

## **Introduction**

War is less common today than ever before. In fact, violence of all kinds has declined sharply in the last 65 years. By virtually any measure—deaths in battle, homicides, rapes, assaults, spousal and child abuse, cruelty to animals—our world seems less violent than that of our grandparents (Pinker 2011; Goldstein 2011; M. White 2011).

Some social scientists go further, suggesting that the post-1945 decline in war and violence is just the latest phase of a much longer process. Already in the 1930s, Norbert Elias suggested that Europe had become a more civilized, less violent place across the previous 500 years (Elias 1982 [1939]). World War II cast a shadow over his thesis, but more recent quantitative research has supported it strongly (e.g., Richardson 1960; Levy 1983; Eisner 2003; Roth 2009).

Since the 1990s some archaeologists have lengthened the story even more, pointing out that the prehistoric material record is often consistent with the horrendous rates of violent death documented among contemporary Stone Age societies (particularly Keeley 1996; LeBlanc and Register 2003).

A new picture of the evolution of war is emerging. So far, though, there have been few attempts to trace the full story of Holocene violence (Gat 2006 is an outstanding exception). I believe that only an overview of the last fifteen thousand years can make the big picture clear, showing that the evolutionary logic of war is simultaneously simpler and more complicated than the existing explanations allow.

## **The logic of violence**

In everyday life, says the strategist Edward Luttwak, “a noncontradictory linear logic rules, whose essence is mere common sense. Within the sphere of strategy, however ... another and quite different logic is at work and routinely violates ordinary linear logic.” War “tends to reward paradoxical conduct while defeating straightforwardly logical action, yielding results that are ironical” (Luttwak 2001: 2).

The central paradox in the evolution of war, I believe, is that war itself has caused the decline in violence.

Evolutionary biologists have produced a large literature on violence as a solution to coordination problems (generally going back to Maynard Smith 1982). Disputes over almost anything can lead to violence, although in most species confrontations between males over access to food, mates, and prestige tend to head the list. Among social animals such as some species of ants and apes, certain kinds of disputes may be solved by group violence that we can loosely call war (Gotwald 1995; Wrangham and Peterson 1996).

Humans behave in rather similar ways. From Helen of Troy to the War of Jenkins' Ear, we have used group violence to try to solve coordination problems of almost every imaginable kind. The one great difference between humans' and other animals' use of violence, though, is that we humans have evolved enormous, fast-processing brains over the last 2 million years, which have allowed us to augment biological with cultural evolution (Klein 2009). Our institutions have evolved, and so have our ways of making war. And, as in all such processes, cultural evolution has then fed back onto the environment, transforming it in ways that drive further cultural evolution.

Historians have tended to look at the evolution of war ironically (in the technical sense of "irony" defined by Hayden White [1973]), as what Barbara Tuchman (1984) famously called a march of folly. Some social scientists, however, have tried to unpack the logic behind human recourse to violence.

Steven Pinker (2011: 679) has suggested thinking in terms of a "Pacifist's Dilemma" game (Fig. 1): despite the fact that the costs to the victim of aggression can be vastly disproportionate to the benefits to the aggressor, there are times when the payoffs make it irrational to be peaceful. The best way to explain the historical decline in violence, he argues, is by asking what has changed the payoffs to make choosing peace the rational decision in reiterated Pacifist's Dilemma games.

		Other's choices	
		Pacifist	Aggressor
Own choices	Pacifist	Peace (5) Peace (5)	Defeat (-100) Victory (10)
	Aggressor	Victory (10) Defeat (-100)	War (-50) War (-50)

Figure 1. The Pacifist's Dilemma (from Pinker 2011: 679)

Over the long run—for my purposes, the roughly fifteen thousand years since the end of the last ice age—the payoffs clearly have changed. The reason is that violence, as Luttwak observes, has a built-in, contradictory, nonlinear logic. In the very long run violence is self-defeating, because war and the fear of war drives the creation of larger societies that pacify themselves internally, in large part so that they can fight more effectively against other societies. This is more or less the insight Hobbes offered in *Leviathan*, long before there was much evidence to work from, and the point Mancur Olson (2000) made with his theory of rulers as stationary bandits.

Over the last fifteen thousand years, wars between societies have become bloodier and bloodier, as societies become larger and more sophisticated. But as societies have become larger and have pacified themselves internally, population and wealth have exploded, and the proportion of humanity dying violently has plummeted. In Stone Age societies, it is not unusual for 10-20 percent of the population to die violently, but in the twentieth century CE, when modern states fought two world wars, committed multiple genocides, and used nuclear weapons, just 1-2 percent of the world's population died violently. War has been good for something after all (Morris, in prep. a).

### **Latitudes not attitudes**

The historical record suggests three broad conclusions about how war has made humanity safer and richer.

First, while violence is a very inefficient way to create bigger, safer, and richer societies, war (or the fear of war) seems to be pretty much the only mechanism that has worked. Hobbes distinguished between “commonwealth by *institution*,” a peaceful process in which “men agree amongst themselves, to submit to some man, or assembly of men, voluntarily,” and “commonwealth by *acquisition*,” a violent process in which “a man maketh his children, to submit themselves, and their children to his government, as being able to destroy them if they refuse; or by war subdueth his enemies to his will, giving them their lives on that condition” (Hobbes 1962 [1651]: 133). The empirical details, however, show that in reality the two always go together. Soft power is the glue that makes large societies hang together, but it always depends on hard power.

Second, the evidence also shows that war is a mechanism that works its magic only on very long time scales. Some people (particularly on the winning side) do find war a positive experience, but most do not.

Third, war’s ability to produce bigger, safer, richer societies is shaped massively by geography. In my most recent book, I argued that geography has been one of the prime movers in history, but in a rather complicated way: geography determines how societies develop, but how societies develop determines what geography means, in a back-and-forth relationship (Morris 2010: 26-35).

Anthropology and archaeology suggest that while some societies are less violent than others, every human group sometimes resorts to violence to settle its disputes (e.g., Kelly 2000). However, the shift toward bigger, safer, richer societies began in a very specific part of the planet, between roughly 20 and 35° North in the Old World and 15° South and 20° North in the New (Figure 2). I like to call this zone the lucky latitudes (Morris 2010: 81-85).

When the world warmed up at the end of the last ice age, this part of the world had far and away the densest concentrations of potentially domesticable plants and animals (Diamond 1997: 85-191). In the part of the lucky latitudes with the densest concentrations of all, in Southwest Asia, cultivation of plants (i.e., selection for larger grains: terminology after Fuller 2007) was underway by 9500 BCE, just a century after the end of the twelve-hundred-year-long Younger Dryas mini ice age. In South and East Asia, where concentrations were somewhat less dense, cultivation was under way by

7500 BCE; in Mesoamerica and the Andes, where concentrations were somewhat less dense still, it had begun by 6500 BCE.

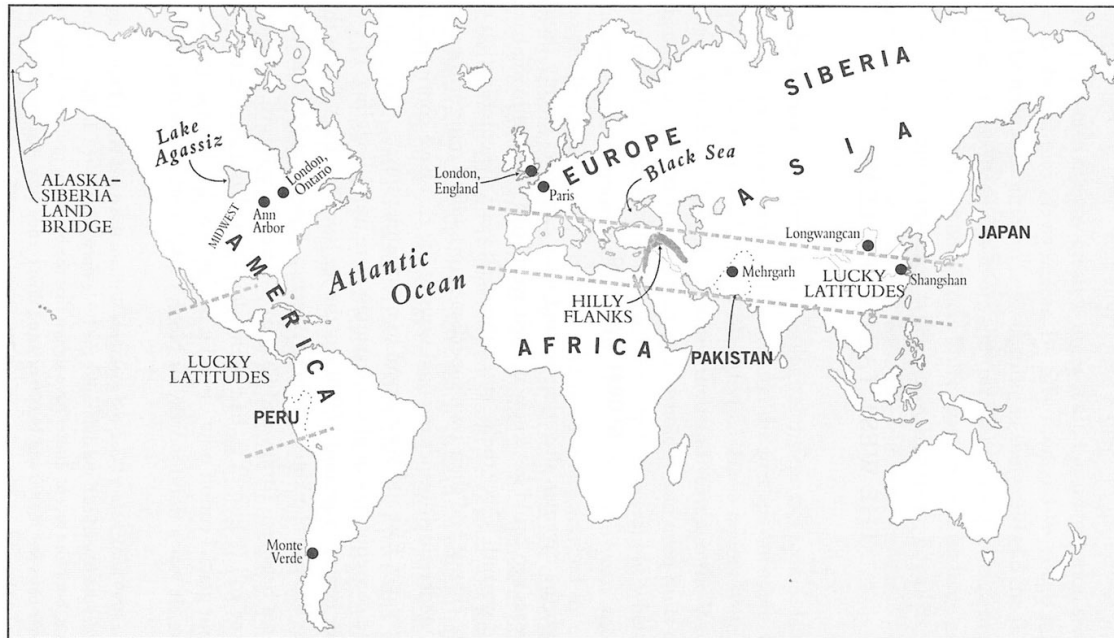


Figure 2. The lucky latitudes (from Morris 2010: 82)

True domestication, the evolution of genetically modified plants and animals that can reproduce only with continued human intervention, typically got underway about two thousand years after cultivation. It began around 7500 BCE in Southwest Asia, 5500 BCE in South and East Asia, 3300 BCE in Mesoamerica, and 2800 BCE in the Andes (Figure 3).<sup>\*</sup> The consistent fit between resource density and date of domestication suggests strongly that geography, rather than race, culture, or great (wo)men, was the determining factor (Diamond 1997).

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<sup>\*</sup> All the dates continue to be debated among archaeologists, although the margins of error are steadily shrinking, and there is no longer much argument over the basic SW Asia/S and E Asia/Americas sequence. I generally follow the interpretation in Mithen 2003, with some updates.

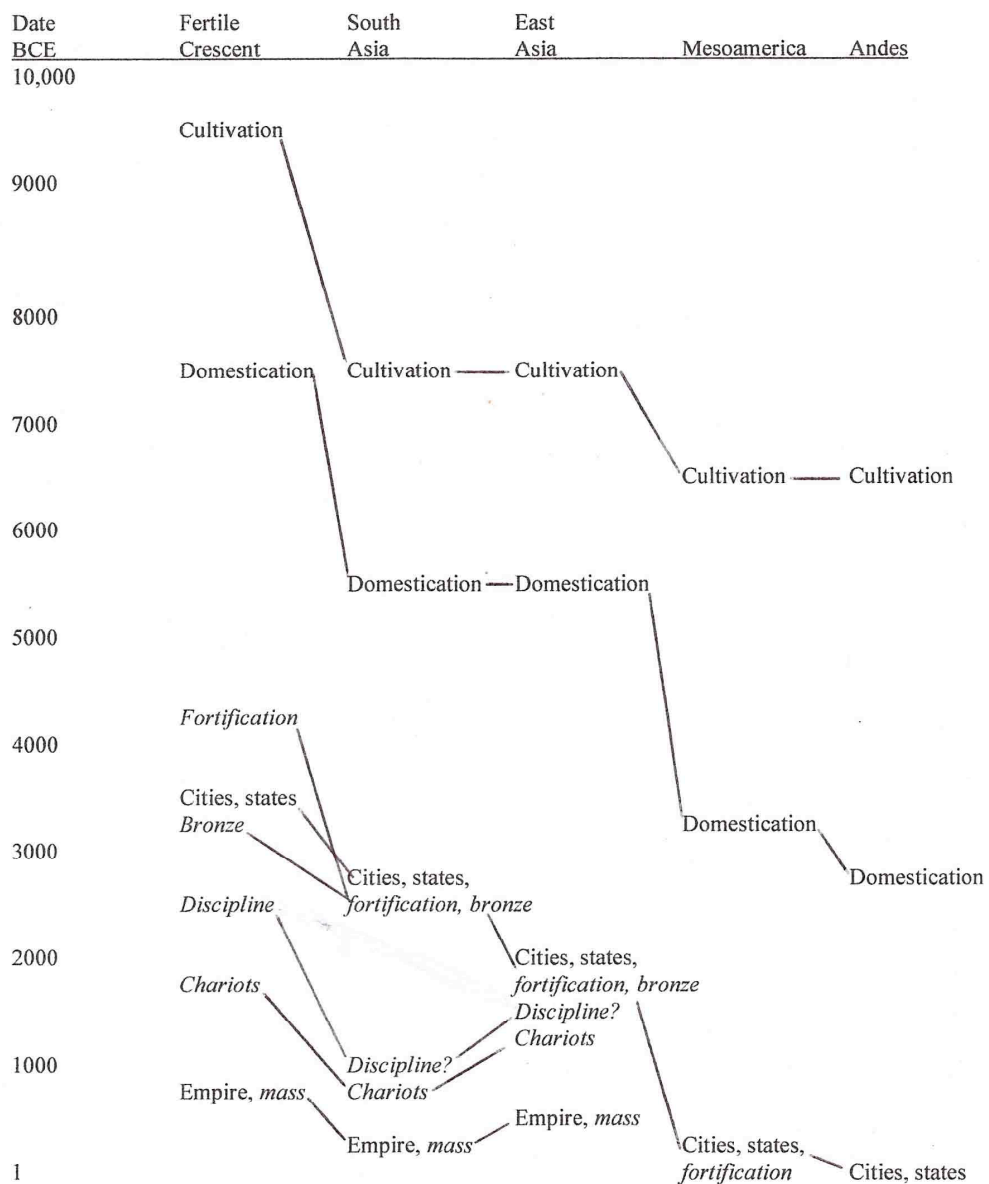


Figure 3. The ancient revolutions in military affairs, 10,000-1 BCE. Social and economic changes are in roman script, military changes in italics (for Morris, in prep. a: Table 2.1)

Domestication massively increased the supply of food per unit of land, and the world's population exploded from about half a million people twenty thousand years ago to five million ten thousand years ago, by which time the great majority of humans lived within the lucky latitudes.

As crowding increased, people probably found more things to fight about, and they certainly found that the costs of defeat were rising. In most landscapes, it is relatively easy for foragers who lose a fight to move away and start over somewhere new, but as population densities rose, that became more difficult. The fixed assets worth defending also increased, as capital investments in agriculture (cleared fields, irrigation systems, terraces, farmhouses, etc.) became more valuable.

In a classic paper, Robert Carneiro (1970) labeled this process circumscription, and in an almost equally classic book, Michael Mann (1986: 46-49) rebranded it as caging. Whichever name we use, though, the consequences were the same. Societies in the lucky latitudes started fighting more intensely, and instead of running away, the losers found themselves being absorbed into larger societies. Hierarchy increased as societies reorganized themselves to compete more effectively in this new environment, raising more powerful armed forces, pacifying themselves internally, and increasing revenue flows to central government.

This was an extremely nasty process, brought about through rape, slaughter, impaling, and enslavement. It began first in Southwest Asia, where the first centralized governments and cities emerged around 3500 BCE (Sumer/Susiana). By 2750 BCE comparable institutions had been created in South Asia (Harappan/Indus Valley, and by 1900 BCE in East Asia too. The New World evidence is a bit more controversial, but by the first centuries BCE and CE we can certainly speak of states in Mesoamerica (Teotihuacán, Monte Albán) and the Andes (Moche culture). The sequence of their appearance closely follows the sequence for the beginnings of agriculture, with the rise of states generally coming three to four millennia after domestication began (Figure 3).

### **Not the Western Way of War (10,000-1 BCE)**

It has become popular in the last twenty-odd years to speak of a distinct “Western Way of War,” invented by the ancient Greeks and passed down to modern Europe and America. The military historian Victor Davis Hanson, who coined the term, suggests that “For the past 2,500 years, there has been a peculiar practice of Western warfare, a common foundation and continual way of fighting, that has made Europeans the most deadly soldiers in the history of fighting” (Hanson 2001: 5).

Greek city-states regularly settled their differences with head-on charges between phalanxes of armored spearmen. “It is this Western desire for a single, magnificent collision of infantry,” Hanson argues (1989: 9), “for brutal killing with edged weapons on a battlefield between free men, that has baffled and terrified our adversaries from the non-Western world for more than 2,500 years.”

John Keegan goes further; since 500 BCE, he suggests, there has been “a line of division between [the Western] battle tradition and the indirect, evasive, and stand-off style of combat characteristic of the steppe and the Near and Middle East: east of the steppe and south-east of the Black Sea, warriors continued to keep their distance from their enemies; west of the steppe and south-west of the Black Sea, warriors learned to abandon caution and to close to arm’s length” (Keegan 193: 332-33).

The data, however, do not bear this out. Rather than a Western Way of War, there has been a Productive Way of War, created by circumscription/caging all across the lucky latitudes, and spread from there across the rest of the world.\* Productive War drove the creation of larger, internally pacified societies, which made their members safer and richer.

Through most of history, people have fought more through raids and ambushes than through pitched battles (Keeley 1996; LeBlanc and Register 2003; Gat 2006). In the ancient lucky latitudes, however, as war drove the evolution of larger, safer, richer, and more sophisticated states, these larger, safer, richer, and more sophisticated states in turn drove a series of revolutions in military affairs. Like the late-twentieth-century revolution in military affairs, they consisted of interlocking technological, organizational, and logistical advances.

All across the lucky latitudes, the first of these was fortification—organizing communities well enough to build walls that would keep out raiders. Thanks to the Red Queen Effect (Ridley 1995), this went hand-in-hand with better organization of raiding; as destruction layers in settlements attest, raids turned into sieges.

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\* The bibliography on specific wars and military systems is vast, and I generally don’t cite specific works or go into details about controversies in this brief survey. There are surprisingly few first-class overall surveys (Gat [2006] remains the best).

Next (where the chronology is fine-tuned enough to make the distinction) came the substitution of bronze for stone weapons, in the Old World at least. Copperworking began in the Andes around 1000 BCE, but stone blades still dominated when Cortés and Pizarro arrived 2,500 years later. Just why the New World's early states were not major bronze producers remains an open question, although Diamond (1997: 360-70) suggests that greater barriers to diffusion of ideas and smaller populations may explain the slow development of metalworking and writing in the New World relative to the Old.

Third, and arguably most important, was command and control. It takes proper military discipline and staff work to maneuver large bodies of men, feed them, and get them to go right up to enemies and stab them (particularly when the enemies are stabbing back). Command and control are hard to document archaeologically, although the famous Vulture Stele from Lagash in Sumer, carved around 2450 BCE (Figure 4), seems to show a somewhat disciplined formation of infantry with officers. Most likely, command and control began evolving soon after the rise of states, and persuading young men to do what they were told in life-threatening situations may have been Leviathan's major challenge.



Figure 4. The Vulture Stele, from Lagash in Sumer, c. 2450 BCE

Fourth—in Eurasia—was the introduction of chariots. Horses were domesticated in Ukraine on the steppes (Figure 5) around 4000 BCE, but not until about 2200 BCE were they big enough to pull carts. By 1900 BCE such carts had crossed the Caucasus Mountains into Southwest Asia, and before 1700 BCE light versions carrying archers armed with composite/reflex bows were in use on the battlefield. Their mobility revolutionized fighting, and by 1500 BCE they were the decisive arm in Near Eastern armies. At the Battle of Kadesh in 1274 BCE the Egyptians and Hittites each fielded about 3,500 chariots.

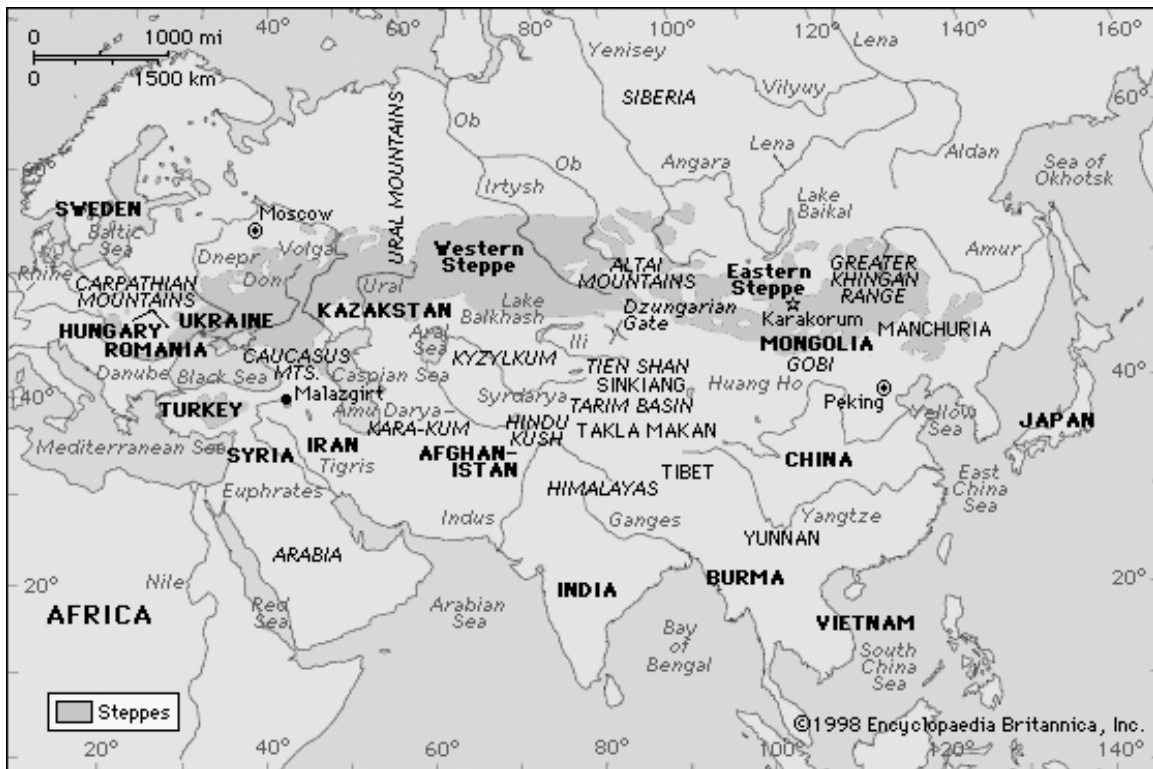


Figure 5. The steppes (marked in gray)

The fifth ancient revolution in military affairs was the appearance of mass formations of iron-armed and armored shock troops. This began in Assyria around 900 BCE, with dense columns of heavy infantry used in combination with cavalry, thanks to the breeding of bigger horses that could carry an armored man for hours at a stretch. Between 700 and 400 BCE Greek armies relied on even more heavily armored infantry alone. By 300 the Macedonians had reintroduced cavalry and designed a more flexible

phalanx; soon after this, the Romans downgraded cavalry once again and brought in the even more flexible legionary formations.

In East Asia, Chinese armies followed a similar path a few centuries later, with mass heavy infantry coming in by 500 BCE and cavalry by 400, although iron only replaced bronze in the third century BCE. By 300 BCE South Asia had produced yet another variant, with armored elephants playing the decisive shock role and infantry relying more on the bow than the spear. Everywhere across Eurasia's lucky latitudes, however, the first millennium BCE saw armies that regularly numbered in the hundreds of thousands seeking to win wars through battles decided by head-on collisions.

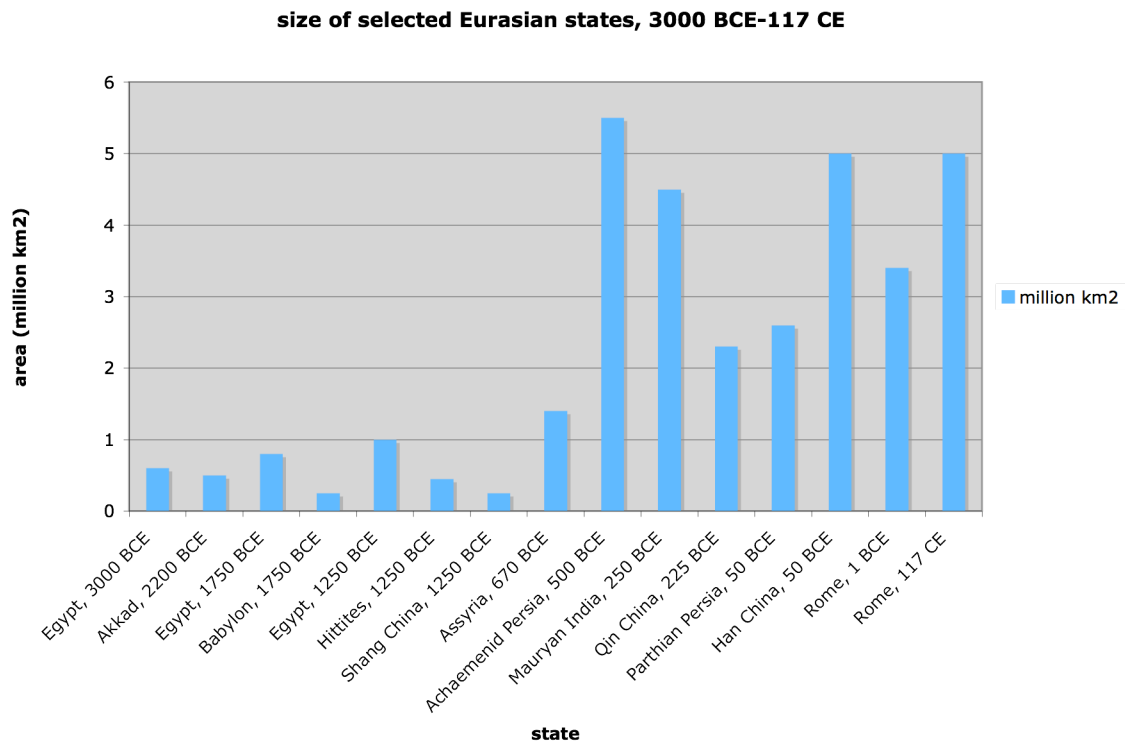


Figure 6. Size of selected Eurasian states, 3000 BCE-117 CE (based on data in Taagepera 1978, 1979)

The ancient revolutions in military affairs drove spectacular state expansion in Eurasia. Geographically, empire size leaped an order of magnitude between the second millennium BCE and the first. New World empires, which had little bronze and no iron or horses, did not begin to catch up till the eve of the Spanish conquest (Figure 6).

No reliable statistics on rates of violent death survive, but the qualitative literary and artistic sources seem to make it clear that the great Roman, Han, and Mauryan

empires were much safer places than prehistoric bands. As mentioned earlier, anthropologists often estimate that 10-20 percent of Stone Age people could expect to die violently, as opposed to 1-2 percent in the twentieth century CE. The empires of the late first millennium BCE must have lain somewhere between about 2 and 10 percent. My guess (Morris, in prep. a: chapters 1-2), for what it is worth, is that they were closer to the modern than the prehistoric end of this range—perhaps 2-5 percent?

This ancient decline in violence came out of a Productive Way of War, developed all across Eurasia's lucky latitudes, not a Western Way of War, invented in Greece. It also provides a valuable comparison case to the modern decline in violence that has drawn so much social-scientific attention.

Pinker (2011: xxiv) suggests that the modern decline "is a tale of six trends, five inner demons, four better angels, and five historical forces," but the similarities between the ancient and modern cases make me think we can reduce his twenty variables. In the fourth through first millennia BCE and again in the second millennium CE, the real motor for the reduction of violence was violence itself. War made Leviathans, which pacified themselves, and all the other trends, inner demons, better angels, and historical forces followed in war's wake.

### **Counterproductive war, 1-1415 CE**

Like biological evolution, cultural evolution is a messy process. It has its own kinds of fitness landscapes, full of bottlenecks, historical accidents, and dead ends. One result is that productive war can regularly turn counterproductive—that is, war serves more to break larger societies down than to increase their scale, simultaneously raising the risk of violent death and lowering the prosperity of their members.

In ancient times, we see great social collapses in Southwest Asia around 3100 BCE (the end of the Uruk Expansion), 2200 BCE (the fall of Egypt's Old Kingdom and the Akkadian Empire), and 1200 BCE (the end of the Bronze Age), and in South Asia around 1900 BCE (the fall of the Indus civilization). The precise causes remain highly controversial, but in each case the feedback relationship between cultural evolution and the environment seems to have been important: geography drove social development, but social development simultaneously drove what geography meant, so that geographical

factors that were highly advantageous at one level of development could be positively disadvantageous at another. In the two cases for which we have reasonable information, in Southwest Asia around 2200 and 1200 CE, collapse seems to have begun at the frontiers, with productive war changing relationships in ways that abruptly generated counterproductive wars.

Throughout the last three thousand years BCE, though, the long-run pattern was for war to be productive. Collapses could produce spikes of violence, described in a certain amount of detail in the Southwest Asian sources for 2200 and 1200 BCE, but war eventually turned productive again, producing new states and empires that surpassed the earlier versions in size, safety, and wealth. Most of the ancient “dark ages” lasted for two to five centuries, although states in South Asian did not regain their pre-1900 BCE level of development for a millennium, by which point the main center of development had shifted from the Indus to the Ganges basin.

But in the first millennium CE, productive war seemed to hit its limits. At the start of the millennium, the Roman and Han Empires four to five million square kilometers and each ruled some fifty-plus million people. However, the success of the empires of the Eurasian lucky latitudes had changed geography in radical ways. For thousand of years, the arid steppes, stretching from Manchuria to Hungary, had been a barrier preventing the northward expansion of complex society. But as the lucky latitudes became richer and richer, this changed. By the last few centuries BCE the steppes had taken on two new features. First, it had turned into a highway, along which caravans could trade and ideas and germs could move; and second, it had turned into a base from which horse nomads could raid the great empires (Barfield 1989; di Cosmo 2002).

The human mobility generated by the new meanings of the geography of the steppes probably had a lot to do with the plagues that ravaged the Roman and Han Empires from the 160s CE onward, and definitely had a lot to do with the migrations that overwhelmed the lucky latitudes over the next six hundred years. Buffered by population decline, economic crises, and mounting pressure on the frontiers, the Han Empire broke up in 220 CE. Rome came close to the same fate over the next fifty years, and then did collapse between the fifth and seventh century.

The Eurasian lucky latitudes remained the most developed\* part of the world in the period c. 200-1400 CE, but on the whole their military capacity fell sharply from where it had stood between about 500 BCE and 200 CE. Armies (especially in Western Eurasia) shrank, sometimes by an order of magnitude, and command and control often collapsed. The Arab armies that overran the Sassanid Persian and much of the Byzantine empires in the seventh century rarely numbered more than ten thousand men.

All across Eurasia, there was also a general shift from mass and discipline toward mobility. In Arabia camels often supplied this and in Western Europe ships, but on the whole, cavalry came to dominate war. Light horse archers were important in most regions, but already in the second century CE, armored cavalry were playing a role. By the sixth century, heavy shock cavalry were the dominant arm in Byzantium, Persia, India, and China. They spread across Europe from the eighth century on, and played a much bigger role than is often realized in Turkic and Mongol forces. Generally speaking, the weaker states of the period 200-1400 outsourced conscription to noblemen/warlords, who raised troops from their retainers and clients in return for land and shares of plunder.

The overwhelming importance of mobile forces in this period meant that the driving force in the history of the Eurasian lucky latitudes was their relationship with the steppes and deserts. No empire from the lucky latitudes ever succeeded in completely mastering the nomad populations, and several agrarian regions were ruled by conquest dynasties from the periphery. The most effective were groups like the Tang dynasty in China and the Kushana in India, who came from the borderlands of the steppe and the settled lands and managed to combine the battlefield power of nomadic cavalry with the high-end institutions of the settled states. None of these dynasties, however, proved as stable as the ancient agrarian empires.

The result in the Eurasian lucky latitudes was a cycle of productive and counterproductive wars. Counterproductive wars broke down the largest societies, which provided opportunities for conquerors to wage new productive wars, building great kingdoms up again; only for these new kingdoms to generate further counterproductive wars, and so on.

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\* In the sense I discuss in Morris 2010: 155-60, 623-45; Morris, in prep. b.

In Western Eurasia, counterproductive war generally dominated. In the seventh century, invading Arabs shattered the Byzantine and destroyed the Sassanid Persian Empires, creating an even larger caliphate, but this rapidly broke down into smaller, weaker states. In the late eighth century, Charlemagne conquered a very large Frankish Empire, but this broke down in the ninth century. In the eleventh century, the Seljuk Turks created another large Islamic Empire, only for that to break down too.

In India, the Guptas created a large empire in the fourth century, but it collapsed in the sixth. Between 600 and 1700 another ten kingdoms each united large sections of what we now call India (especially Vijayanagara in the sixteenth century), only to break down again.

The Sui dynasty reunited China in the late sixth century and in the seventh century the Tang dynasty achieved remarkable heights, only to collapse in the face of Turkic pressure and internal problems in the eighth. In the tenth century the Song again united China, only to break down across the twelfth and thirteenth centuries. Mongols took the throne as the Yuan dynasty in the late thirteenth century, only to be overthrown by internal rebellion in the fourteenth. And so on.

Between 200 and 1400, two forces trapped the Eurasian lucky latitudes in this cycle of productive wars, which generated larger, safer, and wealthier, societies, and counterproductive wars, which had exactly the opposite effect, breaking larger societies into smaller ones and dragging down personal security and prosperity. First, the agrarian empires never really mastered the threat posed by small but highly forces from the peripheries. Even the most successful, such as the Tang dynasty, found it impossible to dominate the shifting alliances on the steppes for more than a few generations.

Second, the empires never solved the problem of scale. All of them needed to support large cavalry forces on distant frontiers, paid for by taxes raised in richer core provinces. Rulers needed to walk a tightrope, maintaining armies strong enough to keep the empire peaceful, to extract taxes, and to protect the frontiers but not so strong that they could overthrow the rulers. Despite extraordinary ingenuity (e.g., Luttwak 2009), rulers basically cycled through the same handful of strategies for managing these difficulties (e.g., Elvin 1973; Luttwak 1976), none of which worked in the long run.

I suspect that these problems were simply insoluble in ancient and medieval times, and that the Roman Empire had in fact reached about as high a level of development as was possible for an agrarian society (Morris 2010: 167-69, 560). By the eleventh century, Song dynasty China was in many ways comparable, but no society before the eighteenth century managed to break through the hard ceiling that limited the growth of agrarian states.

The result: a twelve-hundred-year cycle of rising and falling empires, productive and counterproductive wars, and spikes and troughs in violence. Once again, there are no proper statistics, but the qualitative evidence suggests (to me, anyway) that rates of violent death were overall higher than in the ancient empires (guesstimated above at 2-5 percent) but lower than in prestate societies (10-20 percent)—perhaps in the area of 5-10 percent, averaged across the whole Eurasian lucky latitudes between 200 and 1400 (Morris in prep. a: chapter 3).

Outside the Eurasian lucky latitudes, the story was rather different, and in fact had more in common with Eurasia's history between 3100 and 1200 BCE than with what was happening there between 200 and 1400 CE. The non-Eurasian world certainly saw cycles of rising and falling states and counterproductive wars (e.g., the Classic Maya collapse), but overall, 200-1400 was a time of continuing productive war in much of the world.

In parts of sub-Saharan Africa and Oceania, agricultural caging drove productive war and the rise of indigenous chiefdoms and states. In Mesoamerica and the Andes, increasingly sophisticated states developed with more and more effective (although still basically Stone Age) armies, culminating in the Inca and Aztec Empires. On their fringes, complex chiefdoms such as Hohokam and Cahokia emerged (and collapsed). In Southeast and Northeast Asia, state-level societies rose and fell in contact with China. Only in extreme and/or resource-poor environments like Australia, the Sahara, and Siberia, where caging could not operate, did war remain unproductive, with violence generating no trend toward the creation of larger, safer, wealthier societies.

If there had been fifteenth-century social scientists, I suspect that they would have concluded that productive war had reached its limits by 1 BCE. The Romans had done as much as could be done, and no society would ever surpass that level of development. Within Eurasia, empires would rise, press against the hard ceiling, and fall, in an endless

cycle of productive and counterproductive wars involving steppe horsemen. That, perhaps is why Ibn Khaldun—the closest thing the fourteenth century produced to a social scientist—saw history as such a cyclical process.

Outside Eurasia's lucky latitudes, other parts of the world would steadily catch up with Eurasia, figuring out metal weapons, mass armies, and military discipline, until—by, say, 2011—agrarian empires would rule most of the world. The most successful of them would drive rates of violent death down into the 2-5 percent range, then they would collapse and violence would spike up. War, it seemed, had evolved toward a stable equilibrium, in which 5-10 percent of humans would die violently.

### **The revival of productive war, 1415-2011 CE**

This turned out not to be the case, thanks to two inventions—guns and oceangoing ships. Guns closed the steppes and ships opened the oceans.

Guns and oceangoing ships both evolved primarily in China\* and then spread like wildfire across Eurasia. It took a couple of centuries for magnetic compasses, powerful rudders, and other Chinese innovations to spread across the Indian Ocean to Europe, but less than forty years for guns to make the same journey across the steppes.† No invention in history had ever spread so far, so quickly.

In the fifteenth century, Europeans began making enormous improvements to both guns and ships, massively accelerating the pace of the evolution of war and kick starting a whole new phase of productive war. Geoffrey Parker (1996) famously called the years 1500-1800 Europe's military revolution, but we might do better to see the whole period from 1492 through 1991 as a Five Hundred Years' War in which Europe (almost) conquered the world (Morris, in prep. a: chapters 4-5).

Guns and ships pushed productive war down a new path. Once again, geography was decisive in how this unfolded. Packed tightly at the tip of Eurasia and unable to run

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\* With the obvious exception of Viking longboats, which, thanks to the favorable climatic conditions of the Medieval Warm Period and the convenient spacing of the Faeroes, Iceland, Greenland, and Newfoundland, could cross the Atlantic fairly reliably between about 1000 and 1300.

† The oldest known true gun is from Manchuria, dating to 1288; manuscript illustrations painted in Florence in 1326 and Oxford in 1327 show much-improved versions.

away when they lost wars, Western Europe's raging nations rapidly improved their guns' killing power and their governments' abilities to raise armies and equip them with cannons and muskets. But because Western Europe's states did this simultaneously, in constant competition, none could swallow up the others. Instead, they combined bloody, apparently unproductive deadlock inside Europe with ship-borne, highly productive expansion outside it.\*

This was the most violent conflict the world had so far seen, involving some of the most terrible injustices in history. But it was also the most productive war in history. Guns and ships remade caging. The world, in a sense, was shrinking, and there was no longer any way to outrun conquerors. By the end of the Five Hundred Years' War, European empires and emigrants had swallowed up half or more (depending on how exactly you count) of the planet's land and people. Trade exploded, and even the farthest reaches of Europe's empires began to see rising standards of living.

The defeated often suffered appalling violence, and yet, as has so often been the case, in the long run productive war drove overall rates of violent death down and pushed overall prosperity up. Within Western Europe and its settler colonies on other continents, barely 1 percent of the population could expect to die violently by 1914. Rates of violent death were higher across the European empires as a whole, and in the worst cases (like the Americas in the sixteenth and seventeenth centuries, or the Congo in the late nineteenth century) much higher; but by the early twentieth century, even outside Europe the rate of violent death in most of the great empires was probably below 5 percent.

Similarly, standards of living rose sharply within Western Europe and its settler colonies in the nineteenth century, and by the mid twentieth century they were moving up in large parts of the empires too.

The Five Hundred Years' War was so productive that it began changing the way war worked. By the eighteenth century, productive war had pushed maritime technology

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\* East Asia, despite being the homeland of guns and oceangoing ships, did not move in this direction, for two main reasons. First, after the massive Sino-Japanese war of 1592-98, East Asian governments seem to have concluded that interstate war was counterproductive (although war on the steppe frontier remained highly productive); and second, the distances on the Pacific Ocean were simply too great to make maritime empires on the European model attractive.

and the organization of states so far that governments could, for the first time, directly control the seas. Much of the increase of wealth in the ancient Mediterranean world had come from controlling the lands around that body of water, because ancient ships could not effectively police the sea-lanes themselves. Now, though, ruling the waves began to be as important as conquering the countries that bordered on the seas.

No nation was able to win decisive control over Europe in the Five Hundred Years' War, but after great victories over France in the 1750s Britain achieved near-total naval supremacy. The result was the emergence of what we might call liberal empire, a new kind of power based on integrating societies through trade rather than political rule.

Liberal empire still depended partly on old-fashioned direct rule, incorporating defeated societies (above all India) into a political structure ruled from London, but its wealth and power depended even more on maintaining the freedom of the seas for British commerce. The new kind of empire also produced new kinds of consequences, as the fruits of global trade created incentives that pushed British entrepreneurs into unlocking the secrets of fossil fuels, massively magnifying both the wealth of nations and their destructive power, with Britain in the lead in both areas.

But—in yet another of paradox of war—the growing importance of trade did not mean that productive war was declining in importance. Free trade could only flourish when it had a globocop with the power to police the whole world's oceans, and the only mechanism to decide who would be the globocop was productive war. Britain could not maintain its position if a rival used war to unite continental Europe.

Between the 1790s and 1815, Napoleon almost succeeded, killing as many as five million people in the process, but ultimately could not defeat Britain's economic power. For nearly fifty years Britain's wealth seemed unassailable, but between 1861 and 1871 productive wars and the spread of technology turned the United States and Germany into real rivals.

In the twentieth century two German bids to unite Europe by force and a similar Japanese effort in the Pacific failed, killing more than a hundred million people, but they also swept away the old European deadlock. To fight Germany and Japan, Britain had effectively been forced to sell off its maritime empire, and after 1945 two very new empires, the Soviet and the American, dominated the planet.

Each denied that it was an empire, claiming instead to be a radically new force that opposed imperialism in the name of equality (the Soviet version) or freedom (the American version) wherever it found it, but each was very much a legacy of the Five Hundred Years' War. The Soviets brought the old style of centralized, territorial empire in the twentieth century, while the Americas did the same for the liberal version.

The real break with the past was that the twentieth century's wars had destructive powers that transformed the payoffs from aggression, exposing the deepest paradox of productive war. By the 1980s the two empires had enough nuclear weapons to kill everyone on earth. The only way to avoid nuclear annihilation, it seemed to many, was by forming a world government, yet the lesson of history seemed to be that the only way to form a world government was by a productive war between the two empires—a war that would necessarily be so counterproductive that it would leave cockroaches to inherit the earth. The environment had changed so much that the kinds of productive war that had shaped history for ten thousand years no longer worked.

Mutual assured destruction meant that the Soviets and Americans did not fight a Third World War. Instead, they made do with a war in the Third World. Waged mostly through proxies (murderous rural revolutionaries for the Soviets, thuggish dictators for America), this grinding conflict left about ten million dead between 1946 and 1989.

This, however, was just a drop in the ocean compared to what would have happened if the conflict had mutated into a true Third World War. In the 1980s a “countervalue” nuclear exchange between the Soviets and Americans, with each attempting to destroy the other's ability to fight on rather than just to neutralize its nuclear strike forces, would probably have left three hundred million dead on the first day and billions more over the weeks that followed.

But that did not happen, because the American Empire was perfecting a new kind of productive war: literally a war of production, waged through standards of living. Washing machines and video games replaced tanks and missiles as the main weapons. It was a strange war, shaped by the fact that the two superpowers could not fight an actual war, but it also depended on America's ability to use violence to protect and police its sphere of influence. Yet it worked, and in 1989 Eastern Europe's disillusioned,

downtrodden masses threw off their bungling masters. Within two years the Soviet Empire had been cast onto the ash heap of history.

The world that the American victory made was just as strange as the kind of war that had produced it. There were more independent governments in the 1990s than ever before, and yet the planet had never been so more thoroughly dominated by a single state's military, economic, and cultural power.

## **Conclusion**

The evolution of war has shifted incentives so much that traditional kinds of productive war have become unthinkable. Since the fall of the Soviet Empire, interstate war has almost disappeared, except for the occasions when the USA itself decided to wage it. Mass killing now happens almost entirely within failed states, or is exported from them in the forms of terrorism and civil war. The global rate of violent death has fallen well under 1 percent, far and away the lowest in history.

Further, as Pinker (2011) shows in such detail, violence is becoming an increasingly unattractive option in most spheres of life across most of the planet. We are, in effect, being trapped in the bottom right-hand cell of the Pacifist's Dilemma (Figure 1).

Putting the trends of the last few hundred years into the perspective of the previous fifteen thousand, however, reveals a simpler explanation than the twenty-dimensional interaction identified by Pinker. In ancient times (and again in the last five hundred years) productive war has been the prime mover in reducing violence. War has created larger, safer, and richer societies. The institutional, intellectual, and psychological factors that Pinker identifies are the consequences of productive war.

One conclusion we might draw from the evolution of war is that productive war will continue mutating in the twenty-first century, shifting incentives further toward peace, until at some point virtually no circumstances will remain in which violence seems profitable. At that point, the dream of a world without war will become a reality.

How exactly that will come about, though, remains very unclear. The philosopher Daniel Dennett likes to say that the tools of evolution are cranes, not skyhooks: that is, new adaptations are path-dependent, built from the ground up in incremental steps.

Identifying the logical *telos* of an evolutionary trend avails us nothing if there's no way to get from there from here (Dennett 1995: 73-80, 251-61).

I think we can see two contradictory trends at work in the twenty-first century. On the one hand, productive war has evolved faster in the last five hundred years than ever before, and when the invention of nuclear weapons made it clear that traditional productive war had become counterproductive, the United States and Soviet Union quickly worked out new ways to wage productive war. It is certainly possible that this will continue in the twenty-first century, moving the world toward being a single society without following the unthinkable path of total war.

On the other hand, as organisms and institutions evolve, they change the environment around them, which may push evolution in unanticipated directions. One possible analogy for the near future might in fact be the kind of thing that happened a hundred and fifty years ago. There was no world government in the 1860s, just as there is no world government in the 2010s. But then, as now, one state bestrode the world like a colossus. No competent nineteenth-century government would break the *Pax Britannica* without getting assurances that Britain would at least remain neutral in its conflicts, just as almost none now dares break the *Pax Americana*.

But by the 1870s, the very success of the *Pax Britannica* was feeding back to change the environment, which was becoming uncertain. Expensive new weapon systems were shaking up the status quo. Governments were reorganizing themselves to conscript more men and mobilize them faster than ever before. New economic giants—above all, Germany and the United States—were gaining on Britain. There seemed to be more room to take chances; and in 1914 Germany took such a chance.

The world of the 2010s presents alarming similarities. The 1990s were, in important ways, like the nineteenth century gone mad. Globalization was exploding, technology was changing almost too quickly to measure, and one nation's economic and military might made productive war unthinkable. But since 2000, America's economy has stumbled. In the 2020s China's GDP will probably overtake the United States', and the return of a multipolar world looks imminent.

As in the years around 1900, a revolution in military affairs is underway. By 2020 robotic, nanoscale, and genetic weapons will probably dominate advanced warfighting,

and anti-missile systems may have made the old style of nuclear bullying obsolete. The United States currently has such a huge lead in the new, high-tech styles of war that no state dares challenge it; but so did Britain a century ago.

China will surely not seek a war with the United States in the 2010s, but Germany was not seeking a war with Britain in the 1910s either. The real problem a century ago was the perception that the *Pax Britannica* was breaking up. In such an uncertain environment it only needed a Serbian terrorist with a pistol to set the world alight. In just the same way, the real problem today is a perception that the *Pax Americana* is at risk—and we have no shortage of contemporary terrorists, armed with much more than pistols.

In conclusion: the trends in the evolution of war across the last fifteen thousand years suggest two possibilities to me. First, we may already be reaching the point that war is evolving into something else entirely, making the age-old dream of a world of peace a reality. But second, we may be reaching a point at which productive war flips over into counterproductive war on a scale to dwarf anything the world has seen before. Either way, the next fifty years will be the most important in human history.

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