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Assessing the Steps to War

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This analysis outlines and tests the steps-to-war explanation of international conflict. At the core of this explanation is the expectation that territorial disputes are a key source of war and that as states that have these disputes make politically relevant alliances, have recurring disputes and build up their military forces against each other, they will experience ever-increasing probabilities of war. The absence of these risk factors is expected to lessen the chances of severe conflict. Utilizing the Militarized Interstate Dispute data of the Correlates of War project, the data analyses provide full support for the steps-to-war explanation during the 1816–1945 era and partial support for the Cold War nuclear 1946–92 span. Among the findings for this latter period is the presence of a curvilinear relationship between the number of prior disputes and the probability of war – after a large number of disputes, states begin to ritualize their behaviour at levels short of war.

What causes war? While there has been no shortage of theorizing and empirical research on this question,[1] its primacy remains at the forefront of debate in both academic and policy circles. The reasons for this attention are numerous, including, of course, the immense human carnage that has been suffered over time. Quantitative analysis approaches, for their part, have moved from an emphasis on the correlates of war[2] to a focus on what factors increase the probability that a militarized dispute or crisis might escalate to war.[3] This is a research tack that has often been successful in other fields, especially epidemiology. In international relations most of the new studies on war have examined only the impact of one or two core variables (and perhaps a few control variables) that might increase (or decrease) the probability of war. This study, by contrast, presents and tests an explanation of how several key variables might combine in an additive fashion to affect substantially the probability that a militarized dispute escalates to war.

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[1] See, for example, Bruce Bueno de Mesquita and David Lalman, *War and Reason: Domestic and International Imperatives* (New Haven, Conn.: Yale University Press, 1992); Jacek Kugler and Douglas Lemke, eds, *Parity and War: Evaluations and Extensions of The War Ledger* (Ann Arbor: University of Michigan Press, 1996); Jack Levy, 'The Causes of War: A Review of Theories and Evidence', in Philip E. Tetlock *et al.*, eds, *Behavior, Society, and Nuclear War* (New York: Oxford University Press, 1989); Hidemi Suganami, *On the Causes of War* (Oxford: Clarendon Press, 1996); Hidemi Suganami, 'Explaining War: Some Critical Observations', *International Relations*, 16 (2002), 307–36; William Thompson, *On Global War* (Columbia: University of South Carolina Press, 1988); Stephen Van Evera, *The Causes of War* (Ithaca, N.Y.: Cornell University Press, 1999); Paul F. Diehl and Gary Goertz, *War and Peace in International Rivalry* (Ann Arbor: University of Michigan Press, 2000).

[2] J. David Singer, *The Correlates of War I* (New York: Free Press, 1979).

[3] See Stuart Bremer and Thomas Cusack, eds, *The Process of War* (Amsterdam: Gordon and Breach, 1995); Michael Brecher and Jonathan Wilkenfeld, *A Study of Crisis* (Ann Arbor: University of Michigan Press, 1997); Claudio Cioffi-Revilla, *Politics and Uncertainty: Theory, Models and Applications* (Cambridge: Cambridge University Press, 1998).

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THE STEPS TO WAR EXPLANATION

The original steps-to-war explanation of conflict maintains that territorial disputes generally have a higher probability of escalating to war than expected by chance and in comparison to other types of dispute, such as disputes over general foreign policy or the character of a state's regime.[4] It also maintains that if these disputes are handled in a power politics fashion, the probability of escalation to war will increase markedly. Realist diplomatic culture, which has dominated international relations in the West since 1648, provides a variety of foreign policy practices for decision makers. Key within this discourse is the idea that as security issues arise, states should increase their power by making alliances and/or building up their military forces. The steps-to-war model, though, maintains that such actions often increase the probability of war because they produce a security dilemma that leads each state to feel more threatened and more hostile towards the other side and to take actions against its opponent.[5] As a result, alliances lead to counter alliances and military build-ups lead to arms races. Furthermore, adopting one or more of these practices can be expected to lead to a repetition of disputes and an increased level of escalation across disputes.[6]

This analysis will empirically examine the impact of alliance formation, recurrent disputes and arms races on the probability of war breaking out between states that have territorial disputes with one another. It is posited that states disputing territory have a higher probability of going to war with each other than states that have other kinds of disputes. It is further posited that if a state with a territorial dispute makes an alliance with an outside party that can be used to aid it in its territorial dispute, this will increase the probability of war. If, in addition, states become mired in the repeated use of military force (or the threat to do so), then this can be seen as further increasing the probability of war. Lastly, if states engage in this syndrome of behaviour and also build up their military forces to the extent of being engaged in an arms race, then the probability of war goes up yet again. In this sense, having a territorial dispute can be considered a first step to war, and engaging in other power politics practices can be seen as additional steps to war. Not too much emphasis should be placed on the order of these steps, however. The key claim is that each practice increases threat perception and therefore the probability of war. As these threatening practices accumulate, they make it more likely that eventually a crisis or militarized dispute will occur that escalates to war. This is true for any issue, whether territorial or not.

Why should this be the case? The reason that decision makers adopt these practices is that certain kinds of leaders (and their followers) follow the precepts of realist folklore, which maintain that when highly salient security issues arise, they should be prepared to use force to defend themselves or threaten force if other forms of politics fail. Realpolitik tactics and strategies of resolve within the larger context of coercion are seen as the hallmarks of getting what you want. In the face of contested issues, where each side is reluctant to give in, this approach often leads states into a series of recurring militarized confrontations or disputes. While this is true of all security issues, it is especially the case with territorial disputes, either because of the intrinsic value placed on the stake and/or the

[4] John Vasquez, *The War Puzzle* (Cambridge: Cambridge University Press, 1993), chap. 4.

[5] Suganami, 'Explaining War', pp. 313–14.

[6] For evidence supporting this proposition, see Russell Leng, 'When Will They Ever Learn? Coercive Bargaining in Recurrent Crises', *Journal of Conflict Resolution*, 27 (1983), 379–419; Vasquez, *The War Puzzle*, chap. 5; Brecher and Wilkenfeld, *A Study of Crisis*, pp. 826–8, 837–8.

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domestic political constituencies that develop around the issue. If the threat or use of force makes states insecure, realist folklore posits that they should increase their power. The conventional realist practices by which this is done are either through making alliances with those who will support the position or by building up military forces. Realism, then, provides a way of identifying and even predicting what leaders will do in situations of high security threat.

The steps-to-war explanation deviates from realism in that it sees such practices as producing a security dilemma in which alliances lead to counter alliances, and military build-ups lead to arms races, and escalation to a hostile spiral.[7] The end result is that the adoption of realist prescriptions becomes a series of steps that increase the probability of war. The vicious cycle generated by the security dilemma is reinforced both by the interactions of states and by the indirect effect these interactions have on the domestic political environment of each nation-state. Threatening interactions tend to produce at least reciprocal responses, so a state can compensate for the advantages a particular action gave the first state. Thus, an alliance made by actor A will leave actor B vulnerable unless it can match whatever advantage the alliance provided to actor A. Of course actor B may, if it can, seek a greater advantage (by having more powerful allies) and therefore can be seen as escalating and not just reciprocating. Domestically, such interaction tends to reinforce the positions of hard liners that the opponent is indeed a threat and such a threat must be met by taking a hard line. Escalatory interactions tend to increase both the number and influence of hard liners and push decision makers towards more realpolitik strategies.

Our analysis will test certain key aspects of this broad explanation of the onset of war. In doing so, it will focus on a set of propositions that link territorial disputes and the use of power politics practices to an elevated likelihood of war. Thus, a territorial dispute between two states where one or both sides have an outside ally that will support them is more likely to go to war than a dispute where neither side has an outside alliance. Likewise, a territorial dispute where outside alliances are present and the two states have also had a series of recurring militarized confrontations is more likely to escalate to war than one where an outside alliance is present but the states have not had many previous disputes. Lastly, territorial disputes where both sides have outside alliances, a history of prior conflict and an ongoing arms race are more likely to go to war than those that have all these conditions but are not engaged in an arms race.

This overview of the explanation should make it clear that the dependent variable in our analysis is the probability of war arising out of a militarized dispute. The independent variables can be seen as a set of risk factors for war that operate in a dynamic and non-linear fashion.[8] In this study, we are interested in seeing whether the mere presence of varied combinations of these risk factors at the beginning of a dyadic dispute will increase state tendencies towards war. In this sense, our tests are static rather than dynamic, even though our explanation has clear dynamic aspects. The reason for this is that the data we have available permit only this sort of test. Nevertheless, this is a meaningful test in that the 'static' conditions are presumed to be an outcome of the steps-to-war dynamic, and if they

[7] On the concept of the security dilemma, see John Herz, 'Idealist Internationalism and the Security Dilemma', *World Politics*, 2 (1950), 157–80. Realists also recognize how a security dilemma arises out of realist prescriptions; see, for example, Robert Jervis, 'Co-operation under the Security Dilemma', *World Politics*, 30 (1978), 167–214; and Van Evera, *The Causes of War*, p. 117n, but on the whole they are more sanguine about the pacifying effects of power and resolve.

[8] For an analysis of how probabilistic causality can be used to formalize conflict and war when they are used as dependent variables, see Cioffi-Revilla, *Politics and Uncertainty*, pp. 31–4.

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do not produce the predicted increase in the probability of war, then the explanation is incorrect and could be considered falsified depending on how inconsistent it is with the evidence. Conversely, if the evidence is consistent with the predictions, all that can be inferred is that the static variables are associated with an increase in the probability of war and that, while presumed dynamic aspects might also be operating in the manner we outline, a different sort of test would be needed to demonstrate that.[9]

We thus focus our attention on the following four propositions derived from the steps-to-war explanation:

PROPOSITION 1. Dyadic territorial disputes have a higher probability of escalating to war than general foreign policy disputes or disputes over the nature of one side's regime.
PROPOSITION 2. Dyadic territorial disputes where both sides have outside politically relevant alliances have a higher probability of escalating to war than dyadic territorial disputes where neither side has alliances.
PROPOSITION 3a. Dyadic territorial disputes where both sides have outside politically relevant alliances and have had a series of recurring disputes have a greater probability of escalating to war than dyadic territorial disputes where both sides have such alliances but have not had a history of militarized disputes.
PROPOSITION 3b. The effect of prior disputes is curvilinear. Initially, more prior conflicts steadily increase the probability of war for current disputes, but eventually this relationship reverses as a very high number of prior conflicts will actually engender a ritualization of relations whereby pairs stop their current disputes short of war.
PROPOSITION 4. Dyadic territorial disputes, where both sides have outside politically relevant alliances, have had repeated militarized disputes and have an ongoing arms race, have a higher probability of going to war than those that have these three conditions but do not have an ongoing arms race.

It is important to note that while previous research has been conducted on some of the factors listed in these propositions, almost all of this work has looked at the factors individually or at most at how two factors might combine or interact. One of the main things we do know from this prior work is that territorial disputes are highly war prone compared to non-territorial disputes. This has been established by a number of studies employing different research designs and databases, so that the finding seems to be robust.[10] Taken

[9] Likewise, the language of 'steps' implies a sequence of actions or transitions across phases (on sequences and war, see Cioffi-Revilla, *Politics and Uncertainty*, pp. 140–50, 158–63). The various risk factors for war – territorial disputes, relevant alliances, and so forth – may increase the probability of war, however, without necessarily having worked through sequences. To see whether the actual steps take place in the sequence we imply would require a more case-focused test, which would make most sense after the present sort of analysis has been conducted.

[10] See, for example, Vasquez, *The War Puzzle*, pp. 129–30, 133–6; Paul R. Hensel, 'Charting a Course to Conflict: Territorial Issues and Interstate Conflict, 1816–1992', *Conflict Management and Peace Science*, 15 (1996), 43–73; Paul R. Hensel, 'Territory: Theory and Evidence on Geography and Conflict', in John Vasquez, ed., *What Do We Know About War?* (Lanham, Md.: Rowman & Littlefield, 2000); Paul Senese, 'Geographic Proximity and Issue Salience: Their Effects on the Escalation of Militarized Interstate Conflict', *Conflict Management and Peace Science*, 15 (1996), 133–61; John Vasquez and Marie T. Henehan, 'Territorial Disputes and the Probability of War, 1816–1992', *Journal of Peace Research*, 38 (2001), 123–38; Hemda Ben-Yehuda, 'Territoriality, Crisis and War in the Arab–Israel Conflict, 1947–94', *Journal of Conflict Studies*, 21 (2001), 78–108; Marie Henehan, 'The Effect of Territory on Dispute Escalation among Initiators: A Research Note' (presented at the Hong Kong Meeting of the International Studies Association, 2001); Paul Senese and John Vasquez, 'A Unified Explanation of Territorial Conflict: Testing the Impact of Sampling Bias, 1919–1992', *International Studies Quarterly*, 47 (2003), 275–98.

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together, these studies imply that there is something about territory that makes it particularly intractable; and this observation is not limited merely to interstate conflict, as research focusing on civil wars has reached a similar conclusion.[11]

What is it about territory, which is a divisible stake, that makes it so intractable? The literature on interstate war suggests two things: first, territorial disputes tend to recur;[12] and secondly, the territorial disputes that are most war prone, such as those involving ethnic disputes, generate domestic constituencies that pressure leaders to pursue hard-line policies.[13] Simmons, in her analysis of Latin American territorial disagreements, goes so far as to argue that leaders may be so hemmed in by domestic hardliners that they may turn over territorial disputes on which they want to compromise to an arbitration board in order to avoid taking political heat.[14] However, she finds that if the territorial dispute is highly salient and the arbitration board sides against the country, then that country will not abide by the agreement and/or its leader will be overthrown. As stated in Proposition 1, we expect territorial disputes to exhibit a higher probability of war compared to non-territorial engagements. Nevertheless, we also expect that the accumulation of varied power politics practices (as stated in Propositions 2–4) will tend to increase the chances of non-territorial disputes going to war, similar to their effects on territorial ones.

With regard to alliances, the empirical research reveals evidence consistent with the claim in Proposition 2 that there is some association between making an alliance and both the onset[15] and expansion[16] of war. This work on alliances, however, is very complicated, showing that some periods associate alliances with peace and others with war. Gibler tries to explain why alliances in some periods are associated with peace, but others are associated with war by developing a typology of alliances which distinguishes those that go to war from those that do not.[17]

In Propositions 2–4 we emphasize politically relevant alliances and not alliances in

[11] See Barbara Walter, 'Explaining the Intractability of Territorial Conflict', *International Studies Review*, 5 (2003), 137–53; Monica Duffy Toft, *The Geography of Ethnic Violence* (Princeton, N.J.: Princeton University Press, 2003).

[12] Paul R. Hensel, 'One Thing Leads to Another: Recurrent Militarized Disputes in Latin America, 1816–1990', *Journal of Peace Research*, 31 (1994), 281–98.

[13] See Paul Huth, *Standing Your Ground: Territorial Disputes and International Conflict* (Ann Arbor: University of Michigan Press, 1996); Bikash A. Roy, 'Intervention Across Bisecting Borders', *Journal of Peace Research*, 34 (1997), 3–14; see also Paul K. Huth and Todd L. Allee, *The Democratic Peace and Territorial Conflict in the Twentieth Century* (Cambridge: Cambridge University Press, 2002).

[14] Beth A. Simmons, 'See You in Court? The Appeal to Quasi-Judicial Legal Processes in the Settlement of Territorial Disputes', in Paul Diehl, ed., *A Road Map to War: Territorial Dimensions of International Conflict* (Nashville, Tenn.: Vanderbilt University Press, 1999), pp. 205–37; Beth A. Simmons, 'Capacity, Commitment, and Compliance: International Institutions and Territorial Disputes', *Journal of Conflict Resolution*, 46 (2002), 829–56, pp. 835, 843.

[15] See J. David Singer and Melvin Small, 'National Alliance Commitments and War Involvement, 1815–1945', *Peace Research Society (International) Papers*, 5 (1966), 109–40; Jack Levy, 'Alliance Formation and War Behavior: An Analysis of the Great Powers, 1495–1975', *Journal of Conflict Resolution*, 25 (1981), 581–613; see also T. Clifton Morgan and Glenn Palmer, 'A Model of Foreign Policy Substitutability: Selecting the Right Tools for the Job(s)', *Journal of Conflict Resolution*, 44 (2002), 11–32.

[16] Randolph J. Siverson and Joel King, 'Alliances and the Expansion of War', in J. David Singer and Michael D. Wallace, eds, *To Auger Well: Early Warning Indicators in World Politics* (Beverly Hills, Calif.: Sage, 1979), pp. 37–49.

[17] Douglas Gibler, 'Alliances: Why Some Cause War and Why Others Cause Peace', in Vasquez, ed., *What Do We Know About War?*, pp. 145–64. For a review of recent research on alliances, see Glenn Palmer and T. Clifton Morgan, *A Matter of Choice: A Two-Good Theory of Substitution in Foreign Policy* (forthcoming), chap. 7.

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general because not every alliance is relevant to every dispute or war in which an ally might be involved. If a state has an alliance with another state that commits it to fight only in a circumscribed set of conditions, these conditions may not be relevant to a situation that arises in another region or issue area.[18] For example, the United States during the Cold War had an alliance with Taiwan, and this alliance is relevant to US relations with China and other Asian states, but having Taiwan as an alliance partner is not relevant to disputes the United States might have with countries in sub-Saharan Africa or Latin America. Thus one of the problems of simply counting formal alliances is that active countries, like Britain and the United States, would be classified as having an ally for many of the years since 1816, even though many of these alliance commitments would not be relevant to the dispute at hand.

The research that we propose and carry out is designed, in part, to separate out the impacts of various types of alliance scenarios by focusing on their relevance to the present dispute. The causal logic of realism stipulates that states make alliances in order to increase their power and help balance the power of opponents, which under some versions of realism should lead to a reduction in the probability of war by increasing the risk that an attacker will lose the war. The expectations of the steps-to-war explanation differ on this point. It argues, instead, that when one side makes an outside alliance, this increases threat perception and, in the presence of a subsequent militarized interstate dispute, this increases the probability of war, because it gives the side with an outside ally a potential advantage and in doing so makes it less risk averse. While some targets will back down in the face of a militarized interstate dispute (MID), we postulate that territorial disputes are of such salience that states will tend not to give in, but, rather, either allow the current dispute to stalemate (only to be repeated later) or go to war.[19] If the dispute stalemates, it is anticipated that the side without outside allies would try to get allies and/or build up its military forces before the next MID. If both sides have an outside alliance, then this is seen as having a higher probability of war since both sides have now engaged in and reciprocated some highly threatening actions. In addition, they are further along a realist strategy of coercion and now have fewer options to take before they decide that going to war is the best way of handling the situation they face. For this reason we expect the alliance configuration where both sides have outside alliances to be the most war prone and have focused on this in our propositions. However, we also anticipate that a dyad having even one outside alliance will be more war prone than a dyad with none at all.

Propositions 3 and 4 also place importance on the repetition of militarized confrontations. The original construction of the steps-to-war explanation derives this idea from the twin notion that crises between relatively equal states tend to stalemate and repeat and repeated crises tend to escalate to war.[20] As they repeat, one or both sides can be expected to escalate their use of force in order to coerce or intimidate the other side into agreeing to its issue position. Such bargaining tends to give rise to hard liners in each side, which makes the issue more intractable, reduces the prospects of compromise and encourages more escalation. As both sides climb this ladder of escalation the external

[18] See Brett Ashley Leeds, Andrew Long and Sara McLaughlin Mitchell, 'Reevaluating Alliance Reliability: Specific Threats, Specific Promises', *Journal of Conflict Resolution*, 44 (2000), 686–99.

[19] See Hensel, 'One Thing Leads to Another'.

[20] Vasquez, *The War Puzzle*, pp. 184–90, 316–18. On repeating crises, see: Peter Wallentsteen, 'Incompatibility, Confrontation, and War: Four Models and Three Historical Systems, 1816–1976', *Journal of Peace Research*, 18 (1981), 57–90; Stuart Bremer, 'Who Fights Whom, When, Where, and Why?', in Vasquez, ed., *What Do We Know About War?*, pp. 23–36, at p. 25; Leng, 'When Will They Ever Learn?'

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bargaining situation and internal political climate increase the chance that a crisis will emerge that ends in war.

Since the original publication of the steps-to-war explanation, work on interstate rivalry has come to the forefront. This literature assumes that a pair of states that has a history of repeated MIDs is engaged in a rivalry. An enduring rivalry is conventionally operationalized as six disputes within a twenty-year period and is normally seen as an attribute of a dyad and not a dispute.[21] If rivalry and the repetition of disputes increase the probability of war, it is important in looking at dyadic conflict to have an idea of whether the current dispute is the first, second or *n*th dispute between the same pair of states. We therefore look at how the number of prior dyadic disputes affects the current dispute (Proposition 3a).

The literature on rivalry, regardless of the particular definition of rivalry employed, basically assumes that once a threshold of repeated disputes or level of hostility is crossed, the probability of war increases.[22] A key conclusion of this literature is that most wars that have been fought since 1816 have rivals in them. Put another way, war tends to increase in probability as disputes between the same states recur. All of this suggests that rivalry and recurring disputes are a step to war, but little empirical work has been done examining the effect of prior conflict on the probability of war in the light of the other steps to war.

However, all enduring rivalries may not be the same. We believe that pairs that have a very high number of previous disputes come to learn how to manage their relations and even to a certain extent ritualize their MIDs so that they are not as dangerous as those they had earlier. In effect, at a certain stage interactions become patterned and generate between the two contenders a set of expectations about how to interact that take on a ritualized character. Such a depiction is nicely in line with an earlier assertion by Mansbach and Vasquez that a ritualized stage of relations 'involves the continuation of competition and repetitive probing, but within mutually understood limits, and governed by tacit rules in accordance with standard operating procedures that actors develop to prevent surprise and uncertainties … Hostile moves are undertaken by adversaries, but such moves are expected and so can be parried.'[23] The Cold War relations of the United States and the Soviet Union provide an illustration of this process. A ritualization process implies that there should be a diminution in the probability of war for dyads that have experienced a very large number of prior MIDs. Put another way, the relationship between recurring

[21] Diehl and Goertz, *War and Peace in International Rivalry*, p. 45.

[22] Diehl and Goertz, *War and Peace in International Rivalry*; Frank W. Wayman, 'Power Shifts and the Onset of War', in Jacek Kugler and Douglas Lemke, eds, *Parity and War* (Ann Arbor: University of Michigan Press, 1996), pp. 145–62; Frank W. Wayman, 'Rivalries: Recurrent Disputes and Explaining War', in Vasquez, ed., *What Do We Know About War?* pp. 219–34; William Thompson, 'Principal Rivalries', *Journal of Conflict Resolution*, 39 (1995), 195–223; William Thompson, 'Identifying Rivalries in World Politics', *International Studies Quarterly*, 45 (2001), 557–86.

[23] Richard Mansbach and John Vasquez, *In Search of Theory: A New Paradigm for Global Politics* (New York: Columbia University Press, 1981), p. 117. For additional discussion on how dyadic interaction becomes patterned, see Edward Azar, 'Conflict Escalation and Conflict Reduction in an International Crisis: Suez, 1956', *Journal of Conflict Studies*, 16 (1972), 183–201. Azar recognizes a similar process in his normal relations range, where he maintains that it is not so much the level of hostility that makes for a crisis between two states, but how much that level deviates from the average or typical level of hostility. Thus, a typical negative act between the United States and the Soviet Union would not have as much impact as the same act would if it transpired between the United States and Britain. Azar's concept implies that states in long-term rivalries learn to manage their crises so as to make them less dangerous.

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disputes and war may not be linear but curvilinear (Proposition 3b), something which the idea of crossing a 'rivalry' threshold would miss.

Finally, Proposition 4 adds the condition of arms racing. The steps-to-war explanation sees arms racing as a way of preparing for war and not avoiding it.[24] The rationale for this is that building up military forces produces a security dilemma, in which one side's build-up increases the insecurity of the state that is the target of the build-up. This target state reciprocates by building up its military forces as a way of maintaining and even increasing its own power. This in turn can lead to a full-blown arms race, which in turn increases threat perception and hostility on each side. A militarized dispute that emerges in this atmosphere is more apt to escalate to war than one that occurs in the absence of arms racing.

In addition to these propositions, we will also take note of evidence applying to slight variations on Propositions 2–4, namely looking at the effects of outside alliances, recurring disputes and arms races on the likelihood of war for non-territorial disputes. Our basic expectation here is that the use of power politics practices will also increase the chances of war among non-territorial disputes; namely, that non-territorial disputes characterized by two or three of these practices are more apt to go to war than those that have only one, just as we expect with territorial disputes. However, while the probabilities of war should increase with the use of power politics practices, regardless of dispute type, we expect the chances of war for territorial cases to be higher than for non-territorial ones.

RESEARCH DESIGN

To test the claim that the above steps actually do increase the chances of war among states, we will first look at the probability of war occurring when states have territorial disputes as opposed to other types of disputes (Proposition 1). This test serves as a base model for purposes of comparing whether and how much the probability of war increases with the presence of additional risk factors. Then we see whether the addition of each of the variables specified in Propositions 2–4 increases the probability of war. We examine whether dyads that are contending over territorial disputes in the presence of both sides having politically relevant outside alliances have a higher probability of war than dyads (contending over territorial disputes) that do not have any alliances (Proposition 2). Next, we compare these cases with those that are also involved in repeated disputes (Proposition 3), and lastly we examine those dyads that have all four conditions present – territorial disputes, both sides having outside alliances, repeated disputes and an ongoing arms race (Proposition 4).

Whenever a verbal theory is tested it must be transformed into a testable model. In doing so it is found that a single verbal theory often embodies a family of theories in which the variables can be linked in various ways. This introduces a certain ambiguity in the technical sense of that term in that a series of models can be derived from the same set of variables, even before control variables are introduced. In this analysis we emphasize the additive effects of each of the variables, as opposed to an alternative that would treat them as a set of statistical interaction terms. We do briefly examine the role of statistical interaction

[24] See J. David Singer, 'Threat-Perception and the Armament-Tension Dilemma', *Journal of Conflict Resolution*, 2 (1958), 91–123; Lewis F. Richardson, *Arms and Insecurity* (Pacific Grove, Calif.: Boxwood Press, 1960); Nazli Choucri and Robert North, *Nations in Conflict* (San Francisco: W. H. Freeman, 1975); Susan Sample, 'Arms Races and Dispute Escalation: Resolving the Debate', *Journal of Peace Research*, 34 (1997), 7–22.

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below, as it relates to the interactions of territory with our other independent variables. Our prior explorations of such an alternative approach, with reference to the interaction of territorial disputes and outside alliances, suggest that the increased complexity does not add much to a more straightforward additive mode.[25]

Some might think that a proper theory should only give rise to a single model, yet this rarely occurs, even in the physical sciences. The philosophy of science approaches we adopt are those of Popper and of Lakatos, which assume that a theory will produce not one model but a research programme that tests various iterations of a theory.[26] Popper's approach of conjectures and refutations, where testing leads to a refining of a theory and then further testing, provides the basic justification for the research programme we follow. Now that previous research conducted by a number of scholars shows an increase in the probability of war when one or two of the 'steps' are present in militarized disputes, the next logical step is to assess the effects when all are present. In the past, this has not been done, in part due to the absence of data. The model we test here, which combines all the steps, is the one most closely tied to the logic of the theory. We want to take this more deductive approach rather than just inductively testing the various permutations that could be derived from the steps-to-war explanation.[27] Likewise, we limit control variables (although the effects of some are explored), because our purpose is to test the performance of the model we have derived and not to maximize the amount of variance (or uncertainty) we can account for. If we find that the evidence is consistent with the model's expectations, then controls, as well as testing the steps explanation against competing theories, can be a focus of future research.

The sample for the analysis will be all dyadic militarized interstate disputes in the MID2.1 dataset from the Correlates of War project. This sample is derived by taking the 2,034 MIDs in the set for the entire period of 1816–1992 and breaking them down into each pair of states in the dispute. This increases the number of cases to 3,045 dyadic disputes (reduced to 2,576 because of missing data on type of dispute). Such dyadic analysis is justifiable since each state involved in a dispute must decide for itself whether to escalate its involvement to the war stage and therefore should be treated individually. The most pronounced effect of this procedure is to place more weight on multiparty disputes, particularly those related to the two world wars. This procedure, however, probably increases the validity of our analysis because otherwise the onset of each of these wars would carry the same weight as a simple tuna-boat chase.[28]

[25] Paul D. Senese and John A. Vasquez, 'Alliances, Territorial Disputes, and the Probability of War: Testing for Interactions', in Paul F. Diehl, ed., *The Scourge of War* (Ann Arbor: University of Michigan Press, 2004), pp. 189–221.

[26] See Karl Popper, *Conjectures and Refutations* (New York: Basic Books, 1962); Imre Lakatos, 'Falsification and the Methodology of Scientific Research Programmes', in I. Lakatos and A. Musgrave, eds, *Criticism and the Growth of Knowledge* (Cambridge: Cambridge University Press, 1970), pp. 91–196.

[27] On the dangers of the latter, see Bear Braumoeller and Anne Sartori, 'The Promise and Perils of Statistics in International Relations', in Detlef Sprinz and Yael Wolinsky-Nahmias, eds, *Models, Numbers, and Cases: Methods for Studying International Relations* (Ann Arbor: University of Michigan Press, 2004), pp. 129–51, at pp. 133–4.

[28] For a comparison of using just the disputes without breaking them into dyadic disputes, see Vasquez and Henehan, 'Territorial Disputes and the Probability of War, 1816–1992', pp. 127–31, who find that with either sample the claims of what is Proposition 1 in our study are strongly supported. As a check on the robustness of the findings presented below, we also conduct supplemental analyses excluding the First World War and Second World War years.

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In addition to examining the full time-span, we control for historical era by breaking down the full sample into two periods – the classic international power politics era of 1816–1945 and the Cold War 1946–92 nuclear era. We do this since numerous scholars have argued that nuclear weapons, beginning as early as 1946, ushered in a new era that fundamentally changed the way diplomacy was conducted so as to lower the probability of war between nuclear states. Now that we have lived through over fifty years of the nuclear era we can see that nuclear weapons have in fact raised the provocation threshold for total war. This conservatism on the part of nuclear states may have also led them to restrain their minor allies. In addition, the East–West alliance system may, because of the danger of escalation to the nuclear level, have actually limited mutual superpower intervention into ongoing wars, such as in Vietnam and Afghanistan, rather than encouraged the expansion of war as alliances had in the past.[29] Given this line of reasoning, we think that the post-1945 Cold War era is fundamentally different in an important aspect of international relations from the more classic and longer 1816–1945 power politics era. In a sense, the power politics aspect (as opposed to the territorial aspect) of the steps-to-war explanation may find its more natural domain in the pre-nuclear era. Thus, examining just the full span may produce misleading results and mask interesting differences across the sub-periods. This is especially the case since many arms races in the post-1945 period involve either states with nuclear weapons or states allied to them. Breaking down the full time-span results in 1,362 dyadic dispute cases (reduced to 1,131 because of missing data) from 1816 to 1945, and 1,683 dyadic disputes (reduced to 1,445 because of missing data) for the 1946–92 period.

Our dependent variable will be whether the current MID under contention or any other between the same two parties escalates to war within five years. While most studies utilizing MID data examine whether the dispute under question goes to war or not, the steps-to-war model sees the outbreak of war as a process, with the probability of war increasing as disputes recur. Specifically, it is hypothesized that as crises recur or accumulate the dyad or system is more apt to be plunged into war.[30] Because this is the case, it could be misleading to count disputes that do not immediately go to war but do eventuate in war within a reasonable time frame as evidence against the hypothesis.[31] For this analysis, then, the dependent variable will be whether the current dispute between the parties, or any one within the next five years, escalates to war. While this conception of the dependent variable differs from the typical study using MID data, the use of a five-year window (or sometimes longer) has a long history in the field.[32] The war data of the

[29] On alliances and war expansion, see Siverson and King, 'Alliances and the Expansion of War'; Randolph J. Siverson and Harvey Starr, 'Opportunity, Willingness, and the Diffusion of War', *American Political Science Review*, 84 (1990), 47–67.

[30] See Leng, 'When Will They Ever Learn?'; Manus Midlarsky, 'Preventing Systemic War', *Journal of Conflict Resolution*, 28 (1984), 563–84; Michael Colaresi and William Thompson, 'Hot Spots or Hot Hands? Serial Crisis Behavior, Escalating Risks, and Rivalry', *Journal of Politics*, 64 (2002), 1175–98.

[31] Of the full 3,045 dyadic dispute cases in the data, 473 MIDs escalate to war, whereas our measure of going to war within five years has 596 escalating to war. This is an additional 123 cases out of 3,045 that go to war. However, if this were not done all these cases would count against the propositions even though the dyads involved in them go to war in a relatively short period of time. This being said, in previous work we have used dependent variables with and without the five-year window, and the results show no important differences; see, for example, Senese and Vasquez, 'A Unified Explanation of Territorial Conflict', Appendix, pp. 295–6.

[32] See A. F. K Organski and Jacek Kugler, *The War Ledger* (Chicago: University of Chicago Press, 1980); Levy, 'Alliance Formation and War Behavior'; Wallensteen, 'Incompatibility, Confrontation, and War'; Sample, 'Arms Races and Dispute Escalation'; Gibler, 'Alliances'; Douglas Lemke, *Regions of War and Peace* (Cambridge: Cambridge University Press, 2002).

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Correlates of War project, as opposed to the war codes in the MID data, are used in the analysis. The main difference between these two options is that the MID set has slightly more war cases.

The four major independent variables in our tests will be the type of dispute, the type of politically relevant alliance, the number of disputes that have occurred up to and including the current dispute, and whether there is an ongoing arms race. For the first of these, we will employ the revision type indicator in the MID set. This variable classifies actors involved in militarized disputes in terms of revisionist and non-revisionist states. The revision the former are trying to bring about by their resort to force is then classified in terms of whether it is over territory (territorial MID), a general foreign policy question (policy MID), the regime of its opponent (regime MID), or some 'other' miscellaneous question (other MID).[33]

The second independent variable we will examine is whether the disputants have politically relevant outside alliances. This new measure eliminates outside alliances of the disputants if they are not deemed relevant to the opposing state involved in the MID. Simply put, an alliance with a major state is always relevant because it is assumed that a major state is able to project its capability beyond its own region. An alliance with a minor state, however, is seen as only relevant if the alliance partner is in the same region as the MID target, because it is assumed that it cannot easily project its capability beyond that region even when otherwise inclined to do so.

A hypothetical example may make this rule clearer: on the one hand, if the United States and Brazil are in a dispute and the United States has an alliance with Argentina, then that alliance is relevant. On the other hand, if Brazil has an alliance with Portugal, this is not relevant, but if it had an alliance with the Soviet Union, the latter would be relevant because the Soviet Union is a major state. In a dyadic dispute, first, side B is treated as the target and the relevant alliances for it are computed, and then side A is treated as the target and its relevant alliances are computed. Regions are determined by the state membership list of the Correlates of War project with a couple of emendations to include some states in more than one region.[34] The formal alliance data of the Correlates of War project are used to generate the politically relevant alliance measures (No Alliance, Only Allied to Each Other, One Side Has Outside Alliance, Both Sides Have Outside Alliances, Allied to Each Other and Outside Alliances).[35]

Our third independent variable captures the extent to which a pair of states has been

[33] See Daniel Jones, Stuart Bremer and J. David Singer, 'Militarized Interstate Disputes, 1816–1992: Rationale, Coding Rules, and Empirical Patterns', *Conflict Management and Peace Science*, 15 (1996), 163–213, p. 178. Non-revisionist states on opposing sides of a MID by definition do not have any revision type and hence their revision type is coded as 'non-applicable'. In our data when two non-revisionist states are coupled with each other in a dyadic dispute, that MID is dropped from the analysis. This is done because they are not contesting any substantive issue with each other. Often such states are neutrals or third parties that are caught up in a dispute in which they are not a direct party. Examples of dyads with non-applicable codes in 1914 include Switzerland–Germany, Switzerland–Austria/Hungary, Italy–Germany and Germany–Norway; examples in 1939 include Switzerland–Germany, Germany–United States, Germany–Latvia, Germany–Argentina and Britain–Uruguay. Of the 3,045 dyadic disputes in our data, 469 are coded as non-applicable; of these only three go to war within five years. Excluding them, rather than treating them as non-territorial disputes, makes it more difficult for Proposition 1 to be supported.

[34] See Senese and Vasquez, 'Alliances, Territorial Disputes and the Probability of War', pp. 203–5 for elaboration.

[35] Douglas Gibler and Meredith Sarkees, 'Measuring Alliances: The Correlates of War Formal Interstate Alliance Data Set, 1816–2000', *Journal of Peace Research*, 41 (2004), 211–22.

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engaged in prior conflicts. We hypothesize (in Proposition 3a) that the more disputes a dyad has had before its current one, the greater the likelihood of war, *ceteris paribus*. To measure this we determine how many disputes have occurred previously between the same pair of states. We call this variable 'Number of Prior MIDs' and use it in our analyses across all three time periods. This approach is quite straightforward for the full and pre-1946 spans. For the post-1945 period, however, it assumes that MIDs that occurred prior to 1946 will affect relations after 1945. This assumption has considerable face validity – there is substantial anecdotal evidence suggesting that states have long memories. For instance, most scholars believe that events like the two world wars have had profound effects on the behaviour of states since 1945.[36] Similarly, the memory of allied intervention in the Soviet Union in 1918 helped shape Soviet attitudes towards the West after the Second World War.[37]

The idea that repeated disputes encourage the emergence of a dispute that will escalate to war is at the heart of the idea of rivalry. In that sense our measure of prior disputes can be seen as an indicator of the degree of rivalry, although we are not directly measuring rivalry in its conventional form here. For example, Diehl and Goertz treat rivalry as a categorical variable by using the cut-off points of roughly 1–2 for isolated conflict, 3–5 for proto-rivalry, and 6 + for enduring rivalry, depending on the time frame in which these disputes occur.[38] Instead, we have chosen to treat repeated disputes (and indirectly rivalry) as an integer variable.

Treating it as an integer rather than a categorical variable assumes that crossing a particular threshold (especially six disputes and above) is not crucial and does not make for a marked change in a relationship at that specific number of disputes, but that rivalry emerges in a continuous pattern across disputes as hostility increases from one engagement to the next. An integer variable (and the concept of repeated disputes) sees each dispute as increasing the probability of war even after a particular threshold has been passed. For example, the eighth dyadic dispute is seen as more likely to go to war than the third, but less likely to go to war than the seventeenth.[39] Nevertheless, to assess the importance of various thresholds we will isolate three in our tests of Proposition 3a – the probability of war when two states are engaged in their first, sixth (a threshold relevant to Diehl and Goertz's measure of enduring rivalry) and fifteenth dispute (the mean number of disputes among enduring rivals for 1816–1992). This last scenario allows us to pinpoint the probability of war for the 'average enduring rivalry'.

Our proposition that as disputes increase, the probability of war also increases, has a *ceteris paribus* caveat. We think that this relationship is linear for most dyads, but we also expect that pairs having an extremely large number of recurrent disputes at a certain point become engaged in a kind of ritualized behaviour (Proposition 3b). This pattern makes their militarized confrontations less intense in terms of threat perception. They have somehow learned to manage their militarized confrontations in a way that takes on game-like ritualized characteristics, so these disputes are not at as great a risk of going to war. Their

[36] See, for example, John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989).

[37] For an alternative measure discounting the influence of early disputes, see Mark Crescenzi and Andrew Enterline, 'Time Remembered: A Dynamic Model of Interstate Interaction', *International Studies Quarterly*, 45 (2001), 409–31.

[38] Diehl and Goertz, *War and Peace in International Rivalry*, p. 45.

[39] For this reason, we do not start counting the number of prior disputes only at the beginning of a specific enduring rivalry, as defined by Diehl and Goertz, *War and Peace in International Rivalry*, p. 45.

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relationship is one of threatening and maybe using limited force, but one where taking the ultimate step is not anticipated. This implies that states which can get through a substantial number of MIDs are at less risk than those which just cross the six-MID threshold. Anecdotal evidence that something like this might be present in history can be seen by looking at East–West relations in the Cold War. The United States, Britain and France have a very large number of MIDs with the Soviet Union, but none escalate to war. The same holds for China and the United States after the Korean War.

To test this notion of ritualization, we introduce a quadratic specification to see if the relationship between the number of prior disputes and the probability of war is curvilinear and, more specifically, whether it approximates an inverted U shape. We do this by squaring the Number of Prior MIDs and introducing this new variable (Number of Prior MIDs Squared) into the model. We also graph the relationship to see if the kind of ritualization we hypothesize takes place. This examination of the quadratic specification is then compared to one that simply assesses the impact of Number of Prior MIDs on its own. Such a progression allows us to test Proposition 3 to see if the relationship is better depicted as linear or curvilinear.

Our fourth, and final, independent variable is the presence of an arms race. Here, we use new data collected by Susan Sample for both major and minor states.[40] These data record arms races for each dyad in a MID based on the measure used by Horn,[41] which essentially examines the increase in military expenditure of two states over time. We employ Sample's categorical data to determine whether there is an ongoing arms race for each dyadic dispute.

One of the advantages of utilizing dyadic disputes as the unit of analysis, as opposed to comparing the long-term relations of a pair of states (the dyad) or rivals with each other,[42] is that we can pinpoint when the independent variables occur in relation to the dependent variable. This permits us to have a clear idea of the timing of our variables to make sure that each of the independent variables occurs before the dependent variable.[43] Thus, we know from the MID coding that a territorial revision claim has preceded the threat or use of force. We also have measured our alliance variables so that the formal alliance must be operating before the first day of the MID. Measuring the number of previous disputes permits us to know when a case crosses what might be considered various thresholds of rivalry. Lastly, an arms race must be ongoing in the year the MID occurs.

With these measures in hand, we utilize logistic regression to conduct two key tests of our four propositions. The first is to see if each of our four variables – territory, politically relevant alliances, number of previous disputes and arms races – has a positive and significant impact on the probability of a dispute escalating to war within five years. By using multivariate logistic regression, we have chosen to conduct a very rigorous test of

[40] See Susan Sample, 'The Outcomes of Military Buildups: Minor States vs. Major Powers', *Journal of Peace Research*, 39 (2002), 669–92. For a historical approach to collecting data on arms races, see David Stevenson, *Armaments and the Coming of War: Europe 1904–1914* (Oxford: Clarendon Press, 1996), pp. 1–14.

[41] Michael Horn, 'Arms Races and the International System' (doctoral dissertation: University of Rochester, 1987).

[42] See John Vasquez, 'The Probability of War, 1816–1992', Presidential Address to the International Studies Association, *International Studies Quarterly*, 48 (2004), 1–27.

[43] When the dyad or rivalry (e.g., Britain–Germany) is the unit of analysis, one would compare whether the rivals (over the course of their history) that have territorial disputes, politically relevant outside alliances and arms races are more apt to have a war than those that have one or more of these factors absent. However, with such data one does not know for sure if the alliances, arms races and so forth precede the MID that escalates to war.

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the steps-to-war model; for each step to be seen as a significant factor, it must have a sufficient enough impact so that controlling for the other variables in the explanation does not wipe out the relationship. An easier and alternative test would be to treat the second, third and fourth independent variables (i.e., outside alliances, repeated disputes and arms races) as intervening variables. We have not done that here, since we want to have some sense of the relative potency of each variable, and controlling for each gives us some idea of that.

In presenting the findings for this first test, we rely on odds ratios instead of the parameter estimates from which they are derived; odds ratios are predominantly viewed as the easiest and most useful way of interpreting logit models. An odds ratio greater than one indicates an increased chance of war occurring, and an odds ratio less than one indicates a decreased chance of war occurring. The interpretation of these odds ratios is directly pegged to the presence of the particular risk factor associated with each independent variable.[44]

The second test focuses on the extent to which each of the steps actually affects the substantive probability of war. We are particularly interested in seeing if the various combinations of the variables specified in the four propositions produce a progressive (and meaningful) increase in the likelihood of war. To determine the relative probability of war, predicted probabilities are calculated using *CLARIFY* software.[45]

Finally, we do not test for selection effects in this analysis, primarily because we have done so in a previous study, focusing closely on the effects of territory.[46] In this prior work, we find that states that have a territorial claim have an increased likelihood of having a MID, but that controlling for this does not eliminate the relationship between having a territorial MID and having an increased probability of going to war. These findings imply that the greatest risk for war occurs once states are in a militarized dispute and a territorial claim is handled by the threat or use of force; the likelihood of war is not pre-determined by a mere territorial disagreement. Further, it was found that the estimate for error correlation across the two stages is not statistically significant. Other recent studies have also found no evidence of any sampling bias that would undermine the use of the kind of research design and data we employ here.[47] In this study, we look solely at the effects of our risk factors on the characteristics of disputes that are already under way.

THE FINDINGS

The Full Period, 1816–1992

Table 1 reports logistic regression results for three models over the full 1816 to 1992 time period. We start by looking solely at the effect of revision type (i.e., territory, regime and

[44] For a discussion of odds ratios and their advantages, see Tim Futing Liao, *Interpreting Probability Models: Logit, Probit, and other Generalized Linear Models* (Thousand Oaks, Calif.: Sage University Paper series on Quantitative Applications in the Social Sciences, Sage Publications, 1994), pp. 13–16.

[45] Michael Tomz, Jason Wittenberg and Gary King, *CLARIFY: Software for Interpreting and Presenting Statistical Results, Version 2.1* (Cambridge: Harvard University, 5 January 2003), http://GKing.Harvard.Edu.

[46] See Senese and Vasquez, 'A Unified Explanation of Territorial Conflict'.

[47] Karen Rasler and William Thompson, 'Territorial Disputes and Strategic Rivalry' (presented at the Annual Meeting of the American Political Science Association, Philadelphia, 2003); Alex Braithwaite and Glenn Palmer, 'The Escalation, Geography, and Evolution of Militarized Disputes' (presented at the Annual Meeting of the Peace Science Society: International, Ann Arbor, 2003). Most studies in international relations looking at sampling bias use a censored probit approach. On the use of these types of techniques and their potential problems, see Charles Manski, 'Anatomy of the Selection Problem', *Journal of Human Resources*, 24 (1989), 343–60; Charles Manski, *Identification Problems in Econometrics* (Cambridge, Mass.: Harvard University Press, 1995).

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TABLE 1 *Odds Ratios for Escalation of the Current or Any MID within Five Years to War, 1816–1992*

Variables in model	Model I	Model II	Model III
Territorial MID†	4.22** (0.45)	3.29** (0.44)	3.24** (0.44)
Regime MID†	0.78 (0.18)	0.96 (0.27)	0.91 (0.26)
Other MID†	3.15** (1.01)	4.08** (1.58)	4.33** (1.68)
Only Allied to Each Other‡	–	Perfect Predictor§	Perfect Predictor§
One Side Has Outside Alliance‡	–	1.18 (0.22)	1.19 (0.22)
Both Sides Have Outside Alliances‡	–	1.14 (0.24)	1.17 (0.24)
Allied to Each Other & Outside Alliance‡	–	0.97 (0.24)	0.98 (0.24)
Number of Prior MIDs	–	1.02* (0.01)	1.09** (0.02)
Number of Prior MIDs Squared	–		0.998** (0.00)
Arms Race	–	5.37** (1.20)	5.24** (1.18)
Likelihood Ratio χ^2 (df = 3, 8, 9)	223.2**	164.0**	178.3**
Pseudo R^2	0.083	0.092	0.100
Number of cases	2,576	1,940	1,940

Note: Estimations were performed in Stata 8 (logistic). Main entries are odds ratio estimates, with standard errors in parentheses.
† As compared to the reference category of Policy MID.
‡ As compared to the reference category of No Alliances.
§ Only allied to each other is a perfect predictor of no war.
* $p < 0.05$; ** $p < 0.01$.

other, compared to the reference category of policy) on the chances that disputes will eventuate in war (Model I). In Model II and Model III three variables are added: politically relevant alliances, prior disputes and arms races. These models allow us to assess the effects of each of our risk factors, including the precise nature of the relationship between recurring disputes and escalation to war as either linear (Number of Prior MIDs alone) or curvilinear (adding Number of Prior MIDs Squared).

It can be seen in Table 1 that territorial disputes have a significant impact. Their odds of escalating to war are at least 3.2 times higher than for policy disputes, depending on which other variables are included in the model, providing evidence consistent with Proposition 1. In addition, a separate model (not shown) estimated with regime disputes as the reference category found the odds of territorial disputes eventuating in war to be 5.4 times higher than for regime disputes. Models II and III do not support the expectations for outside alliances as spelled out in Proposition 2. This is due primarily to including the Arms Race variable (which results in a meaningful reduction of cases because of missing data); if that variable is dropped (not shown) then One or Both Sides Having an Outside Alliance significantly increases the likelihood of escalation to war. The test results for the two models provide evidence much more strongly in line with Propositions 3 and 4. Arms races have a significant positive impact on the probability of war; in fact, the odds for disputing states that are in an arms race to have a war are 5.2 times higher than for disputants not engaged in an arms race. Finally, the significant estimates for the Number of Prior MIDs

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and Number of Prior MIDs Squared variables in Model III indicate the presence of a curvilinear relationship (in the form of an inverted U curve) between the number of previous disputes and the likelihood of war. This finding supports our notion (Proposition 3b) that as two states have a very large number of MIDs the probability of war actually begins to decrease.

Taken together, these results fail to falsify Propositions 1, 3 and 4. Thus, the explanation as a whole, while not perfect, is given some support by the tests in Table 1. Next, we consider the performance of the steps-to-war model within the 1816–1945 and 1946–92 sub-periods to see if the explanation fits one historical era better than the other. We expect that this might be the case due to the advent of nuclear weapons and since an earlier study of just the type of dispute and alliance variables[48] showed that the full period masked important differences regarding the effect of alliances.[49]

The 1816–1945 Period

Table 2 reports the logistic regression results for 1816–1945. The test results for Model I show, as in the full period, that territorial disputes are significantly more likely to escalate to war than the modal type of dispute (policy MIDs). Specifically, the odds of war escalation are 3.25 times higher for territorial disputes than for policy disputes and 7.7 times higher (not shown) than for regime disputes. The magnitudes of these differences are reduced somewhat for the full steps-to-war specifications shown in Models II and III, but, nonetheless, remain highly significant.

In contrast to the findings for the full period, we see several statistically significant estimates for the impact of politically relevant alliances on the odds of escalation to war (Models II and III). Of primary theoretical interest is the finding that the odds of war for a dyadic dispute where both sides have an outside alliance are more than four times greater than for a dyadic dispute where there are no alliances. This finding is clearly supportive of Proposition 2. Also of interest is the finding that disputing states that are allied only to each other and have no simultaneous alliance with an outside party have no instances of war escalation for the current MID or any MID within five years. States that are 'Only Allied to Each Other' is a perfect prediction of peace. This provides evidence contrary to the 'friends as foes' hypothesis,[50] which maintains that states that are allied to each other are more likely to go to war with each other than states that are not allied. Our analysis demonstrates that 'friends as foes' holds only when the two states that are allied to each other also have an outside alliance with a third party. This is clearly shown in Model II as the odds of disputes between allies that also have outside alliances going to war are 4.3 times higher than for disputes among states with no allies at all. This also supports our

[48] See Senese and Vasquez, 'Alliances, Territorial Disputes, and the Probability of War', pp. 211–13.

[49] All of the models reported here were also estimated with consideration of joint democracy and relative capability (results not shown). As expected, joint democracy was a prefect predictor of no war and was, therefore, dropped from the models. Also as expected, increasing levels of power preponderance significantly decreased the likelihood of war. Most important for our purposes here, however, is that the results reported in Tables 1–5 changed very little in the presence of these additional factors. Further, to make sure that the results were not being driven by joining states, we also performed analyses excluding all pairs that were not party to the dispute on the first day. The results for this sub-sample of initiating dyads were almost identical to those for both initiators and joiners.

[50] See Bruce Bueno de Mesquita, *The War Trap* (New Haven, Conn.: Yale University Press, 1981), pp. 73–83, 159–64; James Ray, 'Friends as Foes: International Conflict and Wars between Formal Allies', in Charles Gochman and Alan Sabrosky, eds, *Prisoners of War? Nation-States in the Modern Era* (Lexington, Mass.: Lexington Books, 1990), pp. 73–91.

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TABLE 2 *Odds Ratios for Escalation of the Current or Any MID within Five Years to War, 1816–1945*

Variables in model	Model I	Model II	Model III
Territorial MID†	3.25** (0.44)	2.14** (0.41)	2.10** (0.41)
Regime MID†	0.42* (0.16)	0.70 (0.39)	0.62 (0.36)
Other MID†	2.28* (0.84)	3.77** (1.72)	3.70** (1.69)
Only Allied to Each Other‡	–	Perfect Predictor§	Perfect Predictor§
One Side Has Outside Alliance‡	–	1.37 (0.32)	1.36 (0.32)
Both Sides Have Outside Alliances‡	–	4.33** (1.15)	4.35** (1.16)
Allied to Each Other & Outside Alliance‡	–	4.26** (1.47)	4.35** (1.51)
Number of Prior MIDs	–	1.05** (0.02)	0.99 (0.05)
Number of Prior MIDs Squared	–	–	1.00 (0.00)
Arms Race	–	5.76** (1.86)	5.81** (1.88)
Likelihood Ratio χ^2 (df = 3, 8, 9)	99.9**	127.4**	129.1**
Pseudo R^2	0.068	0.142	0.144
Number of cases	1,131	736	736

Note: Estimations were performed in Stata 8 (logistic). Main entries are odds ratio estimates, with standard errors in parentheses.
† As compared to the reference category of Policy MID.
‡ As compared to the reference category of No Alliances.
§ Only allied to each other is a perfect predictor of no war.
* $p < 0.05$; ** $p < 0.01$.

general theoretical expectation in that the presence of outside alliances increases the chances of war, presumably by increasing threat perception and hostility. Making a separate alliance can be seen as a way of hedging one's bet, presumably because there is some underlying tension. When states in a dispute do not have any outside politically relevant allies, their alliance definitely has a pacifying effect.

Models II and III also allow us to assess if recurrent conflict has an effect on dispute escalation to war and, if so, the precise nature of that effect. Here we find clear support for the more linear expectation specified in Proposition 3a, compared to the curvilinear notion of Proposition 3b. So, for the 1816–1945 period, repeated disputes (as measured by Number of Prior MIDs alone in Model II) significantly increase the likelihood of war in a consistent manner, with no hint of significant ritualization. Besides clarifying the influence of recurring disputes, Models II and III provide evidence consistent with Proposition 4 – the odds of war for disputants in an arms race are almost six times higher than the odds for those not engaged in such an arms build-up. Taken together then, all of the risk factors spelled out in our propositions (territorial disputes, both sides have outside alliances, repeated disputes and arms races) have the impact expected by the steps-to-war explanation, indicating that the odds of dispute escalation to war are highest during the 1816–1945 period when states have all four steps present.

We also tested the four propositions using a series of interaction terms (results not shown), beginning with a replication of our earlier study that looked at the interactions of

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Territory with One or Both Sides Having an Outside Alliance.[51] The replication produced the same results – namely, the interaction of Territory with One Outside Alliance is greater than 1 and significant, while Territory with Both Sides Having Outside Alliances is insignificant. When we added the Arms Race variable (which resulted in a reduction of cases from 1,115 to 736), the relationship between the two interaction terms and the dependent variable flipped; i.e., Territory and One Outside Alliance became insignificant and Territory and Both with an Outside Alliance became significant and less than 1. We also ran separate models including the interactions of Territory with the Number of Prior MIDs and with Arms Races.[52] The interaction of Territory and Prior MIDs is insignificant when looking at the 1,115 sample (i.e., without controlling for Arms Races), but becomes significant and increases the likelihood of war when Arms Races are added to the model (and using the resultant restricted sample). These unstable results for the interaction terms lead us to conclude that, on the whole, the relationships between our risk factors and the likelihood of war are best modelled in an additive rather than multiplicative fashion. The additive model is also considerably less complex and hence more parsimonious.[53]

TABLE 3 *Probabilities for Escalation of the Current or Any MID Within Five Years to War, 1816–1945*

Conditions	Territorial MID	Policy MID	Regime MID
No alliances	0.204 (0.151–0.265)	0.108 (0.074–0.147)	0.087 (0.031–0.172)
Both Sides with Outside Allies	0.522 (0.420–0.625)	0.340 (0.265–0.422)	0.279 (0.119–0.469)
Both Sides with Outside Allies & Sixth MID	0.580 (0.486–0.674)	0.395 (0.320–0.472)	0.326 (0.147–0.525)
Both Sides with Outside Allies & Fifteenth MID	0.679 (0.578–0.768)	0.500 (0.403–0.595)	0.421 (0.218–0.638)
Both Sides with Outside Allies, Fifteenth MID & Arms Race	0.920 (0.864–0.961)	0.846 (0.754–0.916)	0.787 (0.597–0.921)

Note: Main entries are predicted probabilities, with 90 per cent confidence intervals in parentheses (both derived from Model II in Table 2). The base probability of war is 0.298.

Table 3 presents predicted probabilities for the pre-1946 period as they relate to the four propositions under study. The estimates in Table 3 can be thought of as the probability of war that is predicted by the logistic regression model in the presence of certain risk factors, such as territorial disputes between states with outside alliances, a history of MIDs and arms races. Table 3 reports, first, that when policy or regime disputes are under contention

[51] Senese and Vasquez, 'Alliances, Territorial Disputes, and the Probability of War'. This earlier study did not control for the number of prior disputes or arms races and used a slightly different dependent variable – whether or not the current dispute involved a war.

[52] These models were run first with just the one interaction term and then with the others also included.

[53] Nevertheless, for certain time periods, sub-samples and model specifications, some significant interactions may be found. Because some of these sub-sample results are divergent, we can conclude that the relationship is at least additive. We find that the interaction of territory and both sides having outside alliances best fits a sub-sample with the years associated with the two world wars dropped (1914–18; 1939–45), along with the five-year window for war onset. This finding provides even stronger support for the steps-to-war explanation and suggests that something about the world war cases is making the relationship more additive than multiplicative.

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and none of the four steps are present (i.e., they do not have territorial disputes nor alliances, recurring disputes or an ongoing arms race), the probability of war is 0.108 and 0.087, respectively. These can be taken as benchmarks for purposes of comparison. In order for the evidence in Table 3 to be consistent with Propositions 1–4, each additional risk factor must result in increasingly higher probabilities of war; i.e., the probability of war for Proposition 2 should be higher than it is for Proposition 1, the probability of war for Proposition 3 should be higher than it is for Proposition 2, and the probability of war for Proposition 4 should be the highest of all.

Each of these expectations is borne out. Table 3 shows that the probability of territorial disputes going to war is 0.204. In order for Proposition 1 to pass testing, this probability must be higher than those for policy and regime disputes, which it is. The probabilities of war for 'other' disputes (not shown) mirror those for territorial MIDs. This is not an accident as each of these wars has been found to have important territorial elements.[54] To assure that these cases would not alter our findings, we conducted sensitivity analyses grouping policy, regime and 'other' disputes into a single category, and found that the probability of war for these combined non-territorial cases is only 0.12, still well below that for territorial disputes.

Adding a second step (both states have politically relevant outside allies before the dispute arose), makes the probability of a dispute escalating to war rise to 0.522. This large jump (from 0.204) clearly supports Proposition 2. If we add a third step, a history of prior militarized disputes, then the chances of war increase still further. For instance, the likelihood of war for territorial disputes between states that both have outside alliances and are in their sixth dispute is 0.580.[55] If we isolate instead the fifteenth dispute, which is the average number of MIDs among those pairs that have at least six disputes, then the probability of war goes up even higher to 0.679. We take these as sufficient jumps to warrant support for Proposition 3,[56] suggesting that disputes between states that have a long history of repeated confrontations, in conjunction with both sides having outside allies, are more war prone than just having both sides with outside alliances.

Our test of Proposition 4 looks at the effect of all four factors being present. As predicted by the steps-to-war explanation, this condition is indeed the most war prone. It has the highest probability of going to war (0.920) in the table and in all the analyses we conducted

[54] 'Other' disputes and the four wars that arise out of them are discussed at length in Vasquez and Henehan, 'Territorial Disputes and the Probability of War, 1816–1992', p. 129, n. 9. For example, the Franco-Prussian War, which began with a crisis over the succession to the Spanish throne, was manipulated by Bismarck to help bring about German unification. The Spanish–Peruvian/Chilean War of 1865 began ostensibly as an attempt by Spain to protect its rights in Peru, but in actuality was a Spanish attempt to regain control over its former colony (see George C. Kohn, *Dictionary of Wars* (New York: Doubleday, 1986), p. 443). The Lopez War is related to intervention in the Civil War in Uruguay, but also reflects Lopez's (and that of his father, the former president) territorial claims against Argentina and Brazil (see William Langer, *An Encyclopedia of World History*, 5th edn (Boston, Mass.: Houghton Mifflin, 1980), p. 848). Finally, the Football War, which starts over a football match, breaks out in the context of a long-term border dispute (see Paul K. Huth, *Standing Your Ground* (Ann Arbor: University of Michigan Press, 1996), p. 201). All but one of the fifteen dyadic 'other' MIDs that escalate are accounted for by these wars (out of a total of forty-nine 'other' MIDs). The remaining 'other' dispute that escalates is a 1900 MID between Russia and Japan, which is associated with the 1904 Russo-Japanese War that arises out of a territorial MID.

[55] As stated earlier, distinct from Diehl and Goertz, *War and Peace in International Rivalry*, we do not place any temporal clustering restrictions on the occurrence of these disputes.

[56] The 0.580 war probability for the sixth dispute falls below the upper bound of the 90 per cent confidence interval (0.420–0.625) for the first dispute. The 0.679 war likelihood for the fifteenth dispute, however, falls well above this upper bound.

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for this study, clearly illustrating the extreme riskiness of bringing all four steps to war together.

Table 3 also reports the effects of taking these steps with policy and regime disputes. While it is clear that policy and regime disputes always have a lower probability of going to war than territorial disputes, it can be seen that handling them in a power politics fashion has the same progressive effect as handling territorial disputes in this manner. Thus, policy and regime disputes are more likely to go to war as dyads make outside alliances, have repeated confrontations and engage in arms races, with the highest probabilities being reached when all four steps have been taken (0.846 for policy and 0.787 for regime).

On the basis of these probability estimates for the 1816–1945 period, a number of conclusions can be stated. First, territorial MIDs are more war prone than policy or regime disputes. Secondly, as more of the hypothesized risk factors ('steps') are present, the probability of war goes up. Thus, just having outside allies is not as dangerous as having them when also involved in recurring disputes, and having allies while involved in recurring disputes is most dangerous if the dyad is also involved in an ongoing arms race. Thirdly, when both sides have an outside politically relevant alliance, dyadic disputes are always more war prone than disputes with no alliances. When both parties are allied only to each other, this is always associated with the absence of war. Fourthly, any issue (territorial or not), if handled in a power politics fashion, will become substantially more war prone. Each of these conclusions is highly consistent with the steps-to-war explanation.

The results in Tables 2 and 3 take us a long way in identifying key risk factors associated with pairs of states having their disputes escalate to war. These tables present important evidence that nation-states in dyadic territorial disputes, where both have politically relevant alliances with outside parties, have engaged in a history of repeated confrontations and have an ongoing arms race are increasingly likely to go to war, compared to when any of these steps are absent. This same overall pattern is present when the practices of power politics are employed with policy and regime disputes. Even though territorial disputes are always more war prone when each additional step is present, policy and regime disputes, for their part, also become more war prone as states have politically relevant alliances, have been involved in prior MIDs and/or have ongoing arms races.

The 1946–92 Period

The steps-to-war model fits the 1816–1945 period with all of its expectations being fulfilled. The analysis of the Cold War 1946–92 period, by contrast, reveals some disparate patterns, although important parts of the explanation are sustained. The results presented in Table 4 show this later period differing from the earlier one in two main respects. First, the estimated effects for some alliance configurations are reversed. Both sides having outside alliances, which was a distinct step to war for the early time span, is now a step in the opposite direction. The same is true for dyads that are allied to each other and also have an outside alliance – the odds ratio shifts to below one, although this estimate is not statistically significant. Dyads with one outside alliance remain positively related to war, but not significantly so for the models in Table 4.[57] On the whole, then, outside alliances are not having the same impact in the 1946–92 period.

[57] These null findings are congruent with those found by Frank W. Wayman, 'Alliances and War: A Time-Series Analysis', in Charles Gochman and Alan Sabrosky, eds, *Prisoners of War?* (Lexington, Mass.: Lexington Books, 1990), pp. 93–113.

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TABLE 4 *Odds Ratios for Escalation of the Current or Any MID Within Five Years to War, 1946–92*

Variables in model	Model I	Model II	Model III
Territorial MID†	10.45** (2.51)	8.65** (2.27)	8.26** (2.18)
Regime MID†	3.28** (1.10)	3.57** (1.41)	3.36** (1.33)
Other MID†	2.18 (2.30)	Perfect Predictor§	Perfect Predictor§
Only Allied to Each Other	–	Perfect Predictor§	Perfect Predictor§
One Side Has Outside Alliance‡	–	1.47 (0.57)	1.33 (0.52)
Both Sides Have Outside Alliances‡	–	0.40* (0.18)	0.39* (0.18)
Allied to Each Other & Outside Alliance‡	–	0.55 (0.28)	0.51 (0.26)
Number of Prior MIDs	–	1.04** (0.01)	1.12** (0.03)
Number of Prior MIDs^2	–	–	0.998* (0.00)
Arms Race	–	1.27 (0.67)	1.20 (0.63)
Likelihood Ratio χ^2 (df = 3, 7, 8)	137.6**	147.7**	154.7**
Pseudo R^2	0.136	0.193	0.202
Number of cases	1,445	1,193	1,193

Note: Estimations were performed in Stata 8 (logistic). Main entries are odds ratio estimates, with standard errors in parentheses.
† As compared to the reference category of Policy MID.
‡ As compared to the reference category of No Alliances.
§ Only Allied to Each Other and Other MID are perfect predictors of no war.
* $p < 0.05$; ** $p < 0.01$.

The second major difference from 1816–1945 is that the effect of arms races is statistically insignificant in the Cold War 1946–92 period (Models II and III). In part, this may be due to the low number of cases (46) with arms races during these years. While these two differences are contrary to what is expected by the steps-to-war explanation, they are consistent with what we know about the Cold War period; namely, that the US–Soviet alliance structure and nuclear arms competition did not result in a war between the major states in the system.[58]

The other results in Table 4 are similar to the earlier period. First, states allied only to each other never go to war. Secondly, territorial disputes are significantly likely to escalate to war. This effect is even more pronounced for the comparison between territorial and policy MIDs during this later period, with the odds of war for territorial cases at least eight times higher (compared to a threefold difference in the earlier period). The comparison of territorial and regime MIDs, though, shows no increase – in fact there is a decline – but the odds of territorial disputes eventuating in war are still greater (at least by 2.5 times) than for regime disputes (not shown). While still a significant difference ($p < 0.01$), it is not nearly as large as the 7.7 times disparity discussed earlier for the pre-Cold War years. Although territory is clearly the most war prone type of dispute in both eras, regime and

[58] Interaction estimates for territory and the two outside alliance categories, as well as territory and arms races, are insignificant for the period after the Second World War.

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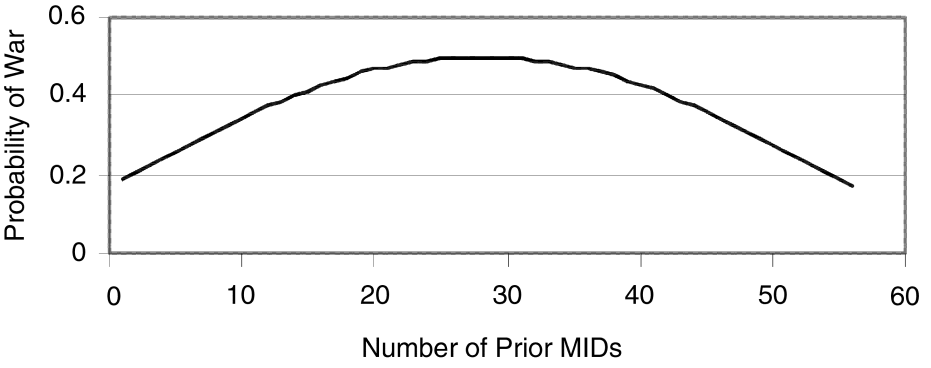


Fig. 1. Probability of war by the Number of Prior MIDs
Note: Predicted probabilities derived from Model III in Table 4. Maxima point for the probability of war (0.5) is at 27 prior MIDs.

policy disputes are ranked differently across the periods, with regime cases exhibiting the lowest propensity for war prior to 1946 and policy engagements assuming that position after the Second World War. Thirdly, dyads tend to be more likely to have their disputes go to war within five years if they are involved in repeated encounters (Model II). Thus, territory and recurring disputes are more consistently potent (and, certainly, less time-bound) risk factors than alliances and arms races.

The exact nature of the recurrent conflict influence during the period after the Second World War, however, warrants a closer look. Specifically, the results for Model III in Table 4 suggest the presence of an inverted U-shaped relationship between repeated disputes and war. Figure 1 is a visual representation of the marginal impact that recurring disputes have on the chances of war. The likelihood of war within five years is shown over the full zero to fifty-five range on the Number of Prior MIDs measure.[59] As Figure 1 reveals, the twenty-eighth dispute between a pair is the most likely to eventuate in war.[60] Increasing numbers of prior disputes between zero and twenty-seven positively affect the probability of war, while previous engagements numbering beyond twenty-seven are negatively associated with war.[61] Interstate wars occur less frequently when the number of prior disputes is both low and very high, with a higher level of war proneness prevalent when the number of previous disputes is intermediate (neither very high nor low). This middle range where disputants have already gone through a significant number of engagements, but have not yet learned to ritualize their entanglements in a way that limits escalation to war, is clearly the most dangerous during the Cold War period.

Such a finding supports Proposition 3b, that dyads with a very large number of disputes have a tendency to ritualize and manage their disputes after a period of time, so that the probability of any one of them escalating to war goes down. This result suggests an

[59] Figure 1 depicts the probability of a territorial dispute eventuating in war based on the Number of Prior MIDs, with the other risk factors set to their modal values (i.e., no arms race and one side has an outside politically relevant alliance).

[60] This point represents the maxima where the slope of the line is equal to 0.

[61] Only eleven dyads have more than 27 MIDs from 1816 on: United States–Soviet Union (56), Russia–China (50), Britain–Soviet Union (40), Russia–Japan (45), Israel–Syria (45), India–Pakistan (40), Israel–Egypt (36), Japan–China (35), Greece–Turkey (33), United States–China (29), and Argentina–Chile (28), for a total of 140 dyadic disputes preceded by 27 or more MIDs.

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important nuance to the prevailing literature on rivalry;[62] namely, that while more previous disputes generally lead to higher chances of war, there appears to be a point above which subsequent disputes are actually pegged to a lower, not higher, probability of war. This curvilinear effect for the 1946–92 era, of course, differs from the more linear impact during the 1816–1945 span, implying that ritualization may be a Cold War phenomenon associated with nuclear weapons. The danger of nuclear war may motivate actors to manage their disputes more carefully, but in doing so may also inadvertently increase the frequency of repeated disputes.[63]

Given these findings for the two sub-periods, what can be concluded about the steps-to-war explanation? First, the steps-to-war model fits the classic international power politics 1816–1945 era quite well. This period can be seen as its natural domain. Secondly, the model fits the shorter Cold War 1946–92 period less well, but even here some of its core propositions receive substantial support. Thirdly, the insignificance of arms races in the Cold War period may have something to do with attempts to manage arms races among nuclear states and their allies, which can reasonably be assumed to reduce the probability of war between major states during the era. If this is true, it may be the case that future non-nuclear arms races in the absence of the kinds of restraints constructed by the United States and Soviet Union may prove once again to be related to war. In this sense, the results for the full 1816–1992 period, which show that arms races are positively related to war, may be more accurate than the analyses of the breakdown of the two periods. This is especially the case since there are so few arms races in the second time period.

Fourthly, the Cold War alliance structure was successful in stripping alliances of their belligerent effects – although it did not make them universally a mechanism that prevented war (since only the Both Sides with Outside Alliances variable is statistically significant in Table 4). What it is about this alliance structure that brings about this effect deserves further exploration – two obvious candidates are nuclear weapons and bipolarity. Whether these Cold War effects will continue or whether arms races and alliances will revert to their earlier bellicose impacts only the future will tell. However, of the two variables – bipolar alliance structure and nuclear weapons – the former is already gone.

Further insights about the chances of war in the 1946–92 period can be gained by examining the predicted probabilities reported in Table 5. This table reports the highest probability for the various combinations. Before discussing these probabilities, though, an important caveat needs to be mentioned: it must be remembered that while the estimates for the dispute type and Prior MIDs variables are statistically significant, those for the One Side Has Outside Alliances and Arms Race indicators are not (Table 4, Model III). Nevertheless, we think looking at the probabilities for the various combinations of the independent variables can give us some clues about the risks they pose for dyads going to war and thereby provide a way of further evaluating the adequacy of the steps-to-war explanation for the Cold War era.

What is most noticeable about Table 5 compared to Table 3 is that the probability of war for the more recent period (ranging from 0.022 to 0.465) is considerably lower than it is for the 1816–1945 span (ranging from 0.087 to 0.920). This general result supports the notion that the Cold War was indeed a 'long peace', albeit one between major states and not necessarily including relations between major and minor states, which had several

[62] See, for example, Diehl and Goertz, *War and Peace in International Rivalry*.

[63] A model including the interaction of Territory and the Number of Prior MIDs reveals an insignificant parameter estimate for the period after the Second World War.

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TABLE 5 *Probabilities for Escalation of the Current or Any MID within Five Years to War, 1946–92*

Conditions	Territorial MID	Policy MID	Regime MID
No alliances	0.154 (0.085–0.244)	0.022 (0.010–0.041)	0.071 (0.032–0.131)
One Side with Outside Ally	0.189 (0.139–0.249)	0.028 (0.018–0.042)	0.089 (0.050–0.143)
One Side with Outside Ally, & Sixth MID	0.274 (0.220–0.330)	0.044 (0.030–0.064)	0.136 (0.082–0.204)
One Side with Outside Ally, & Fifteenth MID	0.414 (0.335–0.493)	0.081 (0.051–0.119)	0.228 (0.140–0.336)
One Side with Outside Ally, Fifteenth MID & Arms Race	0.465 (0.263–0.655)	0.105 (0.037–0.205)	0.273 (0.114–0.465)

Note: Main entries are predicted probabilities, with 90 per cent confidence intervals in parentheses (both derived from Model III in Table 4). The base probability of war is 0.098.

wars.[64] It is also clear that territorial disputes are the most war prone, as in the earlier period, with the war probability estimates for both policy (0.022) and regime (0.071) disputes falling comfortably below the lower bound of the 90 per cent confidence interval (0.085 to 0.244) for territorial disputes.

The major anomaly to note about the post-1945 period is that both sides having an outside ally does not produce the highest probability of a dispute going to war and hence does not even appear in Table 5. In fact, with one minor exception, this condition produces the lowest probabilities of going to war. This finding for the 1946–92 span is contrary to Proposition 2. An examination of the specific cases that have these conditions and do not go to war reveals precisely those that one would expect – members of the East and West blocs (United States–Soviet Union, United States–Czechoslovakia, United States–German Democratic Republic, United States–North Korea after 1953, Iran–Soviet Union, Turkey–Soviet Union, etc.). This implies that the East–West alliance systems made states very cautious about initiating a war against a state that was a member of the opposing alliance. Although neither the 'Both Sides' variable nor the 'One Side' having an outside alliance are significant, the odds ratio estimate for the latter is in the correct direction and shows a slight increase in the predicted probability of war (see Table 5).

As with the earlier period, when disputes recur the probability of war increases – with it being 0.189 at the first dispute, 0.274 at the sixth, and 0.414 at the fifteenth. We also see that as more steps are taken the probability of war goes up accordingly with the highest probability of war (0.465) occurring when all four steps are present – territorial disputes, one side with an outside ally, recurring disputes,[65] and an ongoing arms race. Further, Table 5 makes it clear that it is not that territorial disputes are inherently war prone, but how they

[64] See respectively, John Gaddis, 'The Long Peace: Elements of Stability in the Postwar International System', *International Security*, 10 (1986), 99–142; and J. David Singer, 'Peace in the Global System: Displacement, Interregnum, or Transformation?' in Charles Kegley Jr, ed., *The Long Postwar Peace* (New York: Harper Collins, 1991), pp. 56–84; Michael Brecher and Jonathan Wilkenfeld, 'International Crises and Global Instability: The Myth of the "Long Peace" ', in Kegley, ed., *The Long Postwar Peace*, pp. 85–104.

[65] Of course, as shown in Figure 1, when the number of prior disputes is greater than twenty-seven, the probability of war actually begins to decrease. We present the war likelihoods for the sixth and fifteenth dispute in Table 5 to retain consistency with the estimates for the 1816–1945 period shown in Table 3.

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are handled that is the key, even though they are generally more war prone than non-territorial disputes. The predicted probabilities for policy and regime disputes also show that handling them in a power politics fashion increases the probability of war, as was the case in the early period, albeit at much lower levels. A difference with the 1816–1945 period is that regime disputes are more war prone than policy disputes in the Cold War years, something which makes sense given the highly ideological nature of that era.

The progression in probabilities in Table 5 follows the pattern suggested by the steps-to-war explanation. For example, arms races, even though they do not have a statistically significant impact, do impart the increase in probability expected by Proposition 4. The main deficiency seems to lie in predicting the specific alliance configuration that would increase the probability of war. Only when one side has an outside ally is there a positive relationship to war (and even this estimate is not statistically significant). A look at these cases is interesting. They include several Cold War dyads where one side does not have an outside relevant alliance – such as United States–North Korea, United States/Britain/France–China in 1950. This category also includes a number of famous minor–minor rivalries that go to war where only one side has an outside ally – Egypt–Britain in 1956, Egypt/Syria/Jordan–Israel, Iraq–Israel, Iran–Iraq, Tanzania–Uganda. These cases, while they deviate from the theoretical expectations in Proposition 2, are not so anomalous that they cannot be explained by the logic of the steps-to-war explanation.[66]

Finally, one of the main differences with the earlier period is that in the Cold War era, having no alliances or having only one outside ally are the most war prone configurations, while a case of both sides with outside alliances is the least likely to go to war. In the 1816–1945 period the most war prone alliance configurations are both sides with outside alliances and allied to each other plus an outside alliance, with no alliances the least likely to be associated with war. Again this suggests that it is something about the alliance system of the Cold War era and its relationship to nuclear weapons that is the key to explaining the anomaly, while at the same time suggesting that certain fundamentals remain constant across the two time periods.

CONCLUSION

This study has provided evidence that the steps-to-war explanation can deepen our understanding of the process by which war occurs. First, it has tested and provided evidence consistent with four major propositions derived from the steps-to-war model for the 1816–1945 period. It has been shown that the probability of war breaking out between two states is higher for states disputing territory than for those disputing policy or regime questions (Proposition 1). More importantly, if states dispute territory and both have politically relevant outside allies this greatly increases the probability of war (Proposition 2). If, in addition, these territorial disputants who have outside allies have recurring disputes, then the probability of war is even higher still (Proposition 3a). Finally, if the dyads having all these factors present also are engaged in an ongoing arms race

[66] In the steps-to-war model any outside alliance is seen as increasing threat perception and hence the probability of war, so the fact that dyadic disputes with one outside alliance will go to war is not anomalous. What is anomalous is that they go to war more frequently than disputes where both sides have outside alliances.

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(Proposition 4), then their probability of war approaches such high levels (0.900 range) that war is almost certain within five years.

Secondly, for the Cold War 1946–92 period, territory and a history of prior disputes still have positive and significant impacts on the probability of war, but having outside alliances generally does not, nor do arms races. These latter two (statistically insignificant) factors do, however, under certain circumstances – for example, territorial with one side having an outside alliance – increase the probability of war in a manner consistent with the predictions of the explanation. Why these two factors do not behave more clearly in ways anticipated by the explanation needs further analysis, but it may well have something to do with the Cold War alliance structure and nuclear weapons.

Thirdly, this study has shown that the various foreign policy practices states use in pursuing their territorial disputes help distinguish those territorial disputes that go to war from those that do not. This holds for both the 1816–1945 and 1946–92 periods. States that resort to the threat or use of force to contest territory are on a path to war, but so long as they avoid recurrent disputes, making politically relevant alliances with outside parties or arms racing they can keep the probability of war fairly low. When dyads dispute territory and engage in even one of these steps, then the probability of war goes up. Of these three steps, the most dangerous in the 1816–1945 period is arms racing, followed by both sides having an outside ally, followed by a history of recurring disputes. In the less war prone nuclear Cold War period, the most dangerous is having a territorial dispute or any dispute that festers and recurs. However, it is also clear that states that have a large number of MIDs in the Cold War period learn to manage them, so that at a certain point they become less likely to go to war than those that preceded them. This finding makes a novel contribution to the rivalry literature by showing that when rivals reach a very large number of disputes they behave differently.

Fourthly, the analysis has shown that resorting to the use of power politics to handle disputes increases the probability of war. The only exception to this is with some of the alliance configurations in the post-Cold War era, but even here having one side with an outside alliance moves the probability of war in the expected direction. These findings, especially for the earlier period, support the claim that the use of power politics is a separate path to war, and inherently dangerous even in the absence of territorial disputes.

Generally, however, the most dangerous condition, as shown in our test of Proposition 4 in both periods (Tables 3 and 5) is when all four factors are present. While we have examined only the presence or absence of these conditions, the underlying theoretical rationale of the steps-to-war explanation suggests that these factors are interrelated and that they can form a syndrome of behaviour where one thing leads to another. Thus, as steps are added, it may become increasingly difficult to avoid taking additional steps.

In many ways these findings constitute an empirical breakthrough in the scientific study of the probability of war. They provide evidence, for the long 1816–1945 period, on a specific combination of factors that progressively increase the probability of war. They also provide evidence on how the most recent period of international history has changed in some regards, while remaining the same in others, compared to the previous era. Now that the core propositions have passed a rigorous set of tests, a research programme on the steps to war should begin to address how this explanation might compare with other explanations of war and what kinds of new data need to be collected to test the steps-to-war explanation further. The democratic peace and realist emphases on the role of capability are two obvious alternative explanations and theoretical approaches with which to begin. Important parts of each could be incorporated within the steps research programme. Such

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an approach might be more fruitful both from a theoretical and empirical perspective than simply trying to see which of the three is the best. In terms of the democratic peace, the steps-to-war explanation would predict that one of the reasons democratic dyads do not fight each other is that they may not have territorial disputes, and such disputes as they do have are not likely to be handled in a power politics fashion. An interesting line of future research would be to examine democracies and the steps to war. Mitchell and Prins have provided some evidence that democratic dyads do not contest territorial issues very much, which lends credence to the above proposition.[67] It would also be interesting to see whether they avoid having arms races with each other, making alliances against each other and having repeated disputes. In terms of the role of capability, the current explanation already posits that the process leading to war is apt to differ depending on whether the contending parties are equal. So, the key unanswered questions involve just how the probability of war differs for actors having disparate capabilities and at what stage (i.e., after what steps have been taken) strategic thinking about relative capability has its greatest impact on the probability of a dispute escalating to war.

Lastly, although this study has gone far in measuring the timing of various steps, more refined data need to be collected to get at the dynamics embodied within the theoretical explanation. Once this is done the temporal relationship between the various steps, and whether they are really steps, and how their sequential order might change given the nature of the contending actors can be more fully tested. Likewise, if there are different processes that lead to war and war is multicausal, then a pressing task for future research is to identify the main paths to war in the international system and ultimately measure the precise probability of war associated with each path.[68] These suggestions show that there is much to be done, but at the same time they show that the steps-to-war explanation can provide a rich and potentially highly progressive research programme.

Lewis Richardson, one of the founders of the scientific study of war, hoped that by the careful examination of statistical evidence we could begin to identify the factors responsible for interstate war.[69] This statistical analysis has identified several and measured the extent to which their presence or absence, singularly or in combination, affects the probability of a dispute occurring that will escalate to war within five years. Given these results, we think the steps-to-war explanation deserves further attention and that its research programme provides a highly promising avenue for furthering our knowledge about the onset of war.

[67] Sara McLaughlin Mitchell and Brandon Prins, 'Beyond Territorial Contiguity: Issues at Stake in Democratic Militarized Interstate Disputes', *International Studies Quarterly*, 43 (1999), 169–83.

[68] See Levy, 'The Causes of War', pp. 277, 279, 281; Vasquez, *The War Puzzle*, pp. 48–50; Suganami, 'Explaining War', p. 321.

[69] Richardson, *Arms and Insecurity*.

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