Global War and the Political Economy of Structural Change

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Many students of war assume that all wars should be explicable in the same theoretical terms. For instance, it is argued that wars are caused by misperceptions, territorial disputes, or arms races gone out of control. We have no doubt that there is ample room in the study of war for a wide variety of causal factors but that does not mean that one model of war, combining a variety of factors, necessarily is the most efficacious way, or the only way, to go in explaining international violence. An alternative path is to focus on theoretically sanctioned, discrete types of wars and their possibly equally distinctive etiologies (Thompson 1990b). Global wars provide a prominent example. These events are wars fought over large expanses of territory, by many actors, for a number of years, and with profound implications for the winners, the losers, and even neutral bystanders. They are also distinctive in the sense that they are instrumental in determining how the world is structured. But we do not focus on them solely because they are big and dramatic events. Rather, we choose to focus on them as constituent elements in ongoing processes of political economy. Global wars are not simply prominent wars although they certainly are that. But they are also significant "cogs" in the political economy "machinery" that structure global politics and economics. And as such, we are able to explain why they occur and, to some degree, with what effect. The rest of this chapter will focus on how structural change generates global wars and, to a lesser extent, how global wars generate structural change.[1]

In this chapter we distinguish between the world economy, which encompasses the aggregation of all economic activities and transactions,

and the global economy, which focuses on long-distance commerce and the most technologically advanced industrial production. Within this context, global politics, then, are focused in large part on the management of problems related to the functioning of the global political economy. Global powers are the few states that have the capability and interest in participating in this arena. To do so, they require some minimal capacity for global reach, which has translated historically into maritime and, more recently, aerospace weapons systems. But they also require competitive economic infrastructures to be able to generate and afford global reach. Global wars are intense contests among global and other powers that are fought to determine whose policy preferences are most likely to influence the way, and for whose benefit, the global political economy operates. These contests are neither frequent nor do they erupt randomly. They are geared to the rise and fall of leadership structures and are most probable after an extended period of declining leadership in the global political economy.

By distinguishing between and among such terms as *world, international,* and *global,* we hope to make clear that we are not addressing the sum of all world politics, all international political economy, all military capabilities, or all wars. Only some of these phenomena are pertinent to our focus on the relationship between war and structural change. Put another way, it is quite likely that global structural change impacts have widespread repercussions, but our theoretical interest is focused primarily, and at least initially, on the actors and processes that are most central to the functioning of the global political economy.

We do not assume that nonglobal wars are irrelevant to this story. On the contrary, it is likely that wars in general, as well as conflict and cooperation propensities are linked to structural change — perhaps just as closely as global wars. But we, and others, are only beginning to explore these broader ramifications that include other types of conflicts (Reuveny and Thompson 199713)but also other processes such as economic growth (Modelski and Thompson 1996), democratization (Modelski and Perry 1991), protectionism (Thompson and Vescera 1992; Reuveny and Thompson 1997a; Thompson and Reuveny 1998), polarity (Thompson 1986; Rasler and Thompson 1994)and rivalry (Thompson 1995b, 1999a; Frederick 1999; Kelly 1999; Modelski 1999; and Goertz and Diehl, this volume).

The factors that are regarded as among the most important to structural change are those forces that contribute to the concentration and deconcentration of global reach capabilities (both economic and military).

Our principal assumption is that things work much differently when global capabilities are highly concentrated than when they are not. High concentration suggests the possibility (but not the guarantee) of relatively strong leadership, less conflict among global powers, and a more facilitative environment for global order. Other things being equal, lower levels of concentration correlate with higher probabilities of conflict, disorder, and leadership succession struggles.[2] Yet it is not so much a matter of identifying which continuum pole (high versus low concentration) is most characteristic of international relations. The problem is that international relations cycle back and forth from high to low and back to high levels of concentration. It is the dynamics of highly uneven, long-term economic growth that drives this cyclical momentum. Global war, ultimately then, is a function of long-term economic growth processes. But long-term economic growth processes are also a function of global war. The relationship is fundamentally reciprocal.

These processes of long-term economic growth and political-military power concentration at the global level are complicated further by the coevolution of regional concentration processes that operate on somewhat different principles and on a differently timed rhythm. These same regional concentration processes have tended to produce the most dangerous challengers to global leaders. Therefore, they are also important to the pace and direction of global capability concentration and deconcentration.

Our model thus encompasses two types of coevolution. One centers on the interaction between economic growth and military/political leadership at the global level. A second focuses on the interaction between the development and decay of global and regional hierarchies. Both sets of coevolutionary dynamics encompass important reciprocal influences on one another. To further explore these relationships, we need to elaborate our model by highlighting two sets of activities: long-term economic growth and global warfare.

Long-Term Economic Growth

Most economists and the theories that they have generated are more concerned about short-term growth prospects and problems. How does one avoid recession and still generate employment and the expansion of income? How does one alleviate balance-of-payments problems? How does one best combine capital and labor endowments to take advantage

of comparative advantages? What level of interest rates will discourage inflation without shutting incremental growth down completely? Short-term economic growth concerns certainly are not unimportant, but they do not address structural change. In fact, a focus on short-term economic growth tends to either ignore structural change altogether or else assume that it does not occur.

Long-term economic growth, we assume, is driven primarily by major technological innovations.3 Innovations encompass the development and application of new ways of doing things — which include pioneering new trade routes, constructing new machines for transporting goods more cheaply or more quickly thereby lowering transportation costs, and finding new ways to manipulate and transfer information (telegraphs, telephones, radios, televisions, and computers). Innovations such as these can be minor or radical but it is the latter that tend to promote major structural changes. Radical technological innovations are also discontinuous in time and space, which means that they have a tendency to appear in clusters and that they tend to emerge first in one economy before diffusing to other economies.

These assertions translate into the observation that major technological innovations generate new commercial and industrial sectors of activity that are likely to lead the rest of the economy in which they appear in terms of growth rates. They are likely to do so at particular times as opposed to being spread out over time, and they are likely to benefit most the pioneering economy in which they first appear. Still, technological innovations have finite trajectories. They are unlikely to generate growth forever. They are instead likely to encounter diminishing returns. Sunrise sectors, with the passage of time, become sunset sectors. If the onetime leading sectors are not replaced by new leading sectors, the long-term growth of the pioneering economy will slow. If another economy (or other economies) picks up the lead in developing radical innovations, the stage is set for major structural change in the global political economy.

Following Modelski and Thompson (1996), we view the modern history of long-term economic growth as being predicated on the schedule described in table 1. Table 1 lists the leading sectors associated with each successive pioneering economy since Sung China. Implicit to this approach is that the pattern described in table 1 first emerged about 1,000 years ago and that it is possible to trace the interconnections and transitions from Sung China through the Italian city-states (especially Genoa and Venice) to Portugal, the Netherlands, Britain, and the United States.

TABLE 1.

Global Lead Economies

Lead Economy	Lead Commodities or Sectors	Approximate Timing
N. Sung	Printing; national market information; rice; iron	10th–11th centuries
S. Sung	Maritime trade	11th–12th centuries
Genoa	Champagne fairs Black Sea trade	Early 13th century Late 13th century
Venice	Galley fleets; pepper	14th–15th centuries
Portugal	African gold Asian spices	Late 15th century Earlyimid 16th century
Netherlands	Baltic trade Asian trade	Late 16th century Earlyimid 17th century
Britain I	West Indies products Asian-American trade	Late 17th century Earlyimid 18th century
Britain II	Cotton textiles; iron Railroads, steam	Late 18th century Earlyimid 19th century
United States	Steel; chemicals; electrics Aviation; automobiles; electronics	Early 20th century Mid 20th century

Source: Modelski and Thompson 1996.

Each lead economy, the global political economy's most active or innovative economic zone at particular points in time, enjoys at least two waves of radical innovation. The technological effects of each wave last approximately 40 to 60 years, although the most dramatic impacts are experienced early in the wave called a K-wave (after the Russian economist, Nikolai Kondratieff, who popularized their existence to some extent in the 1920s). The first wave is crucial to the emergence of a new lead economy. It is also crucial to the emergence of a new global leader

because it produces a surplus that can be used to finance military capabilities of global reach to protect and enhance its economic lead.

A lead economy and the leading position in military global reach (which has meant naval capabilities over much of the past 500 to 600 or more years) contributes to victory in the period of turmoil and intensive conflict that tends to follow the political-economic disturbances associated with the emergence of new technological trajectories. These periods of turmoil gradually assumed the shape of global wars after conditions conducive to fusing European regional and global problems became sufficiently prominent. A victory in the intense conflict phase then proves critical to the timing and probability of a second burst of innovation and long-term growth.

In describing a pattern that holds over hundreds of years, we do not mean to suggest that each lead economy and global leader has looked exactly alike. Leads have been strong and weak, as well as somewhere in between. The lead may be based on a broad or narrow technological paradigm that links the cluster of innovations into a set of ways of doing things. By and large, though, each successive link in the lead economy sequence has tended to be more impressive than its predecessors. It is also easy to note that the industrial leaders (after the end of the eighteenth century) have generated much more impressive economic foundations for political-military leadership than was even conceivable in earlier centuries.

Nevertheless, it is difficult to remain a pioneer indefinitely. Technology diffuses in spite of attempts to keep its details secret. Some other economies, certainly not all, are capable of emulating the innovations and perhaps even improving upon them. Some will be especially eager to catch up to the front-runner and surpass its lead if possible. Competition escalates. Protectionist instincts rise to the fore as new producers lobby for insulation from external competitors with head starts. The lead economy begins to see its external markets shrinking or at least becoming much more crowded. Access to markets can take on a zero-sum outlook with competitors concerned that rivals will somehow close future access unless one's own side manages to do the same to the competition first.

The problem is compounded by factors internal to the once-pioneering economy. Initial advantages can be transformed into liabilities. For instance, a location that is ideal in one century as a convenient intermediate point between sources of supply and demand may become a hotly

contested battleground in the next century. A home market that is large enough in one era may be dwarfed by the development of much larger home markets elsewhere. Similarly, the leading sectors of one era create psychological and financial commitments that sometime must be abandoned in the next era.

Various types of institutional rigidity can be anticipated as a matter of course. As a pioneering economy, its new products initially have no competition. That can generate complacency that is difficult to overcome when the real competition emerges. There is always considerable risk associated with making commitments to new technological trajectories. If old products are still reasonably profitable, the most prudent thing to do may seem to be a matter of staying the course with one's established specializations rather than assuming the high risk of untried lines of production. By the time the apparent risk is reduced substantially, it is too late to maintain a lead in technological innovation. Moreover, strong vested interests in older ways of doing things are created that are also difficult to overcome when it comes time to strike out in new directions.

Finally, there is the possibility of resource exhaustion in areas that are critical to prevailing leading sectors. Maritime states have literally run out of sailors. Mining states have run out of gold and silver. Industrial producers have consumed their local supplies of wood, coal, and petroleum. Resource depletion may of course stimulate innovation, but there is no guarantee that an alternative resource source will be developed in fast enough time to salvage a faltering lead. Nor is there any guarantee that the location of the new resources will not favor somebody else.

Hence, external factors compete with internal factors to increase the probability that an economy that was once willing to assume high risks and to engage in experimentation, as well as embracing innovation, will become less experimental and more conservative in the future. There is really no reason that a technological leader could not maintain its lead status indefinitely. But there are many reasons that suggest the probability of doing so are not high.

The historical pattern has been one of a single innovating economy developing new technologies that bestow the advantages of controlling a monopoly. While that monopoly status can be preserved its lead economy status is assured. The monopolies are never permanent, though. They erode thanks to technological diffusion/emulation, diminishing returns, and internal rigidities that make developing still newer technologies less

likely. The lead economy may remain relatively prosperous in the absolute sense, but it is likely to experience decline relative to other economies and competitors.

We should note that one popular approach to explaining relative decline processes conflates, in our opinion, primary and secondary causes. The primary cause is that the pioneering leader loses its ability to be a step ahead of everybody else in terms of developing significant innovations. This occurs because one leading sector or a cluster of related technologies reaches a point of diminishing marginal returns and is not supplanted indigenously (but perhaps elsewhere) by a new set of leading sectors or technological regime. We view consumption trade-offs and strategic overextensions as secondary causes of decline, not primary ones. One argument (Gilpin 1981), for instance, is that leaders overburden themselves by assuming a lion's share of the protection costs for the global political economy. Resources consumed by the world power's military forces leave less for economic investment purposes at the expense of future growth. The burden is certainly real, but we suggest that, for world powers, it at best aggravates a situation in which the long-term engines of growth have already been slowed. Excessive protection costs, in and of themselves, do not retard ongoing growth as much as they may accelerate growth prospects already in decline.4

Another secondary cause from our perspective is the argument (Kennedy 1987) that a global leader makes a number of commitments when its resources are maximal. As relative decline sets in and its resource base erodes, a leader must either reduce its commitments or face an overextended strategic situation with more commitments than it can afford. Overcommitment, again, is a very real process (Thompson and Zuk 1986). Our point is that world powers do not experience relative decline because they have become overextended. Rather, they become overcommitted because they are experiencing relative decline.

Global War

We see global war as an outcome of the combination of processes of concentration and deconcentration operating at both the global and key regional levels of analysis. When the two sets of processes become fused intermittently, the probability of a global war breaking out is greatly enhanced.

Global Concentration Processes

From a systemic perspective, the global political economy is characterized by undulating patterns of capability concentration, followed by deconcentration, and then followed again by reconcentration. We attribute this pattern primarily to the emergence and relative decline of lead economies. The linkage to global war is straightforward. When the global political economy is highly concentrated, the outbreak of a global war is unlikely. After the global political economy has experienced considerable deconcentration, the outbreak of a global war becomes more probable because global wars, inherently, can be seen as succession struggles over which economy will replace the incumbent as the global system's military-political center. In fact, we designate as global wars only those intensive conflicts that lead to a new phase of significant reconcentration and global military-political and economic leadership. In this respect, we admit to being more interested in these wars' roles in the concentration-deconcentration process than we are in their identities as increasingly lethal wars among major powers. Put another way, we think global wars merit special attention as a distinctive set of wars that are a critical part of the global political economy's functioning.

The tendency toward concentration, deconcentration, and reconcentration is much older than the "institution" of global war. We can find instances of concentration and deconcentration going back to 3500 B.C. and the Sumerians, but, in our perspective, the concentration-deconcentration-reconcentration sequence only emerged as a continuous process with the advent of Sung Chinese economic and maritime innovations a millennium ago (Modelski and Thompson 1996). In the period roughly between A.D. 1000 and 1500, we can trace early, transitional versions of successive lead economies in the global, transcontinental sense (Northern and Southern Sung, Genoa, Venice, Portugal). Their fluctuations in relative prosperity appear to be associated with periods of intense conflict that intervene between the twin peaks of economic growth described earlier, but they do not take on the form of the global wars with which we have become more familiar in the twentieth century. After A.D. 1500 or, more precisely, 1494, the global war institution begins to emerge. We assume that this emergence reflects an evolving system experiencing environmental change. The global political economy evolved in such a way that it became increasingly susceptible to intermittent fusion with European regional politics. Global wars are one of the consequences of that evolutionary change.

We will return to both the regional dimensions of global war and the implications for system transformation in later sections. For now, we need to focus on further elaborating the global processes that are most important. We identify five global wars: the Italian and Indian Ocean Wars (1494–1516), the Dutch-Spanish Wars (1580–1608), the Wars of the Grand Alliance (1688–1713), the French Revolutionary and Napoleonic Wars (1792–1815), and World Wars I and II (1914–45). These wars are fought by coalitions of global and other types of powers, as identified in table 2.

The pattern is essentially one of the incumbent global system leader and its allies arrayed against a principal challenger and its allies. For reasons to which we will return in the next section, the challenger has never won. On the other hand, the incumbent leader may also lose its status to one of its allies if the most active economic zone has shifted away from the old leader. In both the Dutch-British and British-American transitions, the political-military shifts in relative status took place during the respective global wars. The junior partner going into the war emerged as the senior partner and the new system leader.

In this respect, we should emphasize that the structure of conflict is more complicated than a simple challenger versus incumbent situation. Declining incumbents select, to some extent, which challengers they will fight and with whom they will ally to meet the intensive challenge. Thompson (1997) argues that this selection process is primarily a function of four variables: maritime-commercial orientation, proximity, similarity (regime type, culture, ideology, and race), and innovative nature. The threats that are seen as most dangerous are those associated with explicitly premeditated challenges that come from dissimilar types of states with fundamentally different strategic orientations. States with strategic foci on utilizing land forces to expand territorial control find it difficultto compete with sea powers other than via attempts at direct conquest. Nearby challengers are less easy to ignore than those located farther away. The more "alien" the challenger, the greater is the likely level of suspicion and misperception in divining motivations and intentions. A challenger and incumbent leader are also more likely to fight if their economic competition is based on similar commercial-technological commodities. If the challenger perceives that the leader will thwart any peaceful positional encroachments, a nonpeaceful competition is more probable.

Similarly, potential challengers adopt different strategies of confrontation. The most traditional approach can be referred to as "capture-the-center," in which the challenger attempts to seize control of the lead economy and its commercial networks. An alternative approach is to avoid attacking the leader on its home ground and to instead focus on attacks on its far-flung commercial networks and the development of alternative networks, as demonstrated by warfare among Portugal, Spain, England, France, and the Netherlands in Asian and American waters. A third strategy involves creating a relatively autonomous subsystem within the world economy that excludes economic competition with the system leader. Napoleon's Continental system, German *Mitteleuropa* aspirations, Japan's Co-prosperity Sphere, and the communist international system of the second half of the twentieth century are all illustrations of this third strategy. How threatening this strategy appears will depend on how coercive the subsystem creation and maintenance processes are and who suffers most from the exclusionary policies. Table 3 suggests that the capture-the-center strategy has gradually lost much of its appeal. The flanking, alternative network approach became increasingly popular in the period most focused on long-distance commerce, while the exclusionary subsystemic approach has become more prevalent in the movement toward increased emphasis on industrial production.

Identifying the Elite Actors and the Long Cycle of Global Leadership

In analyzing global political economy processes, some care must be given to identify which actors are most involved at this level. The tradition in

TABLE 2.

Global Wars and Basic Coalitions

Global Wars	Global Power Coalitions		
1494–1516	Portugal/Spain/England	vs.	France
1580–1608	Netherlands/England/France	vs.	Spain
1688-1713	Britain/Netherlands	vs.	France
1792-1815	Britain/Russia	vs.	France
1914-1945	United States/Britain/France/Russia	vs.	Germany/Japan

Source: Based on Modelski and Thompson 1988, 16.

TABLE 3.

The Evolution of Challenger Strategies

		CHALLENGERS BY TYPE		
Iteration	**Active Zone**	**Territorially Based Autocracies**	**Maritime-Commercial Powers**	**Strategies**
1	Northern Sung	Chin		Capture-the-center/imperial expansion
			Southern Sung	
2	Southern Sung	Mongols		Capture-the-center/imperial expansion
3			Genoa	Alternative network development
			Venice	Flanking/skirmishing
4	Genoa		Venice	Alternative network development/flanking/skirmishing
5	Venice	France I		Capture-the-center/imperial expansion
			Portugal	Alternative network development/flanking
6	Portugal	Spain		Capture-the-center/imperial expansion
			Netherlands	Alternative network development/flanking/skirmishing
			England	Alternative network development/flanking/skirmishing
7	Netherlands	France II		Capture-the-center/imperial expansion
			England	Skirmishing/alternative network development/subsystemic protection at home
8	Britain I/II	France III		Alternative network development/subsystemic protection and regional/imperial bloc formation (Capture-the-center contemplated)
9	Britain II	Germany I		Industrial competition/alternative network development
			United States	Industrial competition/subsystemic protection and regional expansion
10		Germany II Japan I		Industrial competition/subsystemic protection through regional/imperial bloc formation
11	United States	USSR		Subsystemic protection through withdrawal and regional/imperial bloc formation
			Japan II?	Industrial competition/subsystemic protection at home and regional bloc formation

Source: Thompson 1997b, 307–8.

international relations has been to treat all major powers as if they were similar. We argue that only some major powers are elite players in the global political economy and its global wars. One objective way to identify who is a global player is to require that they expend resources in developing a military capability to participate in, and to protect, long-distance, interregional transactions and leading-sector industrial production. Over the past 500 years (and before) this type of global reach capability has translated most readily into naval and, more recently, aerospace power.

Once the Portuguese circumnavigated Africa, the flow of east-west trade became increasingly maritime in nature. East-west trade, of course, had long preceded the Portuguese entry into the Indian Ocean (by more than 1,500 years), but it had oscillated between overland (Silk Roads) and maritime routes. The overland routes depended on some element of stability and safe passage through the adjacent territories stretching from China to the Mediterranean. When there was stability and relatively safe passage, both overland and maritime routes were utilized. The maritime routes seem to have been utilized more heavily as a fallback when instability on land increased the economic risks and transportation costs of cross-Eurasian caravans. The Portuguese and their other European successors altered these processes by hijacking the maritime routes at a time when the overland routes were characterized by disorder and then ensuring that the maritime routes would persist as the favored path for east-west transactions.

Naval power was necessary to first hijack the east-west maritime routes and then to hold on to them and the initially precarious footholds some Europeans were able to acquire around the maritime rimland of Afro-Eurasia. Naval power was also necessary to compete with, and to defeat, rival global powers. Mahanian command of the sea, which means protecting one's sea lanes, became a paramount war objective. So too did neutralizing the competition's global reach capabilities. Thus, not only were navies necessary to protect commercial routes and to attack rivals, they were also needed to defend the home country from attacks. Some degree of insularity may have been one of the strongest prerequisites for the ascent to economic and political-military leadership in the global system, but natural defenses and barriers were never sufficient. They had to be assisted by naval force.

Thus we require that global powers demonstrate a minimal naval capability (10 percent of the global capability pool) in specific naval resources that evolve along with technological change in naval weapons

systems. Table 4 outlines the criteria employed. We also require that global powers indicate some interest in employing their sea power in more than their immediate neighborhood. Operations in only one sea do not necessarily indicate much involvement in long-distance and trans-oceanic activities. Regional sea power, therefore, is not sufficient for elite global status. Moreover, we use the same information base to objectively identify when one global power has achieved something approximating a monopoly position (50 percent or more of the global reach capabilities) and thereby earning the designation of "world power" to indicate its distinctive leading position.

The global power elite has remained a small group: Portugal (1494–1580), Spain (1494–1808), England/Britain (1494–1945), France (1494–1945), the Netherlands (1579–1810), Russiaithe Soviet Union/

TABLE 4.

Basic Shifts in the Measurement of Global Naval Capability

Period	Indicators
1494–1654	The number of state-owned, armed sailing vessels capable of undertaking oceanic voyages.
1655–1860	The number of ships of the line, subject to an escalating minimal number of guns carried to qualify as frontline fighting vessels (1655–70: 30 guns or more; 1671–90: 40 guns or more; 1691–1756: 50 guns or more; 1757–1860: 60 guns or more).
1816–1945	The level of naval expenditure, which is used to smooth the several abrupt technological changes experienced in the nineteenth and early twentieth centuries and which is given equal weight with the appropriate ship counts in a combined index.
1861–1945	The number of first-class battleships, subject to escalating minimal attributes in ship and gun size after 1910 (distinguishing between pre- and post-Dreadnought battleships).
1946–1993	The number of heavy or attack aircraft carriers and, after 1960, the number of nuclear attack submarines and the number of sea-based nuclear missile warheads weighted according to equivalent megatonnage (EMT) and counter military potential (CMP)—with shares of carriers, attack submarines, EMT, and GMP given equal weight in a combined index.

Source: Modelski and Thompson 1988.

Russia (1714 to the present), the United States (1816 to the present), Germany (1871–1945), and Japan (1875–1945). Of this group, only four global powers have qualified as world powers: Portugal, the Netherlands, Britain, and the United States. Each of the major upward bumps in the naval power concentration series (measured as the world power's share) sketched in figure 1 can be readily identified as a phase of world power leadership. Figure 1 portrays what we refer to as the long cycle of leadership in the global political economy.

It is further possible to break each iteration of the cycle into four phases. In fact, two different set of phases have been proposed (Modelski 1987). Which one is more useful depends on whether one wishes to emphasize the ascent of a world power (agenda setting, coalition building, macrodecision, and execution) or its decline (global war, world power, delegitimation, deconcentration). Table 5 outlines the hypothesized timing of both sets of phases. The utility of the periods is that certain types of behavior are associated with each phase. For instance, the most intensive conflict occurs in the global war/macrodecision phase. The next most conflictual phase is delegitimationiagenda building, which, in some respects, is a response to the erosion of the phase of leadership, order, and peak concentration found in the world poweriexecution period. These phases also relate to the timing of economic growth fluctuations

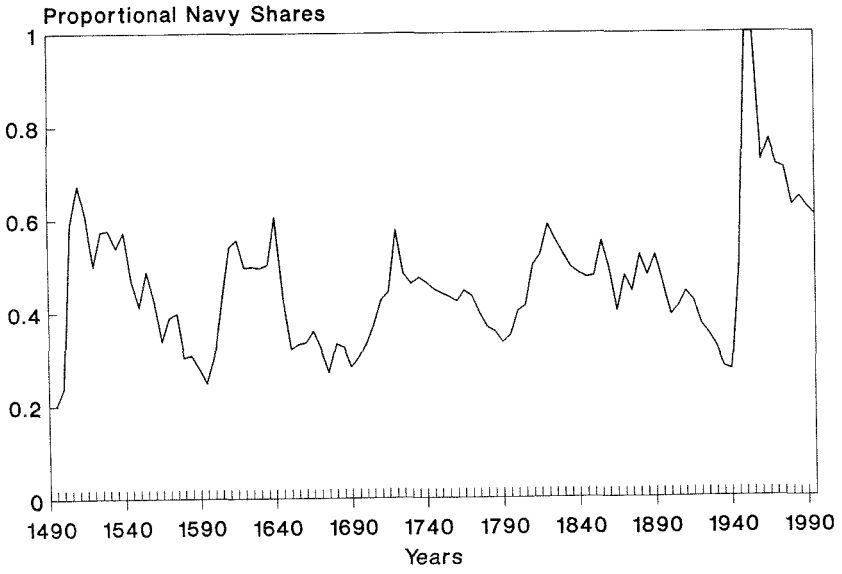

FIGURE 1. The long cycle of global leadership

TABLE 5.

Leadership Long Cycle Phases in the Modern Era

Agenda-Setting/ Delegitimation	Coalition Building/ Deconcentration	Macrodecision/ Global War	Execution/ World Power
1430–1460	1460–1494	1494–1516	15161540 (Portugal)
1540–1560	1560–1580	1580–1609	1609–1640 (Netherlands)
1640–1660	1660–1688	1688–1714	1714–1740 (Britain I)
1740–1763	1763–1792	1792–1815	1815–1850 (Britain II)
1850–1873	1873–1914	1914–1945	1945–1973 (United States)
1973–2000	2000–2030	2030–2050	2050–

Source: Based on Modelski and Thompson 1996, 54.

with new leading-sector spurts taking place approximately during the latter portion of a deconcentration/coalition-building phase and during the world power/execution phase. This pattern reflects one of the fundamental coevolutionary processes we have found propelling the global political economy.

While we are emphasizing naval capability in the leadership long cycle figure, it is assumed that the naval capability leadership is based on economic leadership. We have earlier demonstrated empirically that this is the case for nineteenth- and twentieth-century data centered on the British and American leadership eras. Figure 2 summarizes the "causal" relationships that were found in time series analyses. Rapid leading-sector growth leads to finite periods of economic leadership in those leading sectors and to somewhat longer-lasting naval power leads.

Figure 2 also connects innovation and global concentration processes to global warfare. Based on our theoretical arguments and empirical findings (on nineteenth- and twentieth-century data), we see systemic warfare as a product of economic innovation and leadership processes. In turn, systemic warfare influences innovation, economic concentration, and naval concentration. In this sense, long waves of economic and technological change, the political-military leadership long cycle, and warfare are all highly interdependent dynamics that lie at the heart of the global political economy's functioning.5

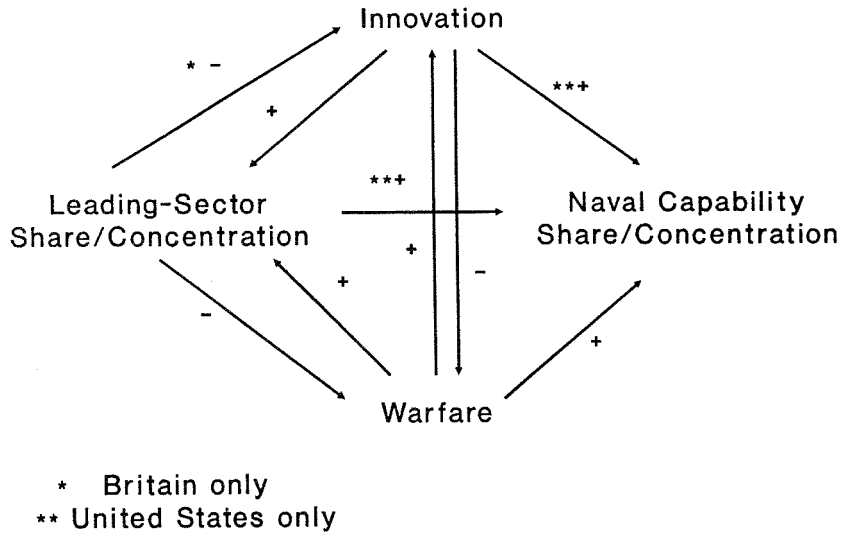

FIGURE 2. Innovation, concentration, and warfare

In terms of general format, this perspective does not differ all that much from alternative interpretations of system dynamics relating political economy and war. Joshua Goldstein's model (1988, 1991a) essentially sees the expansion of the world economy influencing positively the distribution of military power and the severity of war, but in a less than systematic way. Terry Boswell and Michael Sweat's model (1991) also views economic expansion leading positively to the expansion of state resources, and, in turn, the expansion of state resources leads positively and systematically to the size of war. Brian Pollins's (1996; Pollins and Murrin 1997) model, which is more similar to the Goldstein "loose coevolution" perspective, views long-term economic and political-military processes as systematically interrelated but inherently separate processes subject to different dynamics.

Although there is clear overlap in these empirical models, there are also important differences of assumptions and process timing. Our approach emphasizes the system leader's technological innovation as the mainspring of economic growth and contraction that, we contend, has assumed the shape of a twin-peaked kondratieff wave phenomenon with each of the two peaks separated by intensive conflict. The other models are more comfortable beginning with the given of economic expansion

and contraction tendencies and generally prefer to make a greater distinction between long waves of economic versus political/military fluctuations. Indeed, there appears to be a fundamental divergence of opinion emerging over the degree to which "economic" and "political-military" processes are interrelated. Goldstein and Pollins represent a school of thought that views these processes as weakly related. For instance, one of the things an economic expansion does is create surplus wealth that can be exploited for war-making purposes. If the war chest is utilized for purposes of systemic violence, subsequent economic contraction is more likely. In this "loose coevolution" interpretation, the linkages between economic prosperity and warfare are certainly there but indirect. In a "tight coevolution" interpretation, such as ours, economic expansion leads directly to a struggle for succession over global leadership, and the outcome of this struggle sets up the appropriate conditions for another spurt of economic expansion.6

But there are other differences as well. Other analysts do not make the same distinction between global and world economies that we do. Our approach gives more emphasis to naval concentration than do the other approaches' more general treatment of capability. Nor do we all identify the same wars as the most significant ones. The Boswell/Sweat and Pollins/Murrin models have expanded the core concerns by introducing colonial expansion as a way in which tensions due to economic change have been rechanneled away from war.[7] Pollins's work (see also Bennett 1997) also expands the focus on systemic warfare to interstate conflict. Finally, our approach is the only one to emphasize the fusion of global and regional processes—a subject yet to be discussed.

Two points must be stressed here. One is that the models are overlapping but certainly not identical. A second is that all of these empirical models are fairly recent in origin. Both facts are most encouraging. We are not fighting over "night and day" issues of interpretation in which one group of analysts says the world is round and another says that it is square.8 We all see processes of economic and military concentration intertwined with warfare. We disagree about what drives economic growth, precisely how and to what extent economic and political-military processes are intertwined, how to measure the processes, and over which actors and wars should receive the most attention. Such disagreements are normal and healthy. They are also encouraging in the sense that the element of convergence, despite different assumptions, suggests that analysis is generally on the right track. Long-term fluctuations in economic growth and capability distributions clearly are linked to the onset and outcomes of the most intensive wars in the system.

The Intermittent Fusion of Global and Regional Processes

An exclusive focus on global politics is inadequate, for the global system is not an autonomous sphere of activity. On occasion, global politics have become fused with regional politics. These fusions can take many forms. Ambitious states in any region may make coercive bids for regional leadership. Vietnam in Southeast Asia or Iraq in the Middle East come to mind as recent examples. Just how dangerous these bids are depends in part on how salient is the region in which they occur. Regional concentration processes in more peripheral regions are apt to be less destabilizing than similar processes in more central regions. The appropriate comparison is between the Third Indochina War and the Gulf War versus, say, World War II. All three events were lethal, but the first two contests were unlikely to become "globalized." The third one spread throughout the planet relatively quickly. They all began as subregional or regional contests. The difference is that World War II emerged in part from a contest over the control of Europe—still one of the most salient or central regions of that time.

It also mattered that the European region was the home base for a number of global powers. It is easier to remain aloof from more distant contests than ones that take place in one's own backyard. Salience and proximity help explain why European regional international relations, on occasion, have been so explosive for the global political economy. We find this intermittent fusion of European regional and global politics absolutely essential to our explanation of structural change and global war. We also acknowledge a strong reliance on Dehio's (1962) interpretation of the history of European international relations, which we have coopted for the purposes of our model.

Unlike other regions of the world, especially eastern Asia, no single power ever established hegemony over Europe for very long. The basic Dehioan insight is that this outcome was due to what appears to be a relatively unique geopolitical pattern. Before a would-be regional hegemon could unify Europe coercively, counterweights emerged from areas immediately adjacent to the region. Introducing extraregional resources, they were repeatedly able to block the creation of European hegemony.

The eastern counterweight supplied brute land force. The western counterweight increasingly specialized in sea power, which was, in turn, predicated on the development of specializations in the role of commercial intermediary among Europe, Asia, and America. When both counterweights were operative, an aspiring regional hegemon was forced to fight a resource-draining war on two fronts that it was likely to lose. The outcome was an intermittently renewed balance of European power that depended on the region remaining open to extraregional resources controlled by flanking states.

The regional motor of the balancing dynamic hinged on an intermittent rise of a hegemonic aspirant and the concentration of regional capabilities. France inaugurated this system in its 1494 attack on Italy. It was resisted by Spain primarily and then for a short time by a unified Hapsburg entity. A Franco-Ottoman coalition thwarted the second bid, this time on the part of the Hapsburgs. Both of these initial efforts preceded the emergence of a western maritime power capable of functioning as a counterweight. With some English assistance, the Netherlands provided the first maritime counterweight to Philip II's bid for supremacy. By the mid–seventeenth century, Spain had surrendered its regional lead to a restrengthened France. Louis XIV's late-seventeenth-century activities came to be perceived as a direct threat to Europe and the global political economy. A second Anglo-Dutch coalition developed the first large-scale maritime blockade of the European continent and defeated the expanding navy of France in 1692. Between 1692 and the next destruction of the French fleet in 1805 at Trafalgar, the generally eroding, relative strength of the French kept the midcentury Anglo-French fighting from turning into a full-fledged struggle over either regional or global supremacy.

Unlike the earlier, more gradual bids for regional hegemony, the third French bid in 1792 emerged abruptly and was unusually successful for a few years before the Napoleonic variant was crushed in 1814 and 1815. After 1815, the main emphasis of global concern shifted away from the European region to the Russo-British sparring along their mutual Eurasian imperial boundaries. The British remained worried about the French potential for causing trouble in Europe for some time after 1815 but a fourth French bid, with hindsight, was increasingly unlikely. One reason was the emergence of a unified Germany.

Whether or not the ascending Germany of the late nineteenth century was merely seeking equality with other leading powers or European domination, a mixture of commercial and naval rivalries combined with

geographical proximity increased the probability that Britain would identify Germany as its primary threat. In World War I, Germany then proceeded as if it were indeed seeking regional supremacy. By World War II, which can be seen as a continuation of the first world war, both Germany and Japan had become more overt and ambitious about the extent of their regional aspirations. The end of that war led to the territorial dismemberment of the principal challenger (Germany). The division of the entire region into American and Soviet spheres completed the process of diminishing the regional autonomy of Europe and, presumably, some of its ability to generate local problems that could intrude into the functioning of the global political economy. Although the significance of European economies for the global political economy remains high, a renewed, coercive bid for European regional domination seems unlikely.

From a regional perspective, the principal dynamic of this system has been the movement from a peak in the strength of the leading regional power through a long trough to next peak and so on, as illustrated in figure 3. The long troughs were characterized by leveling process. The regional leader that had peaked earlier was in gradual decline, thereby encouraging and facilitating the emergence of new regional contenders.

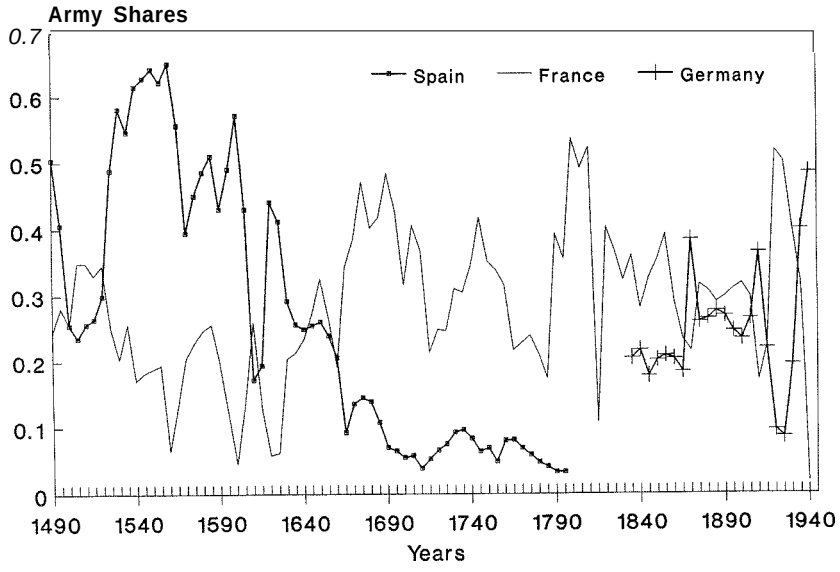

FIGURE 3. Regional leaders in western Europe

During the troughs, relative power relationships and alignments were unstable. The troughs not only provided windows of opportunity for the emergence of new land powers. They also encouraged the upwardly mobile to challenge the regional status quo. At the same time, the strength of the western maritime powers should also be most concentrated during the troughs in regional concentration. The less the threat from adjacent land empires, the more the maritime powers could thrive.

We thus envision the rhythms of two dissynchronized cycles or waves of power concentration, centered on two different types of major powers. On land, the leading regional power waxed and waned. At sea, the leading global power ascended and declined. For the most part, the one declined as the other peaked, but not in a completely dissynchronized fashion. Declining global leaders encouraged would-be regional hegemons. Suppressing would-be regional hegemons galvanized new global leaders to emerge or, in the case of Britain, to reemerge. It is not too much of an exaggeration to say that regional and global powers represent two very different "species" of power. To be sure, there was overlap. Some strong regional powers in Europe were also contenders in the global political economy. But they were never quite as successful as they might have been given their roots in regional/territorial orientations as opposed to maritime orientations. The leading regional powers rose to primacy on basis of absolute autocracies, large armies and bureaucracies, and the success of expansionist foreign policies. Spain, France, and Germany were all created via coercive expansion within the region. Neighboring enemies could be beneficial in the sense that they provided rulers with incentives for developing military and economic strength, if they survived. Global powers were more oriented toward long-distance trade than territorial expansion close to home. To varying degrees they were able to restrain their autocracies. Global powers had good reasons to favor navies over armies. They also led in the movement away from command bureaucracies toward more representative regimes for resource mobilization. Security depended on some type of geographic insularity, or at least the relative absence of proximate adversaries. Without some form of natural protection, they were likely to succumb to the superior military strength of adjacent, land-based empires.

Specializing in long-distance trade, the maritime powers on the regional fringe were concerned primarily with territorial and market expansion away from the European home region. The leading regional powers tended to be overly preoccupied with territorial expansion within

their home region. Operating on entirely different strategic vectors, global and regional powers, one might have thought, were not inherently likely to collide often. Their interests pointed in opposite directions.

Nonetheless, conflicting interests and collisions occurred regularly. The problem was that if a regional power was successful in creating European supremacy, it was well situated to take on the global political economy as its next objective. By seeking control over adjacent sources of economic prosperity, which historically meant attacking either northern Italy or the Low Countries, an aspiring hegemon could quickly acquire a platform for a global challenge. Successful expansion into these areas offered quick fixes for wealth imbalances and maritime capability. Therefore, the leading global powers always had strong incentives to prevent a major land power from attaining European supremacy. Not only might they lose access to important markets nearby, the potential for a direct threat to control of the global political economy was not difficult to discern.

Aspiring regional hegemons acted as if they were not always fully aware of the global implications of their local strategies. But this misperception only made conflict with the western maritime flankers all the more likely. When the regional leaders did announce plans for the control of interregional trade, the potential for acute conflict across the regional and global levels was even further accentuated. On the other hand, collisions between an aspiring regional hegemon and the eastern counterweights depended on the less subtle dynamics of mutually timed interests in expansion into the same territories or strategic errors in timing that forced the aspirants to fight on multiple fronts more or less at the same time.

If a would-be regional hegemon appeared to be expanding toward the immediate north/northwest (the Low Countries) or, earlier, the southeast (Italy) as well as toward the east (the Rhine or eastern Europe), the probability of mobilizing resistance on both flanks increased. Would-be regional hegemons in Europe have repeatedly made this same mistake. They made their own victory less likely by encouraging the simultaneous extraregional interventions from different directions that would work toward preserving the European balance of power.

The western flank learned that hegemonic aspirants could be contained by encircling the European peninsula. The maritime containment strategy might be defeated by either breaking through the naval blockade at sea or circumventing it via land if it was possible to avoid antagonizing land forces to the east. Despite repeated tries, the leading regional

powers were never able to break through at sea. Nor were they able to avoid becoming bogged down in some type of eastern front fighting. In the pursuit of these goals, the aspiring regional hegemon in Europe tended to overextend itself and exhausted its capability to wage war.

The iterative introduction of extraregional resources could not be repeated an infinite number of times. Drawing in the flanking powers and their resources increasingly reduced the ratio of power that could be mustered within the European region relative to what could be mobilized away from Europe. Eventually, challengers from the European region could no longer expect to compete with stronger states outside Europe.

This finite durability of the classical European regional system may have depended on a unique constellation of geohistorical factors. Would-be regional conquerors found themselves caught between offshore rocks and eastern hard places. Despite repeated attempts, European hegemons could not overcome the western and eastern flanks with much more access to the resources useful for war. Regionally biased strategies to overcome these barriers to supremacy proved to be largely self-defeating. The European subsystem retained its pluralistic structure but, ultimately, at the expense of its onetime autonomy and salience. The Soviet-American cold war subordinated the European region to a global contest after centuries of regional problems diverting global interests and resources.

We contend that it has been the interaction between global and regional structural changes that have generated the contexts for the world's most significant and serious wars. From a regional vantage point, the relationship between concentration and the probability of global war is positive. Greater concentration leads to the greater likelihood of intensive conflict. From the global perspective, though, the relationship is reversed. High concentration leads to a decreased likelihood of intensive conflict. The problem has been that these structural rhythms have been out of sync with one another. Global concentration levels tend to be low when regional concentration levels are on the rise.

Given the intermittent fusion of regional and global political problems, global war has been most probable when the regional and global concentration trends have been most dangerous. There is nothing mystical about these structural trends because they reflect the ascendancy of one or more regional powers and the relative decline of the leading global power. Regional-global structures are in transition and the combined trends in structural change are highly lethal—as demonstrated repeatedly over the past five centuries (and in fig. 4).

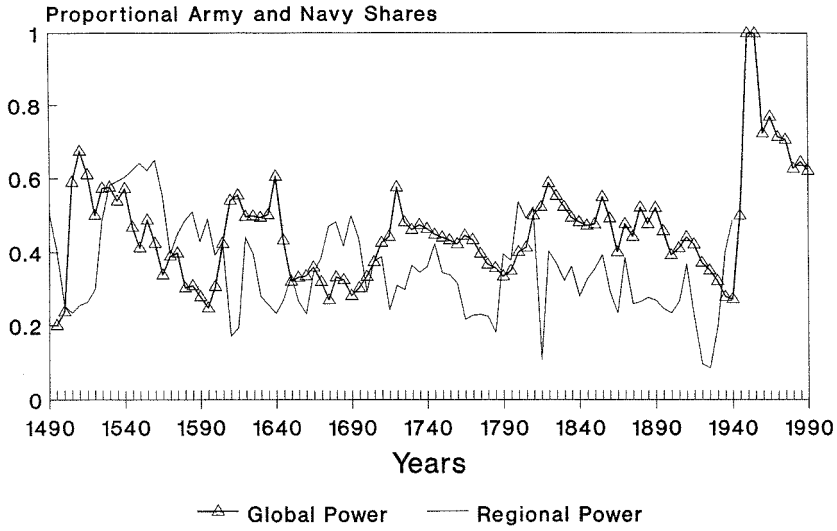

FIGURE 4. Regional and global concentration

Model Summation and Transformation Prospects

Figure 5 summarizes our interpretation of the relationship between global war and the political economy of structural change over the past 500 years. At the core of the model is the tendency for clusters of radical technological innovation to emerge and reemerge. One state is the principal pioneer, beneficiary, and agent of diffusion of these innovations throughout the global political economy based on long-distance commerce and advanced industrial production. But economic change this radical is unsettling and destabilizing. Old leaders are pushed aside. New leaders emerge and fight over whose policy preferences will be predominant in structuring the global political economy.

These global processes have been linked to European concentration processes roughly between 1494 and 1945. The strongest land powers in western Europe have generated periodic challenges of declining global leaders—or, at least, that is the way it has been perceived by the declining global leader. The declining global leader has organized a coalition to suppress the European threat. From that winning coalition, new global leaders have tended to emerge as its predecessor and coalition partner exhausts itself in the ensuing global war.

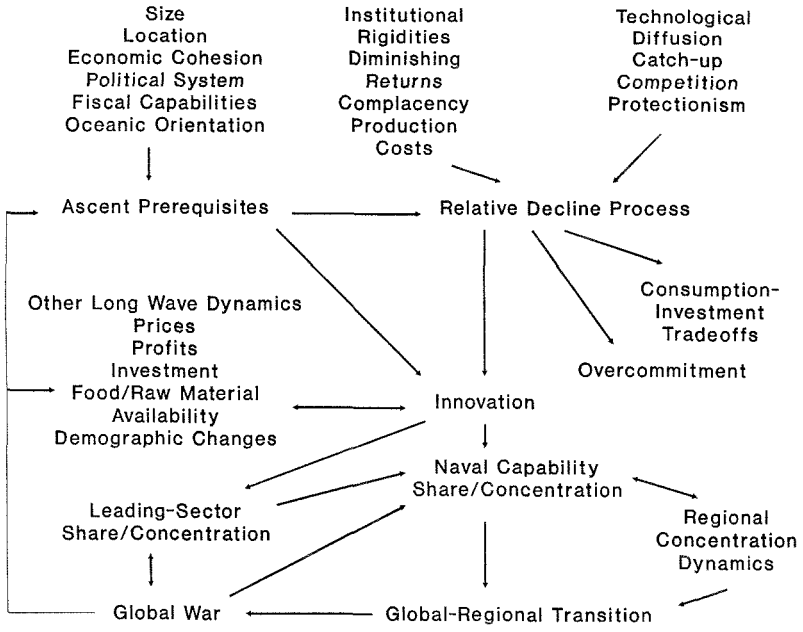

FIGURE 5. Relationship between global war and the political economy of structural change

A variety of processes are linked to the innovation-concentration-warfare core dynamics. There are processes of regional concentration that lead to the fusion of regional and global politics. Another nest of processes is related to the processes of the system leader's ascent and relative decline (internal and external to the system leader as well as consumption tradeoffs and strategic overextension problems). Still another nest of presumably interacting processes are the economic and sociological processes thought to be related to long-term economic growth (such as prices, interest rates, investment, population growth, the development of infrastructure, North-South tensions and debt cycles, generational change, protectionism, and public attitudes). This particular nest has gone undiscussed in this essay because the relationships have yet to be delineated adequately and because it is presumed that they are less close to the global war phenomena than the topics that have been discussed. Another complex that has also gone undiscussed due to the sheer complexity of the subject are the impacts of warfare, and especially global war, on a whole range of phenomena.[9]

Our model-building efforts are ambitious but they are not intended to establish nomothetic laws about international relations and world politics. We would be among the first to acknowledge that international relations have not always worked the way our story suggests. Indeed, the long perspective we adopt makes it very difficult to ignore the significant transformations that the global political economy has undergone. It should not be surprising then if we say that we do not assume that international relations must continue to work the same way in the future as it does now. We have noted at least two quite significant transformations: (1) the emergence of a continuous sequence of concentration-deconcentration-reconcentration beginning around A.D. 1000 and (2) the emergence of global wars beginning around A.D. 1500. Once these processes or dimensions have emerged, it is not carved in stone that they must persist into the indefinite future. Other processes, such as democratization, may emerge and, in doing so, interact with and alter already existing processes in both linear and nonlinear ways.

However, we may not be in a particularly good position to talk about future, long-term transformations of how the system operates. They do not appear to be all that predictable. Even worse, we are only beginning to appreciate just what transformations have taken place already. It is safe to say that an analyst writing some 500 years in the future should have better hindsight on these questions. That still leaves us with some expectation that we say something about the near future, especially in a period of flux in which many observers believe that the past no longer has much to tell us about the present and future.

In the near future, we think four possibilities are most worth contemplating:

1. The nature of technological innovation has been transformed toward the end of the twentieth century such that it is no longer possible for one economy to monopolize innovation rents and/or to provide economic, political, and military leadership.
2. A future global war is too irrational to contemplate.
3. World War II put an end to the intermittent fusion of European and global politics and, as a consequence, made the global political economy less vulnerable to regional disruptions (and global wars).
4. The processes of the global political economy will continue more or less as before, with an increasing vulnerability to eastern Eurasian problems as opposed to the last 500 years of vulnerability to western Eurasian disruptions.

There can be no denying the apparent rapid pace of technological change in the current period. But, minimally, that only means that we are in the midst of another change in technological regimes, one presumably structured around information systems, among other new technologies. If the new leading sectors also prove to have a discernible life cycle in terms of eventual diminishing returns, the likelihood of continuing long wave-like fluctuations in economic growth is high. It is also not abundantly clear who, if anyone, will monopolize the pioneering role and profits in developing the application of information systems. But it is clear that American and Japanese firms and entrepreneurs appear to be well in the lead over the rest of the world. Something similar may have taken place in the late nineteenth century when Germany and the United States were the principal contenders for succession to the British technological lead. Scenario one may yet take place, but there is not much that is going on now to suspect that the processes of technological change with which we are most concerned have undergone substantial transformation.

The second scenario focuses on the irrationality of fighting a third world war that no one could conceivably walk away from as a clear winner. We would like to think that is a very strong scenario. There are, however, at least three problems. One, the stakes involved in deciding policy for the global political economy are very great. The temptation to use coercion may be equally great and as great as it has been in the past. Two, the tendency to fuse regional and global politics complicates the ability of declining global leaders and ascending regional leaders to steer clear of war.[10] It is also never entirely clear to the decision makers that decisions to go to war will ultimately lead to full-scale, global war. Finally, the advent of nuclear weapons at the end of World War II and their contribution to the irrationality of war may have facilitated greatly the ensuing cold war and the avoidance of a war between the United States and the Soviet Union. Yet it did not preclude at least one close call in 1962. For that matter, it has always been irrational for the principal challenger to engage in wars on multiple fronts. That has not stopped challengers from falling into that strategic trap repeatedly over the last several hundred years. Therefore, scenario two may also be right, but it may also be as much wishful thinking as anything else.

The third and fourth scenarios can be treated together since they both focus on global-regional tensions. Scenario 3 seems quite plausible. The regional salience of Europe has certainly diminished. If major European global players reemerge in terms of technological innovation and global

reach in the future, it seems more likely that they will represent some type of partial or full unification of Western Europe. That should preclude intra-European contests spilling over into the management of the global political economy. The real question, though, is whether we have truly transcended the potential for regional troublemaking. Without doubt, some potential for these kinds of problems (i.e., coercive attempts at regional hegemony) persist in the Middle East, south Asia, Southeast Asia, and, now, the newly independent Central Eurasian region. But their potentials for creating problems for the global political economy also seem limited.

The same cannot be said for east Asia, which also has a long and continuing history of rivalry, hegemonic schemes, and attempts at power concentration. Moreover, it, or more accurately, parts of it are increasingly one of the foci of technological innovation. The third disturbing element is China. It is not inconceivable that China could break up along lines similar to the disintegration of the Soviet empire. China could also become tightly integrated into a liberal and interdependent global order. But it is also conceivable that Chinese decision makers could decide to pursue foreign policy schemes that resembled those of earlier Hapsburg, French, and German decision makers in a different part of Eurasia. Should this last possibility emerge several decades down the road, the vulnerability of the global political economy to regional disruptions may reassert itself.

Although we would like to be more confident that we know how things will evolve in the future, we are not. If the pattern of the last millennium is maintained into the next one without major modification, we are in for another round of twin-peaked innovation spurts, separated by a period of intensive conflict and possibly the fusion of regional and global processes. These predictions might take place roughly in the middle of the next century (2030–50). But far from being as deterministic as some of our critics suggest, our perspective on the future evolution of the global political economy tells us only that it is likely to combine simultaneously elements of path dependency (history matters) and open-endedness (evolutionary futures are uncertain). That also seems to be the way it has emerged over the past 6,000 years, episodically intermixing substantial elements of continuity and transformation. To avoid another world war or at least another bout of intensive conflict over global policy questions, we will need to see less continuity and more transformation in the next quarter-century than we have seen in the past quarter-century.

NOTES

1. The core works in the leadership long cycle perspective are Modelski (1978, 1987, 1996), Modelski and Modelski (1988), Modelski and Thompson (1988, 1989, 1996); Rasler and Thompson (1989, 1994); and Thompson (1988). This chapter follows the approach taken in Rasler and Thompson (1994) most closely. We will not spend much time discussing how our approach differs from a variety of alternative approaches to similar questions. Space considerations argue against such discussion and we have already addressed many of these issues elsewhere (in particular, see Thompson 1983a, 1983b, 1985, 1986, 1988, 1996; Modelski and Thompson 1989; and Rasler and Thompson 1994). We note a number of substantive criticisms that have emerged in the following analyses: Rapkin (1983, 1986, 1987); Zolberg (1983); Levy (1985b, 1991); Rosecrance (1987); Nye (1990a, 1990b); Goldstein and Rapkin (1991); Arquilla (1992); Vasquez (1993); Houweling and Siccama (1993, 1994); Denemark (1997); Frank (1998). We will not be addressing them directly in this chapter either but we do pay attention to these criticisms and have addressed some of them directly (see Modelski 1983a and Thompson and Modelski 1994), just as we continue to modify, extend, and elaborate our theoretical framework — in part due to external feedback. Finally, there is still another literature that debates the cyclical and linear-nonlinear nature of war and economic processes (Conybeare 1990, 1992; Beck 1991; Richards 1993; Sayrs 1993; Mansfield 1994; Williams and Huckfeldt 1996; and S. Bennett 1997) that we will not address here directly either. Our position on the cyclical question is expressed in Thompson and Rasler (1988). Generally, we view the attempt to find strict periodicities misdirected when no one really argues a case for strict periodicity.
2. For an important qualification of this generalization, see Modelski and Thompson (1987), who hypothesize that periods of relatively high conflict alternate with periods of relatively low conflict within each long cycle. The global war phase, of course, is one of high conflict, followed by a world leadership phase (low conflict), an intermediate delegitimization phase in which the world order's status quo comes under attack (high conflict), and then a period of deconcentration (low conflict) just before another phase of global war.
3. Some analysts have tended to characterize our approach as one focusing largely on political-military variables, but the economic emphasis emerged early and, we thought, reasonably consistently. See, in particular, Modelski (1981, 1982) and Thompson (1988, 1990a, 1992a) in addition to Rasler and Thompson (1994) and Modelski and Thompson (1996).
4. For our empirical analyses of these questions, see Rasler and Thompson (1988, 1989, 1991, 1992a, 1994) and Rasler (1990).

5. Rasler and Thompson (1994) were able to demonstrate this empirically with a series of bivariate, Granger causality analyses. Reuveny and Thompson (1997b) take this analysis one step further with a multivariate, VAR examination that essentially confirms and extends the 1994 analysis to include indirect relationships. In both these analyses, the empirical focus is on British and/or U.S. warfare and preparations for warfare — and not on global war per se.
6. A third interpretation is that the coevolutionary pattern is not continuous across time. See Williams, McGinnis, and Thomas (1994).
7. The colonialism angle has actually received considerable empirical attention but usually in isolation of other processes. See, for example, Chase-Dunn and Rubinson (1979), Bergesen and Schoenberg (1980), McGowan (1985), Boswell (1989), Chase-Dunn (1989), and Strang (1991).
8. A pertinent example of a "night and day" debate on these issues of structural change is reviewed in Thompson (1999c).
9. Related war impact analyses are Rasler and Thompson (1983, 1985a, 1985b, 1989, 1992b) and Thompson (1994).
10. Global wars raise special deterrence problems. See Modelski and Morgan (1985) and Thompson (1997/1998).