

Confronting the Principles of the Power Cycle

Changing Systems Structure, Expectations, and War

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Power cycle theory discloses and elucidates the uniquely international-political “perspective of statecraft.” The *power cycle*, the generalized path of a state’s relative power change over long time periods, reflects at once the changing structure of the system and the state’s rise and decline as a great power. It encompasses each state and the system in a “single dynamic” of changing systemic share. The *principles of the power cycle* explain what sets the cycles in motion and the peculiar nonlinearities of relative power change. For the researcher confronting long-standing puzzles of concept and historical interpretation, the power cycle is a potent analytic device that serves to unify, simplify, clarify, and correct. To attain such an encompassing perspective, however, the analyst must first confront the full complexities of structural dynamics and the greatest paradox of power itself. In the hour of its greatest achievement, the state is driven onto unexpected paths by the bounds of the system. The tides of history have suddenly and unexpectedly shifted against it.

Power cycle analysis seeks both a clear understanding of such structural shifts and insight into the mind-set of contemporaneous statesmen who must contend with them.¹ A systemic construct, the power cycle traces a state’s development as a major international-political actor regarding a variety of leadership roles. Both actualized and latent capabilities are necessary to create and sustain its long-term growth in power and role.² But this power of statecraft is intrinsically “relative” and hence a conceptual sphere removed from the “absolute” output of interest in

economics. A state’s international-political behavior is conditioned by how its absolute capability (numerator) compares with the absolute capability of the system (denominator) in the *relative power* ratio—its current ratio and its projected change.³ A given state power cycle records, at each time point, the state’s clearly defined past and the likely trajectory of its yet-to-be-determined future power and role vis-a-vis that system.⁴ It reveals at each step how statesmen would perceive the state’s past and future evolution as a major player in the system. The power cycle is thus a state “image” in the sense of Kenneth Boulding (1956) and Herbert Kelman (1965, 25), a conception encompassing “specific memories and expectations” as well as perceptions of the present.

With future projections of power and role embedded in the cycle, this uniquely international-political *dynamic* captures the international-political *concerns* of statecraft. It thereby also fosters a concept of general equilibrium to overcome the deficiencies of the balance of power. To confront the principles of the power cycle, the principles driving systemic change, is to discover the *expectations*, and the *unexpected nonlinearities*, of relative power change that so greatly impact state behavior.

Observe that power cycle analysis overcomes the limitations of so-called calculative and perceptual models that, according to Aaron Friedberg (1988, 13–14), divide the assessment of power. It fully integrates calculative and perceptual assessments in a single “estimation” process, seeking a sense of the trend over broad periods of history. A model in which power is a “stock of one or more commodities” and “adaptation to changes [is] continuous” surely does not represent reality. Nor does a model focusing solely on “crises or dramatic events as the most likely agents of attitude change.” Perceptions cannot rest on subjective judgment alone (Britain and Germany circa 1908 needed some idea how many Dreadnoughts the other had to develop a naval strategy). Conversely, hard figures that never confront the paradoxes and complexity of perception (let alone the subjective will and perceptual ambiguity surrounding naval engagement) could scarcely be representative of the power relations confronting statesmen. Power cycle analysis does not dichotomize agent and structure, agreeing with David Dessler (1989, 466–67) that structure provides the material conditions that both “enable and constrain” state behavior, behavior that in turn “reproduces and transforms that structure.” Models of “bounded rationality” and “prospect theory” likewise probe the interface of structure and decision making? Such a holistic model of power is implicit in all structural theories,

which are based on the conviction that the structure of the international system uniquely affects the opportunity, constraints, and behavior of statesmen.⁶

Observe as well that, notwithstanding its focus on the state power cycle dynamic, power cycle analysis is not a state-level theory. On the one hand, the concept of the power cycle has no meaning outside the context of a system (both power and role are necessarily systemic), and causation in the theory lies at the level of interaction among states. The direction of relative power change on the power cycle reflects the state's competitiveness in that system. On the other hand, a system cannot be fully understood outside the context of the power cycle dynamic. A particular international system is a historically determined and structurally specific relationship among individual states. John Ruggie (1986, 153) correctly criticized those who would talk of systems share, or calculate it, without explaining the "underlying principles that govern the patterning of interaction." The principles of the power cycle are the requisite "generative principles" for changing systems structure.

The first section of this chapter assesses the concepts and theoretical arguments of power cycle theory. Aided by three figures, it seeks to clarify the subtleties and idiosyncrasies of systems dynamics that invite confusion and hinder debate. For example, why is the strain between power and role distinct from status inconsistency notions? What is general equilibrium, and how does it overcome the limitations of the balance of power? How do the principles of the power cycle impact on international political economy? The chapter's second section responds to four substantive and empirical challenges to the theory. The principles of the power cycle resolve seeming puzzles of history regarding the causes of World War I. Concerns about the reliability of calculated critical points are shown to be misplaced. Empirical tests demonstrate that critical points do predict the target of aggression. And dyadic analysis attains greater specificity when confronting principles of systemic change.

What Is Power Cycle Theory?

The First Part: Structural Dynamics

Stimulated by "thought experiments" in 1964 about what drives systemic change, the principles of the power cycle explain how absolute power

changes in the system create the rise and decline of states. Differing levels and rates of growth in *absolute* capability among the leading states set in motion a particular nonlinear pattern of change on each trajectory of *relative* power. Within this "single dynamic" of changing systemic share, individual states pass through a cycle of relative power in which they become ascendant, mature, and then decline—a cycle that sets the context for the state's foreign policy role (defined later). The relative power changes on those component power cycles together map the changing structure of that system. According to the principles of the power cycle, this single dynamic of changing systems structure (as roughly sketched in fig. 1 for the post-1500 historical state system) will reflect the "trends of history" and "shifting balance of world forces" experienced by statesmen and assessed by economic and diplomatic historians.⁷ The "tides of history" follow the paths of ascendancy and demise and the shifting trends on the component state power cycles.

What are these generative principles that set the single dynamic in motion and constrain the contours of the component power cycles? How do differential absolute growth patterns in the system translate into the

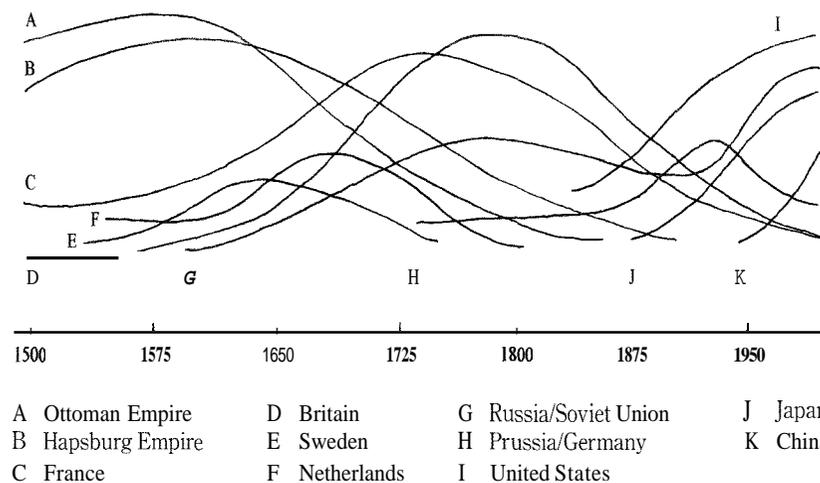


FIGURE 1. Dynamics of changing systems structure: Percent shares of power in the central system for leading states, 1500–1993. *Source:* Conceptualized by Doran (1965; updated 1981, 1989, 1993), based on estimations for the period 1500 to 1815, and data for the years 1815–1993.

single dynamic of changing systemic share for the member states? At base, as shown schematically in figure 2, a state's competitiveness in a system, and hence the direction of change on its power cycle, is a function of how its absolute growth rate compares with the absolute growth rate of the system (the systemic norm). Two principles underlie this dynamic:

1. *The First Fundamental Principle of the Power Cycle* is elegant in its simplicity: A state's systemic share will increase when its absolute growth rate is greater than the systemic norm. Moreover, a single state growing faster than the systemic norm will initiate momentum of change on state power cycles throughout the system.
2. According to the *Second Fundamental Principle of the Power Cycle*, even when the differing state absolute growth rates remain unchanged throughout the system, a state's relative power growth will accelerate only for a time and then (at inflection point F) begin a process of deceleration, due to the bounds of the system (finiteness of systemic share), which brings about peaking (Z) and a turn into relative decline. Similarly, accelerating decline will (at inflection point L) begin to decelerate to a minimum level.

Consequently, on the state power cycle, there are four "critical points" of sudden, unanticipated change at which the projection of future relative power, and hence of future foreign policy role, changes abruptly. Each of these critical points in the power cycle dynamic (the upper and lower turning points and the inflection points on the rising and declining trajectories) correspond in the state's experience to times when the tides of history have shifted.

A fuller discussion of how absolute power changes translate into the particular nonlinear pattern of the power cycle appears in the author's *The Politics of Assimilation* (1971, 193), and *Systems in Crisis* (1991, 62).⁸ The latter book explains the thought experiments that suggested the principles of relative power change (p. 4) and demonstrates them via seeing-is-believing simulations (pp. 65–68). Its appendix includes proofs for the fundamental principles of the power cycle (of changing systems structure) and "ratio tests" for relative power "convergence or divergence." Its index highlights the variety of equivalent descriptors for the power cycle dynamic, such as "competition for percent share," or "logistic growth in a finite system," or "structural bounds on statecraft." But,

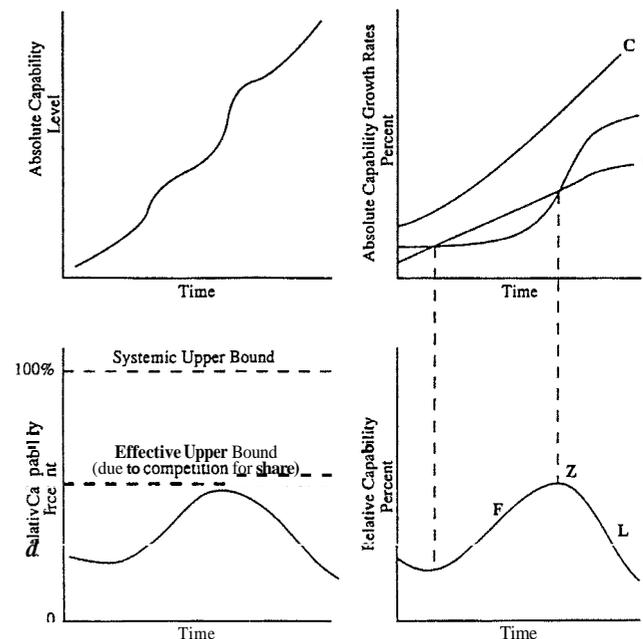


FIGURE 2. The dynamics of absolute and relative capability: Principles of the power cycle (changing systems structure). Curves of absolute growth rate: A: major power system; B: state B; C: entire system. Critical points: F: first inflection point; Z: zenith; L: last inflection point.

Source: On the right is a disaggregation of the figure in Doran, *The Politics of Assimilation: Hegemony and Its Aftermath* (Baltimore: The Johns Hopkins University Press, 1971, 193). This figure appears as figure 3.1 in Doran, *Systems in Crisis: New Imperatives of High Politics at Century's End* (Cambridge: Cambridge University Press, 1991, 63).

most important, chapter 3 undertakes a crucial empirical test (discussed later in this chapter) that validates the theory and underscores the paradigm shift in understanding that it entails. Only from the power cycle perspective do the perceptions and concerns of contemporaneous statesmen look neither distorted nor incongruous.

Confronting the principles of the power cycle reveals that the rise and decline of states is not simple. In fact, as demonstrated in this chapter's second section, relative power change is sometimes insidiously counterintuitive. The shifting tides of history are structural undercurrents that can counter even the largest growth in absolute capability. In every case,

states with great, undiminished potential for absolute growth eventually bump against an upper limit to further increase in relative power, constrained by the “bounds of the system.” Competition for share comes from other states, perhaps much smaller, whose absolute growth rate is greater. Moreover, a state that has obtained a large share of total power increasingly “competes against itself” more than against other states for share, requiring ever greater output to retain its present growth rate. (This is as true for the firm in the industrial context as for the state in international politics; it is a principle of competition.) Since role expectations are tied to change on the power cycle, incomplete understanding of relative power change supports dangerous fantasies about future power and role. Intuitive once explained, the abstractions of power cycle theory become a useful guide for analyst and policymaker.

While power constitutes the means of statecraft, *foreign policy role* involves the concerns and ends of statecraft. Role encompasses but is much more than state interests, position (place) within the system, and status. It goes much deeper, to the very essence of the conduct of foreign policy? Role is foreign policy achievement itself; status is the award associated with it.

Based in the reality of the push and shove of world politics, foreign policy role indexes the behavior and position of the state manifested in its external relations. Distinct from power, role nonetheless is in the long term affected by the trajectory of power. Like power, role is relative (systemic). Although determined primarily by what a government itself does, a role exists only if the other governments accept its exercise of that role. Strategy and bargaining greatly impact this informal legitimization process. Role is foreign policy behavior that the system has allowed the state to achieve.

A historical example that clearly demonstrates the nuances, and vital significance, of foreign policy role involves Russia, France, and Austria in 1852. Russia traditionally enjoyed the role of protector of the Balkan Slavs (a role it still cherishes). Napoleon III of France pressed claims in the Ottoman as protector of the Latin Christians. When Russia tried to get equal acknowledgment of its position and claims and was rejected by the Sultan, it suspended diplomatic relations with the Ottoman and expanded its territorial claims by occupying Moldavia and Wallachia. These actions led directly to the outbreak of the Crimean War, the first war of consequence since the Congress of Vienna of 1815. France had tried to usurp the Russian role. Other governments whose interests were

threatened, especially Austria, were unable to salvage the Russian role, discourage the French acquisition of that role, smooth the transfer of the role or, most seriously, prevent the relatively weakened Russia from expanding its role in a very inappropriate fashion.

Hence, role involves an acknowledged niche in which a country can use its power to obtain additional ends, in particular enhanced security. These behavioral niches change slowly over time in response to state purpose, strategy, capability, and the permissiveness of other actors in the system.

How does foreign policy role change as power changes over broad periods of history? A state's foreign policy expectations are tied to change on its power cycle, but power and role get out of sync because actors and system do not adjust readily to changes in relative power (Doran 1989a; 1991, 100–103).¹⁰ On the upside of the power curve, the increase in power tends to exceed acquisition of role. The system is reluctant to yield role to the ascendant actor, or the rising state may prefer to postpone role gratification and responsibility. On the downside of the curve, there is a tendency for role to exceed power, leading to overextension. Allies and dependent client states do not want the once-ascendant state to step aside, and elites accustomed to the benefits power bestowed do not want to yield role and face a different, more-constricted foreign policy setting. Long in the making, these power-role gaps are shoved to the fore of diplomatic consciousness in crisis intervals when they can no longer be covered up. They then abruptly demand adjustment.

Placed within the dynamic context of power cycle analysis, the tension between power and role attains its fullest meaning and, accordingly, causal specificity regarding the outbreak of major war. Russia and Austria in 1852 were each undergoing critical change on their respective power cycles, signaling an abrupt and unpredictable change in foreign policy outlook: Russia was passing through the second inflection L, and Austria had passed the upper turning point Z within the decade. When France sought to alter the status quo in the Ottoman, it thus unsettled two governments that were already attempting to cope with history's shifting tides. Under these circumstances of massive structural change and foreign policy reorientation for Russia and Austria, a role challenge accompanied by the shock of relative power loss provided the sparks that ignited war.

The strain between power and role goes to the heart of the capacity to act in foreign policy. It is a structural disequilibrium conceptually distinct from the many variants of rank disequilibrium—aspirations/

achievements, power status, achieved/ascribed power (Midlarsky 1969)—which seek congruence between two coequal goals. The power-role gap involves means (achieved power) versus attained interests or ends (ascribed role), and the adjustment between power and role is necessary to establish systemic equilibrium among all of the members (Doran 1989a; 1991, 134–38). The rank models also lack specificity regarding when a rank disequilibrium is likely to produce a conflict outcome. But the many variants of disequilibrium can be assessed simultaneously in the context of the power cycle dynamic, yielding a more encompassing notion of the requirements for equilibrium (Doran 1974; 1989a; 1991, 34). The aspirations-achievement disparity in Anderson and McKeown (1987) involves the inversion of expectations (trends) occurring at critical points on the power cycle; and the disequilibrium between power and role subsumes the power-status gap.

The Second Part: (Post)-Behavioral Response

Power cycle theory thus is, first, a theory of the changing structure of the international system, and of the particular nonlinear pattern of state rise and decline in relative power that comprises that changing structure. But the unique and peculiar nature of that nonlinear change, of the shifting tides of history, is the foundation for the second part of the theory, which seeks to explain the major wars that historically have accompanied massive structural changes in the system. As Greg Cashman (1993, 269) observed, this second, behavioral component is “a theory of decision-making about war” placed in the context of the rise and decline of states. The theory explores “what statesmen saw and how they reacted” to these unique nonlinearities of relative power change.¹¹ What is the behavioral response to each of the four critical points involving an abrupt inversion in the power dynamics, and hence in the state’s projected future foreign policy role and security?

Lower turning point: birth throes of a major power

First inflection point: trauma of constrained ascendancy

Upper turning point: trauma of expectations foregone

Second inflection point: hopes and illusions of the second wind

Lower turning point: throes of demise as a major power

At no other time in the history of a nation’s foreign policy experience is change so unanticipated and yet so massive. Such a sudden shift in future

expectations requires difficult adjustments of equilibrium for the state and the system. However, these critical points are seen to bring about exaggerated fear, misperception, and foreign policy overreaction, making adjustment more difficult and major war more likely.

Some analysts have questioned whether governments can make judgments about their position on the power cycle, much less know when they pass through critical points.¹² Over long time periods, change on the power cycle is rather predictable: the state is in stasis, in ascendancy or in decline, and the trajectory is known because it is a linear extrapolation of past experience. Moreover, since statesmen tend to respond to momentum in the series rather than individual fluctuations, the likelihood is low that they would be confused by false critical points.¹³ A more telling concern is that the nonlinear change in power at an inflection point is so gradual (invisible)—there is almost no change in the size of the increase—that no contemporary observer or subsequent historian could with confidence determine an inflection point in a power trend. But, although such continuity prevails, something else happens at the inflection point (and at all critical points) that revolutionizes foreign policy cognition. Something happens that transforms understanding of the possible, and the impossible, concerning future foreign policy options.

The Unique Trauma of Critical Change in Expectations. What ensues at a critical point is a profound transformation in foreign policy *expectations*, indeed a complete *inversion in the trend* of expectations. This inversion in thinking marks a sharp break with the past, a discontinuity in how the state views future options. The first inflection and upper turning points trigger doubt as to whether the state can assume all of the foreign policy goals it may have envisioned for generations. This inversion in the trend of expectations comes as a shock to the foreign policy elite, who must suddenly confront both ineluctable limits and monumental uncertainty.

Why has the inversion in expectations come as a shock? Overwhelming evidence from forecasting business cycles shows that a turning point (an inversion in future trend projections) cannot be predicted (Moore 1986). Thus, no discounting of the arrival of a critical point is feasible (Doran 1998). But effective intelligence will soon reveal that change of a profound type has altered the state’s future security outlook. To suddenly discover this monumental transformation in its fortunes is unsettling for any government. The more dedicated it is to a larger world role, the more is at stake at the critical point, and the more trying is the task of political adjustment.

The critical point is also a shock because it is an *inversion* from the prior trend. Expectations are based on past experience extrapolated into the future. Since no more complicated model can be justified (an infinite number exist) than the simplest model, linear extrapolation, which is also usually correct, it is used by most decision makers most of the time. In fact, the only time linear extrapolation is wrong in the history of state experience is at the critical points. The critical point is thus a drastic shift in foreign policy cognition. Precisely because it is so apparently subtle, unpredictable, and definitive, and yet so conducive to uncertainty, structural discontinuity at a critical point is so unsettling and potentially devastating.

All of this is represented graphically in the theory (Doran 1991, 98). Expectations are represented by a straight line drawn tangent to the power curve (fig. 3). Between the low point and the first inflection point, the slope of the tangent (the rate of change of relative power) becomes ever steeper, projecting ever greater increases in future power and role. But at the inflection point, the trend of the tangent abruptly inverts. The tangent begins to revolve in the opposite direction, becoming ever less steep, projecting ever declining increments in future role and security position.

Hence, from the perspective of expectations, no more complete sense of discontinuity could transpire than an inversion in the prior trend. No change is more precipitous or more defining. The further the state looks into the future, the larger the disparity between future reality and its prior foreign policy expectations. Ironically, the more foresighted the policy planning, the greater the error of judgment that suddenly confronts the decision maker.

In confronting the principles of the power cycle, the analyst discovers that the “perspective of statecraft”—of relative (systemic structural) change—is indeed idiosyncratic, evoking a paradigm shift in the understanding of foreign policy behavior. Like the statesman, the analyst grasps the most important difference between absolute and relative capability—the nature of their paths over long time periods—and hence the full significance of systemic bounds. At critical points of unexpected non-linearity, where the tides of history suddenly shift, the expectations induced by absolute trends no longer match the shifted trend in relative power. It is traumatic when a very small change on the state’s power curve changes completely the direction of future expectations. It is traumatic when a meteoric rise in relative power suddenly peaks even as absolute capability makes its greatest gains. No theory of international politics can

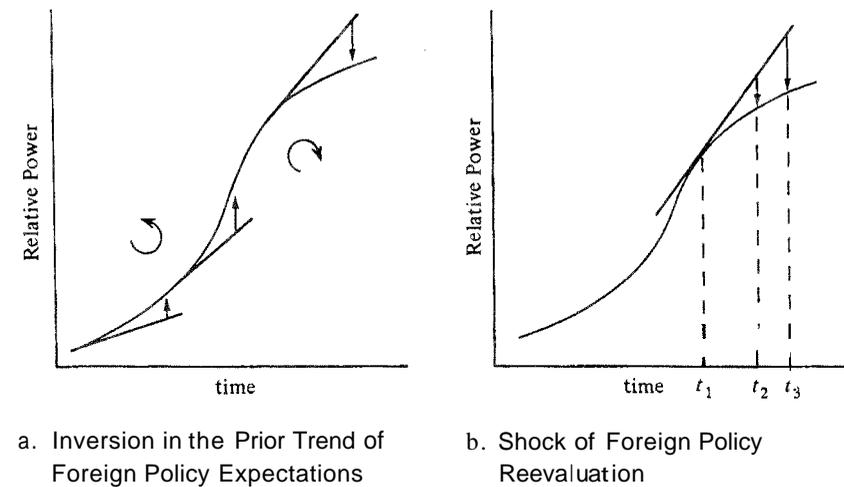


FIGURE 3. Crisis of foreign policy expectations at first inflection point

ignore this fundamental difference in trends and expectations, the conflicting messages and shocking surprises. No explanation of major war can dismiss this discordance in perspectives as probable cause.

From Inverted Expectations to Major War. Three processes underlie the impact of the dynamic of the power cycle on the occurrence of major war. First, the cognitive shock of a critical point is itself destabilizing. With the tides of political momentum suddenly shifting, proving the state’s future security projections dangerously misguided, the critical point becomes a wrenching invitation to anxiety, belligerence, and over-reaction. Second, adjustment to structural change at the critical point is worsened by existing power-role gaps, which are suddenly squeezed to the surface of foreign policy consciousness and appear formidable indeed as the state tries to cope with the shifting tide. Power-role gaps aggravate the tension and uncertainty that already exist at the critical point.

Third, increased inelasticities regarding future role and security lead to an “inversion of force expectations” that accelerates the movement to war. Attitudes and actions rigidify, and rational decision making breaks down.¹⁴ The uncertainties and shocks occurring to foreign policy sensibility cause both potential deterrer and aggressor to find acceptable or even necessary force use previously thought of as “unthinkable.” This

transmutation of mentality is analogous roughly to the inversion of demand and supply expectations that occurs in so-called inverted markets such as during the stock market collapse of 1929 and the oil price run-up of 1979. Expansion to major war follows the Jervis-Mansbach-Vasquez model of a conflict spiral.¹⁵

Such a deep sense of political insecurity might also lead to an effort to cope with the insecurity through the formation of alliances. Empirical results now strongly confirm that the high insecurity associated with critical points leads governments to form alliances (Chiu 2000) in an attempt to protect themselves. As explained in the next part of this chapter, these efforts are sometimes improperly conceived, only exacerbating structural disequilibrium.

All of these processes contributing to instability are magnified in a period of systems transformation when a number of major states pass through critical points at about the same time.¹⁶ Long-standing contradictions in the system are exposed, and equilibrium among states may be on the verge of snapping as a backlog of adjustments between interests and power suddenly demand resolution. States throughout the system seek redress of their own perceived condition of internal disequilibrium. Structural uncertainty is monumental and statesmen are unable to assimilate all of these changes without precipitating the violent behavior that in principle they all wish to avoid.

Assisted by figure 1, consider the pattern of abrupt structural change and systemic tension in several historical examples of world war. The tension came not so much from upward or downward mobility in the systemic hierarchy, which occurs at all times, but from a government's sudden discovery that its projected future foreign policy role had dramatically changed.

Contrast the outlooks of Charles V and Philip II of Spain in the sixteenth century, following the Spanish Hapsburg peak in relative power circa 1580.¹⁷ Although the Spanish-Austrian Hapsburgs remained the dominant power in Europe for decades, Philip II suddenly interpreted foreign policy negatively, even arguing that "God had forsaken" Spain, expressing at once both paranoia and belligerence. Long-standing economic and financial policies had undermined Spain's power base from within, accelerating its relative demise as much smaller states began to consolidate power. Sweden and Holland enjoyed a meteoric rise, abruptly demanding a larger role. France under Richelieu began to consolidate its power. Only eight years after this peak, in 1588, Spain struck out against

the British fleet, and the fateful "Protestant wind" defeated its Armada. The massive changes in *structure* and *roles* eventually strained the system at its core, resulting in the Thirty Years' War.

Similarly, in the mid-seventeenth century, the passage of Louis XIV's France through a first inflection point, threatening slower growth for the first time in its development as a major power, led to confrontations with Sweden (an erstwhile ally) and Holland, each of whom had discovered that its relative power had peaked, thus creating severe problems of overextension. Meanwhile Prussia was rising in the heart of the central European system, and Britain, reconstituted, was enjoying a renaissance of power growth by the end of the seventeenth century, stimulating it to confront France directly with an army on the Continent. Once again, the wars of Louis XIV resulted from a systemic transformation that saw each of Europe's major players viewing its own foreign policy role in highly altered and more troubling fashion.

French power peaked sometime during the latter eighteenth century in the face of growing British industrial and naval strength. This transformation of the system that came on the heels of startling declines in power in northern and central Europe saw a belligerent France resisting its systemic fortunes under Napoleon. The contrast between the changing foreign policy outlook of the Russians (as expressed by Alexander I) and of the French (under Napoleon) was an acknowledgment of the failure of Europe to assimilate dramatic structural change without major war. In contrast to the eighteenth-century system in which France had played the dominant role, a five-actor concert of shared power, balanced and roughly equilibrated, was emerging.

In these three world wars, the existing system of maintaining order collapsed under the weight of arrangements whose foundations had long since been eroded away (Doran 1971).

Empirical examination of the periods preceding World Wars I and II verified the hypothesis that massive, critical structural change predicts to massive warfare (Thompson 1983a; Doran 1985, 1989a). Between 1885 and 1914, every member of the central system experienced at least one critical point on its power cycle. Hapsburg pretensions lived longer than did Austria-Hungary's capability to be a player in the central system, whereas the United States and Japan emerged as new but as yet uninvolved members. Britain and France passed through the inflection point of declining power and were unwilling to yield systemic role to Germany, which soared to its apex. Russia passed through a minimum, Austria-

Hungary and Italy each passed through two critical points on their downward trajectory, and the United States traversed the inflection point on its upward path. Altogether, nine critical points signifying the most abrupt and wrenching form of change on the power cycle were traversed in the 20 years after 1885. Systemic anxieties and perceptions regarding the German response to its critical point were exacerbated by the types of critical changes occurring on these other power cycles (Doran 1989a). Perhaps few international systems could withstand this degree of structural turmoil in so short an interval. For the analyst of history, the uncertainties and turmoil may often present seeming contradictions.

With the paradigm shift to the unique perspective of statecraft, confronting the full significance of systemic bounds on power and behavior, puzzles of history dissolve. For instance, the perspective and concerns of statesmen prior to World War I, which do not make sense from the traditional paradigm, are seen to be very natural in the context of power cycle analysis. Surprises of history are the essence of all critical changes on the power cycle. With a paradigm shift, reinterpretations of history, new perspectives on the causes of war, and alternative paths to world order become plausible.

When the concerns of statesmen are seen clearly, the so-called dilemma of peaceful change begs reconsideration. The second part of power cycle theory thus takes the theory full circle to the questions that had originally motivated it. What causes systems transformation and the massive war historically associated with it? Why had the balance-of-power mechanism repeatedly failed to preserve order during these times of monumental structural change? Is systems transformation possible without major war?

The Third Part: International Political Equilibrium

At the heart of power cycle theory is what might be labeled its third part, the more general and dynamic concept of international political equilibrium that it proposes to overcome the shortcomings of the balance of power. Power cycle analysis emerged from historical sociological analysis of the first three world wars of the modern state system (the hegemonic onslaughts of Hapsburg Spain, of Louis XIV, and of Napoleon), and the postwar efforts to establish a new world order (Peace of Westphalia, 1648; Treaties of Utrecht, 1713; Congress of Vienna, 1815).¹⁸ These great peace treaties had to focus on static criteria for structures that would

allow the new system to evolve and mature. To prevent its own collapse in world war, however, the new system would ultimately have to deal with the long-term relative power changes that inevitably would transform the new structure. The power cycle assessment of peaceful change grew out of the belief that analysis of these long-term changes “might provide a better understanding of the mechanism of systemic adjustment which must *precede* and *complement* any external alliances formed” (Doran 1969, 2). And it recognized that the key issue of systemic adjustment is how to reconcile changing power with legitimate interest.

Was war necessary to restructure world power in the historical periods of systems transformation? If structural change is inevitable, is major war inevitable? Is major war the Machiavellian instrument to coerce a necessary restructuring of world relationships? The thesis that systems transformation is a structural discontinuity caused by major war is at the heart of much international relations theory. According to Liska (1968, 59), “the evolution of a European or any other international system is the story of conflicts which create the system and then later on lead to its destruction.” Likewise, Thompson (1988, xii) states that “global war emerged as a systemic mechanism for resolving policy-leadership disputes in the later fifteenth century. Since then, the mechanism continued to evolve.” Hegemonic stability (Gilpin 1981), power transition (Organski and Kugler 1980), and long cycle (Modelski 1978) theories also identify major war as the vehicle whereby a new systemic hierarchy is born. The dilemma of peaceful change arises because reluctant governments will not yield privileged power positions except by force.

Power cycle theory argues, on the contrary, that major war can be dissociated from systems transformation. First it shows that historical reality is far more complicated than the inevitable war thesis envisions.

For example, World War I did not cause the relative decline of German power any more than it toppled British dominance within the system. These structural changes were long in the making. British power was declining for decades, and German power peaked a decade prior to the war. Russia, the United States, and Japan were rising on the outskirts of the system. It was the dynamics of intense competition within the central system that caused all of these changes. Thus, the notion that war was necessary to restructure world power in 1914 belies historical fact. Restructuring of power relationships was already occurring. Role adjustment was more dilatory, and the war accelerated role change — but *not in the direction the parties intended*. Role shifted after World War II to the

Soviet Union and United States, not to either the initial belligerents or the defenders of the old order. Major war neither precipitated the fundamental changes in power nor was a reliable purveyor of role.

According to power cycle theory, causation went in exactly the opposite direction, from structural transformation to war. A discontinuity of structure and foreign policy expectations caused the massive warfare. A later section of this paper “confronts the principles of the power cycle” as proof, demonstrating the nature of this discontinuity and how it strained the system to the breaking point. What is at issue in systems transformation, and thus in the massive warfare associated with it, is systemic adjustment. Therein lies the clue to the resolution of peaceful change.

The Problem of Systemic Adjustment. Contained within the dilemma of peaceful change are two strategic problems.¹⁹ For the older declining state, the temptation is to resist yielding role for fear that the newly rising state will want to demand even more in the future, possibly becoming a hegemon dominating all. The logic for the declining state thus becomes, why yield anything now when it will be expected to yield even more in the future? This is the invitation to preemptive attack, to strike now to avoid an ever-worsening situation in the future (Levy and Collis 1985; Levy 1987). But the contradictions are glaring. There is never a “right moment” for preemptive attack since the state is involved in a very long interval of relative decline. Moreover, why should the declining state assume that the rising state has aggressive intent toward it?

The problem for the newly rising state is why it should assume role now instead of later, when it could do so more easily (with greater confidence) and *on its own terms* (with less competition) since it would have more power and other governments less. This is the temptation of deferred gratification. It is also, partially, the mentality of the “freerider,” to let others do what they must and to come in under their umbrella since that coverage is collective and cannot be denied. Again, the contradictions are striking. If the rising state waits to assume responsibility, it creates a power-role gap in the system—known traditionally as a political vacuum. This places burdens on other governments incapable of funding the costs of a more extensive foreign policy. Postponing responsibility also postpones the gratification associated with increased status and diplomatic visibility. But deferring gratification carries the risk that it may not be attained. The predicament for the rising state is that it will

eventually peak. When that happens it will discover that it has foregone foreign policy opportunity for leadership and visibility that is never likely to return.

Thrasymachus was rightly criticized by Socrates for believing that, internal to the state, justice meant that the strong should “rule” (Plato 1961). Ironically, external to the state, the injustice that has precipitated the most massive wars is more egregious than that of Thrasymachus. It is the injustice of unearned privilege. The decreasingly powerful (capable) want to claim all of the perquisites, status, and influence that they had enjoyed when they were at the top of their power cycle. The increasingly powerful (capable), because they foolishly postponed assuming responsibility until too late, or because the system refused to adjust for them to allow them a timely assumption of rightly earned status and influence, find that they have been denied an appropriate role. Thus Thrasymachus has been gone one better: the no-longer capable, who can no longer “rule” effectively, think they should continue to “rule.” The increasingly weak attempt to “rule” at the cost of the increasingly strong. This is a recipe for structural catastrophe.

From Balance of Power to Dynamic Equilibrium. Rapid structural change must be allowed to proceed without increasing the likelihood of major war. Major war cannot, by default, be the arbiter of future systems. Power cycle analysis suggests that collapse of the balance of power and peace twice in this century could have been avoided (Doran 1991, 151–65; 1995b, 186–87, 200–202). The balance of power failed because it is a static and partial conception of equilibrium. While it did preserve stability most of the time, it was a recipe for cataclysmic misjudgment during rapid systems change. Power cycle analysis exposes its flaw.

When a state faces superior power accompanied by suspected hostile intent, the balance of power always prescribes external alliance aggregation or coalition formation. This is both the strength of its prescription and the crux of its greatest weakness. Defenses must always be maintained against aggression, but in the long term rising power cannot be artificially halted and declining power cannot be artificially bolstered. Yet the balance of power promoted precisely these objectives during periods of rapid structural change. External aggregation of power was used to halt the advance of an ascendant state and to shore up the fortunes of a declining state, irrespective of the legitimacy of their respective interests.

Consider the period of Germany's ascendancy in the late nineteenth century. Designed to deter aggression and provide peace and security, the balance of power wrongly conceived ended up precipitating war against the crumbling system it was supposed to protect. The other members of the European system, in severe relative decline, banded together to try to offset the German advances in relative power. Instead of allowing role to shift toward ascendant Germany, the rigidity of the balance of power prevented it. The consequence was intense structural strain within the central system. Increasingly dissatisfied, Germany could "wait" for greater role and status so long as it could anticipate future relative power growth. Its sudden peak in the decade prior to 1914 was one of a confluence of critical changes that exposed and tested the contradictions in the system. War became by default the only apparent instrument available to offset the severe structural strains.

World War I showed that states ignore power-role equilibrium at their peril and that rising power cannot be halted. World War II showed that states ignore the balance of power at their peril and that illegitimate interests must never be appeased. Tragically, the allies tried to correct the wrongs done to Germany prior to World War I by yielding position and role to Hitler; but the situation in 1938 demanded the classical balance-of-power response. So much had changed structurally in three decades that German pretensions in 1938 were far greater than its capacity to assume enlarged diplomatic, economic, and even peacekeeping responsibilities. Moreover, Hitler's territorial demands were inherently aggressive, hence illegitimate, and had to be confronted on these grounds alone. The correct strategic response to Hitler was a firm policy of balance and opposition.

The balance of power is inadequate for peaceful change because it considers power only, leaving out much about which states fight, and it does not distinguish between legitimate and illegitimate interests of the rising and declining states. International political equilibrium requires policies of balance and of accommodation regarding nonvital issues of foreign policy role and status. It seeks systemic adjustment through the transfer of legitimate interests and obligations from the declining to the ascending polity. The territorial sovereignty of the declining state is not affected by the transfer, only its foreign policy role, prestige, and place in the systemic political hierarchy. The strategy must be both appropriate to each state's position on its power cycle and acceptable in terms of the legitimacy of the claims on other states. Thus, international political

equilibrium seeks peaceful change through combinations and sequences of strategies, taking the *structural dynamic* and the *legitimacy of claims* into consideration, that will enable each state to bring its power and role in balance prior to the trauma of critical change on its power cycle. Timing strategic response to the dynamics of the power cycle is the key (Doran 1991, 177–86).²⁰

Power cycle theory invites a conception of public morality that is complementary to, yet constrains, notions of power. It challenges the very assumptions of *Machtpolitik*. To understand power is to understand its limits (bounds on relative growth), its issues (systemic role legitimacy and adjustments), its surprises (discontinuous expectations), and hence the shocks and uncertainties and sense of injustice conducive to violence. Vis-a-vis the dilemma of peaceful change, when to accommodate and when to oppose demands for role change, power cycle theory asks, what kinds of international political demands are legitimate, and what is a just response? It proposes a possible solution to that dilemma based on the power cycle dynamic, a solution that puts the burden on decision makers to make adjustments prior to the crisis of critical change. A major task is to assess the limits and possibilities of this proposed solution to the dilemma of peaceful change.²¹

The Fourth Part: International Political Economy and High Politics

A fourth distinct part of power cycle theory involves assessment of future systems change and implications for international political economy.²²

Debate about U.S. decline versus unilateralism, involving the future path of U.S. power and its foreign policy, is part of the larger scholarly dialogue about the structural dynamics of international politics. The question must be refocused (Doran 1991, 1993): What is the U.S. future power and role in an international system whose structure and modus operandi are changing?

In this transforming world, is the United States "bound to lead," as Joseph Nye (1990a) has argued? Or, as Robert Gilpin (1981) has warned, is it a declining hegemon, whose weakened leadership invites challenge from a rising state planning a new system of rules and benefits? Should the United States accept its "end of empire" and "gracefully retreat" from its leadership role, as Paul Kennedy (1988a, 1988b) has advised? What is an appropriate grand strategy for the United States, appropriate both to

U.S. interests and, since this is what leadership is all about, to the interests of the international system?

At issue is whether the United States is in decline in the same way that Great Britain was at the end of the nineteenth century, and Hapsburg Spain was at the end of its empire. The debate was sparked by provocative titles like "Fin-de-Siecle America" (Kennedy 1990), with all its historical associations regarding level and irreversibility, but none of the historical analogies corresponds to the U.S. situation of the 1990s. Britain at the end of the last century was confronting a system in which Germany was already an equal in both economic and military power, and several other countries were not far behind.

The U.S. power cycle reveals two seemingly divergent empirical findings. First, the United States is the most powerful actor in the system by a large margin only increased by the Soviet collapse. Second, around 1965–70 the United States peaked in relative power, but the process of decline is slow and subject to many possible reforms and policy adjustments by the United States (numerator) and/or other leading states like Japan, the EU, Russia, and China (denominator). A prudent reading of these findings is that, in contrast to exaggerated claims of both "declinist" and unipolar "assume-any-burden" advocates, the United States has a serious role to play as a leader among like-thinking allies, avoiding both isolationist withdrawal and hegemonic unilateralism. Never in the modern state system has a single state been responsible for world order; power has always been pluralistic and shared.²³

Policy analysts could readily dismiss the exaggerations and dichotomies of the debate, and acknowledge the need for reforms to slow down, halt, or reverse the process of relative decline (Nau 1990; Rosecrance 1990). But they also knew an important fact of statecraft that flawed the thesis of graceful retreat. Inertia in role change is stronger than inertia in the relative power to carry out that role: the United States could well face larger relative burdens of leadership even if its relative power is diminished (Lahneman 1999). Policymakers can assess alternative power relationships and roles. But a clear picture has yet to emerge regarding the larger structural situation in which the United States may find itself—the strategic policy demands it will face, and the strategic policy choices open to it. Future foreign policy roles must evolve amid uncertain change (Doran 1993, 1996, 1997, 1998).

Many counterintuitive aspects of relative change complicate the debate. For instance, a large state whose absolute growth rate is smaller

than that of its competitors still so weights the systemic norm that it can long maintain systemic share; this explains the complacency that long attended diminished U.S. economic competitiveness. But once relative decline sets in, the same absolute growth rate differentials will yield accelerating decline, explaining the imperative for U.S. economic resurgence. Similarly, expectations that Japan will continue to rise on its power cycle, replacing U.S. "leadership," are based on extrapolation of absolute trends, reminiscent of the Mastery of Europe expectations regarding Germany in the early century. But the principles of the power cycle show that the expectations induced by absolute trends do not hold. The tiny increments of a faster-growing economic pygmy, such as Russia in relation to Germany circa 1900, and China in relation to Japan today, are sufficient to force the giant toward its peak (Doran 1991, 232–36).

The principles of the power cycle also provide insight into the economic policies of countries on different portions of their power cycles, and trade policies of the system during times of linear versus nonlinear change.

When a country has such predominance of systemic share as did the United States 1950–80 (high noon), managers of many of its principal firms (e.g., IBM, automobiles) find that their industries, like the economy, are bumping against an upper asymptote to further growth in share (Doran 1991, 220–25). The firm (industry), like the state's economy, is competing against itself much more than against others. Not able to expand market share, it seeks to protect that share, or to extract monopoly rents from it. The industries become oligopolistic not so much by choice as by structural circumstance.

In contrast, the objective of countries and their industrial managers lower on the power cycle (like Japan and the NICs) is maximum growth, increase in market share, penetration of foreign markets, and protection of their own sphere. Theirs is an offensive strategy built on aggressive exportation and selective constrained importation. Neomercantilism, augmented by a producer- rather than consumer-oriented set of policies by their home governments, was the strategy of the ascendant economies and their leading industries. These self-interested policies turned the leading actor's strategy further against itself and the open world economy to their great benefit (Doran 1994b).

Linkages between the security imperative and international political economy are the focus of an entire course and book.²⁴ Systemically, linear structural change provides a rather certain political setting in which firms can make investment and production decisions with com-

parative trust and confidence and states can relax their relative gains concerns. Government and firms together facilitate a liberalization of trade that is systems-wide and reinforcing. Abrupt nonlinear change unsettles this confidence, causes governments to think increasingly in relative gains and zero-sum terms, and undermines willingness to open borders to trade. Martin Roy (1998) uses a case study, game theory, and regression to study subtleties of this question.

The principles of the power cycle in fact have broad applicability. They are principles of change in any finite system, explaining how absolute growth patterns in the component parts change the structural relations of the whole. To confront the principles of the power cycle is to confront the principles of competition for share. Thus, the shocks and surprises of nonlinear change, the counterintuitive effect of systemic bounds, are likewise experienced by firms, industries, and any entities competing for “market share.”

Substantive Challenges and Response

Paradigm Shift: Seeming Puzzles of History Resolved

The power cycles for Germany and Russia (Doran and Parsons 1980) triggered much theoretical discussion among political scientists and historians. Substantively, the debate centers around “the almost universal pre-1914 belief in inexorably increasing Russian power,” to quote William Wohlforth (1987, 380). Why did European decision makers foresee great relative gains for Russia? Were the statesmen correct? What were the implications of rising Russian power for Germany, and hence for German behavior?

These curves were provocative because, while they accurately captured the prewar trend (perceived and real) of Russia rising from the low point on its power cycle and Germany near its peak, they show Germany peaking in relative power well *in advance* of the war, counter to accepted historical interpretation and “commonsense.” The power cycle argument that *expectations*, and hence *behaviors*, are based on an extrapolation of existing trends became a focus of debate. Wohlforth emphasized the need to combine perceptual and structural explanations. But, just as he seemed ready to accept the full implications of his findings—namely, that contemporaneous statesmen realized Germany’s leveling out of rela-

tive growth—he did a *volte face*. He accepted the arguments put forth by Paul Kennedy (1984) that the contemporaneous perceptions of rising Russian power were “misperceptions” and that Germany was still a rising power prior to the war.

Kennedy supported his argument with the “giant-pygmy” thesis. Germany’s power was so much greater than that of Russia, and its yearly increments were so much greater, that surely Germany did not consider Russia a threat. Kennedy examined production data on steel, coal, and other manufactures. So obvious was Germany’s superior strength, and so obvious did the continued rise in Germany’s relative power seem, that the contemporaneous statesmen must somehow have “misperceived” reality. He thus posed two puzzles that historians must seek to explain. *Puzzle 1*: “Why was Russian power before 1914 so absurdly overrated? . . . Did they not see that Russia, despite its lurch towards industrialization, was a military colossus but an economic pygmy?” *Puzzle 2*: “Which power, Russia or Germany, was *objectively* the most likely to alter the existing order in Europe?” (Kennedy 1984, 28–29).

What were the implications of Russia growing so rapidly, albeit from such a low level? Kennedy’s answer was A. J. P. Taylor’s “Mastery of Europe” thesis that Germany’s fears of Russia “were exaggerated. . . . In fact, peace must have brought Germany the mastery of Europe within a few years” (1984, 29).

Power cycle theory argues that these issues of historical interpretation involve deeper *conceptual* issues: absolute versus relative power, the short-term balance of power versus the long-term trend of relative power, and the static system versus the dynamics of systems change. Moreover, the structural, perceptual, and behavioral aspects of causation must be assessed holistically for a full paradigm shift to the dynamic systemic view. When examined from the perspective of long-term changes in relative power, the giant-pygmy argument and the mastery of Europe thesis are shown to be wrong. From the power cycle perspective, the perceptions of contemporaneous statesmen look neither distorted nor incongruous, but accurately reflect the reality of power trends and the unique concerns of statecraft.

Yet so obvious does the continued rise in German relative power in the European system seem that some analysts have viewed power cycle theory and its empirical findings as suspect.²⁵ They variously attributed Germany’s speaking to supposed flaws or errors in the index, in the choice

of a broader system, in the mathematical method, or in the theory of the power cycle itself.

Chapter 3 of *Systems in Crisis* confronts, and eliminates, each of these concerns by anchoring the analysis in the historical puzzles generated by the assumed historical facts. With “seeing-is-believing” simulations, it shows how the pygmy forces the giant into relative decline. It also examines empirically the absolute and relative scores on the production indicators that Kennedy interpreted and that critics used as part of their own complex index for power, using their data source. The empirical tests demonstrate unambiguously that Germany had peaked in relative power terms (1) on a number of individual indicators (the critics’ data), (2) within the European subsystem, (3) on data restricted to the period prior to the war, and (4) not as some artifact of curve fitting. The data also show the logistic asymptotic effect.

Taylor (1954, 126) later questioned the war causation aspect of his thesis: “Westill have doubts about what the issues were, whether it really was a conscious struggle for the mastery of Europe or of the world.” In a study of how wars begin, he concluded that “wars in fact have sprung more from apprehension than from a lust for war or conquest” (1979, 15). Had Taylor realized that German ascendancy itself was not foreordained, that German relative power had already peaked on the eve of the war, he would have had evidence to support his new speculation about the causes of World War I.

Critical Points versus Transitions: Velocity versus Level

Henk Houweling and Jan Siccama (1988) initiated a very important chain of research when they used the data set from power cycle theory to test an alternative theory of war causation, transition theory. Doran (1989a) then used that data (and newly calculated critical points—see later) to compare the two theories empirically, finding that (1) the relation between a critical point and major war is neither spurious nor dependent upon the presence or absence of a transition and (2) the relation between transition and major war is misspecified, for it is dependent upon the presence of a critical point.

Doran (1989a) also includes the author’s “challenges for research design” in the field. It examines the interface between power cycle theory and the dynamic decision-making model of interstate war developed

by Paul Anderson and Timothy McKeown (1987) as an alternative to explanations based on utility maximization. It shows mathematically that inversions in the trend of slope can approximate critical intervals (the only method used for over a decade). It demonstrates via diagrams of each state’s critical change the devastating illusions at the critical points in the years prior to World War I.

Concerns raised about the statistical procedure for calculating the critical points in Doran and Parsons (1980) had prompted reliability tests via a number of approaches. Newly calculated critical points (Doran 1989a; 1991, 8–10, 112–13), based on an improved methodology, yield greater confidence in the statistical technique for calculating them. The only differences arise from changes in constraints or data: (a) constraints in the 1980 study had forced France’s High and Britain’s Low to fall within the temporal range of the data; (b) the refined technique allowed calculation of Italy’s High and Germany’s two Lows; (c) using a new estimate of Russia’s eighteenth-century share, it showed the 1980 result to be a temporary inversion and determined the true High and Second Inflection for the data; and (d) the post-1950 set of indicators yielded a different U.S. High and no U.S. Second Inflection.

A second article by Houweling and Siccama (1991) issued many criticisms of the comparative empirical test, questioning the reliability of calculated critical points and carrying out additional tests to challenge the validity of the conclusions. The answer to each criticism follows.

1. *Arbitrary Break-Points in Transition Theory’s Tests.* Concern about reliability and validity of calculated critical points is eliminated by comparing the earlier “critical points” (1980) with the newly calculated “critical periods” (1991). Recall that the data itself consists of averages over five-year periods. *No change* in the calculation occurred for 9 of the 12 (not 6 of 13 as claimed) critical points under contention (2 are identical, 5 are within two years, and 2 are within seven years). A quick check shows that 2 of the critical points “switch periods” only because of the arbitrary break-point chosen by Houweling and Siccama for their analysis, not because of any error in calculating the critical points—indeed, in each case, they differ by only two years! The remaining 3 critical points that were different are for Russia and the United States, involving a new estimate of pre-1815 data conditions for Russia and new U.S. indicators. These

differences in no way challenge the validity or reliability of calculation of critical points.

The issue throughout is not whether decision makers can discern critical points (they can), but whether researchers can on the basis of historical hindsight replicate the intuitive geopolitical perception of the decision maker. Reliable methodology assists this replication of structural thought.

2. *Tests of Hypotheses That Misrepresent Power Cycle Theory.* Houweling and Siccama's tables 2 and 3, respectively, test the hypotheses that "every state at war is a critical point state," and that "a critical point state will be at war with all other major powers (in all dyads)." Neither of these hypotheses is asserted in power cycle theory, and hence the empirical tests do not challenge the validity of either the critical points or the theory.
3. *One Counting Error in Each Study.* The Doran (1989a) study contained one counting error on the "No" line of table 3 testing $H_0(2)$. The correct numbers (5 and 11) are found in table 4. The "Yes" column of table 3 should be equivalent to row one of table 4 testing $H_0(3a)$, the "No" column equivalent to row three of table 4 testing $H_0(4)$. The Houweling and Siccama (1991) study also contained one counting error. In its table 5, the case "1946–1965, USSR" should be moved from the lower-right to the upper-right quadrant, changing the Q from .75 to .66. Once these corrections are made, it becomes clear that the tests of $H_0(1)$ and $H_0(2)$ in the two studies are completely equivalent.
4. *Findings That Are Completely Equivalent.* As noted by Houweling and Siccama (1991), the tests of $H_0(3b)$ and $H_0(4)$ in Doran (1989a) are completely equivalent to their own. Hence, researchers should consult table 4 in Doran and tables 4.2a and 4.2b in their study for accurate compilations of the data of each study and tests that address hypotheses reflective of each theory.

Other analyses using different data sets and research designs have also replicated aspects of power cycle theory. Anderson and McKeown (1987) and Schampel (1993), exploring subtleties of velocity or slope as cause, Spiezio (1993), examining militarized disputes, and Hebron and James (1997), using both disputes and international crisis behavior data, reinforce the initial findings on war causation and expand the application of the theory to a wider range of international conflict.

Engaged to (with) Whom?

"It is easier to predict that someone will become engaged with anyone than to predict the more interesting case with whom," admonish Houweling and Siccama (1991). They assert that power cycle theory is only capable of doing the former, while transition theory can do the latter as well. We here examine whether power cycle theory is indeed incapable of identifying with whom a nation fights. Out of just such challenges productive research is born.

An intriguing pattern emerges from assessment of several cases. The state that attacks has recently passed through a critical point; the target is the state taking power share from it. Thus, the state that has constrained the belligerent on its power cycle—the state with which competition against it is keenest—is the state against whom the belligerent turns militarily.

In the case of World War I, we have seen that Germany was the giant at the peak of its power curve, and Russia was the pygmy at the bottom of the system that pulled Germany into relative decline. Germany launched its initial attack against Russia, the state German policymakers had long ruminated about in terms of its alleged looming future potential for threat.

Similarly, ongoing research shows that Saddam Hussein attacked Kuwait, one of the two states within the Gulf subsystem (Saudi Arabia was the other) responsible for pulling Iraq into relative decline (Parasiliti 1997).²⁶

Prussia on the eve of the Franco-Prussian War had passed through the first inflection point on its power cycle. Which state constrained Prussia's power share the most? We will show that it was France, its main Continental rival and the target of its aggression. A first test uses the same data analyzed by Doran and by Houweling and Siccama. Prussia transisted France in the year of the Franco-Prussian War (1870) and because of the fruits of Prussian victory and French defeat. Transition theory allows that the rising state may go to war prior to transition in order to accelerate the transition. In any case, it was the war that caused the transition, not vice versa.

But did the war likewise "cause" the prewar Prussian inflection point in 1865? Logically, territory and other fruits of victory will have *boosted* Germany's rise on the power cycle, not diminished its rate of increase as occurred at and after the inflection. To look more deeply at the data, we

examine four subsystems — the European subsystem (the last four data points omit Japan and the United States) and three dyads (Prussia in turn with Britain, France, and Russia). In about 1865 in each of the subsystems, Prussia experienced an inflection point signifying a slowing down of the rate of increase in its power relative to the respective competitor.

The evidence is clear. Since the rate of increase continued to diminish after the war *despite* acquisition of territory, the war could not have caused the earlier inflection point. But for that very reason, the inflection point occurring just before the war could indeed have caused the war. As the lines tangent to the power curve reveal, the inflection marked a dramatic change in foreign policy expectations. It meant Prussia (Germany) would never again enjoy such heady growth. Bismarck attacked France and acquired new resources but could not stop the declining rate of relative growth.

One issue remains. Was France the state most accountable for taking power share away from Prussia? Its loss of territory logically would give France a worsening dyadic relationship with Germany after the war. But the rate of increase of Prussian (German) power relative to France declined in the year of the war and thereafter, even though the Prussian (German) score reflected the gain of French resources and the French score recorded the loss of a region of increasing importance to its industrial development. In the prior decade, Alsace-Lorraine had quadrupled its output of iron ore, its share of French production growing from about 10 percent to over 30 percent (Landes 1969, 226–27). Clearly Prussia was concerned about the French capacity to outcompete it in relative terms even as its own absolute output continued to soar.

The same pattern appears. A discontinuity in foreign policy expectations precedes a significant war. The target of aggression is not necessarily the largest state, nor a challenger for any kind of political supremacy, but a state that takes power share away. Here Prussia was guilty of “arranged aggression,” arranging for France to attack, an act that Prussia planned and manipulated to its own military advantage. But the pattern is identical: first a discontinuity of foreign policy expectations with a loss of power share to another state(s), then attempted military defeat of the state.

A similar empirical exercise demonstrates, in each subsystem, that Germany’s relative share of steel production peaked in the decade prior to World War I even though its absolute output continued to increase and far exceeded the output of any other state in the system. Graphs for the

dyadic subsystems make unambiguous the states responsible for Germany’s peak. Whereas the trend of relative power vis-a-vis Britain continued to rise, albeit more slowly, the trend vis-a-vis France and Russia had flattened and even begun to decline. A critical point once again is associated with *who* (which competing states) causes it and, consequently, will be the target of aggression.

Power cycle theory not only identifies when an act of major aggression is most likely, and why. It also explains who is the likely target of that aggression, and why it is so engaged. Direction of causation is unambiguous.

Dyads in a Systemic World

In conclusion, this section²⁷ compares the principles of the power cycle, and their predictions, with those of two other structural theories. This chapter argues that the principles of the power cycle reveal the unique perspective of statecraft in the expectations, and unexpected nonlinearities, of relative power change. Figure 4 demonstrates that this perspective is quite in contrast to that of transition theory and hegemonic stability theory.

On the left is a schematic of the pre-1914 absolute trajectories of Britain, Germany, and Russia. Germany experienced very rapid absolute growth in the late nineteenth century, surpassed Britain, and continued its surge with Russia far behind. So great was Germany’s absolute economic output that Russia was by comparison a mere pygmy—of the order of one-tenth the size of Germany on most indicators. There were the objective indicators (absolute levels and trends) perceived by statesmen of the period.

On the right are schematics depicting two very different expectations regarding the *relative* power trajectories of these same states. This dual schematic reveals that debate regarding power cycle theory versus transition (and hegemonic stability) theory is not about empirical findings, preferred empirical approaches, different databases, statistical techniques, subtleties of terminology, or confusions of jargon. Nor is it merely about two different points (critical points versus transition points) in relative power change. At heart, the debate concerns theoretical understanding of the dynamics of international politics. Dyadic analysis must confront the principles of the power cycle to escape theoretical misspecification of the causes of major war.

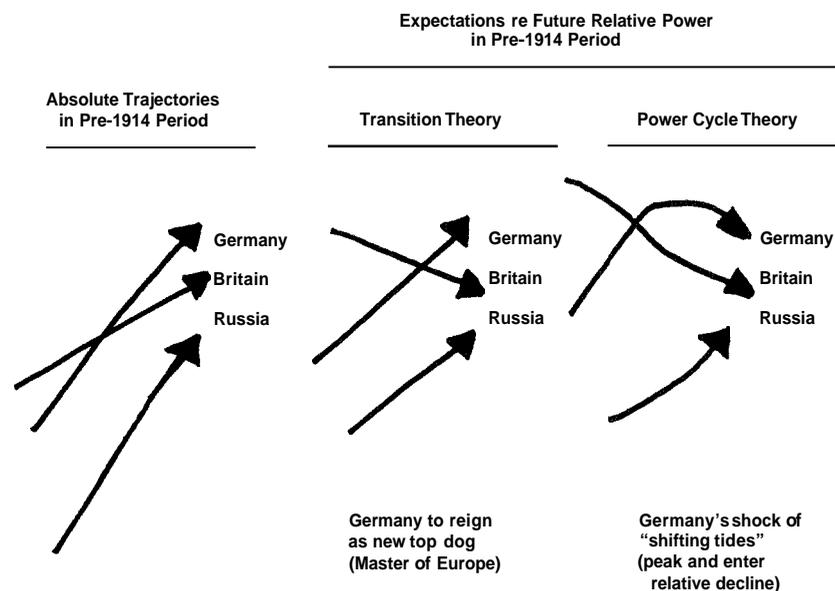


FIGURE 4. Dyads in a systemic world: Confronting the principles of the power cycle

In transition and hegemonic stability theories, expectations about the changing structure of the system (center schematic) precisely match those induced by extrapolation of the absolute power trends (far left). Focusing on the dyadic relation at the top of the system, they assert that the key to systems transformation, and the cause of World War I, was the competition for hegemony between Britain and Germany. The mechanism for the transformation and the war is the "transition" when Germany surpassed Britain in size. These theories conform to the Mastery of Europe thesis: so great was Germany's superiority in the prewar period, and so great were its yearly increases in absolute level, that surely Germany would soon have become Master of Europe if it had not made the strategic error of going to war. In a word, these theories assert that Germany's relative power continued to rise in the prewar period, and only defeat in the war forced it onto a declining relative power path.

In contrast (schematic far right), the principles of the power cycle reveal how the "bounds of the system" suddenly and unexpectedly forced Germany to peak in relative power a decade before the war. Statesmen saw ever greater increments of absolute power growth for Germany; but,

they also saw a sudden halt in its previously rapid gain in relative share. Thus, in the power cycle assessment, what most triggered German angst in 1914, and German bellicosity, was the sudden discovery that the tides of history had shifted against it.

Accounts of diplomatic historians support the power cycle assessment. "With no history behind it save forty years of unchallenged success in an undeviating advance to greatness" (Seaman 1963, 143), and "trust[ing] in a current that would carry [them] to [their] goal" (Dehio 1962, 233), the German Foreign Office and General Staff were shocked to discover that German relative power had peaked. Despite its greatest absolute increases ever, its relative power was locked in a structural vise. Germany and all of Europe were aware of the "underwater current," so counterintuitive, that shattered expectations of continued German rise on its power cycle. The tiny absolute increments of Russia, in accelerating economic take-off at the bottom of the system, were sufficient to halt Germany's ascent and force it onto a declining path.

The problem for Germany was not one of misperception of its power level, but of *very clear perception* of a sudden and completely unexpected and even counterintuitive shift in history's prior trend of relative power change in the system. This terrible period of history begins to make some sense when the analyst experiences the conflicting messages and shocking surprises with which statesmen had to contend as Germany suddenly bumped against the upper limit of its relative power growth. At the hour of its greatest achievement, Germany was driven onto unexpected paths by the bounds of the system.

What are the implications for analysis of rival dyads? The transition between Germany and Britain occurs in both schematics for changing systems structure. But in the power cycle schematic, the transition is overwhelmed by the sudden "shifting tides of history" that drove Germany into relative decline. And it is the growth of the pygmy—nowhere near the upper dyad in terms of level—that causes the critical change in Germany's power cycle. That is why the transition hypothesis is said to be misspecified, and why dyads must be examined in the context of the relevant system.

In the context of systems structure, a transition constitutes one point shared by two absolute trajectories, and hence by two intersecting power cycles. A "critical point" is an inversion in the prior trend on a power cycle at which the state's perception of its future relative power and role suddenly changes. The principles of the power cycle show that

the expectations induced by absolute trends (transition theory) do not hold, and that it is the shock of the unexpected nonlinearities on the power cycle that cause war.

The schematics also show why power cycle theory rejects the traditional view that systems transformation is a structural discontinuity caused by massive war (that defeat in a massive war forces the faster growing challenger onto a declining path). Power cycle theory shows that the nonlinearities of systems transformation (here the challenger's peak and turn into decline) occurred naturally as shifting tides of history determined by the principles of the power cycle, provoking a discontinuity of perception and expectations that caused the massive war. What is at issue in systems transformation is systemic adjustment. Evaluations by statesmen of their changed future trends ricochet across the system, translating the strains internal to each state to the essence of structural equilibrium for the entire system. Causation goes from continuity of structural change, to inversion in the trend of structural change at a critical point (structural discontinuity), to discontinuity of expectations, to failure of systemic adjustment, to massive war. From state to system and back to state, the discontinuity precipitates tumult.

The hegemonic assumption of world order is based on conditions that arose *after the collapse of world order in massive world war*. It is an assumption arising out of the failure of peaceful change. Power cycle theory, developed during a study of those failures, asserts that the dilemma of peaceful change can have no resolution unless order maintenance is recognized as a shared duty. Only thereby can a just and stable equilibrium prevent a collapse into world war during systems transformation.

There is much complementarity in the field of international relations as analysts work toward a common albeit multifaceted understanding of systems change and major war (Geller and Singer 1998; Pollins 1996). A declining hegemon, a redistribution of capabilities, a scramble for leadership, a power transition, a status disequilibrium—each is an accurate assessment regarding causes of major war, but each also suffers from some degree of incompleteness or misspecification. A hegemon may long be in decline; deconcentration of power, power transition, unfulfilled expectations, and power-interest gaps are so frequent that random effects cannot be discounted. For more accurate specification of cause, all of these perspectives ultimately must confront the principles of the power cycle: the conflicting messages and shocking surprises of relative versus

absolute change, the structural bounds on statecraft, the shifting tides of history at points of nonlinearity, the shocks and surprises and uncertainty as statesmen confront the trauma of structural discontinuity. Analysis will thereby approach the "limit point" of understanding, more encompassing and more focused, and thus perhaps more helpful.

NOTES

1. According to Collingwood (1956, 282), the analyst of history must "re-enact the past in his own mind." Carr (1964, 26) restates this responsibility to the facts quite strongly: "History cannot be written unless the historian can achieve some kind of contact with the mind of those about whom he is writing."
2. Although power must include national will, strategic skill, and political coherence, it is largely derived from the state's latent resource base, without which there is no power. This capability can be effectively indexed with a bundle of indicators robust across states and, properly qualified, across time. Also, although experts will disagree about the definition of power, they are able to rank states in terms of how powerful they are perceived to be. Without such intuitive *ranking* of perceived power, policymakers could not plan and implement policies rationally. These perceived rankings of "who has power" are also stable across cultures and are *highly correlated* with national capability. See Doran et al. (1974, 1979); Doran (1991, 33–35, 44–58); Singer, Bremer, and Stuckey (1972); Stoll and Ward (1989); and Sullivan (1990).
3. Doran (1991, 265–67) gives equivalent ratios to determine if a state is rising or declining in relative power. The denominator may also be the other states in the system, but that ratio is unbounded; it obscures the effect of the systemic bounds on the dynamic even though it contains the same critical points.
4. Observe that the power cycle thereby consciously preserves causal direction both perceptually and operationally.
5. On bounded rationality, see Anderson and McKeown (1987). On prospect theory, see Kahneman and Tversky (1979) and Levy (1997). Analysts are exploring the interface between power cycle and prospect theories. Hebron and James (1997) use "framing" to classify declining states as defenders of the status quo and rising states as challengers. Cashman (1997) identifies as directly applicable to power cycle theory three conflict hypotheses derived by Levy from prospect theory.
6. Hoffmann (1960), Keohane and Nye (1977), Singer et al. (1972), neorealists including Waltz (1979), Krasner (1985), and Keohane (1984, 1989). Power cycle analysis (Doran 1991, 27–30) answers the objections of Bueno de

- Mesquita (1978, 1981a) that no structural change is great enough to so affect behavior. See also McGowan (1989).
7. See, for example, Mowat (1968), Rostow (1971), Dehio (1962), Cipola (1970), and Kindleberger (1996).
 8. Doran (1971) is a revision, with annotated bibliography, of Doran (1969).
 9. See Doran (1991, 30–33, 180–86), Rosenau (1969), and Holsti (1970). Role involves the extent of leadership or followership; providing or depending upon external security; being an aid giver or recipient, a lender or net debtor; being sought after for counsel or disregarded; being an overachiever or a nonparticipant in systemic affairs. It involves articulation and maintenance of international economic regimes, responsibilities of mediation and peace-keeping, protection of human rights and the environment, and initiative in organizational forums.
 10. Disequilibrium on the power-role cycle is examined conceptually with the aid of two models: short-term equilibrium graphs (papers dating from 1970) and a lagging of the two components (since Doran 1974). Doran (1980) compares the inversion of force expectations with a runaway arms race via equilibrium graphs. Doran (1989a) analyzes the lag schema to study movement away from equilibrium in a critical interval. Doran (1991) examines both models fully: chapter 1, short-term disequilibrium graphs; chapter 4, effect of disaggregating the cycle; chapter 7, what each model implies for inter-national political equilibrium. Doran and Marcucci (1990) brings the two schema together in a “power cobweb theorem.”
 11. The quote refers to a section in Doran (1991, 125–32) that tries to get into the mind of statesmen undergoing the trauma of critical change, 1905 to 1914.
 12. For Kupchan (1994, 14, 95–97), policy elite can know if the state is rising or declining but not if a turning point occurs, responding only to short-term shifts in the balance. Yet, if those shifts are not equivalent to the abrupt turning points in the long-term relative power trends, his concept of strategic vulnerability reduces to the familiar mechanics of short-term power balancing. And if German elites were aware of the rising trend of relative power, why would they be less sensitive to the abrupt halt in that rise in the decade prior to 1914, especially since the greatest absolute increases ever were unable to lift the German trajectory back onto a rising path? Evidence that statesmen intuitively know when a turning point occurs is Kissinger’s 1963 declaration that “the age of the superpowers is now drawing to a close” (1974, 56).
 13. Only one case occurred in our data, namely, Russia’s suspected inflection in 1821. This suggests that a suspected critical point may likewise be conducive of major war; indeed, Russia initiated several wars during the next decade.

14. See Snyder and Diesing (1977) and Holsti (1972). The question arises whether diffusion processes are rational or nonrational in origin. See Siverson and Starr (1991).
15. See Jervis (1976) and chapter 6 of Mansbach and Vasquez (1981). Doran (1991, 171–77; 1995, 188–90, 204–5) examines the interface of all three theories. See also Siverson and Diehl (1989) and Siverson and Miller (1993).
16. When a number of states are simultaneously undergoing critical changes, the structural uncertainty contributing to instability is compounded by information uncertainty. Moreover, when opponents become multiple, information overload quickly overwhelms the decision maker. The important relationships between information, structure, and systemic stability, explored theoretically and empirically in Manus Midlarsky (1988), likewise have a bearing here.
17. See Doran (1971). The *Harper Atlas of World History* (1986) gives a precise date for Spain’s peak, 1580; most historical accounts give a broader interval.
18. See Doran (1969, 1971). Doran (1995b, 190–97) summarizes the findings on these three assimilative efforts and assesses the two twentieth-century peace treaties.
19. See Doran (1991, chaps. 6–7; 1995, 201–3). Doran (1989b, 106–8) compares as well Midlarsky’s hierarchical equilibrium and Rosecrance’s notion of equilibrium.
20. Robert Powell (1996b) examines formally strategic problems that arise from expectations tied to changes on state power cycles. In particular, he shows how uncertainty about the intentions and aims of a rising power leads to the classic dilemma of peaceful change for the declining state: either fighting an early unnecessary preemptive war or appeasing an insatiable rising state in a series of concessions. However, the formal analysis of security must also take into account both the full dynamic of the power cycles and the dynamic equilibrium proposed in power cycle theory. In particular, how can the formal model account for the fact that expectations are altered abruptly at the critical points when awareness of decline suddenly dawns, and what are the implications for appeasement in that model?
21. Among the increasing literature on peaceful change, see Holsti (1991), Vasquez et al. (1995), and Kegley and Raymond (1999).
22. Young-Kwan Yoon (1990) examines the relative impact on industrial structure, late in the cycle, of home industry investment migrating abroad to seek greater trade opportunities, comparing the cases of Britain, the United States, Japan, and now possibly the newly industrializing countries like Korea. In the context of Asian power cycles, Sushil Kumar at Nehru University has initiated a long-term project studying the dynamic of these cycles for south Asia in particular.

23. This is one of the contrasts of the multiple state system with the universal empires of ancient Egypt, China, Persia, Alexander the Great, or Rome.
24. Doran, Politics of the International Economy course at Johns Hopkins.
25. See Niou, Ordeshook, and Rose (1989,301).
26. See Doran and Buck (1991, 189–210) and Doran and Marcucci (1990, 468–71).
27. The arguments in this section were originally presented in Doran (1992).

PART IV

Summary

Approaches