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**International Environmental
Agreements: Politics, Law and
Economics**


ISSN 1567-9764
Volume 17
Number 4

Int Environ Agreements (2017)
17:501–529
DOI 10.1007/s10784-016-9332-y



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State power and diffusion processes in the ratification of global environmental treaties, 1981–2008

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Accepted: 7 July 2016 / Published online: 20 July 2016
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Abstract There have been many explanations for why countries ratify global environmental treaties. They range from neorealist theory, to hegemony theory, world society theory, and network embeddedness theory. Drawing on hegemonic transition theory, this paper provides evidence that prior to the fall of the Soviet Union, strong and weak countries ratified a treaty if the USA or the USSR ratified the treaty first. After the fall of the Soviet Union, countries' proximity to world society institutions increased the likelihood of ratifying a treaty, and only weaker countries emulated the ratifications of the USA and Russia. However, weaker countries also emulated economic, religious, and language peers, diplomatic ties, and neighbors as well. In contrast, more powerful countries ratified treaties more independently. We studied the ratifications of eight universal environmental treaties by 166 countries between 1981 and 2008 and showed that as the geopolitical context changed, the diffusion process changed. The paper argues that the hegemonic transition which took place in the late 1980s and early 1990s was an enabling event that helped to explain the new roles that major powers assumed in the 1990s and 2000s and opened the door to the ascendancy of global institutions and broader participation in the environmental regime.

Keywords Policy diffusion · Social networks · International environmental agreements · State power

Electronic supplementary material The online version of this article (doi:10.1007/s10784-016-9332-y) contains supplementary material, which is available to authorized users.

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1 Introduction

The ratification of global welfare treaties has received considerable attention in the international relations literature. Initially, hegemonic theories explained the emergence of global environmental regimes in terms of political economy (Paterson 1996; see also Cox 1981), and neorealist theory focused on how domestic factors affected nations' participation in these regimes, e.g., Congleton (1992), Murdoch and Sandler (1997), Fredriksson et al. (2007), and Bättig and Bernauer (2009). Later, world polity theory showed that participation was contingent on exposure to inter-governmental organizations (IGOs), international non-governmental organizations (INGOs), and epistemic communities (Meyer et al. 1997; Frank 1999; Hironaka 2014; Longhofer et al. 2016). Simmons and Elkins (2004) took the literature one step further showing that countries adopted policy innovations because other countries were doing it. They labeled this clustered policy making. Scholars within this framework have been very successful in explaining countries' adoptions of environmental treaties (Bernauer et al. 2010; Perrin and Bernauer 2010; Yamagata et al. 2013; Sauquet 2014), membership in the international criminal court (Goodliffe and Hawkins 2009; Goodliffe et al. 2012), economic and tax policies (Simmons and Elkins 2004; Elkins et al. 2006; Cao 2010; Barthel and Neumayer 2012), human rights practices (Greenhill 2010), and forms of government (Torfason and Ingram 2010).

While it is clear that many countries around the world now participate in the global environmental regime, Solingen (2012: 631) pointed out that policy diffusion does not always happen smoothly and much can obstruct the process. We focus on the historic hegemonic transition in the late 1980s which culminated in the fall of the Soviet Union in 1991 and how it affected the ratification of environmental agreements. Gunitsky (2014) argued that when there is a major realignment in the global geopolitical arena, countries' ways of doing business will change radically. The rising hegemon extends its power and regime type, while the hegemon in decline and its allies lose power. We argue that hegemonic transitions can also lead to fragmentation and parochialism as countries are freed from old alliances and can pursue their own interests, and this will be reflected in the ways treaties are ratified.

We examined the ratification behavior of a large sample of countries in the world between 1981 and 2008 with respect to eight universal global environmental conventions. The literature tells us that prior to 1991 the USA and to a lesser extent the Soviet Union were leaders among major powers in the ratification of environmental treaties. With some exceptions, e.g., China, states went along with the superpowers and mimicked behavior within their blocs. Using event history analysis, we found that from 1981 to 1990 countries were likely to ratify a treaty if it had been ratified by one of the superpowers previously or by more nations that belonged to the same IGOs.

After the power transition of 1991, the USA withdrew from active involvement in the regime, abstaining from several treaties, and Russia passively adopted treaties after other countries had. This left a vacuum, and China and Germany, and, to a lesser extent, France and Japan took a leadership role. The event history analysis showed that after 1990 only weaker countries still emulated the USA or Russia, but they also mimicked economic, religious, and language peers, neighbors, and diplomatic ties. In contrast, more powerful countries were indifferent to the USA and Russia, neighboring countries, diplomatic ties, and language peers, while ratifying different treaties than IGO partners, economic peers, and nations with similar religious traditions. Also non-state actors' influence increased in persuading nations to ratify treaties. At least in the environmental realm, the hegemonic

transition of 1991 did not lead to hegemonic leadership but rather fragmentation and weak world society leadership.

The paper begins with a theory explaining how the geopolitical context can affect the ratifications of powerful and weak nation-states. The methods and data section describe the countries we studied, the variables we measured, and the statistical models we used. Next, we give a brief overview of the global environmental regime from 1980 to 2008 and the eight conventions that we study. This is followed by results from event history analyses looking at countries' ratifications from 1981 to 1990 and from 1991 to 2008 and a qualitative analysis of the major powers and their roles in the environmental regime since World War II. We conclude by discussing the potential for the global environmental regime without strong state leadership.

The contribution of this paper is to show that global context is important in explaining how global welfare treaties come to be ratified, and any one theory of ratifications is inadequate. The received wisdom is that countries are driven by pressure from more powerful countries, domestic concerns, the prescriptions and scripts generated by world society institutions, and what inter-governmental ties, neighbors, and peers are doing. There is some truth in all these narratives, and our paper describes the geopolitical conditions under which some theories are more useful than others in explaining the ratification of global environmental treaties.

2 Theories of diffusion in the international environmental regime

'International policy diffusion occurs when government policy decisions in one country are systematically conditioned by prior policy choices made in other countries (Simmons et al. 2008: 7).' Simmons et al. (2008) described the various mechanisms of diffusion: coercion, competition, learning, and emulation. In the case of coercion, policy initiatives diffuse because countries are making rational choices and seeking to protect or further their material interests by placating more powerful nations. In the case of competition, learning, and emulation, nations are acquiring scripts from or mimicking the behaviors of others in their networks or environment.

2.1 Coercion

Coercion can take many forms, but the common element is an emphasis on countries' structural power and how the global institutional order will further the interests of the most powerful country or hegemon (Vogler 2000: 188–190). Variants include Marxist theory which focuses on the interests of global capitalists and how global regimes are created so as to protect and advance the interests of industrial and financial capital. Less extreme forms view the hegemon as 'the functional equivalent of central government at the international level.' (p. 189). The hegemon protects its own interests but also takes responsibility for ensuring the provision of public goods. Studies have shown how countries' dependency upon the USA, the West, or other countries for foreign aid or military protection led to the rejection of environmental treaties (Schneider and Urpelainen's 2013), the adoption of quotas for women in legislatures (Bush 2011), and countries joining the International Criminal court (Goodliffe et al.'s 2012).

The way global systems are structured is important. Beckfield (2008) described how during the cold war era, two systems coexisted with the hegemon, the USA and its allies,

and the challenger, the Soviet Union and its satellites and allies, vying for global influence. There were antagonistic relations between the competing blocs and exploitation of the periphery by the center. Within bipolar global systems, we expect discipline within blocs. The superpowers take the lead on global issues, and major powers and lesser powers follow suit. As noted, the former have strong interests in maintaining world order, protecting their global interests and winning the allegiance of nonaligned countries. The latter have little choice, because there are no alternative solutions to common problems and their status in the world order depends on the relationship with the hegemon and allies/satellites. Also inter-governmental organizations (IGOs) play an important coordinating role within and between blocs as forums in which members of the different blocs can work on common problems (Beckfield 2008).

2.2 Competition, learning, and emulation

Countries will also consciously imitate others and adopt scripts and policies so as to improve their competitive position. Countries will want to offer the same incentives to potential exchange or trade partners as others. These may benefit partners directly or, at least, make them feel more secure doing business with a country that has such policies or practices in place. Research has shown that if a country's economic competitors adopted neoliberal economic policies (Simmons and Elkins 2004), bilateral investment treaties (Elkins et al. 2006), tax policies (Cao 2010), double taxation treaties (Barthel and Neumayer 2012), or insider trading laws (Kerner and Kucik 2010), it would soon follow in order to maintain its competitive position.

Simmons et al. (2008: 34) note that learning and emulation can be vertical or horizontal. By vertical they mean countries observe global leaders and learn from or mimic what they do. They 'follow the leader.' For example, Perrin and Bernauer (2010), Bernauer et al. (2010), and DeGarmo (2005) showed how the ratification of environmental treaties was more likely if a powerful country had ratified the treaty previously. In contrast to coercion, countries either learn from or emulate prominent actors on the world's stage.

Another example of vertical learning is when countries learn from institutions of world society. Constructivist theory explains nations' adoption of international policies in terms of countries' and their elites' exposure to the institutions of world society. This perspective is based on a number of core ideas: global institutions construct and legitimate actors' identities and social facts, they advocate cooperation over confrontation in solving global problems, they generate templates or models that lay out policies that nations should embrace, and they do not coerce compliance (Meyer 2010). The world society framework focuses on institutions of global civil society, e.g., INGOs, epistemic communities, and IGOs, rather than the nation-state (Meyer et al. 1997). These institutions provide leadership by challenging abuses, formulating solutions to global problems (often caused by nation-states), funding research, and providing global forums to air problems. World society theory sees a much 'flatter' world with nation-states tied again to the center, but in loose affiliations instead of power dependent relations (Beckfield 2008). There is no coercion; rather global institutions are agents that create 'workplaces' where countries can find solutions to common problems (Hironaka 2014). However, there is no room for states to lead. Epistemic communities, INGOs, and special purpose IGOs may, on occasion, have ties to state powers, but their legitimacy lies in their being independent of state control.

Alternatively, countries will learn from or emulate horizontal ties, i.e., neighbors, economic and cultural peers, and others. This could happen indirectly (e.g., through common memberships in inter-governmental organizations), through direct ties (e.g.,

diplomatic relations), shared identities (e.g., similar economic status or religious and/or language traditions), or propinquity (e.g., shared borders). The underlying assumption is that existing ties between countries prime the prospective adopter to listen to and/or emulate another country.

Diffusion that is the product of bilateral learning is rational in the sense that decision-makers are better informed and can make better decisions. Emulation is rooted more in culture and/or linked to what's thought of as appropriate (Simmons et al. 2008). Simmons and Elkins (2004) argued that reputational payoffs result from conforming to global norms. Weiss and Jacobson (1998) highlighted the role of psychological pressure and fear of being viewed as a laggard by developmental and cultural peers in their domain. Ward (2006) argued that once nations were embedded in a maze of inter-governmental ties they were less likely to free ride on environmental matters, because they feared losing their reputation for trustworthiness and being a team player. Embedded states are also vulnerable to recriminations and are more easily monitored by others. Thus, the more ties that a nation has to others, the greater the costs of nonconformity.

3 The global political context of the environmental regime

Recently, the international relations literature has been mute on the broader geopolitical context and how it may affect diffusion. Gunitsky (2014) wrote an important article which focused on key power transitions in the world order and how they changed the status quo. Examples include the rise of the USA after World War I, Germany's rise during the Great Depression, the rise of the USA and Soviet Union after World War II, and the fall of the Soviet Union in 1991. During these episodes, one superpower experiences a radical decline in economic, military, and demographic capabilities, and another superpower subsequently fills the vacuum. Gunitsky (2014) showed that at these points in history rising super powers will intervene in the affairs of other countries, expand their networks of trade and patronage, create global institutions that favor them, and be a role model for others to emulate.

The collapse of a hegemon could also contribute to greater fragmentation, especially following an epoch as intense as the post-World War II Cold War. For example, the end of the Cold War meant something very different to Huntington (1996). Nation-states were now free to gravitate to cultural peers and there was no hegemon, at least not immediately afterward, to discipline them. Huntington's thesis is that the world order became multi-polar. Interestingly, Beckfield (2010) analyzed the social structure of inter-governmental organizations since 1820 and found more fragmentation, heterogeneity, disintegration, and regionalization over a much longer period of time. This was driven by the rise of exclusive rather than inclusive IGOs. However, growing fragmentation is consistent with neoliberal political theory as well as world civilization theory. Countries pursue their own interests and forge ties with other nations accordingly. It is important to recognize that the end of the Cold War did not lead to instant fragmentation, as it had been developing for a century, but neither did it produce unity.

If a power transition accentuates loose coupling in the world order, we suspect it affects more powerful countries the most. Even if major powers can see merit in a global welfare policy, such as clean oceans and clean air, it is more rational to let others absorb the cost of providing the collective good and free ride (Sauquet 2014). One reason is that major powers may be less concerned about their reputation for being cooperative (Bernauer et al.

2010; Perrin and Bernauer 2010). They are simply in a better position to bargain and negotiate effectively with other countries. In the context of international relations, more powerful countries then can afford to ignore lesser countries. If the initiative does not affect them directly, they need not defer to others or 'go along' with others' initiatives. This is in stark contrast to lesser powers who need to worry about their reputations as team players (see Gurowitz 1999; Finnemore and Sikkink 2001) and gaining the good will of others (Crescenzi et al. 2012). When major powers need help in times of crisis, they can much more easily bring pressure to bear on weaker countries (Gurowitz 1999).

In addition, major powers are often unique as countries, and this makes it difficult to anticipate the costs and benefits of adopting a new policy based on others' experiences. Countries turn to others, because they can use others' experience to reduce their own uncertainty. But major powers are often outliers, and there are very few countries that they can learn from if any. In the wake of a hegemonic transition, more powerful countries may then decide to adopt new policies because of domestic pressures or some strategic advantage that leaders perceive, but they are unlikely to simply follow the advice or example of others.

4 The global environmental regime: 1980–2008

Meyer et al. (1997; see also Frank 1999; Hironaka 2014) provide the dominant narrative for the period from 1980 to 2008. They argue that ever since World War II the global environmental regime was not state led and was the child of civil society and inter-governmental organizations. Nation-states, as key actors, came on the scene relatively late in the process. Prior to the 1970s, air and water pollution did not generate a great deal of public attention. Instead of being the product of crisis, Meyer et al. saw the regime as the product of a rationalistic culture and the growth of 'big science' and epistemic communities. The motives for countries to follow the lead of these non-state actors are varied. On the one hand, civil society organizations have resorted to shaming and embarrassment in their attempt to persuade state actors (Keck and Sikkink 1998). On the other hand, epistemic communities have been active in educating the global community and, along with environmental INGOs, shaping the language and rationales behind treaties and helping to monitor conditions in the environment. Meyer et al. (1997) saw the UN system and other inter-governmental organizations as providing an organizational context or framework for inter-state cooperation and indeed many environmental treaties had UN support if not sponsorship. The creation of the United Nations Environmental Programme (UNEP) helped to create a repository of data and expertise and legitimated efforts to address global environmental problems. The point of this narrative is that one can achieve global problem-solving without the major powers playing a leadership role, if there is a set of global institutions that can generate policy alternatives that are founded on solid scientific research and basic human rights.

Still, prior to the power shift which took place in the late 1980s and early 1990s which saw the downfall of the Soviet Union, there was a tense but stable world order that produced numerous global welfare treaties and inter-governmental organizations. The old world order was bipolar and based on the competition between the East and the West. The USA was in a loose but effective alliance with Western European countries and select Pacific Rim; the Soviet Union was in a more hierarchical relationship with its satellite states and allies and had a tenuous relationship with China (Lake 1996). However, there

was accommodation between the two blocs as the two superpowers competed for the trust of nonaligned countries and sought to maintain stability in the world. The Soviet Union and the USA—and their allies/satellites—ratified several global welfare treaties together, and, at least in the environmental realm, the superpowers were among the first to ratify. Thus, the East–West tensions produced a tenuous consensus in the environmental realm.

It is well known that after the fall of the Soviet Union, neither Russia nor the USA remained center stage in the environmental realm, and China seemed unwilling to assume leadership. Russia's influence over its allies, former satellite states, and developing countries weakened (Gunitsky 2014), and China's response was to insist that the responsibility for climate change fell to the developed countries and it, as a developing country, had no responsibility (Harris et al. 2013). The relationship between the USA and its European allies and Japan remained stable and cooperative, although the power asymmetries were clear, and the USA engaged in aggressive institution building expanding NATO and vigorously supported the WTO, NAFTA, and APEC (Ikenberry 2001). However, facing domestic pressures, it withdrew from the global environmental regime shortly after the fall of the Soviet Union and, in this realm, became a 'rogue nation' (Prestowitz 2003). The US withdrawal from the environmental regime was dramatic. Not only did it refuse to ratify the Kyoto Protocol but it never ratified the Law of the Sea, the Basel Convention, and the Convention on Bio-Diversity, even though its economic and cultural peers and countries with whom it had extensive ties were ratifying all these treaties.

While world society theorists argued that global institutions dominated the environmental realm years prior to the collapse of the Soviet Union, we argue that the superpowers still played a central role in ratifying environmental treaties before 1991. Within the context of the Cold War where competing superpowers were locked in a power struggle, alliances were intact, and power blocs competed for the support of nonaligned countries, both stronger and weaker countries mimicked what the superpowers did. After 1991, ratifications were driven more by world society institutions than superpower leadership. Institutions of global civil society and epistemic communities substituted for the superpowers, and countries' proximity to these institutions affected their likelihood of ratifying global environmental treaties (Frank 1999).

Hypothesis 1 Prior to the end of the Cold War, countries were likely to ratify an environmental treaty if the superpowers had previously ratified the treaty.

Hypothesis 2 After the end of the Cold War, countries were likely to ratify an environmental treaty if they were members of global scientific associations, inter-governmental organizations, had ties to international environmental non-governmental organizations, or had ratified more treaties in the past.

We then offered a second proposition that challenged world society theory. After hegemonic transitions, more powerful countries will operate independent of other state actors and pursue their own economic and political self-interests. That is, more powerful countries would 'go it alone' (Gruber 2000). We also proposed that, with the fragmentation, weaker countries would likely learn from and emulate cultural or economic peers, inter-governmental ties, and neighbors as they modeled themselves after trusted others.

Hypothesis 3a After the end of the Cold War, more powerful countries were unlikely to ratify an environmental treaty if the USA or Russia, their neighbors, inter-governmental ties, or economic or cultural peers had previously ratified the treaty.

Hypothesis 3b After the end of the Cold War, weaker countries were likely to ratify an environmental treaty if the USA or Russia, their neighbors, inter-governmental ties, or economic or cultural peers had previously ratified the treaty.

We propose multiple tests of these hypotheses by repeating the analysis using a variety of ties between countries and different treaties. We control for a country's level of democracy (Congleton 1992; Bernauer et al. 2010) and the strength of domestic industrial and environmental lobbies (Fredriksson et al. 2007; von Stein 2008; Longhofer et al. 2016).

5 Data, model, and measurement

We analyzed the ratifications of eight environmental conventions between 1981 and 2008. Appendix I in ESM lists the eight treaties, the year when they became open for ratification, and our source of information on treaty ratifications. There were several criteria we used to select these treaties. First, we chose treaties that related to global issues so that every country in the world could potentially ratify it. Thus, regional treaties or treaties that only affected developed countries (or only developing countries) were excluded. Second, we chose treaties that addressed different environmental problems, e.g., air quality, conservation, dumping, etc. We wanted to ensure that treaty ratifications (the target for our event history analysis) were independent of one another. It could be argued that there were other treaties which were more significant in terms of environmental regulation, e.g., the Montreal Protocol and the Kyoto Protocol, but these treaties were directly linked to the Vienna Convention and the UNFCCC. Finally, we decided against a large-scale comparative analysis, because we wanted to do a detailed analysis of the major powers' ratifications of the treaties. Therefore, the results are not generalizable beyond these eight treaties. We recorded the date when the country ratified a treaty; however, in our analyses we looked at ratifications as of December 31st for each year.

We used discrete time event history analysis (EHA) to investigate the likelihood that countries ratified the eight environmental conventions from 1981 to 2008. We lagged our measures of economic and cultural peer/neighbor/inter-governmental contacts' behaviors by 1 year so our start year is 1981. The model to test the hypothesis is given by:

$$Y_{k,t}^* = \rho^r W_{t-1}^r Y_{k,t-1} - \gamma^r \tilde{Z}_t (W_{t-1}^r Y_{k,t-1}) + \alpha t + X_t \beta + \phi Z_t + V_k \eta + \lambda T_t \quad (1)$$

where $Y_{k,t}^*$ is an $I \times 1$ ($i = 1, \dots, I$ where $I =$ the number of countries) vector whose i -th element $y_{i,k,t}^*$ is given by the log odds ratio of country i ratifying treaty k ($1, \dots, K$, where $K = 8$) in year t . We pooled the ratifications of all eight treaties. $Y_{k,t-1}$ is the $I \times 1$ vector whose i -th element $y_{i,k,t-1}$ shows whether country i had ratified k -th treaty in the previous year (i.e., year $t-1$). The (i, j) -th element of an $I \times I$ matrix W_{t-1}^r , say $w_{i,j,t-1}^r$, is a weight denoting the strength of the tie between countries i and j in the previous year on relationship r where $r \in \{1, \dots, 6\}$ is an index of 6 relational systems or networks that we will analyze as explained in the next section. The product term $W_{t-1}^r Y_{k,t-1}$ records the extent to which those whom one is linked to (or similar to or connected to in some way) ratified a particular environmental treaty weighted by tie strength. $\mathbf{1}$ denotes the $I \times 1$ vector of ones. X_t denotes an $I \times P$ matrix of country-level control variables. V_k is the $I \times (K-1)$ vector of treaty dummy variables coded 1 for k -th treaty or 0 otherwise. T is the $I \times 1$ vector of year variables measuring time ($t = 1, \dots, 29$, corresponding to 1980–2008). λ , ρ^r , ϕ , and α denote scalar parameters, and β and η denote parameter vectors whose dimension is $P \times 1$, and $(K-1) \times 1$, respectively.

Finally, \tilde{Z}_t denotes the $I \times I$ diagonal matrix whose i -th diagonal element is a measure of a country's relational capabilities (or power). The term $\tilde{Z}_t(W'_{t-1}Y_{k,t-1})$ is the interaction term where we multiplied the country's relational capabilities by the ratifications of its neighbors/developmental and cultural peers/inter-governmental contacts, and the parameter γ^r describe the change in the effect of the social influence variable with a unit change in the power score (adopted from Friedkin and Johnsen 1999).

We studied 166 countries. We did not include countries that had populations less than 100,000 in 2008, countries that were territories or parts of established sovereign states, and countries that were unstable at the time we drew our sample.¹ Because some countries were not in existence in 1980, we checked with the US Central Intelligence Agency (CIA) for their incorporation date before including them in our data set.² Russia remained in our analysis over the 29-year period, and we used data on the Soviet Union for the period from 1980 to 1990. Countries that had been part of the former Soviet Union entered into our data set once they became independent nations.³ Other countries changed their names and boundaries over the years. We used the countries listed on our treaties' websites as having ratified the treaties. The list of 166 countries is in Appendix II in ESM.

Domestic variables include the Freedom House measure which assesses the extent to which policy makers have to be responsive to domestic interests,⁴ industrial production as a percent of GDP to measure the strength of the industrial lobby (von Stein 2008), and the number of international non-governmental environmental organizations per capita that were headquartered in each country (logged) to measure the presence of a domestic environment lobby.⁵ Integration into world society was measured using four indicators. We coded a country 1 if it was a member of the ICSU and 0 otherwise to measure its exposure to the global scientific community (similar to Frank 1999). We tallied the number of inter-governmental organizations that a country belonged to in 1980, 1985, 1990, 1995, 2000, and 2005 to measure a country's exposure to IGOs (von Stein 2008; Cao 2010). Since INGOs have been shown to be important actors in policy diffusion (Longhofer et al. 2016), we counted the number of major international NGOs which had branches or offices in each country for each year to code exposure to these organizations. These included Greenpeace International, World Wildlife Federation, Friends of the Earth, Rainforest Action Network,

¹ By unstable we mean countries that through the 1990s and 2000s either experienced extreme domestic conflict or were isolated from the rest of the world. The countries included: Afghanistan, Cyprus, Iraq, Kosovo, Liberia, Montenegro, North Korea, Serbia, Somalia, South Sudan, Timor-Leste. Our reason for excluding these countries was that they did not have stable governments that could engage other countries in efforts to address global welfare problems.

² The US Central Intelligence Agency, The World Factbook. Countries' Independence Dates (<https://www.cia.gov/library/publications/the-world-factbook/fields/2088.html>).

³ Yugoslavia, Czechoslovakia, East Germany, and West Germany were not in our data set, although they existed as countries in the 1980s. Germany entered the data set in 1991 after the merger of East and West Germany.

⁴ The Polity IV Project offers an alternative measure of autocracy/democracy. We used the Freedom House measure, because it and measures devised by Raymond Gastil were used in previous studies of countries' environmental policies and policy-related behaviors (see Congleton 1992; Murdoch and Sandler 1997; Fredriksson and Gaston 2000; Neumayer 2002; Fredriksson et al. 2007; Fredriksson and Wollscheid 2007; Bättig and Bernauer 2009; Bernauer et al 2010).

⁵ Because many countries were under the umbrella of the former Soviet Union in the 1980s, they did not have Freedom House data for that period. In fact, the Soviet Union was not coded in that decade. We also discovered that there were missing data on the Soviet Union for industrial output as a percent of GDP for 1980 through 1988. We addressed these problems using the multiple imputation approach which is described below.

Climate Action Network, International Union for the Conservation of Nature, and the Third World Network. Prior participation in the global treaty regime was measured by the proportion of the eight major environmental agreements that the country had ratified as of December 31st of the previous year. To measure a country's relational power or capabilities, $Z_{i,t}$, we used the Composite Index of National Capabilities (CINC).⁶ We had data on 28 of the 29 years. Finally, a binary measure indicated if a treaty had been ratified by either the USA or the USSR/Russia as of December 31st the previous year. The sources for the variables are in Appendix III in ESM.

To measure geographical proximity, we used a matrix depicting the distances, $d_{i,j}$, (in kilometers) between the capitals of the countries. To convert this to a proximity matrix, we computed the inverse of the distances between countries ($w_{i,j}^{prox} = (1/d_{i,j})$) (W^{prox}). We used two measures to assess inter-governmental ties. First, data on diplomatic exchange (W^{dipl}) were for the years of 1980, 1985, 1990, 1995, 2000, and 2005. The entries in the cells, 1 or 0, indicated if there was a chargé d'affaires between two countries. Second, using the data on countries' memberships in inter-governmental organizations (IGOs) for the year of 1980, 1985, 1990, 1995, 2000, and 2005, we created matrices where the rows and columns are countries and the number in the cell is the number of IGOs that both countries belonged to in that year (W^{igo}).

We computed three measures for peer influences, one reflecting the level of economic development and two measuring cultural identities. First, the World Bank Analytical Classifications divides countries into high-, upper-middle-, low-middle- and low-income groups based on nations' GNI per capita for every year. We constructed a matrix for each year, where a 1 was entered if both countries were in the same category and a 0 otherwise (W^{gnipc}). Second, we used Correlates of War (COW) estimates of the percentages of a country's population belonging to four major religious traditions: Christian, Moslem, Hindu, and Buddhist. Countries were associated with one of these four traditions if more than 50 % of the population ascribed to that tradition. Data were for 1980, 1985, 1990, 1995, 2000, and 2005. We constructed adjacency matrices for every 5 years where the value in the cell equaled 1 if two countries had more than half of their populations belonging to the same religious tradition and a 0 otherwise (W^{relig}). If countries had unique religious traditions or no tradition attracted at least half the population, they were coded as having no ties to any other country. Third, the CIA lists the languages for each country, and we focused on eight: English, Russian, Spanish, German, French, Portuguese, Arabic, and Dutch.⁷ Coding was based on what the CIA identified as the official language and the percentage of the population that spoke the language. Coding was difficult, because the official language was often different than the language spoken by the people, and some countries had no official language. We constructed adjacency matrices where the value in the cell equaled the number of languages which two countries had in common (W^{lang}).

We computed six social influence variables, $W_{t-1}^r Y_{k,t-1}$ ($r = 1, \dots, 6$). For all six matrices, we normalized entries by dividing by the row sums and set diagonals to zero. The

⁶ There are other measures of power using relational or network data (Hafner-Burton et al. 2009), structural capabilities (Volgy and Bailin 2003), involvement in the world beyond their region (Volgy et al. 2011), and technological capabilities. Researchers have also questioned the validity of the CINC (Kadera and Sorokin 2004). Nonetheless, we decided on the CINC, because it is the most common indicator of state power (e.g., Gunitsky 2014), missing data are minimal for the period we study, and we do not use it as a tool to describe transitions or dyadic power relationships. However, we are aware of changing composition especially around 1993 when many former Soviet satellites joined the list of countries.

⁷ This implies that countries like Japan, China, India, Greece, Poland, Viet Nam and others which have languages other than these eight are coded as having no language peers.

vector of product terms $W_{t-1}^r Y_{k,t-1}$ contains scores for each country i —the proportion of nations that country i was related to (weighted by the strength of ties) which had ratified a treaty as of December 31st of the prior year. Since we are analyzing the ratifications of eight different treaties that became available at different times, we computed six social influence scores for each country–treaty observation; for each year the country was at risk of ratifying the treaty.

6 Results

The discrete time event history models pooled the data across the eight treaties, estimated models using maximum likelihood methods, clustered countries, and estimated robust standard errors. The data were organized by year. For each year, we included countries that were in existence at that time and all treaties which were open for ratification. Thus, we pooled across multiple events (treaty ratifications) for a given set of countries in a given year. For example, if there were three treaties open for ratification, a country was included three times for that year if it had not ratified any of these previously.⁸ We modeled countries at risk of ratifying a given treaty in the year that the treaty became open for ratification and every year hence. When a country ratified a treaty, it was removed from the risk set for that treaty but remained in the risk set for other treaties that it did not ratify. If it withdrew from a treaty after 1980, it did not reenter the risk set for that treaty, but this happened in only two treaties, the ICRW and Ramsar, and rarely. To reduce multicollinearity, we computed standardized scores for the CINC variable (e.g., *CINC_z*) and social influence variables (e.g., $W^{prox} Y_z$) before computing their products. However, we could only estimate models that included each interaction separately, because there was extreme multicollinearity when all interactions were included in the model at once. We added a squared term for time and reran the models. Because there were few substantive differences from the models with only time and the squared term increased multicollinearity, we decided to omit the squared term. We included the number of IGOs that a country belonged to and the number of languages that were spoken⁹ and utilized multiple imputation methods to overcome problems of missing data (imputations = 5).¹⁰

⁸ It is important that the choices are truly independent and that the same social processes are at work in explaining choices across treaties. We addressed these issues by selecting treaties that addressed different environmental problems and which were not linked in any way. Also we included dummy variables for each treaty to control for whatever was unique about the treaty. Next, we computed the proportion of treaties which a country had previously ratified. This variable has substantive meaning, but it also controls for the propensity of any one country to ratify a treaty. Finally, we computed the number of years since a country last ratified a treaty. We reran the analysis including this variable, but this did not produce substantively different results, so we did not include the results in the paper. They are available upon request.

⁹ This was in response to Fujimoto et al. (2011) who suggested that analysts include the number or count of events which countries participate in (in our case languages or IGOs) to reduce the negative bias in the network autocorrelation effect as the density of the network increases.

¹⁰ The method for multiple imputing the data set was developed by Rubin (1987). We chose the joint modeling through the multivariate normal methodology (JM: MVN). We use Amelia II (version 1.7.2), a general-purpose multiple imputation package of R which is based on the joint modeling through the multivariate normal methodology. The Amelia program is developed by Honaker et al. (1998–2002). Amelia II integrates the Expectation–Maximization algorithm with Bootstrapping (EMB). We choose Amelia II because our data set is a panel of a large number of countries, which requires algorithms that can control for a time trend during imputation. We include all the variables in the model. Before imputation, we normalized skewed variables by log, square, square root, and other transformations.

Figure 1 presents the cumulative proportion of eligible countries that ratified eight major environmental conventions between 1980 and 2008.¹¹ In the period from 1980 to 1990, there was a slight increase in the ratifications of the three existing treaties and an uptick in the ratifications of the two new treaties, the Law of the Sea (1982) and the Vienna Convention (1985). Between 1990 and 2000, there was a surge of ratifications especially among the new treaties and Ramsar. Whether or not the fall of the Soviet Union caused this is impossible to determine. After 2000, ratifications continued until 2008 when at least 80 % of the countries had ratified six of the eight conventions and almost every country had ratified at least three.

We argued that in the period from 1981 to 1990 all countries should respond positively to the ratifications of the superpowers (H1). The world was organized into two powerful blocs, and countries would take their cues from the hegemon and its challenger. However, after 1990 more powerful countries should no longer be responsive to what the USA or Russia were doing (H3a) and weaker countries should be responsive to the USA or Russia, neighbors, peers, and inter-governmental ties (H3b). That is, the main effects of social influence should be close to zero or positive (e.g., $W^{prox}Y_z$) and the interaction effects (e.g., $CINC_z * W^{prox}Y_z$) negative, due to the fact that social influence and the CINC variables were centered. Furthermore, ties to institutions of world society should be more important in the second period than the first (H2).

Table 1 includes all the linear effects for social influence and tests for each interaction effect separately for the period from 1981 to 1990.¹² Only two social influence variables were statistically significant, and none of the interaction effects were. If the USA or USSR had ratified a treaty previously, both more and less powerful countries were likely to ratify that treaty. Thus, H1 received support. We also see that if more nations who were members of one's inter-governmental organizations ratified a treaty ($W^{igo}Y_z$), a country was more likely to ratify that treaty as well.

Table 2 presents results for the period from 1991 to 2008. H3a posited that more powerful countries would be unaffected by the ratifications of the USA and Russia, economic or cultural peers, and inter-governmental ties. In contrast, H3b argued that weaker countries would mimic the ratifications of neighbors, economic or cultural peers, and inter-governmental ties as well as the USA and Russia. In models that included all the linear social influence effects, we tested for each interaction effect separately, as we did before.¹³

Three of the linear effects are positive and significant at the 0.05 level (geographical proximity, diplomatic ties, and language similarity), and all seven interactions are negative and significant.¹⁴ Thus countries with average CINC scores were more likely to ratify a treaty if either the countries located near to them ratified it, their diplomatic ties had ratified it or countries whose language was similar to theirs ratified it. More powerful countries either were unaffected by the USA or Russia, neighbors, peers, inter-organizational ties, or diplomatic ties or did the opposite, while weaker countries emulated the USA or Russia.,

¹¹ The proportions are based on the number of countries in existence at the time. See Appendix II (online) for the countries included in our analysis and when they entered our data set.

¹² The average VIFs for the seven models ranged from 3.96 to 4.11; the maximum scores for individual variables were between 12.96 and 12.99.

¹³ Multicollinearity was less a problem here. The average VIFs for the seven models ranged from 2.82 to 2.88; the maximum scores for individual variables were between 8.05 and 8.06.

¹⁴ It is important to remember that the social influence and CINC scores were converted to standard scores before computing the product terms.

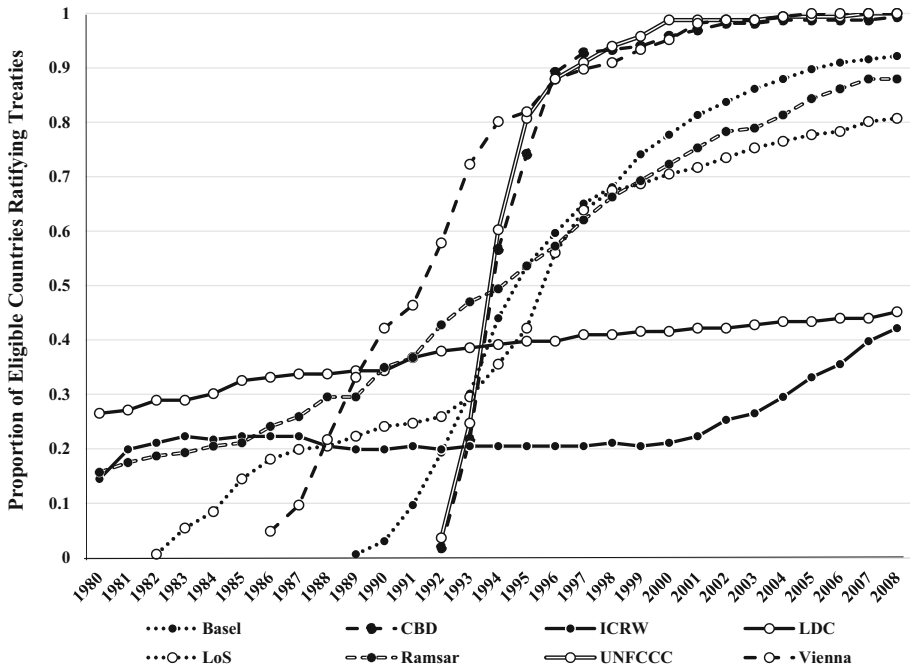


Fig. 1 Cumulative proportion of countries ratifying eight environmental treaties, 1980–2008

neighbors, economic, language, and religious peers, and diplomatic ties. H3a and H3b were supported.

Figures 2, 3, 4, 5, 6, 7, and 8 present more clearly our results from Table 2 where we graph the interaction effects for the period 1991–2008. As noted, we transformed the CINC scores and the social influence scores into z scores for each period before computing the product term. Thus, we can graph the effects of prior major power ratifications and the social influence variables on the odds of ratification for countries that have average CINC scores, scores one standard deviation above the mean, and one standard deviation below the mean. For weaker countries (those one SD below the mean), the dotted lines describing the effects of social influence on the odds of ratifying treaties curved upward when either the USA or Russia (Fig. 2), neighbors (Fig. 3), diplomatic ties (Fig. 4), economic peers (Fig. 6), religious peers (Fig. 7), or language peers (Fig. 8) ratified a treaty previously. However, weaker countries seemed indifferent to the ratifications of countries that belonged to same inter-governmental organizations (Fig. 5). In contrast, for more powerful countries (those one SD above the mean), the effects of others' ratifications on the odds of ratifying were either flat (USA or Russia, neighbors, diplomatic ties, and language peers) or negative (IGO contacts, economic peers, and religious peers).

Hypothesis 2 stated that countries' proximity to world society institutions should provide the impetus for treaty ratifications after the hegemonic transition of 1989–1991. Comparing Tables 1 and 2, we find only limited support for this. From 1981 to 1990, countries which were members of the ICSU were more likely to ratify treaties. In the period from 1991 to 2008, countries that were members of the ICSU or belonged to more inter-governmental organizations were more likely to ratify treaties. In columns six and

Table 1 Discrete time event history analysis with multiple imputations ($i = 5$), 1981–1990

<i>Dependent variable</i> : Conditional log odds of treaty ratification	Model 1 b/RSE	Model 2 b/RSE	Model 3 b/RSE	Model 4 b/RSE	Model 5 b/RSE	Model 6 b/RSE	Model 7 b/RSE
Domestic variables : ENGO number per capita (log)	0.087*	0.085*	0.086*	0.086*	0.086*	0.086*	0.088*
Industry share as a percent of GDP	0.037	0.036	0.037	0.037	0.037	0.037	0.037
Political freedoms	0.006	0.006	0.006	0.006	0.006	0.006	0.006
	0.007	0.007	0.007	0.007	0.007	0.007	0.007
	0.067	0.066	0.066	0.066	0.066	0.065	0.064
	0.138	0.14	0.139	0.139	0.139	0.139	0.139
World society variables : ICSU membership	0.526**	0.542**	0.534**	0.535**	0.532**	0.534**	0.527**
	0.202	0.202	0.201	0.201	0.201	0.201	0.202
Number of IGO memberships	0.009	0.01	0.009	0.009	0.009	0.009	0.01
	0.007	0.007	0.007	0.007	0.007	0.007	0.007
IENGO branch office	-0.021	-0.013	-0.019	-0.019	-0.017	-0.012	-0.007
	0.083	0.082	0.082	0.082	0.082	0.083	0.083
Proportion of treaties ratified	0.68	0.645	0.653	0.655	0.652	0.654	0.644
	0.496	0.494	0.5	0.499	0.499	0.498	0.498
Social influence variables : Power score (CINC _z)	-0.069	-0.028	0.044	0.036	0.028	-0.006	-0.012
	0.097	0.101	0.086	0.052	0.038	0.056	0.058
Previously ratified by USA or USSR (no/yes)	1.510**	1.590**	1.552**	1.551**	1.570**	1.574**	1.583**
	0.446	0.441	0.44	0.443	0.441	0.446	0.443
Previously ratified by neighbors (W ^{neighbors} _z)	0.128	0.093	0.111	0.112	0.102	0.101	0.101
	0.099	0.098	0.099	0.099	0.101	0.1	0.099
Previously ratified by diplomatic ties (W ^{dipl} _z)	-0.026	-0.074	-0.052	-0.054	-0.063	-0.068	-0.059
	0.198	0.193	0.195	0.194	0.193	0.193	0.191
Previously ratified by IGO members (W ^{igo} _z)	0.506**	0.576**	0.535**	0.534**	0.552**	0.555**	0.541**
	0.164	0.164	0.166	0.164	0.163	0.162	0.161

Table 1 continued

<i>Dependent variable</i> : Conditional log odds of treaty ratification	Model 1 b/RSE	Model 2 b/RSE	Model 3 b/RSE	Model 4 b/RSE	Model 5 b/RSE	Model 6 b/RSE	Model 7 b/RSE
Previously ratified by economic peers ($W^{empc}Y_z$)	-0.049	-0.022	-0.029	-0.031	-0.022	-0.019	-0.025
	0.117	0.114	0.114	0.115	0.118	0.116	0.114
Previously ratified by religious peers ($W^{relig}Y_z$)	0.098	0.092	0.095	0.095	0.093	0.09	0.098
	0.118	0.118	0.117	0.117	0.118	0.116	0.117
Previously ratified by language peers ($W^{lang}Y_z$)	0.185+	0.166	0.177+	0.178+	0.174	0.175+	0.175+
	0.106	0.106	0.106	0.106	0.106	0.106	0.106
$CINC_z \times$ ratified by USA or USSR	0.204						
	0.126						
$CINC_z \times W^{prox}Y_z$		-0.097					
		0.119					
$CINC_z \times W^{dip}Y_z$			0.036				
			0.147				
$CINC_z \times W^{digo}Y_z$				0.026			
				0.078			
$CINC_z \times W^{empc}Y_z$					-0.015		
					0.039		
$CINC_z \times W^{relig}Y_z$						-0.059	
						0.061	
$CINC_z \times W^{lang}Y_z$							-0.101
							0.078
Number of language groups	0.131	0.123	0.122	0.121	0.122	0.121	0.12
	0.176	0.176	0.175	0.175	0.176	0.177	0.177
Time	-0.164**	-0.168**	-0.168**	-0.167**	-0.168**	-0.168**	-0.167**
	0.046	0.045	0.046	0.046	0.046	0.045	0.046

Table 1 continued

Dependent variable: Conditional log odds of treaty ratification

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	b/RSE	b/RSE	b/RSE	b/RSE	b/RSE	b/RSE	b/RSE
<i>Treaty dummies (Basel = 0): Ramsar</i>	-2.687**	-2.695**	-2.701**	-2.700**	-2.698**	-2.690**	-2.671**
	0.726	0.728	0.732	0.729	0.724	0.727	0.732
LDC	-4.008**	-4.070**	-4.054**	-4.048**	-4.064**	-4.069**	-4.051**
	0.795	0.788	0.793	0.79	0.784	0.787	0.789
LoS	-0.493	-0.502	-0.531	-0.526	-0.522	-0.517	-0.48
	0.545	0.543	0.545	0.542	0.542	0.542	0.546
Vienna	-0.267	-0.287	-0.283	-0.281	-0.286	-0.285	-0.279
	0.584	0.582	0.584	0.582	0.579	0.582	0.584
ICRW	-2.963**	-3.036**	-3.021**	-3.015**	-3.031**	-3.032**	-3.015**
	0.705	0.698	0.708	0.703	0.694	0.701	0.706
_cons	-3.004**	-3.071**	-2.992**	-3.001**	-3.010**	-3.037**	-3.081**
	0.821	0.84	0.835	0.825	0.822	0.827	0.837
Observations	5241	5241	5241	5241	5241	5241	5241
F statistic	14.71**	14.30**	14.21**	14.18**	14.50**	14.38**	14.52**
Clusters (N of countries)	146	146	146	146	146	146	146

b = conditional log odds ratio; RSE = robust standard errors

** , * , + Denote significant levels of 0.01, 05, and 0.10 levels, respectively

Table 2 Discrete time event history analysis with multiple imputations ($i = 5$), 1991–2008

<i>Dependent variable</i> : Conditional log odds of treaty ratification	Model 1 b/RSE	Model 2 b/RSE	Model 3 b/RSE	Model 4 b/RSE	Model 5 b/RSE	Model 6 b/RSE	Model 7 b/SE
Domestic variables : ENGO number per capita (log)	-0.018 0.017	-0.017 0.017	-0.016 0.017	-0.017 0.017	-0.016 0.017	-0.016 0.017	-0.015 0.017
Industry share as a percent of GDP	-0.007+ 0.004	-0.008+ 0.004	-0.008+ 0.004	-0.008+ 0.004	-0.008+ 0.004	-0.009* 0.004	-0.009* 0.004
Political freedoms	0.162* 0.075	0.166* 0.075	0.169* 0.075	0.172* 0.075	0.174* 0.075	0.177* 0.076	0.178* 0.076
World society variables : ICSU membership	0.293** 0.101	0.302** 0.103	0.292** 0.103	0.288** 0.103	0.289** 0.103	0.289** 0.103	0.276** 0.104
Number of IGO memberships	0.019** 0.004	0.019** 0.004	0.018** 0.004	0.018** 0.004	0.019** 0.004	0.019** 0.004	0.018** 0.004
IENGO branch office	0.077 0.053	0.084 0.052	0.083 0.052	0.082 0.052	0.084 0.052	0.088+ 0.052	0.092+ 0.051
Proportion of treaties ratified	0.465 0.311	0.361 0.3	0.362 0.302	0.372 0.302	0.338 0.301	0.288 0.299	0.328 0.305
Social influence variables : Power score ($CINC_z$)	-0.087 0.078	-0.188* 0.092	-0.153+ 0.091	-0.111 0.084	-0.102 0.082	-0.133+ 0.078	-0.093 0.07
Previously ratified by USA or USSR (no/yes)	0.208 0.138	0.205 0.137	0.227 0.138	0.223 0.138	0.215 0.138	0.236+ 0.138	0.225 0.138
Previously ratified by neighbors ($W^{nbr}Y_z$)	0.250** 0.068	0.222** 0.069	0.245** 0.068	0.243** 0.068	0.241** 0.068	0.245** 0.068	0.249** 0.068
Previously ratified by diplomatic ties ($W^{dipl}Y_z$)	0.212* 0.087	0.225** 0.087	0.207* 0.086	0.213* 0.088	0.217* 0.087	0.212* 0.09	0.220* 0.089
Previously ratified by IGO members ($W^{igo}Y_z$)	-0.059 0.12	-0.066 0.121	-0.066 0.121	-0.068 0.123	-0.064 0.121	-0.067 0.123	-0.079 0.123

Table 2 continued

<i>Dependent variable</i> : Conditional log odds of treaty ratification	Model 1 b/RSE	Model 2 b/RSE	Model 3 b/RSE	Model 4 b/RSE	Model 5 b/RSE	Model 6 b/RSE	Model 7 b/RSE
Previously ratified by economic peers ($W^{empc}Y_z$)	0.044	0.069	0.06	0.06	0.062	0.067	0.06
Previously ratified by religious peers ($W^{relig}Y_z$)	0.104	0.102	0.103	0.103	0.103	0.103	0.103
Previously ratified by language peers ($W^{lang}Y_z$)	-0.07	-0.064	-0.068	-0.066	-0.066	-0.076	-0.062
	0.061	0.061	0.061	0.061	0.061	0.061	0.061
	0.189**	0.191**	0.198**	0.195**	0.194**	0.200**	0.192**
	0.068	0.066	0.067	0.067	0.067	0.067	0.068
$CINC_z$ × ratified by USA or Russia	-0.142*						
	0.056						
$CINC_z$ × $W^{prox}Y_z$		-0.167**					
		0.059					
$CINC_z$ × $W^{dip}Y_z$			-0.116**				
			0.029				
$CINC_z$ × $W^{digo}Y_z$				-0.093**			
				0.026			
$CINC_z$ × $W^{empc}Y_z$					-0.115**		
					0.027		
$CINC_z$ × $W^{relig}Y_z$						-0.174**	
						0.054	
$CINC_z$ × $W^{lang}Y_z$							-0.189**
							0.045
Number of language groups	-0.475**	-0.468**	-0.472**	-0.469**	-0.463**	-0.470**	-0.462**
	0.114	0.114	0.114	0.114	0.114	0.114	0.113
Time	-0.048*	-0.047*	-0.045*	-0.046*	-0.045*	-0.043*	-0.043*
	0.019	0.019	0.019	0.019	0.019	0.019	0.019

Table 2 continued

<i>Dependent variable</i> : Conditional log odds of treaty ratification	Model 1 b/RSE	Model 2 b/RSE	Model 3 b/RSE	Model 4 b/RSE	Model 5 b/RSE	Model 6 b/RSE	Model 7 b/RSE
<i>Treaty dummies (Basel = 0): Ramsar</i>	-0.712**	-0.718**	-0.719**	-0.717**	-0.722**	-0.729**	-0.727**
LDC	0.139	0.14	0.14	0.14	0.14	0.14	0.141
LoS	-2.986**	-2.975**	-2.981**	-2.974**	-2.980**	-3.003**	-3.006**
Vienna	0.305	0.305	0.306	0.306	0.306	0.309	0.309
ICRW	-0.911**	-0.902**	-0.880**	-0.891**	-0.907**	-0.887**	-0.894**
CBD	0.174	0.174	0.176	0.175	0.175	0.175	0.173
UNFCCC	0.373*	0.347*	0.354*	0.355*	0.345*	0.341*	0.344*
_cons	0.152	0.154	0.152	0.153	0.153	0.153	0.153
Observations	-2.266**	-2.232**	-2.243**	-2.240**	-2.231**	-2.241**	-2.246**
F statistic	0.249	0.247	0.248	0.249	0.249	0.249	0.251
Clusters (N of countries)	1.060**	1.070**	1.078**	1.074**	1.073**	1.094**	1.091**
	0.142	0.142	0.143	0.143	0.143	0.144	0.144
	1.040**	1.040**	1.030**	1.029**	1.027**	1.029**	1.019**
	0.159	0.156	0.159	0.159	0.159	0.159	0.164
	-2.063**	-2.077**	-2.073**	-2.055**	-2.051**	-2.100**	-2.050**
	0.364	0.362	0.362	0.362	0.361	0.36	0.363
	8952	8952	8952	8952	8952	8952	8952
	36.29***	37.40***	38.30***	37.53***	37.48***	37.31***	35.31***
	166	166	166	166	166	166	166

b = conditional log odds ratio; SE = robust standard errors
 **, *, + Denote significant levels of 0.01, 05, and 0.10 levels, respectively

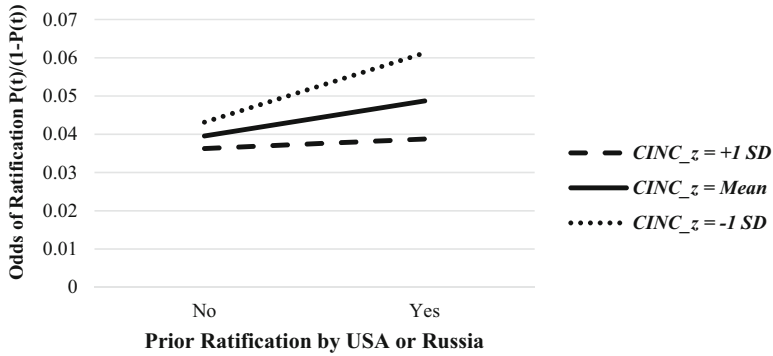


Fig. 2 Odds of ratification by $CINC_z$ and prior ratification by USA or Russia, 1991–2008

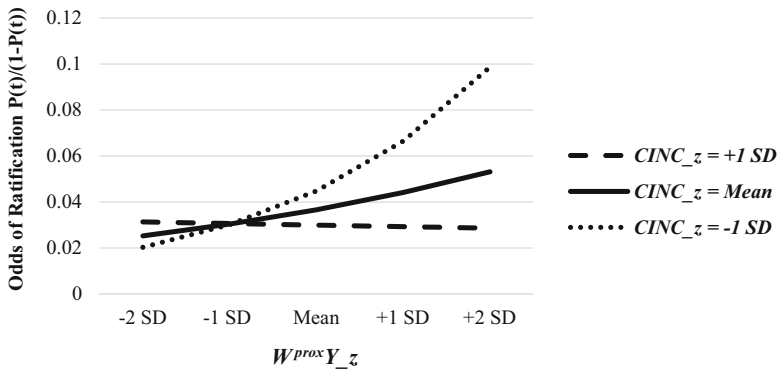


Fig. 3 Odds of ratification by $CINC_z$ and $W^{prox}Y_z$, 1991–2008

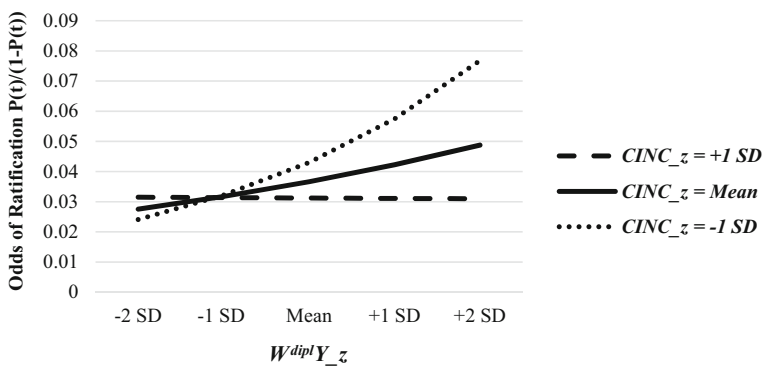


Fig. 4 Odds of ratification by $CINC_z$ and $W^{dipl}Y_z$, 1991–2008

seven, the presence of international environmental branch offices was significant but only at the 0.10 level. Thus, ties to global institutions were somewhat more likely to lead to ratifications after 1990. Finally, we found that domestic factors played a slightly larger role

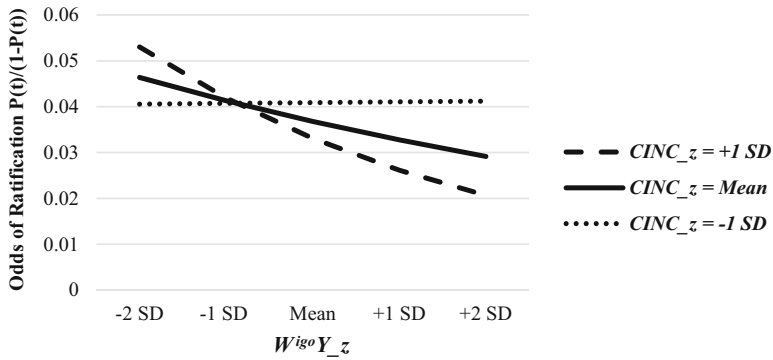


Fig. 5 Odds of ratification by $CINC_z$ and $WigoY_z$, 1991–2008

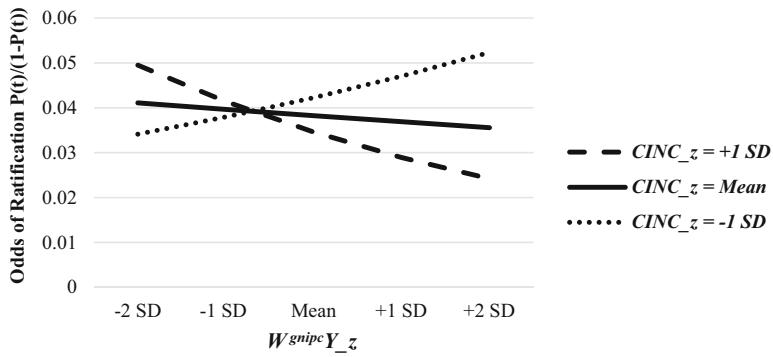


Fig. 6 Odds of ratification by $CINC_z$ and $WgnipcY_z$, 1991–2008

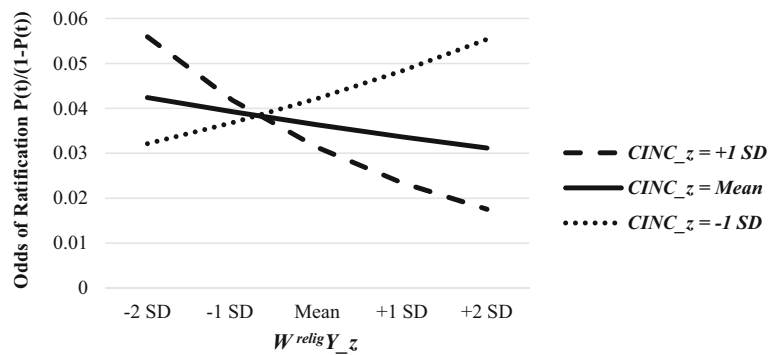


Fig. 7 Odds of ratification by $CINC_z$ and $WreligY_z$, 1991–2008

in the latter period. From 1981 to 1990, countries were more likely to ratify if they had a larger number of environmental NGOs per capita headquartered in the country. From 1991 to 2008, countries were more likely to ratify if they had more political freedoms or

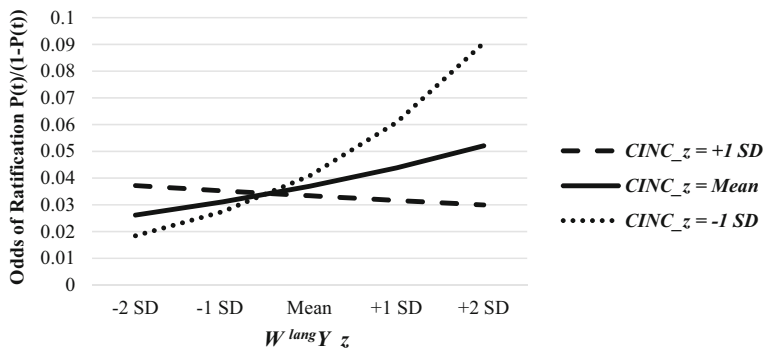


Fig. 8 Odds of ratification by $CINC_z$ and $W^{lang} Y_z$, 1991–2008

industrial output constituted a smaller percentage of GDP. However, the latter effect was significant only at the 0.10 level.

7 Further analysis

We argued that prior to the fall of the Soviet Union, the USA and the USSR were leaders in the global environmental regime, and other major powers followed what they did. The system was based on the competition among the superpowers for prestige and the allegiance of nonaligned countries. After the fall of the Soviet Union, we argued that major powers would go their own way and be unresponsive to the ratifications of the USA or Russia. Indeed, after 1990 more powerful countries were less responsive to the ratifications of these two countries. However, as we will see, the other major powers were very responsive to each other.

One way of assessing leadership is to look at the timing of treaty ratifications historically and the roles that the superpowers and the other major powers played in the process. This required that we identify the major powers in the world during this period. We selected the seven countries that are listed as major powers in the COW data set for the period after World War II. These include the USA, Soviet Union/Russia, China, Japan (after 1990), Germany (after 1990), Great Britain, and France.¹⁵ Figure 9 shows the years when each treaty was open for ratification (Open) and the years when the USA, USSR/Russia, China, Great Britain, and France ratified each treaty prior to 1991. After 1990, we added Germany and Japan. We stopped at 1997 because none of these countries ratified any more of these treaties afterward. If two countries ratified a treaty in the same year, the country which ratified first is listed above the other.

Prior to 1991, the USA or Russia was among the first among the major powers to ratify global environmental treaties. That the superpowers were leaders does not mean they were always visionaries and often their participation was driven by self-interest and domestic lobbies. They also often committed transgressions. The International Convention for the

¹⁵ Their list is very similar to Volgy et al.'s (2011) list. The only difference is that the COW data set has China as a major power since 1950, while Volgy et al. (2011) codes it as a major power after 1990 similar to Japan and Germany. Comparing these countries with those that were ranked as the most powerful using CINC scores, all seven countries were included in the 1980, 1985, and 1990 top ten (along with India, Brazil, and Italy) and in the 1995, 2000, and 2005 top ten (along with India, Korea, and Brazil).

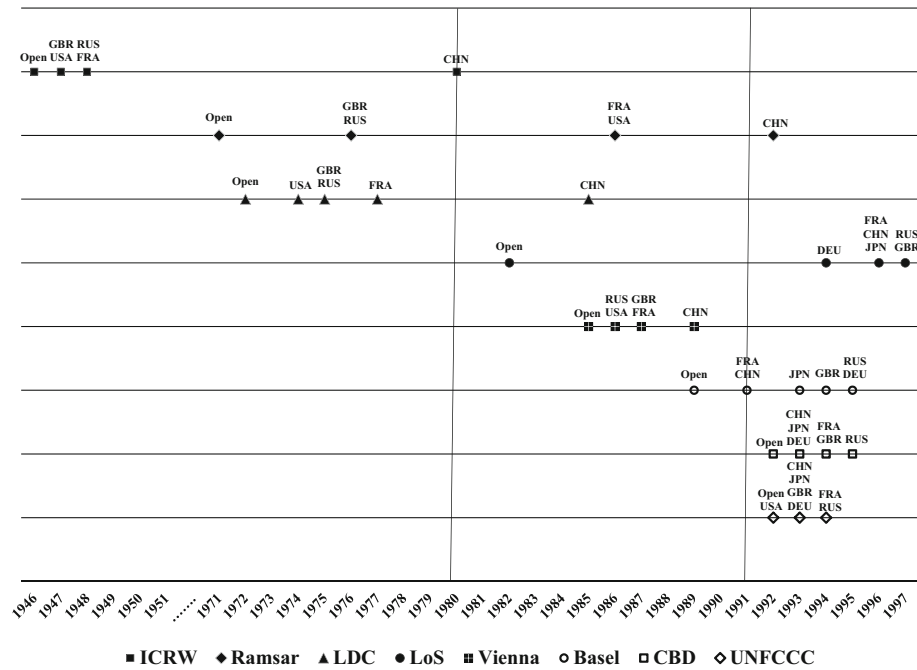


Fig. 9 Ratifications of eight environmental treaties by major powers, 1946–1997

Regulation of Whaling is one example of mixed motives. Stoett (1997: 136) stated: ‘There is no question that American leadership has been pivotal at the IWC. Not only did the United States initiate the entire regime back in 1946, it was by far the most powerful influence in creating the environment in which the moratorium vote could be taken.’ The USA convened whaling states after World War II to draft an agreement to regulate whaling both for conservation and industry purposes. The treaty was signed in Washington, D.C. in 1946 by 15 states including the USA and the Soviet Union (Nagtzaam 2009). It was first ratified by Iceland on March 10, 1947 followed by Great Britain and the USA on July 17th and 18th the same year. The USSR ratified it in 1948. However, in the course of its history the treaty became quite controversial. The USA remained a staunch advocate for conservation often bringing it into conflict with others (Stoett 1997: 9); in contrast, the Soviet Union repeatedly violated the treaty (Vogler 2000: 53–54).

International awareness of the value of conserving wetlands began in the USA and Canada because of these countries’ extensive experience with wetland reclamation (Matthews 1993: 10). The Soviet Union had an economic interest in conservation, because its wildfowl bred in the wetlands of Europe and South and East Asia (p. 14). The International Union for the Conservation of Nature and Natural Resources (IUCN) and the International Wildfowl Research Bureau (IWRB) were leaders in educating the world about wetland conservation, and the Soviet Union and The Netherlands were active in drafting and promoting the treaty. While Great Britain and the USSR were among the eighteen nations sending delegates to Ramsar for the conference on the convention, the USA was not even an observer (Matthews 1993: 25). Australia, Bulgaria, Finland, Greece,

Iran, Norway, South Africa, and Sweden ratified Ramsar in 1974 and 1975. Great Britain and Russia ratified it in 1976. The USA did not ratify until 1986.

The USA and Great Britain led in promoting the London Dumping Convention, having experienced serious pollution problems in waters around the USA (including New York harbor) and the English Channel (the Torrey Canyon oil spill). The USA submitted a preliminary draft of the convention in 1971, and the government of Great Britain hosted the conference where the Convention was signed in 1972 and convened the contracting parties in 1975 (International Maritime Organization Secretariat 1990: 20). The Dominican Republic, Iceland, and the Philippines first ratified the London Dumping Convention in 1973. The USA as well as six other countries ratified it in 1974, and the Soviet Union ratified it in 1975.

The 1980s and 1990s, both mirrored the past as well as marked a transition. Mirroring the past, the USA took a leadership role in the Vienna Convention (Hironaka 2014). Prestowitz (2003) described President Reagan's enthusiasm for the treaty and how the USA was instrumental in drafting the Montreal Protocol which was signed in 1987. The Vienna Convention was first ratified in 1986 by the USA and the Soviet Union along with six other countries, 1 year after it was open for ratification. A host of countries followed. The other treaties were more transitional. Initially, the Law of the Sea, open for ratification in 1982, mirrored the past in that a treaty which the USA and the USSR opposed was *not* ratified by a major power until 1994 (Germany) (Vogler 2000: 45–47). However, after Germany ratified the treaty, the other major powers followed in 1996 and 1997, even though the USA never ratified it. But breaking with the past, many developing countries ratified it early on, signaling their national economic sovereignty from the North. The Basel Convention also reflected the new world order. The USA opposed this treaty and never ratified it, but beginning in 1991 major powers went ahead and ratified it anyway. Jordan first ratified it in 1989, and Hungary, Norway, Saudi Arabia, and Switzerland ratified it in 1990. France and China ratified it in 1991 along with nine other countries, and Russia finally ratified it in 1995.

By the Rio Conference the transition was complete. Prestowitz (2003: 123–124) noted that the Bush administration approached the Rio Summit warily, and there was considerable domestic skepticism about climate change and how much it would cost to reduce emissions. Clearly the USA was at odds with its European allies, Canada, and Japan. The USA along with Australia, Canada, Maldives, the Marshall Islands, Mauritius, Monaco, Seychelles, and Zimbabwe ratified a very soft UNFCCC in 1992, Russia did not ratify until 1994, and the USA never ratified the Kyoto Protocol. Finally, the Convention on Bio-Diversity was open for ratification in 1992, and Canada, Maldives, Marshall Islands, Mauritius, Monaco, and Seychelles ratified in the first year. Several countries including China, German, and Japan ratified it in 1993. Russia did not ratify until 1995, and the USA never did. As DeGarmo (2005: 107) pointed out, even though the USA argued strongly against the treaty, all of the major developed countries and many developing countries signed the treaty signaling the limits of American influence.

It seems that the major powers continued to engage in clustered policy making among themselves after the fall of the Soviet Union. For the most part, since 1946, the major powers tended to ratify treaties within a 3- to 5-year window. After 1990, Russia, Great Britain, and Japan appeared to time their ratifications to match other major powers. To illustrate, Japan ratified Basel 2 years after China, the CBD and UNFCCC 4 months after China, and the Law of the Sea 13 days after China. The only exceptions were Ramsar (where ratifications were strung out across several years), China (for the three earliest treaties), and, of course, the USA (which abstained from ratifying three of the five most

recent treaties). Thus, there was considerable coordination in ratifying treaties among the major powers both before and after the fall of the Soviet Union. However, the former superpowers were not leading the pack after 1990.

8 Discussion and conclusion

Our purpose was to test the proposition that policy diffusion across nation-states is contingent on the geopolitical context. Between 1981 and 1990, only two linear social influence effects were positive and significant: countries were more likely to ratify a treaty if one of the two superpowers or more member states in a countries' inter-governmental organizations had ratified a treaty previously. There were no differences in the behaviors of more or less powerful countries. The first finding supported H1 which argued that superpower influence was a dominant factor in treaty ratifications even at the end of the Cold War. The second could reflect how superpowers coordinated the behavior of their allies during this period. Hughes et al. (2009) (see also Beckfield 2008) argued that during that period inter-governmental organizations were structured such that core countries dominated and weaker countries were tied to the core by their memberships. Between 1991 and 2008, more powerful countries were indifferent to the ratifications of the USA or Russia, their neighbors, diplomatic ties, and language peers and behaved contrary to their IGO partners, religious peers, and economic peers. In contrast, weaker countries were likely to mimic the USA or Russia, neighbors, religious, language, and economic peers, and diplomatic ties. These results supported H3a and H3b and lend support to the interpretation that the global environmental regime became fragmented after the hegemonic transition. More powerful nations were acting independently, while weaker countries were mimicking the USA and Russia and nations similar to themselves. After 1991 we also found some evidence that nations' proximity to world society institutions prompted ratifications, thus providing limited support for H2.

While these findings support our claim that the geopolitical context affects the way policy innovations diffuse across the globe, we must be cautious. First, most of the treaties we studied were 'soft,' and thus, countries may not have taken them as seriously as they would have for treaties that make more demands on them. Second, while it was clear that the USA withdrew from the global environmental regime, it vigorously pursued its interests after 1991 in other arenas. Thus, the environmental arena may be an anomaly. Before we can generalize, further research is needed on a variety of global regimes and types of treaties to see if ratifications changed much after the fall of the Soviet Union. Third, to argue that so much changed between the 1980s and 1990s due to the collapse of the Soviet Union belies the changes which were well under way beforehand. Non-state actors were on the rise prior to the 1980s, the superpowers were in decline as early as the 1970s, and, as Beckfield (2010) noted, fragmentation among IGOs was evident well before the 1980s. Thus, the hegemonic transition in 1991 should be viewed as an enabling event that helped to accelerate processes already in motion rather than a linear cause.

Given our results, what are the implications for the future of the global environmental regime? Clustered policy making—particularly through learning and emulation—should continue to be important for middling and weaker countries. In the climate change arena, for example, clustered policy making is now institutionalized in negotiating groups, e.g., the EU, the Umbrella Group, and the Group of 77 and China. Within the latter, there are subgroups, e.g., BASIC (Brazil, South Africa, India, and China), OPEC (Oil Producing and

Exporting Countries, the LDCs (least developed countries), SIDS (Small Island Developing States), and many more (Roberts 2011). Thus, countries will likely continue to watch and monitor what others are doing and follow accordingly. Clustered policy making could contribute to fragmentation and make it difficult to get global consensus on environmental issues (Roberts 2011; Andresen and Skodvin 2011).

Yet Fig. 1 shows that many different countries ratified treaties throughout the 1990s and 2000s despite the fragmentation. This may be due to the influence of world society institutions and inter-governmental organizations, which, in the absence of strong state leadership, provided the direction for global cooperation, as suggested by world society theory. The United Nations was particularly important in organizing the global environmental regime. In support of H2, between 1991 and 2008, countries that were members of the ICSU or members of more inter-governmental organizations, and, to a lesser extent, had environmental international NGO affiliates or branches in their country were more likely to ratify treaties. However, the importance of these world society organizations prior to 1991 cannot be denied (Hironaka 2014).

What about the major powers? The situation is complicated, and it is difficult to generalize partly because the events were historically specific. Clearly, the US role in the global environmental regime changed. This superpower played a significant role in promoting the Vienna Convention and Montreal Protocol. But after 1991, it behaved contrary to what other major powers and other countries were doing, and its recalcitrance is well documented (Prestowitz 2003). Russia also changed, but in a different way. It also played a leadership role in the 1980s by ratifying early the Vienna Convention (along with the USA), but after its demise, the country was more passive, ratifying treaties which others had ratified. Russia seemed to become a willing follower.

Our qualitative analysis showed that other major powers assumed leadership roles after 1990. China and France were the first major powers to ratify the Basel Convention in 1991 and China, Germany, and Japan were the first major powers to ratify the CBD in 1993. Germany was the first major power to ratify the Law of the Sea in 1994. In contrast, Russia and Great Britain were only responsive to the ratifications of other major powers and were not leaders. Thus, while the USA was 'going it alone' and Russia became a passive follower, China and Germany and to a lesser degree Japan and France were assuming the reins of leadership. It also appears that the major powers emulated one another.

While recognizing the rise of world society and the success of the environmental regime in the post-Soviet era, we hesitate to conclude that state power is no longer important in the environmental realm. In the post-Soviet multipolar world, Schneider and Urpelainen (2013) gave us examples of competing power centers and raw power politics in the environmental realm. Perrin and Bernauer (2010), Bernauer et al. (2010), and this study found that countries still emulated the ratification behaviors of powerful countries. Based on these results, a key ingredient to future environmental efforts is the recruitment of major powers to the table. Not only are they needed to remedy environmental ills, but their presence can influence other countries to commit to a universal effort to remedy global environmental problems.

Acknowledgments We acknowledge the Climate Risk Assessment Research Project at the National Institute for Environmental Studies in Tsukuba, Japan for providing funding for this research, the International Studies Program at the University of Arizona for travel funds, and the Fulbright Program which enabled the third author to teach and do research at the University of Tsukuba in 2007. Finally, thanks to Thomas J. Volgy, Gary Goertz, Noah Friedkin, Eugene Johnsen, Scott Eliason, Robert Pekkanen, Scott Savage, Daisuke Murakami, Hajime Seya, and several graduate students in the Sociology Department at Arizona for their help with this paper.

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