

POWER TRANSITION, CHALLENGE AND THE (RE)EMERGENCE OF CHINA

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We use power transition theory and leadership long cycle theory's challenger model to investigate ongoing deep structural changes that may affect fundamentally the prospects for twenty-first century Sino–American conflict. We specifically evaluate which of these structural theories most accurately maps the power transition process. Whereas both theories offer important insights, the challenger model's focus on qualitative dimensions of structural change are more important to understanding the dynamics of a potential Sino-American power transition.

Key Words: power transition theory, leadership long cycle theory

In March 1996 China engaged in military exercises in the Taiwan Straits, including the firing of missiles to off-shore sites near Taiwanese ports, with the obvious intent of intimidating voters during the lead-up to Taiwan's national elections. The U.S. responded by sending two carrier groups to the area in a show of force that proved effective insofar as China's military exercises stopped, the carrier groups exited the area, and the crisis was resolved—though the underlying issues concerning the status of Taiwan, China's use of force, and the role of the U.S. were not. A little more than three years later, in May 1999, in the course of NATO's war against Yugoslavia, U.S. planes bombed the Chinese embassy in Belgrade, killing three Chinese diplomatic personnel. The Chinese government, as well as most Chinese, dis-

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missed as implausible the U.S. explanation that the bombing had been an accident stemming from the use of an outdated map and rejected the U.S. apology premised on this account. With their government's approval, large crowds of outraged Chinese demonstrated their antagonism toward the U.S. by stoning its embassy in Beijing. The prospect of armed conflict between the U.S. and China loomed even larger in April 2001 when the pilot of a Chinese fighter aircraft was killed near China's territorial waters in a collision with an EP3 surveillance aircraft. The EP3 then made an emergency landing at a Chinese airbase on Hainan Island, triggering a crisis over release of the crew and return of the aircraft and its sensitive surveillance equipment.

In light of this recent series of militarized disputes, it is not too difficult to imagine how a U.S.–China war could begin. Beneath the flow of events that might serve as proximate causes of such a war, however, we believe there are deeper structural changes underway that will affect more fundamentally the prospects for U.S.–China conflict in the twenty-first century. By structural change we mean long-term change in the distribution of power at the apex of the global system, i.e., a *power transition* in which an emerging challenger draws closer to, and may eventually surpass, the existing system leader in terms of those specific power capabilities relevant to the form and maintenance of global order. Though they need not culminate in war, power transitions tend to be particularly dangerous periods, especially if the challenger is dissatisfied with the existing order and the economic benefits, security, and status it is accorded within it.

If the rates of economic growth and military modernization that China has achieved over the last twenty years or so are extrapolated into the future, not too many more decades will pass before China is able to mount a significant challenge to the predominant position of the U.S., at least in East Asia and perhaps globally. There is fairly wide agreement that some form of U.S.–China power transition looms later in this century, but a number of questions remain: When will the power transition enter the most dangerous, war-prone phase? Will China be so dissatisfied with the prevailing regional and/or global order that it will risk war? How can (and should) China's interests be accommodated within the existing order so as to minimize this risk?

Another, more analytical question provides the focus of this article—which structural theory or model most accurately maps the power transition process? Which model's main explanatory variables will better track this process and provide the best explanation of how it unfolds? The best-known approach to power transitions is the research program originated in 1958 by the late A.F.K. Organski, whose contemporary followers continue the same line of research and explicitly use the “power transition” label. Though Organski may have coined the phrase “power transition,” there are a number of other works that address the same or similar underlying questions—though with different nomenclature and explanatory variables—and thus can be grouped within a more generic power transition category (e.g., Gilpin, 1981; Doran, 1991; Copeland, 2000). Our approach in this article is to compare the latest versions of the Organski-derived power transition model with our preferred alternative, termed the challenger model (Thompson, 1997, 2000), which is derived largely from leadership long-cycle (LLC) theory (see, for instance, Modelski, 1987; Modelski and Thompson, 1988, 1996).

Our approach is to first sketch the conceptual and theoretical foundations of the

two models, next compare their respective key concepts and causal emphases, and then proceed to an application of the models to the question of a possible Chinese transition/challenge to U.S. leadership in the twenty-first century. Here we employ those qualitative dimensions of structural change emphasized in challenger model, and contend that these are more important to understanding the dynamics of a potential Sino–American power transition than the quantitative dimensions stressed in power transition theory. While it will be decades before the superiority of either model's fit with twenty-first century power transition can be empirically established, we argue prospectively that the challenger model offers some clear-cut preliminary advantages.

THE POWER TRANSITION MODEL

A short list of key concepts in the power transition model (Organski, 1958; Organski and Kugler, 1980; Kugler and Lemke, 1996, 2000; Kugler et al., 1989; Tammen et al., 2000) includes hierarchy, economic growth, dissatisfaction, overtaking, and parity. The international system is viewed as a pyramid-shaped power hierarchy. At the very top tier is the system's dominant power. The next tier contains the great powers, followed by medium and small powers. Descending the tiers, the number of states falling into each tier increases; hence the pyramidal structure.

In a system in which all states are agrarian, economic growth involves extending the size of agricultural holdings and the number of people that reside within them. Industrialization, beginning in the late eighteenth century, altered the range of options available to state makers seeking greater power. The size of one's population continued to be of great importance, but after the eighteenth century economic productivity could be vastly enhanced by intensively exploiting and adopting technology instead of merely expanding the state's territorial size. Most importantly, industrialization made possible relatively rapid ascents in the international hierarchy. In particular, it made possible the ascent of hitherto underdeveloped states with large populations that, in turn, meant that larger states could catch up and surpass smaller states that had developed their economies earlier. Moreover, once states reach a high level of development, their further growth is likely to be relatively slow—thereby making them more vulnerable to rapidly ascending states with developing economies.

States at the top of the system's hierarchy take advantage of their elite status and establish rules, institutions and privileges that primarily benefit themselves. Ascending states thus encounter a structure of benefits already established by an earlier cohort of elites. If that structure is perceived to work against the best interests of ascending states, they are likely to be generally dissatisfied with the way in which the system is organized, in particular with its distribution of tangible and intangible benefits and with the restrictions it places on their upward mobility.

At any point in time, some proportion of the total field of states, whether they are ascending or not, will share dissatisfaction with the prevailing system structure. The three questions are (1) whether the extent of dissatisfaction is great, (2) whether one or more of those states that are most dissatisfied are in the great power stratum, and (3) whether a sufficiently dissatisfied great power is overtaking the system's domi-

nant power. The probability of conflict between the dissatisfied great power and the dominant power will be greatest when the relative capabilities of these two states are characterized by parity—the “zone of contention and probable war” wherein the ratio of the dissatisfied great power’s and the dominant state’s capabilities lies between 4:5 and 6:5 (Tammen et al., 2000, p. 31). Prior to attaining parity, the rising, dissatisfied great power has little incentive to attack a dominant power that is still viewed as too powerful. The challenger essentially lacks the capability to do something about its dissatisfaction. Long after surpassing the once-dominant power, the rising, dissatisfied great power no longer has much incentive to attack a now inferior, former rival. Thus, the greatest risk of warfare is when the two states have attained rough equality in power (parity), after one state that is dissatisfied with the international order has caught up with a formerly more powerful state (overtaking) that was most responsible for creating the status quo. This is the dangerous zone of power transition.

In addition to this conceptualization of power transition dynamics, analysts working in this tradition employ several auxiliary concepts and generalizations. The most stable and enduring alliances are formed between actors that relate to the prevailing status quo similarly. Therefore, alliances linking satisfied and dissatisfied actors may occur but their duration will be temporary. Alliances can reinforce the pro-status quo or anti-status quo forces, but they cannot substitute for the key structural dynamic of overtaking in the one dyad that matters most.

Institutional similarity and economic interdependence modify the likelihood of dissatisfaction. The more similar the institutions and/or the more interdependent two economies are, the less likely dissatisfaction will lead to a challenge to the system’s status quo. Conversely, arms buildups and arms races (if both sides in a transitional situation participate) reflect substantial dissatisfaction on the part of the challenger and an attempt to accelerate the pace of military catch-up and the development of a relative power advantage.

Another central concept in the power transition research program is political capacity. More efficacious political systems can facilitate economic growth and mobilize resources for attacking or defending the status quo. Thus, it is conceivable that a state could have a large population and a rapidly developing economy, but only limited political capacity to bring these elements of power together in an effective package. Only if the political capability to mobilize resources improves along with population and economic growth is a state’s relative power likely to be enhanced. Political capacity also presupposes some convergence of elite goals in mobilizing resources for international competition. Divisions within the elite or a weak, decentralized state can hold back a potential challenger’s ability to take on the dominant nation.

Finally a last caveat pertains to the speed of overtaking. The faster the overtaking, the lower is the probability of war. Should war break out in such circumstances, it is not likely to be a very severe or protracted confrontation because the ascending power is likely to gain its power advantage over the formerly dominant power in fairly short order. Slow transitions prolong the period of parity and increase the window of maximum friction. If neither side can muster a relative power advantage, the combat is likely to become a drawn-out war of attrition.

THE CHALLENGER MODEL

The challenger model (Thompson, 1997, 2000) is derived from leadership long-cycle theory's interpretation of the past millennium of struggles over position, territory, and markets. The model rests on several strong assumptions. First, it distinguishes between global and regional activities. Global activities involve transregional transactions while regional transactions remain relatively close to home. All actors engage in regional transactions to varying degrees but only a few have specialized in global transactions. This distinction leads to a stress on a fundamental duality in strategic orientations. States that have been content to emphasize improvements in wealth and power by local territorial expansion possess continental orientations. States that have focused on long-distance trade as the principal path to wealth and power possess maritime-commercial orientations and, in time, became the most innovative industrializers as well.

The development of this global structure has been conditioned strongly by the geographical location of its most prominent actors. While Sung China can make a claim to being the first modern active economic zone, East Asian circumstances proved inhospitable for cultivating this original lead. The epicenter of the active zone shifted to the eastern Mediterranean and Genoa and Venice. By 1500, the epicenter had shifted further west to the Atlantic and a string of Western European-based leaders—Portugal, the Netherlands, and Britain—only to shift once again to the other side of the Atlantic in the late Nineteenth century. While these global leaders sought to stay aloof from European continental politics, their locations frequently made that impossible. Intermittent efforts to dominate the European region by a string of continental powers—Spain, France, and Germany between 1494 and 1945—meant that the global and European realms were unlikely to remain separate. Global warfare in 1494–1516, 1580–1608, 1688–1713, 1792–1815, and 1914–1945 amounted to showdown clashes between a coalition led by one or more global powers and a coalition led by one or more regional powers. In every instance, the global coalition won. By leading the suppression of the major continental threat, the global leader enhances its resource base and its ability to shape the rules of global order. Over time, as this positional lead gradually erodes, new threats emerge on the continent and from within the global camp as states attempt to move up the military–political and technological pecking orders.

In the initial version of the challenger model (Thompson, 1997), five variables—proximity, similarity, strategic orientation, innovation, and threat/frustration perceptions—were specified as especially critical to the intensity of challenges to the system leader's position. This set of variables presumes that there may be a number of potential challengers and, if so, that the global system leader may play a significant role in determining just who the primary challenger is by emphasizing one challenger's threat over others. *Proximity* refers to the tendency of a system leader to be more alarmed by a nearby threat than by one that is more distant. Accordingly, challengers that are located physically nearest the home base of the system leader are likely to be regarded as greater threats than challengers located further away. If there is only one source of challenge, this factor may not have much bearing.

Similarity, a variable also found in the power transition model, lessens the prob-

ability of a violent power transition. Similarity refers specifically to culture, language, and politico-economic institutions. Challengers that are viewed as more distant culturally and ideologically are most likely to be regarded as greater threats than are challengers that somehow seem less "alien." Dissimilarities in race, institutions, and economic organizing principles, and ideology aggravate conflicts between system leaders and their challengers because the dissimilarities magnify the extent of threats perceived by all parties. They may also increase the probability of misperceptions. But this is not simply a matter of the social-psychological dynamics of perceived distance. Different types of political-economic institutions are likely to produce preferences for different organizing principles for political systems and markets. A challenger that aims to fundamentally change international regimes is likely to be perceived as more threatening than another that is expected to maintain the norms and rules that are already in practice.¹

The range of *strategic orientation* is limited to the duality previously mentioned; in some respects, this concept overlaps with similarity. Challengers with continental orientations are most likely to regard territorial conquest as the best approach to defeating the system leader. This goal can be achieved in three ways. One way is to take over the European region and utilize this large land area with a number of maritime ports as a base of operations for global competition. A second approach is to conquer the system leader's home base. Spain did this to Portugal in the early 1580s. France attempted to do this to the Netherlands in the late 1600s but was not successful. Both Napoleonic France and Nazi Germany contemplated assaults on Britain but neither carried out their plans. A third approach, of course, is to do both—conquer the European region and the global home base. Nevertheless, the point is that states with fundamentally different strategic orientations are more threatening to global leaders than states with fundamentally similar ones. A challenger oriented to territorial conquest is more likely to adopt coercive tactics than a challenger that is just as interested as the system leader in avoiding territorial entanglements in order to better focus on the conquest of markets. Put another way, the potential loss of sovereignty should be more threatening than the potential loss of market share.

The maritime-commercial qua industrial states have predominated in global transactions. At any given time, one state stands out as the predominant global system leader. To attain this position, a state must first develop power resources that combine radical economic innovation with global reach capability to form the lead economy, or most active source of important economic *innovations*. These innovations are translated into a predominant economic position in long-distance trade, industrial production, or both. The profits generated by pioneering economic production in turn underwrite the development of global reach capabilities that are needed to protect the leading position. The initial stress on long-distance trade, much of which is transported by ship, placed an early premium on naval, i.e., global reach, capabilities. This emphasis has also meant that system leaders have been the leading naval powers of their times.

The last main variable has two dimensions—one is the system leader's *perception of threat* posed by one or more challengers. On the one hand, if faced with more than one potential challenger, system leaders will be forced to concentrate their defensive energies on the challenger that they perceive to be most threatening (although

the existence of multiple challengers should not be assumed). The other dimension of this variable is the extent of the challenger's *frustration* (or dissatisfaction) with the leader and the world order constructed under its auspices and over which it presides. Indeed, some argue that the prospects for a peaceful power transition hinge on whether the system leader and the challenger are able to negotiate mutually acceptable agreements concerning the main elements of world order: the hierarchy of power and status; rules for managing security, including when and under what circumstances use of force is justified, as well as the laws of war; mechanisms for managing territorial changes; recognition of territorial spheres of interest; and rules that govern trade, investment, and other functional subsystems of the world economy.²

System leaders are often seen by challengers as obstacles to further improvements in their status. If a challenger desires a larger share of trade, most likely it will feel the need to take it away from the leader. The question is whether the challenger is content to simply expand its share or desires to supplant the leader as the predominant trading state. This is one of the dimensions that differentiated England and France as challengers to the Netherlands in the seventeenth century. The English thought the Dutch controlled too much trade and wanted a larger share for themselves. The French wanted to supplant the Dutch lock on European trade and establish a French monopoly. So, both declining leaders and ascending challengers can contribute to the attitudinal property of threat/frustration. The greater the combined sense of threat/frustration, the greater is the likelihood of an intense struggle between leader and challenger.

COMPARING THE TWO MODELS

Both models focus on the likelihood of conflict developing as a challenger catches up to a once-predominant system leader. Yet, despite these apparent similarities, they diverge in terms of the factors deemed most likely to exacerbate the dangers of structural transition.

The divergences begin right at the outset. The power transition model sees a single hierarchy in which one state has already established an edge in relative power over other great powers.³ The precise basis for dominance is not fully specified but its foundations lie in having a combination of more people, a larger economy, and some capacity to mobilize these power resources. A structural problem emerges when an even larger great power emerges only to become dissatisfied with the prevailing distribution of benefits and privileges. The cartoon that depicts a string of open-mouthed fish of decreasing size, with each fish about to devour the next smallest fish in the sequence, captures this transition imagery quite nicely.⁴

In contrast, the challenger model sees a differentiated world system in which some states pursue primarily regional strategies while others concentrate on global strategies. Each domain has a different hierarchy predicated on different attributes. The regional hierarchy is based on land power and a state's ability to increase its control of territory. The global hierarchy is comprised of states that attempt to avoid entanglement in regional politics while they compete for control of long-distance commerce and for competitive superiority in technologically advanced industries. A global power's standing depends largely on the extent to which its economy can pioneer

the generation and implementation of radical innovations, as well as on its command of global reach capabilities with which it can project and protect its economic activities across the planet.

The challenger model thus concentrates on contenders for the role of global system leader. These contenders may come from the ranks of global powers but they may also come from the leading state of the principal region (which, prior to 1945, was Western Europe). Regional hegemony in Europe provided a strong base for global contestation. Moreover, the aspirants for European hegemony have always made some claim to global power status even if their strategies remained primarily regionally oriented. As a consequence, global system leaders have skirmished with other global powers, but the most intense confrontations have been showdown wars between a global leader and its coalition versus an ascending aspirant for European hegemony and its coalition. After 1945, Western Europe lost its role as the world system's principal region, but one can argue that the regional focus was simply stretched to encompass the larger Eurasian land mass during the U.S.–Soviet Cold War, and that Eurasia has regained much of the preeminence it held prior to the ascendancy of the western end of the larger land mass.

As a consequence, the power transition model offers a clear prediction about the timing of conflict.⁵ Around the time that the bigger fish catches up to the smaller fish and establishes parity, conflict between the challenger and once-dominant power becomes more likely. There is no corresponding prediction in the challenger model because the transition process is not necessarily between two similarly constituted actors. The transitional clash could be between two similarly oriented, commercial-maritime powers, but historically it has been far more likely to be a clash between the leading global power and the leading regional power. Since their orientations and specialized capabilities are not likely to be the same, it is difficult for both actors to compare their relative power precisely. Metaphorically, the leading global power is a whale, while the leading regional power is an elephant. The former specializes in economic innovation and global reach capabilities, while the latter specializes in coercive dominance at the regional level. Elephants do not normally fight at sea and whales have a difficult time negotiating sustained combat on land. Instead, elephants fight in or near their home territory and whales have to project their power over long distances with some diminishment of power practically inevitable. This situation encourages the elephant and discourages the whale. Moreover, since the leading global power is in relative decline and the regional power is on the ascent, the latter is encouraged to think it is stronger than objective assessment of its position might otherwise warrant.

These asymmetries lead to a major divergence between the two models: how they conceptualize the sources of power that are most crucial to structural models in general and to power transitions in particular. Population and economic size are critical to the power transition model. “[W]ithout a large population, a nation cannot hope ever to become either a great power or dominant nation” (Tammen et al., 2000, p. 18). The main reason underlying this generalization is that population is viewed as the basic resource pool that can be mobilized for other purposes including economic development and the exercise of military force. It can be influenced by slowing birth rates and/or decreasing death rates but, generally, population is a relatively fixed

foundation of national power. A state either has a large population or it does not. States with larger populations are likely to surpass the relative power of states with smaller populations. Accordingly, power transition analysts have asserted that

In the long run, the already prosperous United States cannot remain the dominant nation in the international system because both China and India have populations four times larger. This population gap cannot be bridged by a developed society. Therefore, because of the constraints that stable populations impose on the expansion of power in developed societies once Asian societies modernize and overtake the United States, no new transitions are anticipated (Tammen et al., 2000, p. 19).

Consistent with this emphasis on population size, power transition analysts rely on gross domestic product (GDP) as their primary index of national economic productivity.⁶ Overtaking and parity, therefore, are customarily measured in terms of the distance between the dominant nation's GDP and the overtaking dissatisfied great power's GDP. Once the overtaker's GDP attains 80 percent of the dominant power's GDP, the condition of parity is considered to have been reached.⁷ Parity holds until the overtaker's GDP exceeds 120 percent of the former system leader's GDP. Power transition analysts further assume that once an economy has attained developed status, rapid growth is no longer an option. Rapid growth is restricted to economies attempting to modernize and catch up with the dominant nation's mature economy.

In contrast, the challenger model focuses on pioneering technological changes rather than on generic economic growth. Leadership long-cycle arguments emphasize that long-term economic growth is stimulated by paradigmatic shifts in economic production. The first phase of the British Industrial Revolution focused on textile and iron production techniques. A second phase emphasized the development of steam power and the expansion of railroads. A subsequent phase shift, led primarily by the U.S. and, to a lesser extent, German economies, centered on steel, chemicals, and electrification. Automobiles came next, followed by jet engines and semiconductors, before giving way to computers and biotechnology in the ongoing information technology age. Thus, the difference in emphasis is largely one of qualitative versus quantitative considerations. The challenger model emphasizes radical production shifts stemming from innovations and the emergence of new leading sectors. The power transition model instead relies heavily on industrialization and economic growth, but does not explicitly consider the sources of this growth or the Schumpeterian processes that generate it.

As a consequence, a technologically less sophisticated economy could make substantial gains in economic growth and, assuming it is sufficiently large, it could appear to be overtaking the world economy's lead economy in terms of GDP. Even though its economy remained relatively underdeveloped by prevailing world standards, a dangerous transition would be in train, from a power transition standpoint. From the perspective of the challenger model, however, this type of transition would be a matter of dubious significance as long as the expected overtaking depends on sheer size and not on cutting-edge technological innovations.

From this perspective, there is no reason that a system leader cannot significantly revitalize its economy by innovating new technologies that become the basis for new

leading sectors. Earlier system leaders enjoyed only two spurts of economic growth but Britain experienced four spurts between the late seventeenth and mid-nineteenth centuries.⁸ The United States economy appears to be entering its third growth spurt, based on its lead in information technology. There may be many good other reasons why systemic leadership tends to be of finite duration, but there is no upper limit on the ability of economic growth leaders to rejuvenate themselves and their technological leads by new rounds of radical innovation.⁹

One of the reasons for divergence between the power transition and challenger models on the size-versus-innovation question is that different historical scripts are associated with the construction of the respective models. The power transition model's history begins mid-eighteenth century with the advent of the British Industrial Revolution. Events that occurred prior to this milestone are regarded as irrelevant to power transition dynamics. After Britain established its early lead, it was overtaken by the United States and Germany. The United States, in turn, will be overtaken eventually by China and India.

The challenger model is predicated on a much longer historical script. It begins with an economic revolution in tenth century Sung China and traces a China–Genoa–Venice–Portugal–Netherlands–Britain–United States millennium-long sequence as successive lead economies in the world economy. Halfway through the sequence, the size of the economies begins to expand but the movement of succession is never predicated solely on the relative size of the economies in competition. The primary question is which economy pioneers the next wave of radical technological innovation and thereby becomes the world economy's lead economy for a finite period of time. In fact, their main opponents—the successive continental powers, Spain, France, and Germany—often (but not always, as we will see) possessed the largest Western European populations and economies and, prior to the nineteenth century, larger economies than the commercial-maritime powers. Yet they were unable to mobilize successfully these larger economies and populations to win in global warfare. One of the reasons for defeat, especially in the Spanish and French eras, was that the larger economies were simply not as competitive as the smaller lead economies in terms of advanced technology and productivity. The smaller lead economies were also in a vastly superior position to mobilize non-European resources, both in general and in the showdown clashes with their continental opponents.

Some of the interpretative dilemmas associated with relying on an indicator of economic bulk, such as GDP as the principal measure of relative power, are demonstrated in Table 1's array of British, German, U.S., and Chinese GDP and GDP per capita figures expressed in constant 1990 U.S. dollars.¹⁰ An examination of the relative size of the British and German economies, the key transition in the first half of the twentieth century according to power transition arguments, reveals that Germany never actually exceeded the 80 percent threshold until well after the conclusion of World War II.¹¹ A better argument for a single economic indicator of relative power can be made for GDP per capita (at least in the British-German case). This measure comes closer to tapping productivity than most other single indicators because it controls for population size in estimating gross wealth. If fewer people can generate as much or more wealth as a much larger number of people, the smaller group must be using more sophisticated or complex technology. Thus, the GDP per capita indi-

Table 1.
British, German, US, and Chinese GDP and GDP/C, 1820-2015

	Britain		Germany		U.S.		China	
<u>Year</u>	<u>GDP</u>	<u>GDP/C</u>	<u>GDP</u>	<u>GDP/C</u>	<u>GDP</u>	<u>GDP/C</u>	<u>GDP</u>	<u>GDP/C</u>
1820	34.8	1756	16.4	1112	12.6	1287	228.6	523
1850	60.5	2362	29.4	1476	42.5	1819		
1870	96.6	3263	44.1	1913	94.4	2457	187.2	523
1880	114.9	3556	53.1	2078	161.1	3193		
1890	143.5	4099	70.6	2539	215.0	3396	233.5	615
1900	176.5	4593	99.2	3134	312.9	4096	260.6	652
1913	214.5	5032	145.1	3833	518.0	5307	300.9	688
1920	203.3	4651	114.0	2986	594.1	5559		
1930	238.3	5195	165.2	4049	769.2	6220	384.3	786
1940	315.7	6546	242.8	5545	930.8	7018	400.0	778
1950	344.9	6847	214.0	4281	1457.6	9573	335.5	614
1960	448.9	8571	469.2	8463	2022.2	11193	585.5	878
1970	594.9	10694	723.7	11933	3045.8	14854	893.7	1092
1980	719.5	12777	946.3	15370	4161.0	18270	1434.2	1462
1995	961.0	16371	1275.7	19097	6149.5	23377	3196.3	2653
2015					9338.0	25533	9406.0	6398

Source: Maddison (1995, 1998). GDP is expressed in billion 1990 constant dollars. GDP per capita is expressed in 1990 constant dollars.

cator is more sensitive to the extent to which an economy is capable of generating and adopting the latest advances in technological change than is GDP. Illustrating this point, in 1913, German GDP per capita was equivalent to 77.9 percent of British GDP per capita. By 1940, German GDP per capita had exceeded the 80 percent threshold (84.7 percent of British GDP per capita).

This brief look at the German–British dyad underscores the problems that can arise when calibrating power transitions, parity, and overtaking in terms of economic size; we submit that similar problems attend the use of other bulk indicators (e.g., size of military, population) to map the power transition process. We now turn to considering when the twenty-first century overtaking clock will start ticking: in 2015, as power transition theorists suggest, or sometime much later and perhaps even as late as sometime in the twenty-second century? The next section applies the models, at least some of their key concepts, to a potential Chinese challenge, the possibility of a U.S.–China transition, and the likelihood that the challenge and transition process would involve a large-scale war.

APPLYING THE MODELS TO CHINA

This section applies some key concepts from the above discussion to the widely anticipated and debated question of a future U.S.–China power transition. We first

spell out the various ways in which China might challenge the United States, its predominance in the East Asian region and, ultimately its global leadership. Then, in succession, we apply the concepts of power, strategic orientation, innovation, spatial domain, and threat perception/dissatisfaction.

Challenge

What specific political or military actions on the part of China would constitute a challenge to the United States and the existing regional or global order? What revisions might China seek to the regional status quo? How might these revisions jeopardize American interests? First, consider situations in which China might elect to use force, leaving the U.S. and others with the choice of whether and how to respond.¹²

- To vindicate claims to territory or territorial waters, principally Taiwan, but also the South China Sea including the Spratly Islands, Daiyou/Senkaku Islands, and, less likely, border disputes with India or Vietnam. Regional states, as well as the U.S., could be expected either to accept a *fait accompli* (following, say, a surprise attack on Taiwan) or to acquiesce to China's territorial claims in the face of its military power.
- To suppress separatist movements, including Taiwan, Muslim Uighurs in Xinjiang Province, and Tibet.
- To prevent the emergence of new threats such as Japan or India.
- To protect overseas communities of ethnic Chinese or business interests.

Other challenges could result from China seeking to establish regional hegemony, with implications for regional states, especially those on China's periphery, as well as the United States.

- Securing deference from regional states could quickly become confrontational if the deference demanded were to include severing or significantly limiting regional states' ties with extra-regional powers, especially the United States. China's insistence that regional states no longer host a U.S. military presence, e.g., in Korea or Japan, or that they do not establish military ties with the U.S., say Vietnam, could lead to a U.S.–China militarized confrontation.
- Curtailing the U.S. military's freedom of action throughout East Asia by means of sea lane denial, disruption of U.S. information dominance, or attacks (or threats to attack) U.S. military bases in Japan or South Korea as well as ports, airfields, or other militarily relevant facilities in the region.
- Limiting U.S. economic access to the region's raw materials, markets, and investment opportunities.
- Shifting the region's security structure away from the configuration of formal and informal bilateral alliances between the U.S. and various regional states.

Another category of challenges could arise were China to attempt to alter the multilateral "rules of the game," which were originally set in place under American auspices and which reflect American, or at least western, values, interests, and pref-

erences. Such a challenge could be mounted at either the regional or global level.

- Rules associated with the regional (APEC) or global (WTO) trade regime.
- Rules to curb proliferation of weapons of mass destruction and delivery systems.
- Rules and norms pertaining to regional security (in the ASEAN Regional Forum).

Power

Central to any structural theory of international politics is its conception of power—how it is defined and operationalized. We earlier discussed the divergent treatments of power found in the power transition and challenger models, and showed how the former's reliance on indicators of gross economic size was misleading in the case of the German–British dyad in the late nineteenth and early twentieth century. The U.S.–Chinese comparison is equally revealing. Table 1 compares U.S. and Chinese GDPs to a forecasted 2015 point, by which time they are expected to have converged.¹³ It also compares the respective GDP per capita values to the same 2015 point. In 1995, Chinese GDP per capita was about 11 percent of the comparable American figure. By 2015, it is projected to rise to 25 percent of U.S. GDP per capita. While this represents more than a doubling of the 1995 proportional figure, 25 percent suggests that the Chinese economy will have quite some way to go to approach the U.S. economy's degree of technological sophistication and productivity.

Tammen et al., (2000) equivocate considerably on the significance of a 2015 overtaking. While they make use of the same forecasted information on 2015 that we do, some chapters portray this anticipated economic overtaking as providing grounds for alarm while other chapters suggest that Chinese underdevelopment means that it will take more time before the GDP transition can be translated into a relative power advantage. Even so, the position that seems most consistent with power transition arguments is conveyed by the following passage (Tammen et al., 2000, p. 59):

The power asymmetry that secured U.S. hegemony from Soviet threats was based both on productivity and population. China has the potential to overtake the United States because it only requires a level of productivity one-fifth that of the United States due to its tremendous population advantage. Short of a catastrophic nuclear war or domestic disintegration, one cannot but anticipate the emergence of China as the largest and most productive nation in the international system.

We need not dwell further on conceptual and measurement issues,¹⁴ but we do emphasize that power transition theory's operational emphasis on quantity and absolute size—viz., GDP, population (and size of the military in some widely used multivariate indexes)—does not map those aspects of power in the twenty-first century that are most relevant to a potential U.S.–China transition. We think the challenger model's focus on quality and on highly specialized global reach capabilities will provide a more precise fit.

The sheer size of China and of the PLA would certainly pose strategic and tactical problems insofar as the U.S. and any potential set of regional allies would be vastly outnumbered. But sheer size is not necessarily an advantage, except perhaps in large-

scale land wars, precisely the kind of war in which the U.S. would be least likely to engage. Furthermore, after 1985 China shifted away from the Maoist strategy of "people's war," in which adversaries were to be drawn into a protracted war that allowed China to capitalize on its considerable strategic depth and very large armies, to a strategy of "local (or limited) war." Local wars, which are anticipated to be fought on China's peripheries and to be decided quickly, are limited in geographic extent, as well as in terms of their political purposes.¹⁵ As Burles and Shulsky (1999, p. 45) point out, "China's vast size and population, crucial assets in the traditional 'people's war' concept, are, at best, irrelevant under local war conditions." This conclusion is even stronger in light of the doctrinal shift to "local war under high tech conditions." As Godwin (1999, p. 60) puts it: "[W]here mass can no longer be assumed to substitute for quality, operational concepts designed to compensate for technological deficiencies are increasingly difficult to realize."

It is in this context that General Zhao Nanqi, director of the China Military Science Association, argues that China's military modernization entails a change in "armed forces construction from a quantity and size model to a quality and effectiveness model" (cited in Burles and Shulsky 1999, p. 48).¹⁶ Consider, for instance, naval capabilities: "In aggregate terms the PLAN is the third largest in the world. It is roughly equivalent in size (but not armament) to the Russian Pacific fleet. . . . However in qualitative terms, when measured against other navies in Asia, one finds that the Japanese naval Self-Defense Force, the Indian Navy, the combined naval forces of the ASEAN, and elements of Taiwan's Navy are all superior to the PLAN. And of course the PLAN is incomparable to the U.S. Navy" (Shambaugh, 1997, p. 25).

Absent a modern air force, it is likely impossible for the PLA to prevail in a local war under high tech conditions, yet "the PLAAF has always been the technologically weakest leg of the PLA force structure" (Shambaugh, 1997, p. 29). The PLAAF counts over 4,500 fighter-interceptors in its inventory but most of these are obsolete relics, 1950s–1960s vintage Soviet aircraft that are no match for the much newer American and French combat aircraft deployed by the U.S., Japan, and Taiwan. The lack of AWACs surveillance and target acquisition systems, airborne refueling capabilities, and sophisticated C³I (command, control, communications, and intelligence) combine to limit the PLAAF's and PLANAF's ability both to project force and to coordinate the kinds of joint (air, land, sea) operations envisioned by the strategic doctrine of local war. Lewis and Litai's (1999, p. 100) survey of China's less than successful efforts to develop a modern air force leads them to conclude that, "[t]here is no near- to medium-term likelihood that China's air force could match those of its possible foes."

In sum, the quantity of naval and air capabilities arrayed against China's potential foes provides a highly misleading overestimate of the country's military power. China's weaknesses in this regard stem from a variety of qualitative deficiencies. Least of all would we expect such broad gauge measures as GDP, population or PLA manpower to provide much guidance as to how and when a U.S.–China power transition might unfold. Even if we were to allow that such measures of national "bulk" might have some predictive power, they surely do not offer much understanding. These conclusions are reinforced when we turn to the closely related issue of strategic orientation.

Strategic Orientation

The power transition model does not take into consideration similarities or differences in strategic orientation between dominant powers and challengers. Conversely, as argued earlier, strategic orientation is a critical element in the challenger model. The maritime orientation of system leaders has resulted in their development of global reach capabilities, a strong position in global commerce, industry and finance, and the creation of global networks and institutions. In combination, these global proclivities have meant that system leaders have established a strong military and economic presence in various geographic regions, a presence that often brought about conflicts of interest with upwardly mobile regional powers. Challengers can be either regional powers that have used land power to climb to the top of a regional hierarchy (historically Europe) or other powers with a maritime orientation and global aspirations. Confrontations between globally oriented system leaders and continentally oriented regional leaders have been much more war prone, with the former invariably emerging victorious. Challenges from other global powers have tended to be resolved well short of global war.¹⁷

China has traditionally been a continental power with force configurations, weaponry, and strategies oriented to land warfare along its 20,000 kilometers of borders with (presently) fourteen different countries, and to coastal defense along China's 18,000 kilometers of coastline. Consider the extent to which China's force structure as recently as 1998 still reflected the people's war/land-based strategy: China's army accounted for 73 percent of its 2,840,000-strong active forces, the navy for 10 percent, and the air force 17 percent; the corresponding proportions for the U.S. army, navy and air force in the same year were, respectively, 33, 40, and 27 percent of the 1,443,000 active forces total (Blasko, 1999, p. 267). This continental strategic orientation continued until the mid-1980s, when China began to shift away from the "people's war" strategy. Swaine and Tellis (2000, p. 124) attribute this shift to "dramatic changes in China's strategic geography" brought about by the economic reforms initiated in the late 1970s: "[I]ts most valuable economic and social resources now lie along its weakly defended eastern and southeastern territorial periphery as opposed to the secure interior heartland as was the case during the Cold War."

This change was reinforced by the collapse of the Soviet Union and the consequent easing of what was then China's principal threat, along its northern border. The main threat was now the United States (along with Japan and Taiwan), which brings substantial air/naval force projection capabilities to the region. Together, these changes "put a premium on the development of new kinds of conventional forces—primarily air and naval—and new concepts of operation that are quite alien to the traditional continental orientation of the Chinese military." Owing to this continental orientation, "[T]he PLAN's [PLA Navy] role in 1985 [had been] the coastal defense component of a continental strategy" (Godwin, 1999, p. 49). Thus, in Finkelstein's (1999, p. 117) terms, "[f]or the PLA today (and more than likely tomorrow) the essence of defending China will be defined by the PLA's ability to defend seaward from the coast in the surface, subsurface, and aerospace battle-space dimensions. This is precisely the type of warfare that the PLA is currently least well postured to conduct."

Under the new doctrine of "local war under high tech conditions," maritime strat-

egy, weapons, and operations have been deemed at least as important as the traditional emphasis on continental defense. But the PLAN's resulting attempts to extend its operational range from "brown water" (coastal defense) to "green water" (off-shore defense) have been less than expeditious. The eventual development of a "blue water" navy capable of projecting and sustaining force over much greater distances from Chinese territory is even more problematic, constrained by diplomatic choices (no alliances, no forces stationed abroad) as well as technical factors (weak amphibious capabilities, poor logistics). China's military, in a Chinese general's oft-cited turn of phrase, is like a boxer with "short arms and slow legs."

Consider China's efforts to improve its ability to project maritime force (an elephant's effort to develop whale-like capabilities, to continue the earlier metaphor). Chinese military strategists have declared the intention of eventually being able to project a zone of "active defense" out as far as what they term "the first island chain," which lies 500–1,000 nautical miles away from China's coast and extends from Korea to the Ryuku and Spratly Islands (Pillsbury, 2000, p. 267, 302). There are three levels within this first zone:

1. brown water, 0–50 miles, defended by radar missiles, coastal patrol boats and gunships, mines, and land-based aircraft;
2. green water, from 50–300 miles out, defended by missile destroyers, corvettes, ship-based helicopters, and land-based aircraft;
3. blue water, out to the first island chain, to be defended by submarines equipped with advanced missiles and naval attack aircraft.

Beyond that, the PLAN aspires to project force out to the "second island chain," which stretches from the Aleutians to Guam and to the Philippines.

Where does China stand with respect to realization of these force projection objectives? Godwin (1997, p. 220) concludes that the PLA has improved its "ability to project and sustain forces in nearby maritime regions claimed as sovereign Chinese territory." Yet, despite the improvements, China's capabilities remain quite limited: "In a potential conflict against the United States or Japan . . . the PLA Navy could disrupt—but not defeat—operations as far as 200 nautical miles offshore" (Shambaugh, 1999–2000, p. 60).¹⁸ Indeed, it is probably more accurate to speak of China's *force extension*, rather than projection, capabilities. In Frankenstein and Gill's (1997, p. 133, fn.7) terms:

It is useful to distinguish between force extension and force projection. The latter term . . . means the ability to insert and sustain military force in theatres distant from the homeland. Force projection thus requires the development of forces capable of operating on their own and the logistics capability to sustain them. Force extension, on the other hand, would require only the ability to employ force at a distance for a short time and without the intention or requirement to sustain it. An extension strategy might be suitable for certain scenarios in the South China Sea, but would be inadequate for an invasion and necessary occupation of Taiwan.

Another useful perspective on power extension/projection can be expressed in

terms of “three generic levels of capability” (Swaine and Tellis, 2000, pp. 160–161), those necessary for China to:

- *deny* its adversaries free use of a given battlespace;
- *control* a given battlespace to a degree that allows operations without inordinate risks to its own forces;
- *exploit* its control of a given battlespace to bring coercive power to bear against the strategic centers of gravity valued by its adversaries.

Combining the two standards, then, China’s ability to extend air and naval force provides it with no more, at least for now, than a partial capability to deny the U.S. or other adversaries free use of the battlespaces along China’s maritime periphery.

These limited capabilities are the result of technological inferiority vis à vis the U.S., Japan, and Taiwan. But the idea of finding ways to defeat foes with superior capabilities has a long and venerable history, dating back to the military theorist Sun Tzi.¹⁹ More recently, as Godwin (1999, p. 42) points out, “[a] consequence of Mao Zedong’s successful adjustment to Japanese (and later Kuomintang) military superiority is that the PLA’s doctrinal tradition contains the principle that technological inferiority does not necessarily foreshadow defeat.”

The principle of “the inferior defeating the superior” has led to an emphasis on what the Chinese call asymmetric war, along with corollary emphases on deception, surprise and pre-emption.²⁰ Pillsbury (1999, pp. 69–71) reports six approaches to asymmetrical naval warfare found in the Chinese strategic literature:

1. Attack space-based communications and surveillance systems;
2. Use of shore-based missiles and aircraft rather than developing large (symmetrical) naval forces;
3. Develop “magic weapons,” e.g., tactical laser weapons, stealth technology adapted to ships and cruise missiles;
4. Attack the naval logistics of the superior navy;
5. Attack the command and information systems of the superior navy;
6. Use submarines and new types of torpedoes.

Note that most of these “asymmetric” methods, which are supposed to compensate until China overcomes its technological inferiority, themselves require capabilities that lie in China’s technological future. The elephant is clearly having difficulty transforming itself into a whale, or even developing some whalelike characteristics. For China to become a maritime power with (regional) force projection capabilities will require that it enhance its capacity for innovation, the subject of the next section.

Innovation

Gilpin (1981, pp. 188–189) views innovation as a type of strategy by which a dominant state can meet the increasing costs of maintaining the existing international system when challenged by a rising state (for whom the costs of changing the status quo are decreasing): “Through organizational, technological, and other types

of innovations, a state can either economize with respect to the resources at its disposal or increase the total amount of disposable resources. . . . This innovative solution involves rejuvenation of a society's military, economic and political institutions." We concur with Gilpin's emphasis on innovation but think that he does not take it far enough. Specifically, we view innovation as a general and defining attribute of system leaders, a kind of activity that they undertake systematically on a continuous basis, and not merely a strategy, among others, to be pulled off the shelf should challengers arise. Furthermore, we think the key feature of innovation is that it brings about *qualitative*, sometimes revolutionary, changes that enable system leaders to open initially and widen subsequently their economic and military leads; the influence on the quantity of available resources emphasized in Gilpin's formulation is a salient, but less important, consideration.

It is probably safe to assume that the United States will sustain a high rate of innovation, technologically and organizationally, and in both the economic and military areas. But also critical to any potential power transition will be China's ability to develop a capacity for innovation sufficient to avoid falling further behind the U.S. in the revolution in military affairs (RMA).²¹ There seems wide agreement that if China tries to emulate each and every generation of American military technology it will take a century or more to catch up with the U.S. military. But it may be possible for China, by exploiting the advantages of backwardness, to "leapfrog" over some generations and thus to accelerate the catch-up process. To be sure, the gap between China and the U.S., Japan, or Taiwan is wide. As Shambaugh (1997, p. 220) wryly notes: "While some of the systems under development will permit the PLA to 'leapfrog' forward at least a decade technologically, in many cases they will be leaping from the 1960s into the 1970s." Even if one expects China to develop the requisite capacities to innovate, it is very difficult to estimate when this will happen, how long until the resulting innovations significantly impact the military competition with the United States, and which technological stages can be leap-frogged.²²

Several recent studies have begun to address these questions by focusing on China's thriving civilian industries as a potential source of advanced technologies for the military sector. China's indigenous military R&D facilities have had limited success in developing new technologies and have been plagued by lengthy development times, so it is unlikely that China will rely solely on home-grown weapons systems. The primary external sources of technology include imports of weapons systems and manufacturing technologies from other powers; previous significant upgrades have resulted from imports, mainly from the Soviet Union/Russia (e.g., Sovremenny destroyers, SU27 combat aircraft, Kilo-class submarines). But China has twice experienced cutoffs of imported military technology (by the Soviet Union in 1959/60 and by western countries after the Tiananmen Square crackdown in 1989), thus strengthening the incentives for self-reliant defense production. Another external source is international commercial markets, where China can purchase some critical "dual use" components and equipment and then build weapons systems around these components. But, given the wariness of governments in weapons-exporting states, neither of these external sources is likely to provide China with state-of-the-art weapons technology. The remaining external (to domestic defense industries) source is China's rapidly expanding civilian industries, which have been increasingly opened to for-

eign investment and the technology transfers that accompany it. In consequence, China's commercial sector has been climbing the technological gradient and now provides an advanced technological base.

Frieman (1999, p. 250) emphasizes the importance (as well as difficulty) of factoring some assessment of China's scientific and technological base, and thus its capacity to innovate, into any estimate of China's overall power resources. Accordingly, Frieman examines China's progress in those "technologies that will form the building blocks for information warfare and for the kind of high technology weapons envisioned by those who write about the revolution in military affairs": computer hardware and software, semiconductor manufacturing, telecommunications networking, and satellites. Frieman also considers the development of China's indigenous base of scientific and technical talent and reforms in the organization of China's scientific infrastructure, as well as the relationship between China's private industries and its defense sector. On these bases, Frieman (1999, p. 263) concludes that, "in another ten years, if not sooner, China will have at its disposal the raw material, the building block technologies, to support the systems on which the battlefield of the future will depend."

Cliff's (2001) study of the military potential of China's commercial technology reaches similar conclusions. Cliff looks at eight technology areas that are on the U.S. Department of Defense's 1996 list of *Military Critical Technologies* and that correspond to major civilian industries: microelectronics, computers, telecommunications equipment, nuclear power, biotechnology, chemicals, aviation, and space. He reports that China has "significant production capabilities" in all of these industries except biotechnology, but also that all suffer "significant limitations" (2001, p. 30). Cliff (2001, p. 58) concludes, "that China can expect to make significant technological progress in coming years but cannot possibly catch up to, much less 'leapfrog,' the United States or Japan in the foreseeable future" [by 2020]. Cliff cautions, however, that despite this gap China's technological progress could still enable development of "niche" capabilities that could pose "a serious military challenge to the United States" (p. 62).

For now, "A national military strategy focused on potentially high intensity limited, local war along China's extensive land and sea borders . . . has called for technologies Beijing's defense R&D has thus far not developed and the industrial base cannot yet produce" (Godwin, 1999, p. 59). But if, as Cohen (1996, p. 51) argues, contemporary civilian technologies of the sort examined by Frieman and Cliff, especially information technologies, are especially suitable for rapid application to military purposes, then the potential for leapfrogging may be considerable: "To the extent that the revolution [in military affairs] proceeds from forces in the civilian world, the potential will exist for new military powers to emerge extremely rapidly . . . in a few years, China will quickly translate civilian technological power into its military equivalent." Thus, we contend that China's capacity to innovate will provide valuable clues about how and when a power transition will develop. Expeditionary improvements in China's capacity to innovate will bear out Cohen's assertion. If, on the other hand, China's innovativeness continues to lag a considerable distance behind that of the U.S., then China overtaking the U.S. might wait until the twenty-second century.

Spatial domain: global or global-regional

Power transition theory lacks a meaningful spatial dimension, implicitly assuming that transitions at the apex of the international system always involve two globally oriented contenders. In recent work, the logic of transition has been lifted from the original global context and applied at the regional level (Tammen et al., 2000, chap. 3; Lemke, 2002). But by viewing transitions as either global or regional, the power transition research program misses the central spatial regularity of challenges, i.e., their global-regional configuration: those challenges that have culminated in global war have all involved an emerging regional power confronting a global leader.²⁴ This spatial dimension is theoretically meaningful, enjoys a large measure of empirical corroboration, and is particularly germane to the U.S.–China case. We do not wish to suggest deterministically that a U.S.–China war in connection with a Chinese challenge is inevitable because it fits with the historical record, but rather that, from an analytical standpoint, a transition research program that takes this aspect of the record into account is advantaged vis à vis those that do not.

Another spatial dimension that power transition theorists, except for Lemke (2002), fail to consider concerns how distance influences the challenge/transition process. Boulding (1962) introduced the concept of a “loss of strength gradient” (LSG), which posits the erosion of the effectiveness of force as a function of distance. Put simply, U.S. military power erodes because the East Asian theater is on the other side of the planet from U.S. home territory — even though the United States has invested heavily in developing weapons technologies and logistic systems that arrest the rate of decay. The network of alliances, bases, and nonalliance military relations that the U.S. has constructed also serve to offset the LSG. Nevertheless, for various reasons, some erosion is inevitable. First, as Szayna et al. (2001, p. 67) contend, “a proto-peer [challenger] with some revisionist tendencies is likely to attempt to alter regional hierarchy first. Because of its global responsibilities the hegemon will be able to concentrate only a portion of its power at the regional level, whereas the regional [challenger] is likely to be able to concentrate almost all of its power there.” U.S. military advantages would be reduced further were it already engaged militarily in another geographic theater, e.g., the Persian Gulf or Central Asia. Additionally, Chinese strategists believe that in order to bring sufficient force to fight a war along China’s maritime periphery the United States would have to establish very long logistics lines, which then “represent relatively vulnerable and extremely lucrative targets” (Burles and Shulsky 1999, p. 63). The relatively shallow “brown” waters around Taiwan and in the South China Sea are also seen as disadvantageous to the U.S. because such a maritime environment is not optimal for U.S. antisubmarine capabilities, which were designed for deep “blue” ocean warfare.

The major implication of the LSG for a possible U.S.–China power transition is that China need not match the U.S. in terms of overall military capabilities to mount a challenge. As Christensen (2001, p. 7) argues, “with certain new equipment and with certain strategies, China can pose major problems for American security interests, and especially for Taiwan, without the slightest pretense of catching up with the United States by an overall measure of national military power or technology.”²⁵ Matching American global military power may lie in the distant future, but being able to

inflict punishment on the U.S., should it intervene in regional matters of vital interest to China, is a much more realistic goal that is attainable in the near- to mid-term. Presently, as we have shown in the previous section, China's LSG falls precipitously at or just beyond its maritime periphery. Should China develop force extension/projection capabilities adequate to deny the U.S. the ability to operate with impunity (i.e., without risk to its forces) along this periphery, the point at which its LSG intersected with that of the United States would be pushed out further from the Chinese mainland.

The salience of some of the concepts discussed above—asymmetric warfare, the doctrine of “the inferior defeating the superior,” and the development of “niche” capabilities—becomes apparent in this context. Thus, “what will determine whether China takes actions that will lead to Sino-American conflict will likely be politics, perceptions, and coercive diplomacy involving *specific military capabilities in specific geographic and political contexts*, not the overall balance of military power across the Pacific or across the Taiwan Strait” (Christensen, 2001, p. 13, emphasis added). Godwin (1997, p. 220) explains how this perspective affects the PLA's R&D and procurement: “[I]t is useful to think about military modernization as now focused primarily on creating specific attributes designed to respond to immediate requirements while the vast bulk of the armed forces continue to pursue the complementary broader vision of a truly modern force by the years 2020–2050.”

To summarize, we contend that theorizing and empirically testing the spatial dimensions of challenge and power transition—specifically their global-regional configuration and the effects of distance and the LSG—is essential to understanding these processes. The explanatory power of the challenger model is thereby augmented in ways we think will prove useful to understanding a potential U.S.–China power transition.

Threat Perception/Dissatisfaction

Though we are inclined toward structural models (and their materialist bases) cast at high levels of social aggregation, we recognize that attention to attitudinal and perceptual factors is important, indeed necessary. Otherwise, it is impossible to account for how structural factors, especially structural change, translate into behavior. Accordingly, one strength of the power transition model is its emphasis on the level of (dis)satisfaction with the status quo order on the part of the ascending state (Tammen et al., 2000, pp. 9–15). Although we agree strongly with this emphasis as pertains to the ascending challenger, trying to make this variable symmetrical by also assessing the (dis)satisfaction of the declining dominant power seems a questionable conceptual extension. As Tammen et al. (2000, p. 9) acknowledge, “[b]y definition, the dominant power is satisfied . . . [and therefore] is the defender of the status quo. After all, it creates and maintains the global or regional hierarchy from which it accrues substantial benefits.” Yet the authors then proceed to develop and graphically illustrate several scenarios based on the combination of the challenger's *and* the leader's (dis)satisfaction.

A more fruitful approach, in our view, is to combine assessment of the challenger's (dis)satisfaction with the existing order and estimates of the system leader's percep-

tion of the threat posed by the challenger. On the one hand, the challenger's dissatisfaction can be mapped across the elements of order we discussed earlier: the hierarchy of power and status; rules for managing security, use of force, and the laws of war; mechanisms for managing territorial changes; mutual recognition of spheres of interest; and rules governing trade and investment. The greater the extent that a challenger feels that the existing order and its constituent rules do not afford it status, respect, and material rewards commensurate with its rising power, the more dissatisfied it is likely to be. On the other hand, the leader's threat assessment has two main elements: (1) its own future vulnerability to the challenger, based on projections of its own and the challenger's growth rates and innovative performance; and (2) the challenger's revisionist potential, i.e., the likelihood that its dissatisfaction will lead the challenger to pursue a revisionist agenda aimed at overturning the existing order (see Szayna et al., 2001, pp. 51–52). The more threatening the leader perceives the challenger to be, the more likely the former will resort to competitive strategies to cope with the challenger's ascent.

How to combine these two attitudinal dimensions? We propose that the most conflict-prone type of power transition would be characterized by a combination of a dissatisfied challenger and a system leader that perceived the challenger to pose high levels of threat. The least conflictual situation would result from a satisfied challenger and a system leader with low threat perceptions. The other combinations—dissatisfied challenger and low threat perceptions, and satisfied challenger and high threat perceptions—would likely fall somewhere between the first two in terms of intensity of conflict.

It is too early to assess China's dissatisfaction with the existing, U.S.-dominated order, both globally and in the Asia-Pacific region. The "century of humiliation" and the succession of indignities suffered at the hands of western and Japanese imperialism lead pessimists on this question to the view, as characterized by Betts and Christensen (2000–2001, p. 7), that, "a seething set of Chinese grudges and territorial ambitions are on hold only for a lack of confidence in capability." Optimists, conversely, believe that China can be constructively engaged—both bilaterally by the United States and others and multilaterally in various international regimes—to produce a generally satisfied China with a positive stake in a world order modified to account for its interests and power. The World Trade Organization can be regarded as a kind of laboratory within which these expectations will be put to the test.

While China's level of (dis)satisfaction remains to be determined, there is considerably more evidence that China is increasingly viewed as a threat by American leaders, at least (but not only) those, like the current administration, on the political right. The opening salvo of the so-called "China threat" school of thought was the ominously entitled book, *The Coming Conflict with China* (Bernstein and Munro, 1997), which has been followed by a burgeoning literature pro and con. There have also been a series of reports by government agencies and government-sponsored commissions that regard China in threatening terms (most recently, U.S. Department of Defense, 2002; and U.S.–China Commission, 2002). The analytical task will be to devise systematic methods for assessing (dis)satisfaction and threat perceptions as the China challenge unfolds over the coming decades.

CONCLUSION

Our expectations of what might take place in the future are conditioned heavily by the conceptual frameworks and assumptions that we bring to forecasting exercises. The expectations of power transition modelers are reasonably clear. A Chinese transition to dominant power is inevitable and fairly imminent (some time roughly within the next generation). Therefore, the main question for U.S. foreign policy decision makers is how best to accommodate this sea change in the international environment. Yet this forecast is premised primarily on assumptions about the impact of population and economic size. We do not say that bulk size is irrelevant, but there are other considerations that lead to much different conclusions. If one emphasizes such factors as technological innovation, strategic orientation, and spatial domain, as are found in leadership long cycle arguments, the inevitability of a power transition or a change in systemic leadership becomes much less evident and imminent. Structural change may be inevitable but a power transition is not. A bid for systemic leadership, as seen by the challenger model, entails much more catching-up than what is envisioned in the power transition model.

Moreover, it is possible that China will continue to become larger militarily and economically without necessarily closing the qualitative gap between itself and the current system leader. The analytical question thus becomes whether we should pay more attention to the quantitative or the qualitative gap between leader and potential challengers. We argue for the latter. Such an argument by no means precludes variable amounts of Sino-American conflict in coming years but it does imply that an intensive Chinese challenge of U.S. systemic leadership is more than a generation away. Whether a challenge occurs or not will depend on how Sino-American relations unfold in the coming decades, in addition to the choices made by Chinese and U.S. decision makers in developing economic and military capabilities for the future.

NOTES

1. The main caveat to the preceding point is that two states that are specialized in the same economic activities are more likely to conflict than two states that are not. For a challenger to develop a major innovation in one of the leader's specialties—whether Asian spices, American sugar, or automobiles—the resulting economic threat is apt to be seen as quite acute. A challenger that is threatening to undermine one or more legs of the lead economy's foundation is more dangerous than a challenger specializing in activities that are complementary to the leader's resource base. At the same time, the lead economy tends to monopolize those sectors in which it possesses technological edges. Challengers must literally break into markets that have not been characterized by much competition. As Japan's experiences in the 1980s and 1990s illustrate, it is difficult to do this without resorting to tactics that are viewed as unfair by the targets of the challenge. Indeed, leaders and challengers tend to converge in their choice of economic specializations rather than settle into a harmonious division of labor. It is not really that common for a challenger to innovate in some totally new activity in which more established actors are not already present. The leading sectors of industrialization have been fairly uniform, suggesting that lead economies will find it difficult to avoid direct competition with other industrial economies. More variable are the geographical locations and significance of markets in which leaders and challengers compete. For instance, Asian trade dominated in the late fifteenth through seventeenth centuries as the main locus of contention. But, it was German maneuvering in Middle Eastern markets in the late nineteenth and early twentieth centuries that contributed to the British sense of

- threat moreso than did nineteenth century American competition in Central America.
2. See Gilpin (1981) for a more extended discussion of these elements of order. The contributors to Kupchan et al. (2000), especially the chapters by Kupchan and Khong, focus on these elements as the key to understanding why some power transitions do not culminate in large-scale war.
 3. This statement is not entirely correct. One of the extensions of the power transition research project has involved applying the principles to regional systems. Examples of this type of analysis are found in Tammen et al. (2000, chap. 3; Lemke (2002); and DiCicco and Levy (1999, p. 691–692). Nevertheless, power transition analysts assume that conflict diffuses down from global to regional levels but not up from regional to global levels. The challenger model sees the problem as an interaction of global and regional dynamics.
 4. One problem with this line of argument is that power transition analysts, usually parenthetically, suggest that Britain overtook France at some point in the late Eighteenth century, which led to the French Revolutionary and Napoleonic Wars. Lacking data on GDP, they are reluctant to pursue this possibility. Yet, since Britain had a smaller population than France, its transition had to be based primarily on economic development. But if this is the case, the power transition historical script has one case of transition based on economic development (Britain–France) and two cases of transition based on population and economic development (the successful and relatively nonconflictual U.S.–Britain case and the unsuccessful, conflictual Germany–Britain case). The very small number of cases provides a rather shaky foundation for generalizing about economic development, population size, and power transitions.
 5. For an excellent review and extension of the “war initiation” models developed in association with power transition theory, see Wedeman (2000).
 6. See Organski and Kugler (1980, p. 34) for the development of the argument that power = population multiplied by GNP/population which, in turn, equals GNP. They also report that their GNP indicator is highly correlated ($r = 0.86$) with a Correlates of War index of capability (Singer, Bremer, and Stuckey, 1972) that aggregates six indicators of military, industrial, and demographic standings.
 7. See Organski and Kugler (1980, p. 49). For the most part, the 80 percent rule seems to have been maintained in subsequent power transition analyses.
 8. The leadership long cycle argument is that each system leader has enjoyed at least two spurts of innovation-led economic growth. The first spurt in this “twin peaks” model destabilizes the world political economy’s pecking order and leads to global warfare. Emerging victorious from the global war at the head of a winning coalition improves immensely the chances of pioneering a second, post-war growth spurt. This topic is examined at greater length in Modelski and Thompson (1996).
 9. The subject of relative decline on the part of system leaders is explored extensively in Rasler and Thompson (1994).
 10. The estimates are based on purchasing power parity converters to avoid problems encountered in using exchange rates. Details on the procedures used are found in Maddison (1995, pp. 162–169).
 11. The relative size of Germany’s economy vis-à-vis Britain measured in GDP terms was 47.1% in 1820, 48.6% in 1850, 45.7% in 1870, 46.1% in 1880, 49.2% in 1890, 56.2% in 1900, 67.6% in 1913, 56.1% in 1920, 69.3% in 1930, 76.9% in 1940, 62.0% in 1950, and 104.5% in 1960.
 12. This compilation of potential Chinese challenges is drawn largely from Khalilzad et al. (1999, chap. 2) and Swaine and Tellis (2000, chap. 1). There are, of course, other issues on which U.S. and Chinese interests are at odds. One frequent source of tension is China’s human rights practices; another is its exports of nuclear and missile technologies, especially to the Middle East and Pakistan. Though human rights is an important element in U.S. foreign policy, it is not an issue area that engages U.S. “vital interests” and thus is not likely to lead to militarized conflict; the same cannot be said concerning proliferation of weapons of mass destruction.
 13. Maddison’s (1998, pp. 96–97) forecast is actually optimistic from a Chinese perspective in the sense that he assumes that U.S. technology advances will be as slow as they were in the 1980s and 1990s. But he also assumes that Chinese economic growth will slow down somewhat from its strong performance in the past few decades because he does not expect all these factors that contributed to impressive growth in the recent past to be duplicated in the future factors (e.g., increases in the number of women in the work force or exceptional agrarian gains). His own very brief conclusion about the international political implications of this forecast merits repeating in full: “With such performance China would probably reach U.S. levels of GDP by 2015, would account for about 17 percent of world

GDP and have a per capita income nearer to the world average. It would still be a relatively poor country with one fifth of U.S. GDP per capita, but its role in the world economy and its geopolitical leverage would certainly be greater" (Maddison, 1998, p. 96). It is rather difficult to disagree with this modest conclusion.

14. See Thompson (1996, pp. 168–171) for a more detailed critique of how power has been defined and operationalized in the power transition research program.
15. Burles and Shulsky (1999, p. 31) cite Chinese strategists as identifying five types of "local war": small-scale border conflicts, contests for territorial seas and islands, surprise air attacks, partial hostile intrusions, and punitive counterattacks.
16. Cohen (1996, p. 47) provides a persuasive general argument that, owing to the ongoing revolution in military affairs, "the balance between quality and quantity has shifted in favor of quality." See Khalilzad et al. (1999, p. 61) for the contention that the Chinese military needs to "trade quantity for quality."
17. This argument that dissimilar strategic orientations are more likely to result in global war is directly at odds with Ross' (1999, p. 203) interpretation that complementarity of different strategic orientations is conducive to peace: "The U.S.–China bipolar conflict is a rivalry between a land power and a maritime power. This dynamic reduces conflict over vital interests and mitigates the impact of the security dilemma, reducing the likelihood of protracted high-level tension, repeated crises, and arms races." Ross (1999, p. 193) is also confident that, contrary to our argument in this section, "Beijing's continental interests and U.S. maritime capabilities should deter China from making naval power a priority." As noted earlier, however, though complementarity of strategic orientations makes for a more dangerous situation than similarity, Ross' argument does hold when applied to position within a global division of labor. When economic interaction is interindustry, as in the classic Ricardian sense of comparative advantage, complementarity can more easily lead to a harmony of interests. Conversely, when great powers are converging on the same set of industrial specializations, or leading sectors, commercial relations among them are more likely to be conflictual (see the earlier discussion in end note 1).
18. Note that 200–300 miles is the maximum offshore range of the PLA's land-based aircraft.
19. For explication of this concept, see Shen (1997).
20. See Russell (2001) for a provocative scenario in which China uses deception and surprise to wage a successful military campaign to take control of Taiwan. For the cognate concept of "unrestricted warfare," see Qiao and Wang (1999).
21. See Tellis et al. (2000) for a pioneering effort to reconceptualize national power that seeks to incorporate and operationalize the technological capacity of countries, including the ability to innovate. From this standpoint, "[t]he ability to dominate the cycles of innovation in the international economy is the critical mainspring beneath the production of power" (p. 36).
22. For useful surveys of China's innovative potential with respect to military technologies, see Franck and Hildebrandt (1996), Gauthier (1999), and Stokes (1999). Consensual points across these diverse, pre-Afghan war studies include: China is closing the gap with the U.S. in some critical technologies, but overall, still has a long way to go; integration of various technologies and weapons into complex systems remains a weak point (see also McVadon, 1999 on this issue), and; China does not have to catch up with the U.S. in overall strength of military technology in order to seriously complicate U.S. military operations in the Asian theater, an argument we develop in the next section.
23. On this point see also Lilley and Ford (1999).

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