positions in informal networks of relationships. In fact, networks themselves can be considered one of many manifestations of informal governance (Radnitz 2011). If the rules of participation, agenda setting, voting, and information sharing are not or only vaguely specified, central actors in informal information exchange networks enjoy benefits in institutional bargaining.

Economic power is likely to be most effective if bargaining occurs in an institutional
context marked by moderate formality. On the one hand, because in a thin institutional context only few rules exist that govern actors’ interactions, they can and will easily turn to the coercive power potential residing in their financial capabilities and outside options to secure outcomes that reflect their preferences (Gourevitch 1999; Lake 2008). Conversely, a highly formalized institutional context makes the use of threat and coercion more difficult and costly. On the other hand, if the formalization of the bargaining environment is high, then actors will prefer to use network power since its use is likely to be as effective as economic power but less costly.

The discussion so far can be summarized in three observable implications. First, under conditions of informal governance actors that occupy privileged positions in informal information exchange networks are more likely to be able to influence the outcomes of transnational tripartite institutional bargaining than those at the network periphery. Second, under informal governance actors that hold multiple forms of power including network power choose to exercise network power because it is more effective and less costly than other power strategies. Third, actors that lack network power but have economic or institutional power at their disposal use these means to enhance their network position.

Transnational Tripartite Bargaining at Work: the Kimberley Process

In the late-1990s, the armed conflicts in Sierra Leone, Angola, Liberia, and the Democratic Republic of Congo were fueled by illegal profits from conflict diamonds, i.e. rough diamonds used by rebel groups to finance their fighting against legitimate governments. As a response to this linkage between diamonds and civil war, the UN imposed targeted sanctions on conflict diamonds in Angola and Sierra Leone (Wright 2004; Beffert and Benner 2005a).

As the ineffectiveness of these sanctions became obvious, South Africa, Namibia, and Botswana met for negotiations with the United Kingdom, the United States, and Belgium
in May 2000 in Kimberley, South Africa to discuss the issue of conflict diamonds (Grant and Taylor, 2004; Bone, 2004; Wright, 2004, 2012). Representatives of the diamond industry and human rights NGOs were also present at this first of a series of meetings which later became known as the Kimberley Process. Within less than three years states, the industry, and NGOs agreed on establishing a certification scheme for regulating the international trade in rough diamonds, the Kimberley Process Certification Scheme (KPCS), which aims at creating a “clean diamond cartel barring conflict diamonds from entering the legal market” (Beffert and Benner, 2005a, p. 2).

I examine two episodes in which states, the diamond industry, and NGOs negotiated over the formal monitoring and enforcement mechanisms of the KP; namely the initial negotiations over the KPCS (2000-2002) and the negotiations over the reform of the KP’s governance architecture (2010-2012). For each negotiation episode I analyze the institutional choices from which actors could have chosen a particular setup of monitoring and enforcement provisions, actors’ institutional preferences, actual choices made, and how different forms of power were used by different parties to influence institutional structures.

**Setting up the Kimberley Process**

**Institutional choices.** At the outset of the initial negotiations in 2000, states, the diamond industry, and NGOs faced a plethora of choices regarding how to design the organizational structure of the KP. How to organize monitoring and enforcement was particularly contentious and technically challenging (Beffert and Benner, 2005b, p. 5). Monitoring and enforcement of KP regulatory standards could have been delegated to the domestic authorities of participating states; to the KP secretariat; to the KP plenary meeting; or to independent external auditors. The status quo of no regulation of the rough diamond trade was, of course, also an option.

When on November 5, 2002 in Interlaken states, the diamond industry, and NGOs agreed on the institutional architecture of the KP, they created a unique institution (Haufler, 2010).
Importantly, this institution contained weak and decentralized monitoring and vigorous but decentralized enforcement mechanisms.

At its beginning, the KP contained a weak and decentralized monitoring system. States were required to provide reports to the KP annual plenary meeting (the main decision-making body) about how they implement regulatory standards. Further, “review missions” were envisaged as a complementary “verification measure”. They were meant to address situations “where there are credible indications of significant non-compliance with the Certification Scheme”. However, what precisely “credible indications of significant non-compliance” are and how to recognize them remained totally unspecified making it difficult to decide in what situations a review mission would be unleashed. In addition, launching a review mission required the agreement of all participating states. This provided potential rule violators and their allies an effective veto in the monitoring process. On top, all participating states had to work out the terms of reference for each individual review mission and agree upon the reviewers, again by consensus.

Compared to monitoring, KP enforcement is more vigorous, though also decentralized. In principle, the sanctioning capacities of the KP are powerful. The ultimate measure of punishing rule violations was (and still is) the expulsion of shirkers. The KPCS prohibits KP participants to trade rough diamonds with non-participants. Therefore, suspending a country from the regime isolates it from the legal diamond trade. This de facto exclusion is backed up by a waiver of the WTO that exempts the KP from provisions under the GATT on most-favored-nation treatment, elimination of quantitative restrictions, and non-discriminatory administration of restrictions. Because KP participants account for approximately 99.8 percent of the global rough diamond trade, an exclusion imposes high

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6Kimberley Process Certification Scheme, pp. 9-10.
7Kimberley Process Certification Scheme, p. 10.
8Kimberley Process Certification Scheme, p. 10.
9Kimberley Process Certification Scheme, p. 6.
costs and can, hence, serve as powerful threat to deter non-compliance.

However, the use of this potentially powerful enforcement tool is compromised by the rules and procedures that govern its execution. On the one hand, the KP cannot enforce its decisions directly; only individual member states can do so. On the other hand, while the KPCS clearly states that expulsion constitutes the ultimate measure of punishment, precise procedures for how it can be invoked are lacking. Importantly, any sanctioning measures are subject to political negotiations in which all states, including the potential rule violator, have equal voice and vote. Thus, as with monitoring each individual state has an effective veto which weakens the potentially powerful enforcement procedures of the KP.

**Initial preferences.** States, the diamond industry, and NGOs had a common interest in setting up a transnational tripartite regime to regulate the global diamond trade and prevent diamond revenues to fund rebel groups. However, actors’ preferences over the nature of the institutional structure of the regime varied. How to monitor and enforce regulatory standards was one of the most contentious issues. There were three camps: actors who pushed hard for a strong monitoring system that provides for independent third party audits (particularly NGOs); those who were reluctant to accept any comprehensive and detailed system of compliance verification (industry and states such as Russia, Israel, and China); actors that were not taking a particularly prominent position and remained largely passive during the negotiations (e.g. United States, European Union).

NGOs pushed hard for “regular, independent, expert monitoring of all national control mechanisms” (Smillie, 2002, p. 9). They argued that monitoring of states’ national control systems has to be mandatory for all KP members for the scheme to be credible and effective. NGOs also wanted the body responsible for monitoring to have some “teeth” which implied the specification of explicit consequences for states and industry in case they do not live up to their commitments and ultimately the ability to ostracize non-compliant participants.

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12 Interview state representative, Jerusalem, November 04, 2010.
13 Kimberley Process Certification Scheme, p. 11.
from the regime (Beffert and Benner 2005b, p. 7). This demand for mandatory, regular, and independent verification accompanied by the capacity to expel standard violators was essential for NGOs: “For NGOs, this is an obvious necessity. It is not negotiable; it cannot be watered down or leavened with vague wording. We must be clear on this.”

By contrast, many states, notably Russia, Israel and China, and the industry rejected the concept of independent monitoring outright. Instead, they argued for voluntary verification and sought to “ensure that the emerging scheme not be monitored by any institution outside their own national jurisdiction” (Smillie 2010a, p. 185). Some states (e.g. Russia) even considered anything beyond voluntary self-reporting a “deal-breaker” that would have led them to walk away from the negotiations. Reluctant states were particularly eager to make sure that the new institution does not infringe on their sovereign rights (Beffert and Benner 2005b, p. 7). They also warned of the costs independent monitoring would incur and were concerned that commercial confidentiality would be undermined. Governments with state-run diamond sectors were especially hostile towards vigorous monitoring (Wright 2012). Industry also highlighted the economic costs as well as transparency and commercial sensitivity issues as major concerns. The diamond industry in general and small and medium diamond dealers in particular were cautious about creating a set of new transparency rules that substantially deviated from the secretive and opaque trading system they had developed in the past (Beffert and Benner 2005b, p. 7).

Most other countries, including such big players as the United States, Canada, and the EU, remained silent. Notably, although states, such as the United States, South Africa, Botswana, and the EU, acknowledged the need for “good arrangements for compliance monitoring”, they did not speak up when the issue was negotiated, but referred to the rather “soft” wording as it ultimately got incorporated in the KPCS as adequate.

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14 See also, civil society petition “Governments and Industry: Stop Blood Diamonds Now! The Key to Kimberley”.
15 Notes for NGO Comments at WDC Meeting, Milan, March 13, 2002.
The battle lines that emerged on monitoring were mirrored in the fights over enforcement. NGOs argued that meaningful penalties should be associated with rule violations. Every country that decides to join the KP should be legally obliged to meet the regulatory standards set out in the KPCS and there should be consequences if it fails to do so (Smillie, 2002, p. 10). An arrangement without “teeth”, they argued, will lack credibility and ultimately fail to achieve its goals. States and industry objected any centralized sanctioning capacities and were anxious about keeping any responsibility for responding to non-compliance with individual states (Beffert and Benner, 2005b, p. 7).

The monitoring and enforcement mechanisms which were agreed upon in December 2002 in Interlaken were no single groups’ ideal point. However, given the configuration of initial preferences, the agreed monitoring and enforcement structures closely approximate the interests of recalcitrant states and industry (Beffert and Benner 2005b; Wexler, 2010). Monitoring became voluntary and primarily based on state and industry self-reporting. Review missions could only be triggered in extraordinary circumstances and were left to the discretion of the entire KP membership. Enforcement was potentially strong but the decentralized and informal rules and procedures that governed its execution provided states with significant control over its use.

**Bargaining over monitoring and enforcement.** The situation in which bargaining over the KPCS occurred was characterized by low formalization of the institutional context. For example, at the beginning of the negotiation process participation in the process was entirely contingent on the willingness of the South African convener; no rules existed that could have been invoked to ensure participation. Furthermore, who could make proposals and how was not spelled out in any statute or document so that informal practices and tacit understandings dominated with respect to procedural issues. Overall, in its early days the KP operated in an informal and often ad-hoc fashion.

My argument suggests that in such a situation we should expect actors with network power to be particularly influential. Economic and formal institutional power should figure
less prominently in actors’ negotiation strategies. And indeed, there is evidence suggesting that the network power of industry and its allies was essential for the negotiation outcomes.

The major representatives of the diamond industry, such as the World Diamond Council (WDC) or the market leader De Beers, were popular actors in the evolving KP network that attracted particularly governments which heavily relied on their expertise. This led to the formation of new communication ties between industry representatives and key governments. Further, with the establishment of the WDC soon after the launch of the KP the industry created a single focal point for its operations in the KP. The representatives of the WDC had the mandate to negotiate on behalf of the diamond industry and, hence, occupied together with a few other entities, such as De Beers and the Belgian High Diamond Council (HRD), an important brokerage position between governments and NGOs, on the one hand, and the diamond industry, on the other. As brokers, they were able to provide other participants with scarce, otherwise inaccessible information on such crucial issues as supply chain management or techniques for the identification of rough diamonds’ place of origin. This brokerage position and the informational advantages emanating from it provided industry representatives with power to influence the negotiation agenda, the definition of problems and potential solutions, and in some cases even others’ preferences. Importantly, industry used its informational advantage to persuade various states that state and industry self-reporting would be the only way to create an affordable and manageable monitoring and enforcement system.

In addition to these new relationships, industry could draw on existing strong connections with key states. De Beers had strong ties based on licensing agreements and collaborative ownerships with major African and Western diamond producers, such as South Africa, Botswana, Namibia, and Canada (Pohl 2005; Spar 2006). Further, in the early-2000s it bought major shares in Canadian mines and substantially expanded its activities in Russia through negotiating new trade agreements with Russian companies (Spar 2006, p. 203). Likewise, the HRD had close relationships with the Belgium government (Bieri 2010; Shax-
Moreover, intra-industry relationships have traditionally been characterized by dense and strong social ties. As Hauffler (2013, p. 15) describes: “The diamond sector is characterized famously by social networks, typically ethnic, that generate sufficient trust that millions of dollars in gems can be exchanged on a handshake.”

These strong connections provided the basis for trustful interactions among industry players as well as between the industry and several countries at a time when NGOs and other governments have just started to form collaborative relationships. In short, the representatives of the diamond industry together with a few key governments formed a powerful densely connected group to which outsiders had no access. Exploiting this powerful network position, the WDC, De Beers and the HRD were able to influence the negotiations over the design of KP monitoring and enforcement mechanisms.

By contrast, NGO representatives were less well connected within the emerging KP network. Initially, NGOs had difficulties establishing relationships with states and industry. Due to their aggressive campaigning activities during the late-1990s and the early negotiation period (Bieri, 2010), states and particularly industry were reluctant to engage with civil society organizations on cooperative grounds. Likewise, NGO activists continued to meet state and industry representatives with distrust and skepticism. This made the formation of relationships with states and companies difficult. The few ties NGOs had to like-minded governments, such as the United Kingdom (Beffert and Benner, 2005, p. 5), did not provide strategic benefits because these states decided to take no active position on the politically sensitive issues of monitoring and enforcement.

As a result, NGOs had less privileged access to the information flow within the network which made it difficult for them to influence the negotiations. In fact, they were in such a weak bargaining position that they ultimately had to back down on one of their key concerns in the negotiations; namely, the creation of an independent third-party auditing system.  

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These qualitative observations of the informal communication relations that existed during the 2000-2002 negotiation episode can be further strengthened and refined by examining the formal properties of the prevailing network structure. Overall, 119 states, companies, NGOs and other entities can be identified as—to varying extent—involves in the negotiations. The participation in informal information exchanges of these 119 actors was unbalanced. To start with, according to my data, only 62 of the 119 actors were actually participating in informal information exchanges during the negotiations; 57 states and organizations were completely isolated from this exchange. Among these 57 isolated actors were many NGOs, such as Action Aid, Oxfam International or Physicians for Human Rights. This peripheral location as isolates in the informal communication network made it difficult for them to make their voices heard during the negotiations.

If we focus on the group of 62 actors which were actively involved in informal communication, the picture remains largely the same. A closer look at the individual network positions of some of the most prominent actors reveals an uneven distribution of central network positions. As shown in table 1, De Beers and the WDC and South Africa and Botswana as two of the leading African diamond producing states occupy advantageous network positions particularly with respect to their outdegree (number of direct outgoing connections) and betweenness (being located on the shortest path between unconnected others) centrality. In terms of indegree (number of direct incoming ties) centrality, Global Witness and Partnership Africa Canada as the two leading NGOs in the KP are in better positions compared to industry and on an equal footing with South Africa and Botswana. This suggests that it is especially the ability to spread negotiation-relevant information and to mediate information flows between otherwise unconnected others that provides bargaining advantages. For example, by having many direct connections to others, the WDC was able to widely communicate its interpretations of regulatory problems and feasible solutions at the very early stages of the negotiations which helped it to persuade other parties that its preferred solution—a light monitoring and enforcement system—is most suitable to effectively tackle
the problem of conflict diamonds.

Table 1: Centrality and Centralization in the 2000-2002 Information Exchange Network

<table>
<thead>
<tr>
<th></th>
<th>Outdegree</th>
<th>Indegree</th>
<th>Eigenvector</th>
<th>Betweenness</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Beers</td>
<td>0.424</td>
<td>0.127</td>
<td>0.204</td>
<td>0.049</td>
</tr>
<tr>
<td>WDC</td>
<td>0.424</td>
<td>0.127</td>
<td>0.204</td>
<td>0.049</td>
</tr>
<tr>
<td>HRD</td>
<td>0.178</td>
<td>0.136</td>
<td>0.147</td>
<td>0.001</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.339</td>
<td>0.339</td>
<td>0.185</td>
<td>0.037</td>
</tr>
<tr>
<td>Botswana</td>
<td>0.339</td>
<td>0.339</td>
<td>0.185</td>
<td>0.037</td>
</tr>
<tr>
<td>Israel</td>
<td>0.331</td>
<td>0.110</td>
<td>0.178</td>
<td>0.004</td>
</tr>
<tr>
<td>United States</td>
<td>0.331</td>
<td>0.110</td>
<td>0.178</td>
<td>0.004</td>
</tr>
<tr>
<td>Russia</td>
<td>0.331</td>
<td>0.110</td>
<td>0.178</td>
<td>0.004</td>
</tr>
<tr>
<td>DRC</td>
<td>0.339</td>
<td>0.339</td>
<td>0.185</td>
<td>0.037</td>
</tr>
<tr>
<td>Global Witness</td>
<td>0.127</td>
<td>0.305</td>
<td>0.170</td>
<td>0.006</td>
</tr>
<tr>
<td>Partnership</td>
<td>0.127</td>
<td>0.305</td>
<td>0.170</td>
<td>0.006</td>
</tr>
<tr>
<td>Africa Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centralization</td>
<td>0.352</td>
<td>0.267</td>
<td>0.210</td>
<td>0.023</td>
</tr>
</tbody>
</table>

Notes: Calculations performed using the network package for R (Butts, Handcock and Hunter, 2013).

What about economic power? To start with, at the time of the 2000-2002 negotiations the global rough diamond production was highly centralized. Only three countries accounted for almost two-thirds of the overall global production. In 1999, with an annual production worth $1,800 million Botswana alone accounted for about 26 percent of the global production followed by Russia, South Africa and Angola which produced diamonds worth $1,600, $800, and $600 respectively. Compared to these market leaders Western producers, such as Canada or Australia, played only minor roles (see table 2).

Global trade was also centralized with a few countries accounting for the vast majority of exports and imports. According to a World Bank report, in 1999 Botswana alone was responsible for about 22 percent of the world’s total rough diamond exports (Goreux, 2001, p. 3). Russia, South Africa, and the Democratic Republic of Congo occupied the ranks two through four. To compare, the two biggest Western exporters, Australia and Canada, together account for only 12 percent of overall global exports.

Data on rough diamond imports are not readily available for 1999. A 2000 UN report
identifies Belgium, the United Kingdom, the United Arab Emirates, India, and Israel as the most important importers. Belgium was of particular importance with around half of all world diamond production passing in one way or another through the trading center Antwerp (Shaxson [2001], p. 216).21

Table 2: World Diamond Production 1999 and 2000

<table>
<thead>
<tr>
<th></th>
<th>1999 Value (mio. $)</th>
<th>1999 % World Production</th>
<th>2000 Value (mio. $)</th>
<th>2000 % World Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>1,800</td>
<td>26.47</td>
<td>2,200</td>
<td>29.33</td>
</tr>
<tr>
<td>Russia</td>
<td>1,600</td>
<td>23.53</td>
<td>1,600</td>
<td>21.33</td>
</tr>
<tr>
<td>South Africa</td>
<td>800</td>
<td>11.76</td>
<td>900</td>
<td>12</td>
</tr>
<tr>
<td>Angola</td>
<td>600</td>
<td>8.82</td>
<td>750</td>
<td>10</td>
</tr>
<tr>
<td>Australia</td>
<td>400</td>
<td>5.88</td>
<td>300</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>400</td>
<td>5.88</td>
<td>400</td>
<td>5.33</td>
</tr>
<tr>
<td>Namibia</td>
<td>400</td>
<td>5.88</td>
<td>500</td>
<td>6.67</td>
</tr>
<tr>
<td>Others</td>
<td>800</td>
<td>11.76</td>
<td>900</td>
<td>12</td>
</tr>
<tr>
<td>World</td>
<td>6,800</td>
<td>100</td>
<td>7,500</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: [Shaxson 2001, p. 214].

When it comes to manufacturing the United States had jewelry manufacturing worth $9.6 billion and was the biggest manufacturer of rough diamonds in 2000. Other relevant players include Western Europe, India, and China with manufacturing activities worth $8.1, $7.2, and $3.6 billion respectively (Bain & Company [2011], p. 49). Furthermore, the United States was, and still is, by far the biggest consumer of diamond jewelry. Estimates of the overall size of the US market for diamond jewelry in 2000 vary widely and range between $11.54 and $39.8 billion (Burkhalter, 2001) but clearly single out the United States as the most important consumer of gem-quality diamonds (Weber, 2001).

The distribution of financial capabilities within the diamond industry was also highly skewed. In 2000, the market leader De Beers sold rough diamonds worth $5.9 billion followed by the Russian monopole ALROSA, BHP Billiton, and Rio Tinto which registered sales of

$1.7, $0.3, and $0.2 billion respectively (Bain & Company 2011, p. 31). Finally, compared to the economic capacities of industry and diamond producing, trading, and manufacturing states, the economic power of NGOs, such as Global Witness or Partnership Africa Canada, is miniscule.

This highly skewed distribution of economic power had no strong impact on the outcomes of institutional bargaining. For starters, many actors with abundant financial capabilities played no decisive role in shaping the monitoring and enforcement structures of the KP. Take Russia as an example. Despite its substantial economic power as the second largest producer of rough diamonds in the world, Russia remained unable to fully accomplish its goals. Although throughout the negotiations it strongly opposed the inclusion of any language on compliance verification and enforcement into the new certification scheme the country did not manage to achieve its objective and ultimately agreed to the creation of a rudimentary monitoring mechanism. Thus, in several instances the correlational evidence on the relationship between the possession of economic power and the ability to influence institutional choices fails to be in line with the expectation that control over financial capabilities is an effective means of influence in tripartite institutional bargaining.

Moreover, although in some cases the actors in central network positions also hold significant economic power (e.g. Botswana, South Africa, De Beers), we lack strong evidence that side payments, issue-linkage, and “go-it-alone” power figured prominently in bargaining tactics. There is no recorded instance of industry or states offering NGOs financial or some other form of material compensation for their agreement to a monitoring and enforcement system they considered dysfunctional. For example, despite its superior position in the global diamond industry, De Beers did not use its capabilities to exercise direct influence over the institutional framework of the KP. Instead it typically “sat quietly in the second row of seats and decided matters during the breaks in the negotiation” (Wright 2012, p. 184) by using its informal relationships to other negotiators.

This is not surprising from the perspective of my argument. Why should have industry
Negotiating a New Governance Architecture

In 2010, led by the governments of Israel and the United States—the KP Chair and Vice-Chair at that time—the Kimberley Process entered negotiations over a reform of its governance architecture. These reform efforts covered a broad range of institutional design elements. Among the most contentious items was the strengthening of monitoring and enforcement. When the negotiations came to an end in November 2012 the results were mixed. While states, the diamond industry, and NGOs agreed on some minor changes in the monitoring system, no deal could be struck with respect strengthening enforcement capacities.

Institutional choices. A number of options regarding how to change monitoring and enforcement were at the table. Moving from a voluntary peer review system as established in 2003 to a mandatory, independent third party auditing mechanism was a possibility; keeping the peer review mechanism but making regular reviews mandatory was another; incorporating an independent external expert as part of reviews was another possibility; and of course simply maintaining the status quo was also an option. With respect to enforcement the range of possibilities was more limited. Here, the two basic alternatives were further institutionalizing the informal enforcement procedures and keeping the status quo of ad-hoc, negotiation-based enforcement.

When the negotiations came to an end at the Annual Plenary Meeting in November 2012 in Washington, states, industry, and NGOs agreed on a few amendments to the KP peer review mechanism which further institutionalize the system and open it up for broader
expert participation. Specifically, the new administrative decision introduced more regular review visits, broadened expert participation, and imposed additional requirements on how to follow-up on the findings of reviews. No agreement was reached on enforcement.

**Initial preferences.** States, the diamond industry, and NGOs had sharply diverging preferences over how to reform the KP monitoring and enforcement. There were again three camps that were actively involved in institutional bargaining and a fourth group consisting of all those actors that adopted a more passive role.

Again, NGOs’ maximal position was to develop the voluntary peer review system into a mandatory, independent third party auditing mechanism backed up by a credible sanctions apparatus. With respect to enforcement NGOs argued that “any regulatory system needs a system of standardized and graduated penalties as well as a technical support mechanism to remedy technical problems of compliance.” In particular, they demanded reforms that provide for a more systematic and formalized sanctioning apparatus which is not subject to ad-hoc negotiations driven by political and economic interests.

NGOs also had two second-best options. One was to maintain the basic structure of the peer review system but making the reception of regular review visits mandatory for all participating states. Another was to introduce an independent technical expert as part of all reviews who would then lead the review team and be in charge of writing review reports and recommendations. On these two points the NGO preferences were shared by a number of Western states including, most prominently, the United States and Canada.

NGOs and their allies confronted a large coalition of states which opposed any changes

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24 Kimberley Process Civil Society Coalition, Communique, Brussels Meeting, November 17-19, 2011, p. 3.


26 Interview NGO representative, Washington, DC, June 5, 2012.

of monitoring and enforcement. Basically what these actors preferred was maintaining the status quo without any amendments. This alliance included India, the United Arab Emirates, Russia, China, South Africa, and Zimbabwe.\textsuperscript{28}

A third group with a more complicated preference profile consisted of the diamond industry, the European Union, and states, such as Australia. To start with, in contrast to the 2000-2002 negotiations industry was divided on the issues of monitoring and enforcement (Partnership Africa Canada 2012, p. 2). While retailers (e.g. Jewelers of America) as well as Western mining companies, such as DeBeers, were in favor of strengthening monitoring and enforcement, companies located at the middle of the diamond production chain (e.g. diamond traders and manufacturers) were skeptical about introducing far-reaching changes that increased the level of scrutiny.\textsuperscript{29} As a consequence, in contrast to 2000-2002 industry was not able to articulate clear positions and play an important role in the 2010-2012 negotiations.

Finally, actors, such as the European Union and Australia, were also ambivalent in terms of their preferences over monitoring and enforcement reform. Both, the European Union and Australia, preferred reforms over the institutional status quo.\textsuperscript{30} But not at all costs. For them, strengthening the governance architecture of the KP was essential to prevent the scheme from becoming irrelevant in the coming years. However, paraphrasing one interviewee, if changing the KP means that important countries walked out, then they would not support such change.\textsuperscript{31}

These divergences were settled in favor of the status quo coalition. The amendments to the peer review system adopted at the 2012 Annual Plenary Meeting approximate the institutional preferences of the reform opponents and are largely at odds with the preferences of NGOs and their allies. Recalcitrant states were successful in blocking an institutionalization

\textsuperscript{29}Eli Izhakoff, President of the World Diamond Council, Address to the KP Plenary Meeting, Washington, DC, November, 2012, p. 4.
\textsuperscript{30}Interview government officials, Washington, DC, June 5, 2012.
\textsuperscript{31}Interview government official, Washington, DC, June 5, 2012.
of peer reviews and prevented the monitoring system to be opened up for the participation of experts from outside the KP. The attempts of the United States, Canada, and the NGOs to increase the formalization of enforcement were also blocked.

**Bargaining over Monitoring and Enforcement.** The political context in which the reform negotiations took place in 2010-2012 differed in important ways from the 2000-2002 environment. Importantly, the formalization of the institutional context had increased to a moderate to high level with elements of formal and informal governance co-existing. After the launch of the KP in 2003 a number of formal working groups and sub-committees have been established. These working groups serve as the primary working bodies where substantive negotiations are conducted, proposals get prepared, and contentious issues resolved before an issue enters the agenda of the Plenary Meeting.

In addition, decision-making has become more structured. In the KP, only states have the formal right to vote. While industry and NGOs participate in negotiations on an equal footing and play an important role in decision-making, their official status as “observers” does not provide them with the right to vote (Smillie 2005, Kantz 2007). Among states decision-making works by consensus where each state has one vote. Practically, however, consensus means unanimity (Smillie 2010a, p. 197; Smillie 2010b, pp. 3-4). Accordingly, each state has a de facto veto and can block unfavorable decisions which makes the KP a “one man-one veto arrangement” (Smillie 2010a, p. 197). Together with the working group system these decision-making rules imposed more structure on institutional bargaining in the 2010-2012 episode compared to the 2000-2002 negotiations. In such a political context we should expect that formal institutional power figures more prominently in actors’ negotiation strategies. There is again some empirical evidence in support of these expectations.

To start with, the structure of informal communication among KP participants changed

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32 Today, there exist en permanent working groups in the Kimberley Process; namely, the working group on monitoring, the working group on statistics, the working group of diamond experts, the working group on alluvial and artisanal production, the participation committee, the committee on rules and procedures, and the selection committee. See [http://www.kimberleyprocess.com/web/kimberley-process/working-groups](http://www.kimberleyprocess.com/web/kimberley-process/working-groups), accessed: March 23, 2013.
dramatically compared to the 2000-2002 negotiations. Although over time NGOs managed to improve their position in informal communication networks, their relationships particularly with African governments deteriorated again toward the end of the decade. In the wake of the negotiations over the KPCS compliance of the activities of the Mugabe regime in the Marange diamond fields of Zimbabwe the confrontation between NGOs and their supporters, on the one hand, and African governments, on the other, became more severe and at times even hostile. Mutual mistrust increased and previously established communication channels and informal working relationships deteriorated (Bieri and Waddell, 2012, p. 16).

This had an important impact on the distribution of network power among the protagonists in the 2010-2012 negotiations. During the period between 2010 and 2012 one can observe an increase in the overall fragmentation of the informal information exchange network. Because of the growing tensions and “negative emotions” in the context of the Zimbabwe negotiations the level of informal connectedness among states, the diamond industry, and NGOs declined considerably. The NGOs, for example, were more and more frustrated about the resistance of many governments to engage in substantial discussions about the linkages between diamond trade and human rights issues in general and the human rights abuses in the Marange fields in particular. To put additional pressure on these reluctant governments, some NGOs started to adopt a more aggressive negotiation strategy including public statements and reports.

Moreover, the behavior of some governments toward NGOs deteriorated between 2010 and 2012. To illustrate, at the November 2009 annual plenary meeting in Swakopmund the Zimbabwean delegation “openly mocked and shouted threats to a Zimbabwean civil society organization that had come to present evidence of government complicity in the violence in Marange” (Partnership Africa Canada, 2010, p. 3). Also the relationships between the

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33For a detailed account of the negotiations over the KPCS compliance of Zimbabwe see Westerwinter (2014).
United States, on the one hand, and Zimbabwe and its supporters, on the other, became increasingly problematic.\textsuperscript{36} As a consequence, in terms of network structure what we observe are two densely connected groups consisting mainly of NGOs and Western states, on the one side, and African and several key trading and manufacturing countries, such as the United Arab Emirates, China, and India, on the other side.

This fragmented structure and the loss of several informal relationships to key governments made it difficult for NGOs to disseminate their positions during the reform negotiations. They still had strong ties to important Western governments including first and foremost the United States and Canada but these players themselves had lost several of their relationships with African states during the Zimbabwe crises so that the distance which NGO information could travel in the network remained limited. Conversely, also the strategic information NGOs were able to obtain from other actors was limited because their main sources of such information were the United States, Canada and states with similar preferences and knowledge so that much of the information their informal relationships provided them was redundant.

This qualitative analysis of the patterns of relationships among states, the diamond industry, and human rights NGOs is supported by examining the structural properties of the informal information exchange network that existed during the negotiation episode. We see a decrease in the overall information exchange and communication activities compared to the 2000-2002 network. Despite the fact that more actors were involved in informal information exchanges—network size increased from 119 to 154 nodes between the first and second negotiation episode—the density of communication decreased from about 0.07 to 0.01. Thus, while in the first negotiation episode more than 7 percent of all possible ties were actually realized, in the informal communication network in 2010-2012 it was only about 1 percent.

Furthermore, of the 154 states, companies, and NGOs that were identified by various

\textsuperscript{36}Author’s meeting notes, Kimberley Process Annual Plenary Meeting, Jerusalem, November 2010.
sources as involved in the negotiations, 124 actors were completely isolated from the informal communication that occurred during the negotiation episode; only 30 actors were actively involved. Among the 124 isolated actors were many NGOs, such as the Liberian Green Advocates and the Zimbabwe-based Center for Research and Development and Zimbabwe Lawyers for Human Rights. Importantly, even resourceful organizations that had ties in the 2000-2002 network, such as Human Rights Watch or the Belgian International Peace Information Service, became disconnected during the 2010-2012 period.

Also, the overall centralization of the network, i.e. the distribution of central positions among actors, increased. Particularly with respect to eigenvector centrality central positions were more concentrated in the 2010-2012 network compared to the 2000-2002 network. This means that informal communication was more clustered around a few highly central actors.

Table 3: Centrality and Centralization in the 2010-2012 Information Exchange Network

<table>
<thead>
<tr>
<th></th>
<th>Outdegree</th>
<th>Indegree</th>
<th>Eigenvector</th>
<th>Betweenness</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWDC</td>
<td>0.013</td>
<td>0.013</td>
<td>0.049</td>
<td>0.000</td>
</tr>
<tr>
<td>WDC</td>
<td>0.118</td>
<td>0.098</td>
<td>0.306</td>
<td>0.003</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.092</td>
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<td>0.286</td>
<td>0.004</td>
</tr>
<tr>
<td>Botswana</td>
<td>0.046</td>
<td>0.039</td>
<td>0.161</td>
<td>0.000</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>0.026</td>
<td>0.026</td>
<td>0.090</td>
<td>0.000</td>
</tr>
<tr>
<td>Israel</td>
<td>0.033</td>
<td>0.026</td>
<td>0.111</td>
<td>0.000</td>
</tr>
<tr>
<td>United States</td>
<td>0.144</td>
<td>0.137</td>
<td>0.317</td>
<td>0.009</td>
</tr>
<tr>
<td>Russia</td>
<td>0.085</td>
<td>0.085</td>
<td>0.245</td>
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</tr>
<tr>
<td>UAE</td>
<td>0.046</td>
<td>0.039</td>
<td>0.133</td>
<td>0.000</td>
</tr>
<tr>
<td>India</td>
<td>0.092</td>
<td>0.098</td>
<td>0.256</td>
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</tr>
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<td>Global Witness</td>
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<td>0.000</td>
</tr>
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<td>Partnership</td>
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<td>0.092</td>
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<td>0.002</td>
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<tr>
<td>Centralization</td>
<td>0.134</td>
<td>0.141</td>
<td>0.413</td>
<td>0.008</td>
</tr>
</tbody>
</table>

*Notes: Calculations performed using the network package for R (Butts, Handcock and Hunter, 2013).*

If we move from the network to the actor level of analysis and examine the positions of the reform protagonists, we see a highly uneven distribution of central network positions. As shown in table 3, the United States and the World Diamond Council occupy important
positions as hubs in the information exchange network. Especially their outdegree and eigenvector centrality reflect their dominant positions. Other key players, such as Russia, India, or the United Arab Emirates, rank lower. NGOs, such as Global Witness and Partnership Africa Canada, also occupy less prominent network positions.

This profile of informal communication ties provided the United States and the WDC with the relational infrastructure needed for accessing and disseminating large amounts of strategic information. Particularly their connections to other central actors as indicated by their high eigenvector centrality allowed them to tap and spread large amounts of negotiation-relevant information in short periods of time. Their opponents including, for example, Zimbabwe, the United Arab Emirates, and Israel, lacked this strategic advantage.

There are several pieces of qualitative evidence in my data that indicate that network power was a key element in the US’s bargaining strategy. When the US together with Canada and the NGOs bargained for the creation of a sub-group on enforcement within the working group on monitoring as a step toward an increased institutionalization of KP enforcement it used its knowledge about the positions and major concerns of the reform opponents to articulate a proposal which they thought would provide room for agreement. During the hot phase of the negotiations they repeatedly referred to the fact that the new sub-group would only provide a more formalized setting for information exchange and coordination among national custom and law enforcement authorities and have no enforcement authority itself, that the new body would operate strictly within the overall mandate of the KP, and that membership would be voluntary. They knew from various exchanges with India, Russia, and their supporters that these points were major concerns for them. Rather than employing a coercive strategy based on a “take-it-or-leave-it” approach they used more subtle negotiation tactics based on their strategic information and crafted a bargaining strategy that included a proposal that anticipated their opponents’ major concerns to make agreement more likely.

38 Ambassador Milovanovic, Opening Remarks to Kimberley Process Plenary, Washington, DC, November 27, 2012, p. 3.
Despite all efforts, they failed.

Another example comes from the negotiations over changing the monitoring system. Here, the United States together with Canada and the NGOs sought to open up the peer review system for the participation of external experts. However, rather than starting with a strong proposal that closely reflects its preferences, the US used its knowledge about the preferences and concerns of the reform skeptics to come up with a bargaining strategy that addressed the skeptics’ concerns from the beginning.\footnote{Author’s participant observations, Kimberley Process Annual Plenary Meeting, Washington, DC, November, 2012.}

In both cases the US would not have been able to anticipate the preferences and concerns of their opponents had they not received that information through their informal communication ties. Yet, in both instances the efforts of the US and its allies to establish the ground for agreement were effectively blocked by South Africa, Russia, the United Arab Emirates, India and other reform opponents who used their veto power to block institutional changes.\footnote{Author’s participant observations, Kimberley Process Annual Plenary Meeting, Washington, DC, November, 2012.}

What about economic power? At the outset of the negotiations the global production of rough diamonds was still highly centralized. If anything the centralization of production has further increased compared to the situation at the beginning of the decade. As table 4 shows, throughout the period between 2009 and 2011 only four states (Russia, Canada, Botswana, South Africa) together accounted for about 75 percent of the world’s diamond production. The major African producers, such as Botswana and South Africa, still figured prominently among the world’s most important diamond producers with an annual production of $1,436 and $886 million respectively in 2009. Also Russia maintained its position as a leading producer with an annual production ranging from $2,341 to $2,675 million between 2009 and 2011. Canada has expanded its market position and became a major diamond producer. While its annual production in 1999 was worth only $400 million, it produced diamonds worth $1,475 million in 2009. This growth further continued in 2010 and 2011.

Another important change is the rise of Zimbabwe on the global diamond market. In the
middle of the decade large deposits of high quality diamonds were discovered in Zimbabwe. Although it took a few years until the country was able to exploit its newly discovered resources, diamond production in Zimbabwe started to take off in 2010 and 2011. From an annual output of $20 million in 2009 production jumped to $340 and $476 million in 2010 and 2011. As a consequence, Zimbabwe’s share in the global diamond production increased from irrelevant 0.02 percent in 2009 to 3.3 and 2.2 percent in 2010 and 2011. This rapid growth is expected to further continue in the coming years.

Table 4: World Diamond Production 2009-2011

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th></th>
<th>2011</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value (mio. $)</td>
<td>% World Production</td>
<td>Value (mio. $)</td>
<td>% World Production</td>
</tr>
<tr>
<td>Russia</td>
<td>2,341</td>
<td>28</td>
<td>2,382</td>
<td>21</td>
</tr>
<tr>
<td>Canada</td>
<td>1,475</td>
<td>18</td>
<td>2,305</td>
<td>20</td>
</tr>
<tr>
<td>Botswana</td>
<td>1,436</td>
<td>17</td>
<td>2,586</td>
<td>23</td>
</tr>
<tr>
<td>SAF</td>
<td>886</td>
<td>11</td>
<td>1,194</td>
<td>10</td>
</tr>
<tr>
<td>Angola</td>
<td>804</td>
<td>10</td>
<td>976</td>
<td>8.6</td>
</tr>
<tr>
<td>Namibia</td>
<td>409</td>
<td>5.0</td>
<td>744</td>
<td>6.5</td>
</tr>
<tr>
<td>Australia</td>
<td>313</td>
<td>3.8</td>
<td>252</td>
<td>2.2</td>
</tr>
<tr>
<td>DRC</td>
<td>226</td>
<td>2.7</td>
<td>174</td>
<td>1.5</td>
</tr>
<tr>
<td>SLE</td>
<td>78</td>
<td>0.9</td>
<td>106</td>
<td>0.9</td>
</tr>
<tr>
<td>ZIM</td>
<td>20</td>
<td>0.2</td>
<td>340</td>
<td>3.0</td>
</tr>
<tr>
<td>India</td>
<td>1.7</td>
<td>0.02</td>
<td>3.3</td>
<td>0.03</td>
</tr>
<tr>
<td>China</td>
<td>0.5</td>
<td>0.01</td>
<td>0.3</td>
<td>0.00</td>
</tr>
<tr>
<td>Others</td>
<td>272</td>
<td>3.3</td>
<td>330</td>
<td>2.9</td>
</tr>
<tr>
<td>World</td>
<td>8,262</td>
<td>100</td>
<td>11,393</td>
<td>100</td>
</tr>
</tbody>
</table>


The situation with respect to diamond exports, imports, manufacturing, and consumption remained nearly unchanged compared to the 2000-2002 episode. Also the distribution of economic capabilities within the diamond industry and between NGOs and other KP participants remained virtually stable.\textsuperscript{41}

There is no strong evidence in my data that indicates that economically powerful actors

\textsuperscript{41}For a more detailed analysis see Westerwinter (2014).
directly used their financial capabilities as bargaining leverage. Side payments and issue-linkage played no prominent role in actors’ bargaining tactics. Neither did companies offer NGOs financial in exchange for their agreement to monitoring and enforcement structures that they would have otherwise rejected, nor did economically powerful consumer and trading countries, such as the United States and Canada, try to organize the support of small African nations for a strengthened monitoring apparatus by providing them with financial or technical assistance.

Despite the absence of directly exercised economic power, there is some evidence that differences in financial capabilities played an indirect role. Economically powerful actors, for example, have the resources required to send large delegations to KP meetings. Given that attending these meetings is costly only few participants can afford to attend negotiations with large delegations. As a result, while economically powerful actors, such as the US, the EU, Russia, Zimbabwe, and industry, typically attend negotiations with delegations of six or more individuals, others including Switzerland, Australia, and the NGOs have only a few people on the ground. Such differences in delegation size in turn affect how much of the negotiations actors are able to cover. The meetings of working groups—which are the sites where most of the critical bargaining occurs—run in parallel so that small delegations have to choose which meeting to personally follow. In addition, especially during “hot” negotiation phases extraordinary meetings are scheduled which often last until late at night. While larger delegations can handle parallel and extraordinary meetings flexibly, smaller delegations are at a disadvantage. As a member of a small Kimberley Process delegation reports, because institutionalized mechanisms for sharing information about negotiation agendas, progress, and future steps are absent, being not directly involved in the discussion of a particular item makes it difficult to obtain accurate information. The only way to obtain such information for those not directly involved in negotiations over a particular item are informal communication

Furthermore, economically powerful actors are in a better position to participate in KP review visits and missions. The review visits and missions which are the cornerstone of the KP’s peer review system. Their primary purpose is to assess the compliance of states’ export and import control systems with the minimum requirements of the KPCS. But in addition they are a major venue for information sharing and trust-building among KP participants (Bieri and Waddell 2012, p. 14-5). Participating in review teams provides actors with privileged access to information held by others about ongoing negotiations and other aspects of KP operations. In addition, because they cause participants to spend several days of intensive work together, review visits also promote the formation of stronger personal relationships among states, industry, and NGOs which in turn can have a positive impact on trust and information sharing.

In sum, as in previous negotiation episodes there is no strong evidence that the direct use of economic power in form of side payments and issue-linkage figured prominently in actors’ bargaining strategies. Yet, the increased institutional formalization of KP governance opened up routes through which economic advantages could indirectly impact institutional bargaining in form of increased coverage of negotiation meetings and participation in the day-to-day KP operations.

What role did institutional power play? As outlined above, the formalization of the institutional context of the KP increased since 2002. The increasing number and formalization of working groups and the codification of previously informal operationg procedures imposed more structure on institutional bargaining. As a result, the relevance of institutional power has increased compared to the 2000-2002 negotiations.

Three aspects of institutional power were of particular importance: the distribution of voting rights, access to negotiation forums, and agenda-setting and proposal-making powers. Unanimity decision-making provided each state with a de facto veto position resulting in
unbalanced institutional power between states, on the one hand, and industry and NGOs, on the other. At the same time, unanimity decision-making led to an equal distribution of voting power among states. Given the steady growth of the number of member states since 2002 (see figure 1), unanimity decision-making led to an increased number and heterogeneity of powerful parties within the KP which made achieving bargains in the 2010-2012 reform negotiations much more difficult compared to the 2000-2002 negotiations. This is reflected in the complete failure of agreement on enforcement and the only minor movements toward strengthened monitoring.

Figure 1: Kimberley Process Member States, 2002-2012

![KP Membership 2002-2012](image)


The picture becomes more nuanced if we examine formal access to negotiation forums. States, industry, and NGOs have equal access to the Intersessional and Annual Plenary Meetings—the primary decision-making bodies of the KP. All governments and organizations
can attend these meetings, take the floor, and raise questions and concerns. Participation in the working groups is, however, more uneven. Overall, only 31 states and organizations participated in the seven working groups and the reform committee during the negotiation episode. Few states and organizations (e.g. US, EU, WDC) were involved in seven or eight working groups, while the vast majority of actors including Switzerland and Global Witness only covered three or fewer forums. Hence, a large number of states and organizations had no or only limited access to the critical stages of the negotiation process.

Finally, agenda-setting and proposal-making powers are also distributed unevenly. The annually rotating KP Chair and Vice-Chair have substantial agenda-setting and proposal-making power. In addition, the chairs of the working groups and committees have ample room to shape the agendas of working group negotiations. Importantly, the roles of chairs and vice-chairs are largely reserved for states leaving industry and NGOs at a disadvantage.

As expected on the basis of my theoretical model, under conditions of increased institutional formalization this uneven distribution of institutional power had an important impact on the negotiations. Most notably, at several occasions the states that were against strengthening monitoring and enforcement used their veto powers to prevent negotiations from moving toward an unfavorable direction. Although vetos were not issued formally at any point in the negotiation process, the explicit or implicit threat of formally objecting a particular issue often sufficed to block unfavorable developments. The increased number and heterogeneity of member states made it more difficult to strike bargains that reflect the interests of all veto players.

For example, when the NGOs together with the United States, Canada and a few other states tried to open up the peer review system for the regular participation of external experts they experienced vigorous pushback by South Africa, India, Botswana and many other African states which raised concerns about threats to confidentiality and argued that

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45 Document on historical development of working group and committee memberships prepared for the author by the 2012 Kimberley Process Chair (United States).
46 Administrative Decision, Terms of Reference for the Chair and Vice-Chair of the Kimberley Process, 2010.
the expertise available among KP members was sufficient for sustaining high-quality peer-to-peer monitoring. The proponents of increased external participation, by contrast, highlighted the fact that review teams often lack the technical and political expertise required to monitor a country’s export and import control system and that the possibility to recruit external experts for monitoring visits and missions would increase the monitoring capacities of the KP. The discussions went back and forth and as the recalcitrant states became aware that their opponents will not back down they simply said they are unable to agree to such an expansion of the monitoring system, i.e. they implicitly referred to their ability to object to it, so that the US and its allies had to cave in.\footnote{Author’s participant observations, Kimberley Process Annual Plenary Meeting, Washington, DC, November 27-30, 2012.}

Conclusions

Using a political model of transnational institutional design this paper analyzed the creation and reform of the Kimberley Process. Focusing on two negotiation episodes during the life course of this transnational public-private governance scheme, I examined how the level of formalization of the institutional context in which negotiations take place affects the power strategies states, firms, and NGOs choose to shape the outcomes of tripartite bargaining over monitoring and enforcement mechanisms. Findings of this qualitative analysis lend first support to my argument. As my model suggests, in an environment dominated by informal governance the informational and strategic advantages derived from central positions in informal communication networks among negotiators are important bargaining assets. Economic and especially institutional power are less decisive. As the formalization of the institutional context increases, the role of institutional power grows.

My analysis further suggests that economic, institutional, and network power interact with one another. On the one hand, rather than offering costly side payments or issue linkages to their opponents actors that control financial capabilities use these to improve
their presence in negotiations which in turn has enhancing effects on their institutional power. On the other hand, access to formal institutional structures (e.g. working groups and review missions) provides actors with opportunities to build informal communication ties which then can be used to affect others’ preferences and beliefs. In other words, institutional power—particularly in the form of access—can have an enhancing effect on network power.

Together these findings suggest that focusing on the power politics of transnational institutional design can help better understand institutional outcomes that are considered inefficient in terms of rational choice-based theories of international cooperation. They also suggest that the political environment has an important impact on how and what forms of power are manifest in institutional bargaining and when they have effects. This highlights the importance of a more nuanced understanding of the context of power politics in contemporary world politics (Finnemore and Goldstein 2013).

My analysis also suggests that a network approach opens up ample room for refining and expanding hypotheses about the functioning and effects of informal governance in world politics. Network analysis provides a way to introduce the depth and precision required to study informal governance. Specifically, networks are one way to conceptualize informal power of strong as well as weaker players both within and outsiders formal international organizations. Importantly, the methodological toolkit of network analysis is a promising way to make progress toward identifying and measuring informal governance structures and to examine their impact on the dynamics and outcomes of global governance.
Methodological Appendix

This appendix introduces the network data and technical concepts used in the paper. Comprehensive introductions to the methods of formal network analysis are provided elsewhere (see Wasserman and Faust, 1994; Carrington, Scott and Wasserman, 2005).

Data for measuring the structure of the informal information exchange networks among states, companies, and NGOs involved in the negotiations over the monitoring and enforcement mechanisms of the KP in 2000-2002 and 2010-2012 was collected using a multiple measurement and multiple sources strategy (Butts, 2009). This data collection procedure combines information from key informant interviews and archival materials. I describe the procedure using the 2000-2002 negotiations as an illustration. Data collection for the 2010-2012 negotiation episode followed an identical pattern.

In a first step, documents and qualitative interviews were consulted to identify actors reported as involved in the negotiations over the creation of the KP between May 2000 and November 2002. This boundary specification yielded a set of 119 state and non-state actors. Then actors who held key positions during the negotiations (e.g. leading states, business associations, NGOs) were asked to provide information on the exchange of policy-relevant information and advice pertinent to monitoring and enforcement among these 119 actors. Key informants were selected so as to represent structurally non-equivalent parts of the network under study to compensate for actor bias emanating from network position (Burt, 1983). Further, I selected actors that could be expected to be central in the network to enhance the accuracy of their network assessments (Marsden, 2005). In sum, 5 key informant network assessments were obtained. This data was then supplemented with information gained from archival materials (e.g. minutes of negotiation meetings, confidential memos, press releases, NGO reports) which provided an additional assessment. In a final step, the individual network assessments were merged and only those ties taken into consideration which were either revealed by documents or jointly reported by at least two key informants.

The resulting relational data can be represented as a $n \times n$ square matrix $\Omega$, where
each element $\omega_{ij}$ represents a transmission of policy-relevant information from actor $i$ to $j$, $(i, j = 1, \ldots, n)$, and $n$ is the number of nodes in the network:

$$\Omega_{n,n} = \begin{pmatrix}
\omega_{1,1} & \omega_{1,2} & \cdots & \omega_{1,n} \\
\omega_{2,1} & \omega_{2,2} & \cdots & \omega_{2,n} \\
\omega_{3,1} & \omega_{3,2} & \cdots & \omega_{3,n} \\
\vdots & \vdots & \ddots & \vdots \\
\omega_{n,1} & \omega_{n,2} & \cdots & \omega_{n,n}
\end{pmatrix}.$$ 

Because data on information exchange between states, firms, and NGOs involved in KP negotiations was collected as directional, the above and below diagonal entries of $\Omega$ are not identical ($\omega_{ij} \neq \omega_{ji}$). The elements of $\Omega$ can be formally defined as follows:

$$\omega_{ij} = \begin{cases} 
1 & \text{if actor } i \text{ sent information to } j \text{ during the negotiation episode} \\
0 & \text{otherwise.} 
\end{cases}$$  \hspace{1cm} (1)$$

I use four measures of node centrality to describe actors' position in the negotiation networks; namely, outdegree, indegree, eigenvector, and betweenness. Degree centrality describes the number of direct connections an actor $i$ has with others in a network [Freeman, 1978]. In case of a directed network one can distinguish between outdegree and indegree centrality which measure the number of a node's direct outgoing and incoming ties respectively. Formally, the outdegree and indegree of node $i$ are defined as follows

$$Outdeg_i = \frac{\sum_{ji \neq i} \omega_{ij}}{(n - 1)} \quad \text{and} \quad Indeg_i = \frac{\sum_{ij \neq i} \omega_{ji}}{(n - 1)},$$  \hspace{1cm} (2)$$

where $n - 1$ is the number of nodes in the network other than $i$. Because outdegree and indegree measures are strongly affected by the overall number of actors in a network the absolute number of node $i$'s outgoing and ingoing ties is divided by $n - 1$ to normalize degree scores and facilitate comparison across networks.
Eigenvector centrality measures how far an actor is directly connected to other central nodes (Bonacich 1987). Thus, it takes into account that a node’s centrality depends on the centrality of its neighbors, its neighbors’ neighbors, etc. Technically, it is a centrality measure “in which a unit’s centrality is its summed connections to others weighted by their centralities” (Bonacich 1987 p. 1172). The basic notion of eigenvector centrality is formalized as follows:

$$\lambda e_i = \sum_{i \neq j} \Omega_{ij} e_j,$$

where $e_i$ and $e_j$ are the $ith$ and $jth$ elements of an eigenvector of $\Omega$, and $\lambda$ is the eigenvalue associated with this eigenvector. For the purpose of computing eigenvector centralities the directed network data is symmetrized so that $\omega_{ij} = \omega_{ji}$.

Betweenness centrality calculates the number of shortest paths or geodesics that connect node $j$ and $k$ and go through node $i$ (Freeman 1978). In a general sense, betweenness centrality measures the extent to which node $i$ is pivotal for transactions between every other two nodes in a network and can be understood as a global measure of brokerage. It can be formalized as follows:

$$Between_i = \sum_{\forall j \neq k, j \neq i \neq k} \frac{g_{jik}}{g_{jk}} \left( \frac{(n-1)(n-2)}{2} \right)^{-1},$$

where $g_{jk}$ is the number of geodesics connecting nodes $j$ and $k$ and $g_{jik}$ is the number of geodesics between $j$ and $k$ that contain $i$. The second term in equation 4 is a normalizing constant that refers to the maximum number of possible non-directional connections in a network.

Finally, centralization is a network-level index that measures the dispersion of central positions in a network, i.e. how much nodes vary in terms of their centrality (Butts 2009 p. 26). Network centralization can be computed on the basis of all four node centrality measures introduced above. The general formalization is given by the following equation:
\[ Cent_\Omega = \frac{\sum_i [C^* - C_i]}{\max \sum_i [C^* - C_i]} , \]  

where \( C \) refers to a particular centrality measure (e.g. indegree or betweenness), \( C^* \) is the largest observed value of \( C \) in the network, \( C_i \) is the observed value of \( C \) for node \( i \), and \( \max \sum_i [C^* - C_i] \) is the maximum possible sum of differences in node centralities for a network of \( n \) nodes. \( Cent_\Omega \) measures the degree to which \( C^* \) exceeds the centralities of all other nodes in the network. It varies between 0 and 1 with lower values indicating a relatively equal distribution of central positions and higher values a relatively uneven distribution.


URL: http://statnet.org/


