ESCAPING THE LOGIC OF ANARCHY: A NEW MODEL OF COLLECTIVE SECURITY

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ABSTRACT

Past attempts to create collective security, such as the League of Nations and the United Nations, have failed. This article argues that this is because the anarchic structure of the international system does not permit a top-down approach to the problem. It is argued that the solution is to create a collective security model that is bottom-up rather than top-down.

This article proposes a model of collective security that uses positive feedback generated by network effects to trigger the bottom-up emergence of a global collective security organization. Driven by fear and self-interest, weak states join this fledgling organization, increasing its value as a provider of security, which in turn draws in states of progressively greater military capability until a critical mass is achieved and it becomes rational for all states in the international system—even a hegemon—to join. Once the international system is consolidated, the possibility of rational aggression by any single state is eliminated.

Employing a formal analysis, the article then examines whether the model could stabilize the present U.S. dominated unipolar system and a bipolar system dominated by the U.S. and China. The article concludes that system stability is possible in both cases, and that the model in fact grows more robust as the system becomes less unipolar. Thus, it is argued, China’s ascendency as a global power—and the friction this will likely produce—represents an opportunity to unify the international system and help lay the scaffolding for true global governance.

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I. INTRODUCTION

Although international cooperation flourishes on many fronts, we have failed to establish global governance on the strength and scale required to meet the great challenges of our time. Wealth inequality, violence and extremism, pollution, and environmental degradation—these are problems that can only be dealt with on a universal basis. Our crude patchwork of intergovernmental organizations, designed chiefly to facilitate the movement of goods, services, and investment across national borders, is no match for such challenges. On a foundational level, the international system remains, as it always has, in a state of technical anarchy from which we cannot fully extricate ourselves.¹

This is because states—the world’s dominant unit of economic and political organization—fundamentally impede cooperation. The anarchic structure of the international system forces states to compete, which limits their ability to fully coordinate.² Because there is no higher authority to which states may turn if threatened, and because they can never be certain of their neighbors’ intentions, states exist in a condition of lingering insecurity. States respond to this by striving to increase their power relative to each other.³ In doing so, however, they spark a competition for security from which none can rationally disengage, even if all wish to do so. This structural trap, the infamous security dilemma,⁴ has been

¹ Anarchy, of course, does not imply that the international system is riven with disorder; it simply means that there is no authority above that of states. International anarchy prevails where no “agency exists above individual states with authority and power to make laws and settle disputes. States can make commitments and treaties, but no sovereign power ensures compliance and punishes deviations. This—the absence of a supreme power—is what is meant by the anarchic environment of international politics.” ROBERT ART & ROBERT JERVIS, INTERNATIONAL POLITICS: ENDURING CONCEPTS AND CONTEMPORARY ISSUES (12th ed. 1992).

² The present discussion embraces the core assumption of neorealism, which prioritizes systemic structure as a determinant factor of state behavior on the international level. While there are powerful institutional forces within the international system, and although these globalizing regimes of power are proliferating, states retain a monopoly on the use of force. In addressing the problem of intrastate war, therefore, states are the logical object of study. This is not to dismiss the important insights of neoliberalism—it is merely that neorealism’s conceptual framework is sufficiently robust to build a workable theory of bottom-up collective security. The foundational work of neorealism is Kenneth Waltz’s Theory of International Politics, upon which this discussion draws heavily. See KENNETH WALTZ ET AL., THEORY OF INTERNATIONAL POLITICS (1979).

³ JOHN MEARSHEIMER, THE TRAGEDY OF GREAT POWER POLITICS 31 (2001). By power, what is meant is primarily hard power.

⁴ John Herz first coined the term. See John H. Herz, Idealist Internationalism and the Security Dilemma, 2 WORLD POL. 157 (1950). The dynamic is captured more formally in game theory
widely studied in international relations yet the field is barren of solutions. Theorists are good at identifying the trap but have failed to provide any means of escape. By inducing competition between states, the security dilemma keeps us locked into anarchy.

Many have advanced schemes to lift us from international anarchy—William Penn, the Abbé de Saint-Pierre, Jeremy Bentham, Immanuel Kant, and Woodrow Wilson, to name but a few. Their plans, however, all share a defining commonality: the top-down creation of a governance structure either in the form of a central authority or a loose federation of states. This institutionalist approach forms the basis of collective security theory in which nations jointly agree to not aggress against each other and meet aggression against any nation with a unified response of overwhelming force. The League of Nations (“LN”) and the United Nations (“U.N.”), both created in the humanitarian rubble of world wars, represent the great powers’ two serious attempts at collective security. The first collapsed beneath the weight of Axis aggression and the second has been unable to “save succeeding generations from the scourge of war.”

Such efforts are destined to fail because they do not resolve the structural trap in which states find themselves. The proposition that we can move from anarchy to hierarchy through a top-down coordinated process is self-contradictory. International anarchy, by its nature, obstructs coordination. The problem we face is not designing an institution to establish international order. The problem is far more foundational: it is how to change the structure of a system when we are imprisoned within it. What thinkers like Kant and Bentham fail to understand is that no matter how well-intentioned, we cannot wish away the structure within which we are trapped because it is not the product of deliberate design—it is the unintended outcome of the system’s units rationally pursuing their own ends. The structure that sustains international anarchy, like

by the prisoners’ dilemma. See WALTZ, supra note 2, at 109. The security dilemma does not say that everything states do to increase their own security necessarily reduces or threatens the security of other states; however, this is often the case. Thus, while the dilemma by no means guarantees war, its persistence guarantees the continued fragmentation of the international system, and thus the constant possibility of war.

6 ROBERT O. KEOHANE, NEOREALISM AND ITS CRITICS 199 (1986).
7 Note that collective security is understood here as a security arrangement that encompasses all the states within the international system and as distinct from regional security arrangements that do not. The term ‘collective security’ is used in this sense throughout the discussion.
8 U.N. Charter, Preamble.
economic markets, is “spontaneously generated, and unintended.”\footnote{Waltz, supra note 2, at 91.}

While all affect the system, none control it. Yet until the system’s structure changes, there is very little we can do. Try as they may, governments cannot free themselves from the tyranny of this logic. States cannot coordinate themselves out of anarchy. To escape, a governance structure in some form is required to get states to coordinate, yet in order to establish a governance structure, states need to coordinate. It is a contradiction with catastrophic consequences. Because of it, the international system remains stuck in a state of anarchy.

International politics is a serious game, one that provides little room for utopian stabs at peace that may leave a nation on the ash heap of history. The chief aim of states is to survive, and the most straightforward way to ensure this in an anarchic world is to possess power. Yet in order to achieve universal security, the power of all nations must be wholly constrained with no nation able to prevent collective action, for that nation might itself become an aggressor.\footnote{The present discussion is agnostic as to whether states ultimately seek to maintain (defensive realism) or maximize power (offensive realism). Both defensive and offensive realism support the model (although the latter more robustly). Thus, while the phrase ‘maintain maximum relative power’ is used throughout and clearly suggests an offensive realist position, this may be understood as aligning with either position. This agnostic position is preferred for purposes of parsimony—i.e. to minimize the model’s assumptions.}

Thus, the primary reason collective security cannot be effectively implemented top-down is because it requires nations to create an institution more powerful than themselves, and this is something they cannot rationally do while hostage to a structure that commands that each maintain maximum relative power.\footnote{Indeed, many question the viability of collective security theory, and they are correct if it is envisioned as something established top-down. See, e.g., CLAUDE, POWER AND INTERNATIONAL RELATIONS.}

As the establishment of both the LN and the U.N. clearly illustrate, powerful nations will never voluntarily permit their power to be meaningfully constrained. In the case of the LN, this was achieved by creating a de facto veto power (which the requirement of unanimity assured). In the case of the U.N., the post-World War II (“WWII”) powers simply reserved for themselves absolute veto power as permanent members of the Security Council. Because powerful states cannot rationally surrender their position of dominance, the only way to establish collective security is through a bottom-up process that traps states into relinquishing their power.\footnote{The U.N. is a structurally flawed institution for collective security (i.e. because of the veto power of the permanent members of the Security Council (“P5”)). Collective security theory’s numerous other impediments are discussed in Section IV.}
In this article, I advance a new model of collective security that does precisely this. The model uses positive feedback generated by network effects to trigger the bottom-up emergence of a global collective security organization that will consolidate the international system, eliminate the possibility of rational aggression, and solve the security dilemma, clearing the way for true global governance. Moreover, I propose to achieve this highly ambitious task by using the very causes of the problem—systemic anarchy, states’ mutual fear and self-interest, and the unequal distribution of power between them. The defining feature of this security organization is that it is open to every state in the international system without exception. Motivated by fear and self-interest, weak states join the fledgling security organization, increasing its value as a provider of security, which in turn draws in states of progressively greater military capability until a critical mass is achieved and it becomes rational for all states in the system—even a hegemon—to join. At each level, fear pushes the most vulnerable unit (or units) to seek membership, with this effect bandwagoning up the hierarchy of global power until the entire system consolidates. It is possible in this way to corral states into a security architecture in which their power is ultimately constrained. I call this process bottom-up collective security, which may be distinguished from classical collective security. Unlike classical collective security, bottom-up collective security moves the system from anarchy to hierarchy through a decentralized process of self-organization that requires only that states act in their narrow self-interest.

The importance of this project cannot be overstated. We are fast approaching a dangerous inflection point in history, in which the constancy of the international order created by the U.S. during the second half of the 20th century can no longer be taken for granted. The global balance of power is shifting. With the growing economic and military capability of China, the prospect of large-
scale martial conflict is once again coming into view. Conflict, Thucydides counsels us, grows more likely when a rising power approaches parity with an incumbent power.\textsuperscript{14} If power transition theory or offensive realists such as John Mearsheimer are correct, China will not rise peacefully.\textsuperscript{15} Indeed, a familiar pattern of aggression is emerging.\textsuperscript{16} The seriousness of this compels me to state my objective plainly. While the model I propose is theoretical, I am not interested in mere theory—I am ultimately interested in application. The task of overcoming the logic of anarchy is formidable. This difficulty, however, does not impugn its possibility; it merely speaks to a fundamental misunderstanding embedded in our historic approach to the problem.

This article is divided into seven sections. The second section discusses how security alliances generate network effects and how this may be used to trigger bottom-up decentralized coordination. The third section develops a blueprint for the model, outlining its foundational principles and assumptions. The fourth section describes the causal logic that underpins the model. The fifth section tests how the model would—provided its assumptions are correct—track real-world conditions. Employing a formal method of analysis, I seek to answer whether the model would stabilize the international system under two sets of conditions. The first is the present unipolarity of the world order characterized by U.S. hegemony and the second is the anticipated drift towards a bipolar system dominated by the U.S. and China.\textsuperscript{17} I conclude that system stability is possible in both cases, and that the model in fact grows

\textsuperscript{14} Thucydides, The History of the Peloponnesian War (2009).
\textsuperscript{16} I am referring here to the U.S.’s 2012 ‘Pivot to Asia Strategy’ and the policy of Chinese containment that it reveals, alongside, for example, China’s growing military assertiveness in the East and South China Seas. The U.S.’s emerging ‘Indo-Pacific’ strategy signals a similar turn towards containment.
\textsuperscript{17} Whether the current global polarity meets the technical definition of unipolarity (a point of academic debate) is unimportant for our purposes.
more robust as the system becomes less unipolar.  

This finding is significant because it means that China’s ascendency, rather than a threat, represents an opportunity to unify the international system and lay the essential groundwork for robust global governance. The sixth section discusses in what way bottom-up collective security is unimpeded by the problems that plague classical collective security theory. The seventh section concludes.

II. SECURITY AS MARKET SHARE

In his seminal work, Theory of International Politics, Kenneth Waltz invokes market theory to explain the systemic ordering of international politics. It is a useful (although imperfect) analogy in that markets have a similar structure of functionally alike units possessing varying capabilities competing within an anarchic system. In the market for national security, states, like firms, compete with one another for survival by increasing their market share. In the case of states, ‘market share’ is a state’s share of global power. Both systems—economic markets and national security markets—are anarchic, yet organizational effects emerge in the absence of formal organization. The spontaneous emergence of systemic order, Waltz explains, “arises out of the activities of separate units—persons and firms—whose aims and efforts are directed not towards creating an order but rather toward fulfilling their own internally defined interests. . . .” “From the coaction of like units,” Waltz continues, “emerges a structure that affects and constrains all of them. Once formed, a market becomes a force in itself, and a force that the constitutive units acting singly or in small number cannot control.” This lack of control is critical to the model that follows.

18 System stability is narrowly defined here in terms of the possibility of rational aggression between states. A more rigorous definition is set out in Section III.B.

19 See WALTZ, supra note 2, at 88–99, 131–38.

20 See supra note 11. The analogy, however, is imperfect in that firms do not always compete for market share; they compete for profits. Firms will seek to increase their market share if this increases their profits. Firms always seek to maximize profit because profit is a net concept that takes account of costs. The same is not necessarily true of security. This, however, is not fatal in that we can simply tweak the analogy: states wish to increase their share of security like firms that are competing for market share (because in their specific situation an increase in market share will translate into an increase in profit for the firm).

21 WALTZ, supra note 2, at 90.

22 Id.
A. Competition is Healthy in Economic Markets But Not in Markets for National Security

Competition between firms is considered a healthy dynamic in economic markets. It produces optimal pricing, innovation, greater consumer choice, and the efficient allocation of productive resources. It is therefore desirable to keep the market largely anarchic and lock firms into competition. To help ensure this, domestic laws prevent coordination and check anti-competitive practices. In markets for national security, however, the inability to perfectly coordinate thrusts states into a competition with often catastrophic consequences. Economic actors merely face the potential for bankruptcy; states, however, along with their populations, face potential annihilation through the barrel of military aggression. Yet states like firms have little choice but to compete. This is because the distribution of power in the international system is a matter of relative power.23 If one state gains power but its potential rivals gain an equal degree of power, then it has effectively gained nothing. This zero-sum character forces states to compete over the allocation of power within the system. If a state desires security, it must compete for that security.

Whether it is an economic market or one related to a nation’s security, the result is the same—structural forces limit the control units have over the system in which they operate. If an economic market is populated by more or less equally small providers, no one is able to affect the system.24 Actors’ choices are constrained by the structure. No single seller can, for example, unilaterally raise or lower her prices without suffering a response from the market. However, as competition decreases and the ability of actors to coordinate increases, units gain more control over the system. For example, if a market is dominated by a handful of large firms, oligopolistic competition will emerge, allowing these firms to collude to raise or lower prices, and so forth. Where only two firms dominate a market as a duopoly, their ability to influence the system is even greater. However, the complete elimination of competition in the form of a monopoly delivers near total control over the market because a monopoly is no longer subservient to the

23 See Robert Gilpin, War and Change in World Politics 18–25 (1981); Mearsheimer, supra note 3, at 34; Kenneth Waltz, Man, the State, and War 198 (1959); Waltz, supra note 2, at 134.

24 See Waltz, supra note 2, at 133.
force of competition. For units to gain full control over an anarchic system, therefore, competition must be eliminated.

States would be better off if they cooperated but they are unable to do so because the pursuit of security traps states into competition. Noting this, Waltz writes: “States, like consumers, can get out of the trap only by changing the structure of their field of activity. . . . [T]he only remedy for a strong structural effect is a structural change.” Yet the question is how can states that have little control over a system that binds their actions change the structure of that system? This seems to require centralized control over the system. And here we see the heart of the problem: to create central power we need a central power to do the creating, yet the absence of a central power is precisely the problem we are trying to solve. It is a dog chasing its own tail. However, while the present structure forces states to compete, this very structure may be used to force states to coordinate. The international system is in fact a complex system from which hierarchy may emerge spontaneously provided the right conditions are introduced. By introducing a dynamic into the system on the micro-level, the same structure can, through feedback loops, produce a different macro-level organizational effect, moving the system from anarchy to hierarchy.

B. Network Effects and Security Alliances

It is possible to use network effects produced by security alliances to trigger decentralized coordination. Network effects

25 Id. at 111.


27 While he doubts it is possible, for Waltz, a systemic shift from anarchy to hierarchy is a structural change. See Waltz, supra note 2, at 100.

manifest in economic markets when the value of a good or service for each user increases as other actors adopt the same good or service.\(^{29}\) The classic example is language. The usefulness of a language (as a means of communication) increases for all of its speakers as more people learn the language; this is because with each additional speaker that joins the same linguistic network one has more people with whom one can communicate.\(^{30}\) This creates a positive feedback loop: the increase in value spurs further adoption, which increases its value and in turn attracts more users, creating a self-reinforcing pattern. While network effect systems exhibit several unique characteristics, foremost among these is their ability to spontaneously consolidate markets that possess a high degree of interconnectivity. Before long, a single gauge width will emerge as the de facto standard within interconnected railway networks, a single operating system will dominate interlinked computer networks, and a single language will gain ascendency within a tightly-bound linguistic network. For our purposes, the key feature here is that this process of mass coordination occurs in a decentralized fashion—it is ordering without an orderor. Given sufficient interconnection, network effects push towards a ‘monopoly’ with all users within the network spontaneously coalescing around a single good or service.\(^{31}\)

Security alliances are a service. The service they provide is security. The collective strength of its members discourages aggression against those within the alliance. Like language, the value of a security alliance to each of its members increases as more states join it; as its membership grows, a security alliance’s defensive capability strengthens.\(^{32}\) This will produce a network effect.\(^{33}\)


\(^{30}\) That language speakers do not communicate with every other speaker of the language makes the example imperfect; however, it remains an excellent, intuitive illustration.

\(^{31}\) Where, however, there is insulation (defined by a lack of interconnection), multiple network effects can co-exist, splintering a market into competing standards. This dynamic is discussed again in Section II.C, Principles 1–3.

\(^{32}\) There are also disadvantages that come with network growth. As an alliance grows, existing members are burdened with the potential defense of new members. However, this will not offset the benefit gained from an increase in membership for two reasons. First, the usefulness of
The international system is a small network of actors (one that currently stands at only 195 members). The tightening of transnational interconnection wrought by globalization has produced a highly networked system from which no state stands disconnected. Such a system is primed to produce powerful network effects, particularly where it involves the ever-critical matter of national security.

C. Inducing a Network Monopoly in the Market for National Security

Waltz posed the question: “What are the conditions that would make nations more or less willing to obey the injunctions that are so often laid on them? How can they resolve the tension between pursuing their own interests and acting for the sake of the system? No one has shown how that can be done, although many wring their hands and plead for rational behavior. The very problem, however, is that rational behavior, given structural constraints, does not lead to the wanted results.” To answer Waltz, this is how it can be done: we can marshal these structural constraints to generate a network effect that will render coordination rational for self-interested agents.

In economic markets, commercial actors often deploy network effects as a business strategy to achieve a monopoly position. Network effects are dangerous in commercial markets because they can produce monopolies that inhibit competition and concentrate control over the system. In the market for national security, the service (i.e. an increased ability to discourage aggression) manifests immediately, while the disadvantage (i.e. the possible burden of having to defend another member) may in fact never materialize, and even if it does, if defense is deemed too costly, a state can choose to abandon its commitment and exit the arrangement at that stage. Second, because the international system is finite, as a security alliance grows stronger, its relative power to aggressors who remain outside of it increases, reducing both the potential for aggression and the burden of defense if it should occur.

33 I am referring here to what is known as ‘indirect’ as opposed to ‘direct’ network effects. For a deeper explanation of the distinction between direct and indirect network effects, see Bryan Druzin, Buying Commercial Law: Choice of Law, Choice of Forum, and Network Externalities, 18 Tul. J. Int’l & Comp. L. 131, 149–53 (2009); see also Michael L. Katz & Carl Shapiro, Network Externalities, Competition, and Compatibility, 75 Am. Econ. Rev. 424, 424 (1985).

34 This figure is based upon the U.S. Department of State’s count of independent states.

35 WALTZ, supra note 2, at 109.

36 The anti-competitive practices of Microsoft in the late 1990s are an example of the strategic use of network effects. See United States v. Microsoft Corp, 87 F. Supp. 2d 30 (D.D.C. 2000).
however, it is competition and the lack of control over the system that is dangerous. Control is what we want. To achieve this we can harness the network effects that naturally inhere in alliance structures to trigger the emergence of a monopoly in the market for national security. All the ingredients for this are already present; we need only set the conditions for a network effect to form. Once the network effect begins to grow, it will alter the incentive structure in mixed-motive games, pulling states into a stable equilibrium of coordination.\textsuperscript{37} And all that is required to do this is the mutual fear and self-interest of states. If it is a war of all against all, if all are afraid, then we can use this fear to create unity from disorder—we can harness the systemic force of anarchy to extinguish anarchy. The remainder of this article outlines a model to do this, scrutinizes its viability, and discusses its implications for reshaping the international system.

III. THE PROPOSED MODEL

A. Foundational Principles and Assumptions

What I propose is the creation, through treaty, of a collective security organization. The name I give to this body is the Organization for Collective Security (“OCS”).\textsuperscript{38} Under the treaty, all ex-

\textsuperscript{37} Mixed-motive games are ones in which the players’ preferences are partly coincident and partly opposed, motivating the players both to cooperate and to compete. It is important to note here that I am not asserting that international relations are characterized only by problems of coordination. International relations are a mix of problems involving coordination, collaboration, and dynamics in which states sometimes have an interest in defecting from cooperation. What is critical to understand here, however, is that as the network effect intensifies, the players’ payoffs will be affected. States derive benefit from belonging to a security alliance (in the early stages, this is particularly true for weaker states) and this benefit (and the cost of remaining outside of the security alliance) increases as the network grows larger. The benefit derived from the network effect offsets incentives that may otherwise derail coordination, and crucially, \textit{as the network effect grows stronger, its capacity to offset such incentives increases until it eventually locks all players into a stable equilibrium of cooperation.} Thus, the growing network effect is ultimately able to secure coordination in even the most inhospitable of mixed-motive games. This is discussed at length in infra Sections II.B and C below, and again in a more summary fashion in infra Section IV.

\textsuperscript{38} The initial push to implement OCS may come from a variety of sources: from private actors to NGOs, IGOs, or states advocating for its creation on the floor of the general assembly. Presumably, it would be more vulnerable states that would take the lead in establishing OCS. OCS could conceivably be integrated into the U.N. system as a special agency; however, complications would emerge regarding how OCS (and its members) would interact with the existing rules on the use of force. For example, given the current U.N. system, it is unclear how OCS
tant states, their governments, and national boundaries are recognized. With the system’s units fixed, OCS then operates in relation to this political map of the international system. If any treaty member is attacked by another state, all other member states are obligated to come to its defense, with each deploying a percentage of their military capability. The precise degree of force is determined at the time of conflict by OCS, the preference being for the lowest percentage sufficient to subdue the belligerent with a preponderance of power. Defense is defined as maintaining the territorial integrity of a state’s national boundaries. Membership is voluntary and states may join or exit OCS as they please. However, if a treaty member (1) fails to aid in the defense of another member, (2) chooses to exit the treaty, or (3) aggresses upon states would be free to engage in aggression against non-members (as provided for under principle 4 of OCS below). Such considerations, however, along with the complex administrative and legal instruments OCS would require to function, lie beyond the scope of the present discussion.

States are required to agree to this political map upon joining. States, however, must be a treaty member at the time they are attacked. Without this pre-commitment, the optimal strategy for states would be to wait until aggressed upon, creating a start-up problem. It should also be noted that OCS does not address intrastate conflict, such as civil wars, as well as acts of trans-national violence perpetrated by non-state actors (such as terrorist acts). A stronger version of the model could ban intrastate as well as interstate conflict. This would help prevent human tragedies, such as the Syrian civil war. Moreover, this would increase the incentive for governments to join OCS (i.e. because their domestic rule would be all but guaranteed). However, such a move would have to be carefully weighed against its corollary effects. In particular, this would have the effect of shoring up the domestic rule of illiberal regimes. A possible answer to this concern is that, once the international system is locked into OCS and a robust governance structure emerges, demands could be made on such regimes to reform. A successful OCS would have the regulatory wherewithal to address such sub-state issues. For purposes of parsimony, however, a strong version of the model is not presented here—the focus here is entirely on intrastate conflict, an alarming possibility that is once again coming to the fore with China’s ascendency to great power status.

The challenge of distinguishing between aggressor and aggressed is a commonly cited impediment to collective security. See, e.g., Organski, supra note 15, at 461; John Mearsheimer, The False Promise of International Institutions, 19 Int’l Sec. 5, 31 (1994). A parsimonious definition of aggression is thus adopted here: aggression is defined as the intentional and unsolicited incursion of martial force in any form, be this manpower or weaponry, into the territory of another state. (This is similar to how aggression is defined under Articles 5 and 6 of the North Atlantic Treaty); if both belligerents have committed incursions into each other’s territories, both incursions must immediately cease. The party that does not do so is deemed as the aggressor. If both parties continue their incursions, both are deemed as aggressors and sanctioned accordingly. If both parties cease their incursions, neither is deemed as the aggressor until an independent fact finding mission (under the aegis of OCS) can determine which party is the aggressor. (This is the same in cases of multiple belligerents.) This definition of aggression does not capture activities such as state support for terrorism, proxy wars, cyber-warfare, etc. The definition also does not relate to military conflict occurring exclusively in international waters and/or airspace. However, while these tactics have many proximate causes, their underlying cause is the security dilemma. If the model solves the security dilemma, the use of such tactics will diminish.
another treaty member, the state will be expelled from OCS for a pre-determined number of years. If the expelled state is aggressed upon during this period, no treaty members will come to its defense. The expelled state, however, may rejoin the treaty after the expulsion period if it wishes to do so.

OCS differs from traditional collective security organizations in key respects, which are captured in the six foundational principles of its proposed charter:

1. Treaty membership remains continuously open to every state in the international system. The only exceptions are states enduring a period of expulsion or currently engaged in inter-state military conflict.

2. There are no criteria for membership with respect to the political system, domestic practices, international standing, or foreign policy of a state.

3. Treaty expulsion is never permanent and is always for a preset fixed period of time.

4. Member states are free to engage, individually or collectively, in military aggression against non-member states while maintaining OCS’ defensive protection.

5. Member states may possess concurrent membership in other security arrangements.

6. Member states are required to annually increase their military capabilities by a fixed percentage of their GDP until the system fully consolidates, after which this obligation ceases and member states are required only to maintain a minimal level of military capability.

While the logic behind these six principles may not be immediately clear, they are strategic and based on a set of core assumptions that draw from neorealism:

1. The first assumption is that states wish to survive more than they wish to engage in war.

2. The second assumption is that the international system is anarchic, meaning simply that there is no higher authority than states.

3. The third assumption is that any state may become an aggressor at anytime and attack any state.

4. The fourth assumption is that, because states can never be certain of the intentions of other states, states are concerned with the relative power within the system and wish to main-
tain maximum relative power in order to ensure their survival.44

(5) The fifth assumption is that two or more aggressors may simultaneously attack a state, but this is less likely than the case of a single aggressor and decreases in likelihood as we increase the number of aggressors.45

(6) The sixth and final assumption is not drawn directly from neorealism but rather follows from it: all other variables held constant, aggressors are less likely to attack states that are stronger than them and more likely to attack states that are weaker than them.46 Thus, all else being equal, the weaker a state is relative to other states, the more threatened it will feel. This I call the sitting-duck effect.

My central claim is that the incentive structure created by OCS will spark a network effect in the market for national security.47 Guided by fear and rational self-interest, small powers—the most vulnerable units in the system—will scramble to join the fledgling treaty and in doing so slightly increase OCS’s defensive capabilities and hence its value as a provider of security. This increased capability will then draw middle powers into OCS, further strengthening its defensive capability. This process then continues in an increasing returns fashion with the security arrangement pulling in states of progressively greater military capability until it is rational for all states within the system—even a superpower and hegemon—to join, at which point the entire international system consolidates into a single security monopoly.

B. System Consolidation

Let me illustrate this using a simple system of ten units. Recall the assumptions outlined above. The states in this system wish to

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44 See supra note 11. Although there are other forms of power, the discussion is concerned primarily with military power. See infra Section III.A below for elaboration on this point.

45 The logic here is that at any given time most states are not aggressive, thus the likelihood of two or more states simultaneously aggressing is less than that of a single state aggressing, and this probability decreases further as we contemplate additional aggressors. Thus, it is far more likely that, for example, two states will co-attack one state than 194 states will co-attack one state.

46 This is simply an inversion of neorealism’s bedrock assumption: “The stronger a state is relative to its potential rivals, the less likely it is that any of those rivals will attack it and threaten its survival.” MEARSHEIMER, supra note 3, at 33.

47 This claim is not tested here; rather it is the subject of other work I am conducting that examines OCS’s formation and resilience to shocks.
survive more than they desire conflict. As such, states wish to maintain their power relative to other units within the system. Any state may become an aggressor and any state may become the object of aggression. Multiple aggressors may attack in concert. The weakest state in this system feels the greatest sense of insecurity. Because all units fear any unit that is more powerful than themselves, the entire system fears the most powerful unit and the most powerful unit fears collective aggression if said aggression exceeds its own power.

Figure 1. A system composed of ten units in which each unit possesses a different level of capability:

<table>
<thead>
<tr>
<th>State</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>9</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
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<td>D</td>
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<td>G</td>
<td>4</td>
</tr>
<tr>
<td>H</td>
<td>3</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
</tr>
</tbody>
</table>

Given these assumptions, the following claims can be made. In this system, State J is the most threatened and State A is the least threatened.48 States B to J are all threatened by State A. However, State J is the most threatened unit—it is the sitting duck. The sitting-duck effect is most pronounced with the weakest unit, but it applies to all units to different degrees of intensity. States J and I are the two most threatened units relative to the other units in the system (with State J being the most threatened between the two). The sitting-duck effect incentivizes States J and I to join OCS. After both states join, the collective defense strength of OCS rises to a power of 3 and State H (at a power of 3) now becomes the most threatened independent unit in the system. As such, State H is incentivized to join the burgeoning security net-

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48 State A is threatened because of the possibility of collective aggression. Note that, while less likely, the possibility of collective aggression also intensifies the sitting-duck effect.
work, increasing OCS’s collective strength to a power of 6. At this stage, State G becomes the sitting duck (at a power of 4) and thus has the strongest incentive to join OCS.

This pattern continues with the network effect increasing non-linearly until the process gains critical mass, at which point a threshold is surpassed and the system will ‘tip’ with the remaining units flocking into OCS. Consider the system’s structure when State G joins OCS. State F, a middle power, becomes the most threatened unit in the system. The defensive capability of OCS (10) now doubles the power of State F (5) and is equal to the defensive capability of the most powerful unit in the system, State A. Once State F joins OCS, the defensive capability of OCS (15) nearly triples that of the most vulnerable unit, State E (6), and now exceeds the power of State A. Provided that all the remaining units are rational, at this point the system will tip and consolidate into a single unified network.

1. Critical Mass

The stage at which the addition of the next unit renders OCS more powerful than any single unit in the system I call the critical mass threshold. This threshold is not invariant across systems. The system described in Figure 1 boasts a rather idealized pattern of perfectly escalating power—dissimilar distributions of power will cause systems to consolidate differently. However, any distribution of power will produce the same general pattern—all units will eventually join OCS. This process of consolidation is reinforced by the fact that the system is finite. As OCS absorbs a growing share of the system, the insecurity of units outside of OCS intensifies non-linearly because (1) their individual defensive capability is decreasing relative to the increase in the defensive power of the

49 For the concept of critical mass and tipping, see Thomas C. Schelling, Micromotives and Macrobehavior 98–99, 101–10 (1978, 2006 ed.). The idea of ‘tipping points’ was first developed by Morton Grodzins. See Morton Grodzins, Metropolitan Segregation, 197 Scientific American 4, 33–47 (1957); see also the concept of ‘phase transition’ in physics and the study of complex systems.

50 For example, non-linearity is exceptionally pronounced where the distribution of power is ‘clumped’ in the system, as in Figure 1, which is top-heavy.

51 Only a distribution of power in which a hegemon possesses the majority of the system’s power would be immune to this logic. This is illustrated in Figure 3, System A. Note that the U.S. currently possesses roughly 39% of global power, a figure that will likely decline with the ascendency of China. See infra Figure 4.
2. Why the Hegemon Will Join

But why will State A join OCS? After all, it is the most powerful unit within the system. State A will do so because, with the rest of the system now consolidated, State A can no longer threaten any unit in the system and therefore has lost its position of dominance. As such, remaining outside of OCS offers little advantage while remaining independent incurs significant disadvantages. As the only unit outside of OCS, State A is now the most vulnerable unit—it is now the sitting duck. Although its power is greater than any other single unit within the system, State A is threatened by the possibility of collective aggression against it. For example, a coalition between State B (State A’s nearest peer competitor) and any one of the units in the system (save State J) is more powerful than State A’s total defensive capabilities. Moreover, with their defensive power now fortified by OCS, State A’s peer competitors may be more tempted to engage in aggression. So long as State A remains independent, the relative power of State B is greater than State A because State A is no longer able to as effectively retaliate should State B attack it.53 Yet even more significant than all these points is the simple fact that the future is uncertain. Aggressive states may become strong and strong states may become aggressive. All that is certain is that the rise and decline of national power is inevitable. As the last independent unit, and as the most powerful one, once State A joins OCS the system will fully consolidate, providing State A protection against future vicissitudes in the distribution of power. Thus, the threat of collective aggression and the uncertainty of its future relative position within the system create a powerful incentive for State A to join OCS. However—and this is a crucial point—even if the hegemon fails to join OCS, sys-

52 Note that units outside of OCS may be party to other security arrangements, rendering this decrease unbalanced. The relevance of regional security arrangements is addressed in supra Section II.C, Principle 5.
53 Recall that under the fifth principle, treaty members will defend the territorial integrity of State B even if State B is the aggressor.
tem stability is still achieved because rational aggression by any state is now rendered impossible.

3. Lock-in

In addition to decentralized coordination, network effects produce a second interesting dynamic known as lock-in. Lock-in occurs when users become unable to abandon a network without suffering prohibitively high transaction costs and as a consequence become ‘locked’ into the prevailing standard. Again, language offers a convenient illustration. Consider the linguistic constraints imposed upon the inhabitants of an isolated Russian village. While the villagers are, in principle, free to unilaterally switch from speaking only Russian to, for instance, only Somali, they are locked into the Russian language. There is no value in speaking only Somali. Even if a group of villagers banded together determined to speak only Somali, they would lose far more than they would gain. These villagers are structurally locked into the Russian language. Short of a village-wide decision to collectively switch to Somali, it is impossible to dislodge Russian as the dominant language. The same process will occur with respect to OCS. Once the international system tips, the system’s units will become locked into OCS and, in practice, will be unable to exit (although they remain technically free to do so). A unit, or even several units, will be as powerless to exit or establish a competing security network as an individual is to create her own currency or language. It is possible to break lock-in but it requires large-scale coordination to do so. Thus, the lack of central control and the inability to coordinate, formerly a source for competition, now becomes a source for cohesion, causing the international system to stabilize. Even more decisive to OCS’s stability, however, is that once the system consolidates there is really no reason for states to break away and become independent or form an alternative security network, as their security is already provided by OCS at the maximum possible level.

The advantage to an anarchic system is that, once critical mass is reached, there is no single unit with sufficient power to prevent the emergence of a network monopoly, or dismantle it once it consolidates the system and locks in place. The problem of anarchy is thus turned on its head. It is anarchy that compels the units to cleave together into a stable, universal coalition. OCS solves the

54 While this decision need not be unanimous, it would need to be sufficiently large to achieve critical mass.
security dilemma by exploiting the structural forces that cause it—an unequal distribution of power, fear, mutual distrust, and an inability to coordinate. The increasing security offered by OCS in conjunction with the growing insecurity produced by the sitting-duck effect will drive states into OCS. Thus, the more unstable the system, the more stable OCS becomes as units respond by scrambling into it for security. With OCS in place, the shifting patterns of national power no longer produce systemic effects. So long as the system is consolidated in OCS, the defensive capabilities of all units within the system are identical and remain the same regardless of unit-level fluctuations in power.55

IV. The Causal Logic of the Model

I noted that OCS’s foundational principles are strategic. I will now discuss how they are strategic. The causal logic that underpins all six principles is to induce, intensify, and fortify the network effect.

A. Principles One to Three

Principles one to three are designed to maintain non-exclusivity, which is critical given how networked markets function. Provided there is sufficient interconnection (and the right incentive structure), users will coalesce around a single standard. However, if there is a lack of interconnection, local network effects may form, producing multiple pockets of consolidation (the diversity of the world’s languages are a good example of this). Conventional security alliances are by definition exclusionary—they form because states fear a common threat. Such alliance systems can never achieve universal consolidation because the force that brings units together—an external threat—requires a relation of opposition. Their ability to consolidate a system is ultimately capped: at their maximum level, they will partition a system into two grand coalitions, as illustrated by the Soviet-U.S. rivalry of the cold war. To ensure that the market does not splinter into competing network

55 For Waltz, alliances are not changes in structure. Adjustments in the distribution of power will simply cause alliances to disband and repattern. Waltz, supra note 2, at 98. Waltz, however, does not anticipate network lock-in, in which, rather than unsteady constellations of competing alliances, we have instead a single alliance into which all units are locked.
effects, it is thus essential that OCS remains non-exclusionary and permanently open to every state in the international system with no exceptions (principle one). As such, there can be no limitations on membership with respect to a state’s political system, domestic practices, international standing, or foreign policy (principle two), and treaty expulsion is never permanent in order to prevent expelled states from forming rival coalitions (principle three).56

States cannot exclude their enemies, which is in fact helpful. Because fear drives consolidation, longstanding enemies are particularly incentivized to join OCS. The principal concern of enemies is the balance of relative power between them. OCS exploits this fear. For example, consider how Saudi Arabia and Iran, North and South Korea, or India and Pakistan would likely respond if the other joined OCS, increasing its defensive capability and thus distorting the balance of relative power between them. While many variables may ultimately determine their response, it is clear what the structure dictates: as soon as one joins, the other should also join. Upon joining, however, these adversaries cease to threaten each other. To illustrate, suppose that both Saudi Arabia and Iran join OCS. If Iran attacks Saudi Arabia, OCS will defend Saudi Arabia; if Saudi Arabia attacks Iran, OCS will defend Iran. Moreover, there are now other powerful incentives for both states to not initiate aggression. If Iran, for example, aggresses against Saudi Arabia, Iran will be expelled from OCS, leaving it vulnerable to Saudi aggression (who would likely be in no mood for peace). Compounding this, stranded outside of OCS, Iran becomes a sitting duck for any aggressor in the international system throughout the period of its expulsion.57

That despotic regimes are free to join OCS may be unpalatable, yet this is not only necessary, it is desirable. These ‘bad actors’ are dangerous only as long as the system remains anarchic. In order to transition from anarchy to hierarchy the network effect must consolidate the system as much as possible. The goal of OCS is not internal political reform or regime change; it is to eliminate international military conflict.58 OCS operates on the same principle as domestic policing: police come to the defense of all regard-

56 Even if expelled states did so, the value of such networks would be less than a consolidated OCS and so units would abandon the rival coalition and return to OCS when permitted to do so.

57 Note that the sitting-duck effect grows more pronounced as the system becomes more consolidated.

58 Sub-state conflict will persist under this model.
less of actors’ personal character. If the police elected who to protect, the unprotected actors would be compelled to defend themselves. OCS must therefore remain continually open to all states in the international system—liberal and illiberal, friend and foe. Because they may abandon the treaty at any time and because no demands are made regarding their internal affairs, OCS is an offer states will find hard to refuse as other states—particularly their potential adversaries—consolidate into OCS.

B. Principle Four

The existence of bad actors also helps on other fronts. In order to amplify nations’ sense of insecurity, member states are not required to universally renounce unprovoked military aggression under the fourth principle of the treaty. Quite the opposite: member states are free to engage, individually or collectively, in revisionist military aggression against non-member states from behind the defensive shield of OCS’s security umbrella. This will embolden revisionist states and this is deliberate: the aggressive behavior of bad actors is especially useful to consolidate the system because the threat they pose incentivizes states to join OCS. If a bad actor joins OCS (a tempting option given the easy gain in relative power), the threat it poses to non-member states increases. Thus, in all scenarios (as a member of OCS or not), the bad actor helps drive states into OCS and keep them there. Because there is no demand that members renounce military aggression against non-member states, all states in the international system—status quo and revisionist powers alike—are incentivized to join OCS.

C. Principle Five

The fifth principle facilitates market penetration. Currently, there are six major regional security arrangements in the international system.59 These bulwarks of power are impediments to global consolidation in that they represent localized network effects. Allowing states to hold concurrent membership in multiple

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security arrangements helps OCS outcompete these regional security arrangements through a process known as multi-homing. Multi-homing is the concurrent adoption of two or more networked services. For example, merchants employing incompatible credit card payment systems such as Visa and MasterCard are multi-homing. The ability to multi-home is critical because it liberates users from having to choose between networks. This allows a fledgling network to gain a foothold in the market. All states, even if they already form part of a regional security arrangement, have an incentive to further augment their defensive capabilities by joining OCS. However, unlike regional security arrangements that limit the number of members, OCS’s non-exclusivity will, over time, allow it to gain increasing market share as it absorbs more units.

Regional security arrangements do not alter the logic of OCS. Just as with individual units, regional security arrangements are not of equal capabilities. This power asymmetry incentivizes states in weaker security arrangements to supplement their defensive capabilities through concurrent OCS membership (i.e. they will multi-home). As OCS’s defensive strength increases, the relative power of stronger security networks decrease. This incentivizes states in stronger security arrangements to boost their defensive capabilities by joining OCS. Yet, just as with a hegemon, NATO-states, constrained by the logic of anarchy, will be reluctant to relinquish the relative power they possess unless they are forced to by the structure. Moreover, some regional security arrangements, such as the CSTO, explicitly prohibit signatories from holding concurrent membership in other security arrangements. Remaining outside of OCS, however, is a sustainable strategy only so long as the current balance of power does not change. If China continues its ascension to great power status, NATO’s relative share of global power will decrease. Multi-homing will eventually become the optimal strategy for all units within the system. If NATO members are forced to a decision, they may peel away from NATO and join OCS. A more likely outcome, however, is that, because multi-homing offers the greatest security, NATO members will eventually agree to permit concurrent membership with OCS. Post system consolidation, the significance of regional security arrangements will wane as the


61 NATO currently represents approximately 59% of global power.

62 The assumption here is that, as the system polarizes, China will remain outside of NATO, an assumption for which the Cold War provides strong empirical support.
security of all states will be supplied by OCS at the maximum possible level.

D. Principle Six

The sixth principle—that OCS members annually increase their military capabilities until the system consolidates—is designed to heighten the level of fear in the system in order to accelerate system consolidation and strengthen lock-in. OCS states bolstering their capabilities will force non-OCS states to respond in kind, triggering a system-wide arms race in which not all units can equally compete. As the gulf in power between units widens, non-OCS states that fall behind will be incentivized to join OCS.

**Figure 2. The effect of escalating security competition illustrated across three time periods:**

![Diagram](image_url)

NOTE: The squares represent the system’s units and the numerals indicate their military capability. The large circle, and the units within it, represents OCS. The numeral in the circle’s center indicates the collective defensive strength of OCS (note that critical mass has already been achieved). In T1 there are four OCS states and five non-OCS states. In T2 the OCS states each increase their capability by 100% (they are shaded). (Note that a 100% increase is used here merely for expository simplicity.) This forces the non-OCS states to respond, of which two units are able to achieve an increase of 100% (also shaded), one unit is only able to achieve an increase of 50% (speckled), and two are simply unable to compete and so join OCS because they are the sitting ducks. In T3, four of the OCS states again increase their capability by 100%. Two non-OCS states respond by increasing their capability by 100%. The third non-OCS state cannot fully compete and so joins OCS because it is the sitting duck. Note that al-
though the second most powerful non-OCS state has been able to successfully compete throughout, the unit has nevertheless now become the sitting duck and so is incentivized to join OCS in T4. It will become rational for all units in this system to join OCS by T5.

This escalation in security competition intensifies the sitting-duck effect, accelerating system consolidation. Moreover, the increase in absolute power within the system reinforces lock-in because it renders it more perilous for a unit to exit OCS’s security umbrella and go it alone.

With the model’s causal logic explained, we are positioned to examine how it would respond to real-world conditions, a question of paramount importance to which I now turn.

V. APPLYING THE MODEL USING CURRENT AND PROJECTED GLOBAL POLARITY

The previous section explained the model employing a simple system of units interacting. This section asks the crucial question: provided its assumptions are correct, how would the model track real-world conditions? More specifically, could OCS achieve system stability now or in the foreseeable future? Before considering this, however, the model’s limitations should be noted.

A. Limitations to the Model

Several variables are omitted to achieve parsimony. The guiding logic throughout (I follow Waltz here) is that if a certain level of reductionism helps construct a workable model then this is preferable over more complicated approaches that unnecessarily prolif-

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63 An important point should be noted here regarding the behavior of units post system consolidation. As confidence in OCS strengthens over trial and time, states will invariably engage in security free-riding (as we see in the case of NATO). This should, in principle, spark a self-reinforcing process of disarmament as an increasing number of units compete to free-ride, causing the international system to eventually settle into an equilibrium of militarization roughly corresponding to the minimum level required under the treaty (note this ‘floor’ is necessary to preserve a degree of fear in the system, the lack of which could erode treaty cohesion, and in cases of irrational aggression, the potential for which will always remain.) This concept of ‘spontaneous disarmament,’ while deserving of more rigorous examination, is, however, beyond the scope of the present discussion.
erate variables.\textsuperscript{64} If the model proves robust, additional variables may be added at a later stage. First, the model assumes that states are rational actors. Perfect rationality, however, is not required; only that states generally act rationally—the occasional lapse of non-strategic behavior is not fatal to the model. Second, the model’s focus on military capability does not imply that other forms of power, such as soft power or the influence of institutions, are unimportant; merely that they are unnecessary for the model to function and so need not be considered.\textsuperscript{65} The assumption here is that military force exerts a robust influence over state behavior making it a critical variable. The model also assumes that stronger military power always prevails (or more precisely, that states assume this). While this may not always be the case,\textsuperscript{66} the historical record supports this generalization. Additionally, the ability of national militaries to seamlessly coordinate is assumed although in reality the frictions inherent in large-scale joint military action would render the collective power of OCS “less than the sum of its parts.”\textsuperscript{67} Similarly, geography and constraints on the projection of military force (via bases, a blue-water navy, etc.) are also omitted. These variables, however, could in principle be incorporated. The model also assumes that all units within the system equally threaten each other. This is of course not true because geographical realities constrain or promote interconnection.\textsuperscript{68} Another point is that the model treats all conflict as homogeneous when in fact conflict differs substantially in nature (e.g. land-based conflict, naval, aerial, etc.), and militaries vary in their ability to engage in these conflicts. In principle, this could also be incorporated into the model. Likewise, although nuclear capabilities are absent from the model, there is no theoretical obstacle to incorporating this significant form of power into the model.\textsuperscript{69} Lastly, the model does

\textsuperscript{64} See \textsc{Waltz}, \textit{supra} note 2, at 7–11.

\textsuperscript{65} See \textsc{Waltz}, \textit{supra} note 2.

\textsuperscript{66} For examples, see \textsc{Mearsheimer}, \textit{supra} note 3, at 58–60.

\textsuperscript{67} See \textsc{Thomas Szayna}, \textit{The Emergence of Peer Competitors: A Framework for Analysis} 34 (2001).

\textsuperscript{68} Geography would likely determine how OCS emerges, with membership clustering regionally.

\textsuperscript{69} Some further comment should be made regarding the implications of nuclear weapons on the thesis. Because fear drives the model, nuclear threats in fact render the model more robust in that non-nuclear states even more intensely fear states that possess nuclear weapons. It might be argued that a nuclear power may choose to not join OCS, content that its nuclear arsenal is sufficient to deter would-be aggressors. However, even states with their own nuclear deterrent would be prudent to still fear other nuclear states, particularly if there is some lingering uncertainty whether a rival nuclear power is a rational actor, in full control of its arsenal, or likely to
not examine the possibility of a cascade effect triggered by defection that could cause OCS to unravel.70

B. Method

Here I will define my terms, clarify the precise questions I seek to answer, and describe the method I employ. While definitions of ‘stability’ vary in the literature, I define stability as the condition in which no single unit is more powerful than the combined power of OCS, thus eliminating the possibility of rational aggression by any single unit.71 A system may be described as unstable where rational aggression is possible, and as growing more unstable as the possibility for rational aggression increases. Rational aggression, as I define it, is where (1) one or more units are more powerful than one or more other units, and (2) there is incentive for the more powerful to engage in aggression.72 By this definition, the current international system is unstable; however, as the system’s polarity changes, it will likely grow far more unstable. What I seek to answer is how OCS would respond to two conditions. The first is the present unipolarity of the international system marked by U.S. hegemony and the second is the anticipated drift towards a bipolar system dominated by the U.S. and China. Three questions are posed. These are, with OCS in place and provided all the model’s assumptions are valid:

engage in what it initially believes will remain a conventional war but that later escalates into a nuclear conflict as the result of a miscalculation of some kind. Given these concerns, even if a state possesses nuclear weapons, they still have an incentive to join OCS and little incentive to remain outside of it, particularly if they are late adopters. It is likely that nuclear powers will be among the last to join OCS, but the incentive structure does not imply that they will not eventually join—it merely speaks to the timing of when they are most likely to do so.

70 This is the focus of other work I am currently conducting that formally models formation and cascade effects.

71 Note that this definition does not capture collective aggression. This is because the concept of stability is, in reality, a continuum. Because a system can be said to be more or less stable, a threshold is necessary to delimit what is a sufficient degree of stability to warrant the label. The model’s fifth assumption holds that two or more aggressors may simultaneously attack a state but that this is less likely than the case of a single aggressor and its probability decreases as we increase the number of aggressors. I thus define system stability as the condition in which no single unit is more powerful than the defensive power of OCS because this threshold identifies a reasonable boundary point for the concept of stability. The reader, however, should note that this is merely the minimal condition for stability and that a system can be more stable. The degree of system stability, as well as the potential for collective aggression, is gauged by way of the independent variable (described below).

72 This incentive, however, need not be in line with the actor’s long-term interests.
(1) Can system stability be achieved under the current unipolar system?  
(2) Can system stability be achieved under the anticipated bipolar system? 
(3) Which polarity is more conducive to system stability? 

A simple algorithm is employed to gain purchase on these questions (see Appendix 1 for a formal description). I assume that the system is fully consolidated into OCS and ask what would occur if the most powerful unit (the hegemon) exited OCS and attacked the weakest unit.\(^73\) I then determine whether OCS’s combined power exceeds the hegemon’s power. To do this, I calculate what I term the \textit{minimum contribution}. The minimum contribution is the lowest percentage of its total military power needed from each OCS-member so that, when combined, this amassed power is exactly equal to the hegemon’s power.\(^74\) More formally, the \textit{dependent variable} is the minimum contribution required from each unit in OCS that when combined matches the hegemon’s power and the \textit{independent variable} is the system’s particular distribution of power.

1. The Dependent Variable

I use the minimum contribution as the dependent variable for three reasons:

(1) If the minimum contribution required to achieve system stability exceeds 100\% of each unit’s power it is impossible to achieve system stability (see Figure 3, System A).
(2) States are reluctant to expend their military power.\(^75\) As such, states prefer to contribute less of their total military power in meeting aggression if possible. Thus, the lower the minimum contribution, the more willing units will be to provide the necessary forces and hence the stronger the institutional cohesion of OCS and its ability to reliably stabilize the system.
(3) The lower the minimum contribution level, the more stable the system is because it means each member has a deeper reserve of force they can bring to bear to confront a bellig-

\(^{73}\) The logic being if the hegemon cannot defeat the weakest unit, it cannot defeat any unit in the system.  
\(^{74}\) Note that the weakest unit deploys 100\% of its power to defend itself.  
\(^{75}\) This claim follows from the model’s fourth assumption—i.e. states “wish to maintain maximum relative power in order to ensure their survival.” As Mearsheimer opines, “states are self-interested actors with powerful incentives to minimize the costs they pay to contain an aggressor.” \textit{Mearsheimer, supra} note 3, at 157.
The greater this excess power, the less likely it is that any unit, or several units acting collectively, will engage in aggression because OCS can oppose them with a correspondingly greater preponderance of force (see Figure 3, System B and System C).

**Figure 3. Three systems of different stability:**

**NOTE:** In System A, even if all units in OCS contribute 100% of their power, their combined power does not match or exceed the hegemon’s power. System A is therefore not stable. In System B, if OCS’s members each contribute 100% of their power, OCS will possess excess power. System B is therefore stable. In System C, if OCS’s members each contribute 100% of their power, OCS will possess an even greater excess of power. System C is therefore the most stable of the three.

Thus, the minimum contribution may be used as a yardstick with which to measure the relative stability of a given system. The lower the minimum contribution, the more excess power. The more excess power, the more stable the system. This approach allows us to gauge a system’s degree of stability, including the potential for collective aggression.
2. The Independent Variable

To obtain the independent variable (the system’s distribution of power), I use national military spending as reported in the Military Expenditure Database compiled by the Stockholm International Peace Research Institute (“SIPRI”). While there are alternative ways to determine the distribution of power, given the importance of weaponry in modern warfare and the verity of its obsolescence, military spending is a reliable way to estimate military capability. I posit ten years as a rough approximation of technological obsolescence. A twenty-year period is also employed (1995–2015); however, the ten-year period (2005–2015) is the primary metric. Only 158 states are used in the calculation (the SIPRI database only tracks the top 158 military spenders). This, however, may be defended in that national militaries below this threshold fade into strategic irrelevance, as their capabilities are inconsequential.

C. Question One: Can System Stability be Achieved Under the Current Unipolar System?

To get a fix on the current global polarity, I total ten years of national military spending (2005–2015) for 158 states. The results show an overwhelming U.S. dominance, with U.S. military spending exceeding the next nine top military spenders combined.

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76 See Appendix 2.
1. Results

Having determined the independent variable, we can now answer the first question: can system stability be achieved under the current global distribution of power? Given the international system’s current distribution of power, OCS achieves system stability with a minimum contribution of 65.67%. That is, as it is presently constituted, if each state in the international system contributed 65.67% of its military capability to OCS, the military capability of the most powerful state in the system (the U.S.) would not exceed the collective defensive capability of the least powerful state in the system (Gambia). Any further contribution of military force above this percentage would confer military superiority to OCS, with this advantage growing commensurate with the increase in contribution.

77 Save the most powerful state who is the aggressor in this scenario, as well as the weakest state (which contributes 100% of its power).

78 Note that thirty-seven weaker states are excluded.
FIGURE 5. POWER COMPARED:

NOTE: If its members each contributed 100% of their power, OCS would possess a preponderance of power.

Thus, under the current global distribution of power, the possibility of rational aggression may be eliminated and system stability may be achieved. Further, OCS reaches the critical mass threshold when the seventh-ranked power (Germany) joins OCS, after which the addition of the next power (Saudi Arabia) will cause the international system to tip.

Applying the same approach, I use a distribution of power based upon a twenty-year period of military spending (1995–2015) as the independent variable. This, however, involves trade-offs. For example, while a longer period helps reduce ‘noise’ caused by atypical surges in military spending due to events such as the Iraq war, etc., technological obsolescence in weapon systems is less accurately tracked. For this reason, as well as to restrict the analysis to the post-Cold War era, a period exceeding twenty years is not considered.
2. Results

While there is a slight reshuffling in the ranking of states, the system’s overall distribution of power, which is the critical variable, remains largely unchanged. Under this distribution of power, OCS is able to achieve system stability. There is a minor downtick in the minimum contribution to 64.53%. The critical mass threshold is reached when the seventh-ranked power (Japan) joins OCS, after which the addition of the next power (Germany) will cause the system to tip. With both distributions of power (ten and twenty years), we see the same outcome: OCS achieves system stability with a minimum contribution of around 65%, and the critical mass threshold is reached when the seventh-ranked power joins OCS. Thus, provided the model’s assumptions are valid, system stability can indeed be achieved under the current global distribution of power (based on both ten-year and twenty-year periods). However, given the rise of China as a potential peer competitor to the U.S. and the deep structural stress this will cause, the question of how the model responds to bipolarity is of equal, if not greater importance.
D. Question Two: Can System Stability be Achieved Under the Anticipated Bipolar System?

The bipolar system shown below is based on the ten-year distribution of power used in Figure 4. For purposes of parsimony, all inputs are held constant; only China’s power is increased to perfect parity with U.S. power. While this is surely inaccurate in absolute terms, it distills the effect of bipolarity on the system. I then posit a scenario in which one of the two superpowers exits OCS and attacks the weakest unit in the system.

**Figure 7. Total Global Military Expenditure by State using the 2005–2015 distribution of power and holding all States Constant save China:**

NOTE: In this projection, the U.S. and China have achieved perfect parity. Because the projection is inaccurate, the eight remaining top powers are simply numbered.

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79 By some estimates, Chinese military spending is projected to reach near parity with the U.S. by 2045. See, e.g., UK MOD, *Global Strategic Trends – Out to 2045* 93–94 (5th ed., 2014). Other estimates even put U.S.-China convergence possibly as early as 2022 (although such projections are highly dependent on uncertain variables, such as sustained Chinese economic growth). IISS *Military Balance* 256 (2013); see also Anthony H. Cordesman, *Estimates of Chinese Military Spending* 41–43 (2016).
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1. Results

With this as the independent variable, we can answer the second question: can system stability be achieved under the anticipated global drift towards bipolarity? The answer is that system stability not only can be achieved in a bipolar system—the system is more stable. Because power in the system is now less concentrated, the minimum contribution required to achieve system stability drops from 65.67% to 43.56%.

![Figure 8. Power Compared:](image)

NOTE: If its members each contributed 100% of their power, OCS would possess a greater preponderance of power than in the current unipolar system.

The distribution of power depicted in Figure 7 allows us to isolate the effects of bipolarity. A more realistic projection, however, would capture the relative increase in power of all states within the system. Projections exist that, in fact, predict a multipolar system by 2045. There is, however, reason to be skeptical of such predictions given the uncertainty and number of variables involved. Nevertheless, general trends may be discerned—the international system is clearly growing less unipolar. Predicting when something will come to pass is far more difficult than predicting that something will eventually come to pass. Thus, rather than engage in the pretense of perfect accuracy, I posit a future balance of

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80 Note that because all other inputs were held constant, the critical mass threshold remains the same as in the previous simulations.

81 UK MOD, supra note 79.
power using a high degree of generality. I am concerned here with systemic trends rather than precise predictions. Below, I project a system dominated by the U.S. and China at parity that incorporates an increase in the remaining states’ capabilities. While precision is impossible, the projection tells us how OCS would respond to a system of less robust bipolarity.

**Figure 9. Total Global Military Expenditure by State using the 2005–2015 distribution of power exhibiting decreased bipolarity:**

Note: The bipolar dominance of the U.S. and China is reduced so that they jointly account for just under half of total global defense spending.

2. Results

With power more dispersed across the system, OCS responds predictably. The minimum contribution needed to achieve system stability drops to 28.40%.

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82 I do this by reducing the U.S.-China strength levels in Figure 7 by 50% thus increasing the relative power of the remaining units in the system. This reduces the Sino-U.S. share of defense spending to just under half of the world’s total defense spending. This is loosely based on the 2014 report by the U.K. Ministry of Defence, which estimates that the U.S. and China will jointly account for approximately 45% of global defense spending by 2045. Id. at 93–94. It should be noted that this report also projects India as a significant second-tier power. However, for purposes of parsimony, this is not included here (although multipolarity would render OCS even more robust as is explained in infra Section III.E).
FIGURE 10. POWER COMPARED:

NOTE: If its members each contributed 100% of their power, OCS would possess an overwhelming preponderance of power.

Moreover, with a greater excess of power spread across the system, the critical mass threshold plummets: it is reached when the fifteenth-ranked power joins OCS.\footnote{Note, however, that the existence of significant second-tier powers (e.g. India) would soften this drop.} Because of its low minimum contribution, this system is extremely stable.\footnote{Moreover, because the critical mass threshold is lower, system consolidation is easier to achieve.}

E. **Question Three: Which Polarity is More Conducive to System Stability?**

We can now also answer the third question: which polarity is more conducive to system stability? Clearly, with OCS in place, bipolarity is more conducive to system stability than unipolarity. However, the minimum contribution continues to decrease as we move further away from unipolarity, rendering the system even more stable. This suggests that, under OCS, multipolarity would be even more conducive to stability. Thus, a system of perfect multipolarity in which all states possess identical levels of power would be the most conducive to system stability (and consolidation) under OCS.\footnote{Fear of collective aggression would still trigger consolidation under such a system. Moreover, the logistical inability of accurately assessing the capabilities of other actors would prevent} Conversely, perfect unipolarity, in which the power
of the hegemon exceeds the combined power of all of the other units in the system, would render system stability unattainable under OCS. The likelihood of either extreme, however, is near impossible (at least for any sustained period) given that fluctuations in national power are inevitable.

It is unlikely that all of the estimates and figures employed above are accurate (the distribution of power in Figures 7 and 9 are almost certainly inaccurate). The strength of the model, however, is that it does not matter. All that is needed to apply the model is a broad stroke assessment of the approximate distribution of power and the general direction in which the international system is trending. This is because the pattern is clear: OCS grows more robust as the system moves away from unipolarity, and with the emergence of China as a global power this is clearly what is occurring. The conclusion that flows from this is predictable yet significant. As the unipolar moment fades and China rises, so too does the viability of bottom-up collective security.

VI. BOTTOM-UP COLLECTIVE SECURITY IS A COMPLETE THEORY

This final section outlines the primary impediments to classical collective security and discusses why bottom-up collective security theory is unhindered by these problems.

A. Classical Collective Security

Classical collective security, as Mearsheimer explains, is an incomplete theory because it requires that states “trust each other, but it does not satisfactorily explain how this is possible in an anar-
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chic world where states have military power and uncertain intentions.” Many note the impediments to the theory’s implementation. The strongest of these are outlined below.

**Narrow self-interest** - Collective security requires that when states confront aggression, they “must not think in terms of parochial self-interest . . . but must instead . . . equate their national interest with the broader interests of the international community.”

**Moral alignment** - Collective security theory requires a “commitment to the value of world peace by the great mass of states.” Governments must therefore be open to moral appeals against the misuse of martial force and moved to action as a consequence.

**Arms reduction** - There is a contradiction between promoting arms reduction (as advocated under the LN and the U.N.) while demanding that states maintain offensive capabilities powerful enough to counter potential aggression.

**Free-riding** - So long as there remains sufficient power to confront troublemakers, there will be a temptation to sit on the sidelines and free-ride. Concern that free-riders will gain in relative power and later capitalize on this advantage may cause security cooperation to unravel.

**Mixed loyalties** - Collective security theory demands that states fight friends and defend foes, and states may be reluctant to do this.

**Entanglement** - States may wish to avoid becoming entangled in remote conflicts that possess no strategic significance, transforming them into international confrontations.

**Carrying others’ weight** - An unequal provision of military muscle may undermine the commitment of powerful states.

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88 Mearsheimer, supra note 41, at 36.
89 See supra note 12.
90 Mearsheimer, supra note 41, at 29.
91 CLAUDE, supra note 12, at 250.
92 Mearsheimer, supra note 41, at 30.
93 Id.
94 Id. at 31.
95 Id. at 32.
Consistency of action - The consistency of collective action cannot be relied upon. While states may engage in security cooperation when their interests align, “anarchy ultimately . . . causes them to seek advantage over their neighbors, and to act in a self-interested and self-help manner.”

Start-up problem - Collective security requires a substantial universality of membership but there is a start-up problem—each unit may hesitate to join until a sufficient number of others join, but this logic is the same for all units, thus no one joins.

Surrendering power - Collective security requires the great powers to relinquish their position of dominance by creating a framework under which collective action cannot be prevented unilaterally or by a small association of powerful states, and this is something they cannot rationally do while the system remains anarchic—yet, paradoxically, the system will remain anarchic so long as states cannot do this.

B. Bottom-up Collective Security

As outlined below, bottom-up collective security is unhindered by these impediments. It is a complete theory because it explains how it is possible to achieve coordination in the absence of trust in an anarchic system where the threat of violence is ever-present.

Narrow self-interest - The theory does not require that states trust each other or equate their interests with the broader interests of the international community. Quite the opposite in fact: the model is predicated upon the persistence of fear, distrust, and self-interest. The only trust that is required is a ‘trust’ that states understand what is in their national interest and will act accordingly.

Arms reduction - Fear drives the model. As such, OCS does not call for arms reduction; rather, it escalates security competition by requiring further militarization in order to increase the level of fear in the system.

96 Adler & Barnett, supra note 12, at 3.
97 Claude describes a similar dynamic, which he calls the “Dilemma of Circularity.” See Claude, supra note 12, at 256.
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**Moral alignment** - There is no need to subpoena the conscience of nations to move them to action. All that is required is that states are self-interested and afraid.

**Free-riding** - The destabilizing effect of free-riding is blunted by systemic lock-in. Fear of being stranded outside of OCS discourages free-riding and thus reassures states worried about others free-riding.

**Mixed loyalties** - Lock-in and fear of network isolation reduces states’ reluctance to fight friends or defend adversaries if necessary.

**Entanglement** - Lock-in and fear of network isolation checks states’ hesitation to join in conflicts that do not directly involve them. The continued integrity of OCS, which may be undermined by inaction, is of direct strategic relevance to each of its members.

**Carrying others’ weight** - Lock-in and fear of network isolation mitigates the problem of unequal military burdens. Moreover, while one’s contribution may exceed weaker members, it is lesser than that of stronger members, from which one benefits. This logic applies at each level of power until the hegemon, who will join OCS for reasons already discussed.

**Consistency of action** - Because collective action is predicated upon self-interest and fear, security cooperation is far more reliable.

**Start-up problem** - Membership growth does not pose a problem for bottom-up collective security theory because states are driven to join out of fear, in a bottom-up, increasing returns fashion until critical mass is achieved.

**Surrendering power** - The primary barrier to collective security—the command of anarchy that each maintain maximum power—is utilized to solve the very problem it creates. As states are pulled into OCS, the sitting-duck effect bandwagons up the hierarchy of global power, pressuring units at each level to join OCS so as to retain maximum security, until the most powerful state becomes the sitting duck and is compelled by the same logic to join. In this manner, bottom-up collective security uses the ordering principle of anarchy to trap powerful states into surrendering their position of dominance.
VII. Conclusion

The Westphalian system has locked us into a gridlock from which we cannot free ourselves in a top-down manner. The mandate of power politics is clear: the most straightforward way to survive under anarchy is to maintain maximum relative power. States—particularly powerful ones—are thus unwilling to diminish their respective power by creating an authority more powerful than themselves. As a consequence, we remain stuck in the security dilemma. Geopolitical competition will persist, undermining the advance of global governance, so long as the security dilemma persists. Bottom-up collective security solves the security dilemma by marshalling the structural forces that cause it to trap states into a system of universal collective security in which their individual power is ultimately eclipsed by the combined strength of that system. Through decentralized self-organization, OCS moves the system spontaneously from anarchy to hierarchy.

Given the absence of control, there is no other way to do this. Because of the transitory nature of power, this can never be achieved in any permanent sense top-down. Even if there were a hegemon powerful enough to bring the entire system to heel, the longevity of this empire and thus the constancy of its international order could not be relied upon.\(^98\) Nor could any state be entrusted with this role for such unchecked power would be an invitation to global tyranny. OCS answers the attendant question of how to create hierarchy without dangerously concentrating power.\(^99\) OCS is a governance structure under which all states are constrained yet power remains sufficiently dispersed. Because states are dependent upon each other for protection against each other, none can unilaterally dictate the rules of the road.

The cardinal question of our age is whether the present century will be defined primarily by cooperation or conflict between the U.S. and China. The current geopolitical structure is arguably pushing in the direction of conflict. If their capabilities continue to grow, it is not unlikely that the Chinese will seek to rewrite the rules of a liberal international order forged by the U.S. in the aftermath of WWII, and of which the U.S. is the primary beneficiary. While there may be some kind of great power accommodation, it is

\(^{98}\) See WALTZ, supra note 2, at 111–12.

\(^{99}\) WALTZ doubts this is possible arguing that the amount of power needed to be lodged at the system’s center to control its parts would simply cause “states to engage in a struggle to control it.” Id. at 112.
likely that, concerned over the security implications of their weakening position, the U.S. will try to contain China’s ascendancy. The friction this will cause does not, however, represent a threat. It represents an opportunity. Bottom-up collective security reverses the systemic effects of anarchy—under its framework, conditions that intensify security competition promote system consolidation. Therefore, the more unstable the system grows, the stronger OCS becomes. Thus, as China rises, increasing instability will drive states into OCS and unify the international system.¹⁰⁰

This is the scaffolding for true global governance. With security competition eliminated, the greatest barrier to international integration is removed. The highest achievement of civilization is our ability to coordinate for this is the foundation of all human organization. Yet on the international level our ability to do this remains stunted. To effectively coordinate, we must first solve the hard problem of international relations—the anarchic nature of the world order. The theory articulated here achieves this. Until the model is implemented, however, it will remain an open question. More details are left to be explored. The article did not engage in a ‘nuts and bolts’ discussion of OCS’s practical implementation; rather, the article’s purpose was merely to set out, as rigorously as possible, the basic framework of the model. For parsimony, a good deal of complexity was stripped from the model. Moreover, some may fundamentally disagree with many or all of the assumptions upon which the theory rests. To the skeptical reader, however, I say let us implement it. Only reality can be the final arbiter of the model’s viability.

¹⁰⁰ There is no guarantee of course that China’s rise will continue. Should China’s ascension to superpower status falter, OCS may fall dormant but will resume consolidating the system when the international system again grows unstable (as it invariably will).
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APPENDIX 1.  FORMAL DESCRIPTION OF THE ALGORITHM

Suppose all players join the group. Now, the strongest player attacks the weakest player, and all other group members co-defend the weakest player. Let \( X \) be the minimum contribution, \( S \) be the power of the strongest player, \( W \) be the power of the weakest player, and \( SUM \) be the sum of power of all players. The weakest player survives if and only if:

\[
S \leq X(SUM - S - W) + W
\]

Hence, the minimum contribution is:

\[
X = \frac{S - W}{SUM - S - W}
\]

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