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The Causes of Peace:
The Role of Deterrence

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"Give the nuke a Nobel"
Time Magazine, 11 October 2009

INTRODUCTION

Deterrence and peace are two words that contrast starkly with each other.[1] At the root of the first one is the Latin verb *terrere*, to "terrorize". Not an easy match with "peace". Whatever impact deterrence has on peace, this mismatch calls for a rather restrictive definition of peace, understood here as the absence of direct, open military conflict between two parties (including when they are still, legally speaking, in a state of war, such as North and South Korea). It is restrictive in the sense that, just as democracy is not only about elections, peace is not only about the absence of war.

In the contemporary public debate, deterrence is often understood as a process through which a party is prevented, through a rational calculation from its part, from attacking another because such aggression would trigger nuclear reprisals which would exceed the expected benefits of aggression. Such a restrictive definition is unwarranted in four respects. Deterrence is not a concept limited to the military domain: it operates in many aspects of human life, with some dating it to God's threat to Adam and Eve (to not eat the fruits of the Tree of the Knowledge of Good and Evil under penalty of becoming mortals). In the strategic domain – that of State-to-State relations, the focus of this paper – deterrence is not only nuclear: it also exists at the conventional level. It can be exercised through "denial" (persuading the adversary that achieving its goals would be difficult because of the obstacles it would face) as much as by "retaliation".[2] And it has never been based *solely* on a rational calculation, even though most Cold war deterrence theory – just like economic analysis – was premised on the rationality of actors. Emphasizing the origins of the word "deterrence" helps reminding analysts that there was always an irrational component to the concept it embodies.

[1] This paper was originally prepared for the Nobel Institute. The author is grateful to Alice Pannier and Elbridge Colby for their thoughtful comments on an earlier draft. This version also takes into account a discussion held at the Nobel Symposium held in Bergen, Norway in June 2016.

[2] Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, New Jersey: Princeton University Press, 1961), 15.

THE STATE OF THE ART

Deterrence Before 1945

The idea of military deterrence is almost as old as organized warfare. However, *deterrence as a strategy* is a more recent innovation.[3]

It is probably the meaning of the famed Roman adage *si vis pacem, para bellum*, the idea being that one would hesitate before attacking a well-armed adversary. Such an idea is also to be found in Thucydides' works.[4] *"When there is mutual fear, men think twice before they make aggressions upon one another",* says Hermocrates of Syracuse as quoted by Thucydides.[5]

Deterrence was a state of fact more than a war-prevention instrument.[6] It did not appear as such in Clausewitz's writings, for instance. Diplomacy and alliances, not deterrence, were essential to prevent war. Classical deterrence as a concept operated – and continues to operate – through denial and not retaliation.[7] The notion of a "fleet-in-being" proposed by Lord Torrington in 1690 was an early example. Deterrence through the threat of unacceptable violence is a more recent innovation: it was present in the writings of the early theorists of aerial bombardment such as Douhet in Italy, Trenchard in the United Kingdom, and Mitchell in the United States.[8] But, overall, before 1945 deterrence was at best an *"occasional stratagem"*.[9] It was not a *strategy* – the deliberate articulation of particular means towards the achievement of specific goals – and even less a key war-avoiding instrument. What changed after 1945 is that with nuclear weapons, deterrence became an *elaborate strategy* mostly based on the threat of *retaliation* and designed to *prevent war.*[10] Nuclear weapons *"purified deterrent strategies by removing elements of defense and war-fighting",* as Kenneth Waltz put it.[11]

In the late 1970s, the expression "conventional deterrence" appeared by contrast with nuclear deterrence, but it was hardly dissociable from the nuclear context: the idea behind it was that so-called Precision Guided Munitions (PGM) could help raise the nuclear threshold.[12]

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[3] It differs, for instance, from mere "self-deterrence" in which a party would renounce attacking another based on the observed correlation of forces and opponent's behavior.

[4] Richard N. Lebow, "Thucydides and Deterrence", *Security Studies*, vol. 16, n° 2, April-June 2007.

[5] Thucydides, History of the Peloponnesian War, Book IV.

[6] Raul Naroll et al. (ed.) *Military Deterrence in History: A Pilot Cross-Historical Survey* (Albany: University of New York Press, 1974).

[7] Robert Jervis, The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon (Ithaca: Cornell University Press, 1989).

[8] George Quester, Deterrence before Hiroshima: The Airpower Background of Modern Strategy (Piscataway: Transaction Publishers, 1986).

[9] Lawrence Freedman, *Does Deterrence Have a Future?* (Sandia National Laboratories, 1996), 1.

[10] "Elaborate strategy": Patrick M. Morgan, *Deterrence Now* (Cambridge: Cambridge University Press, 2003), 3.

[11] Kenneth N. Waltz, "Nuclear Myths and Political Realities", *The American Political Science Review*, vol. 84, n° 3, September 1990, 732.

[12] John J. Mearsheimer, "Precision-guided Munitions and Conventional Deterrence", *Survival*, vol. 21, n° 2, March-April 1979.

Overall, two lessons of history regarding the effectiveness of conventional deterrence appear. Firstly, deterrence depends much less on the overall correlation of forces than on the volume and quality of forces deployed on the theater, their degree of availability, and the type of military strategy employed.[13] It is likely to fail if one of the parties has the ability to undertake a *blitzkrieg;* conversely, it is likely to succeed if the other party has the ability to embark in prolonged attrition warfare.[14] Secondly, deterrence of weaker states will fail if such States are highly motivated, or misperceived some facet of the situation, or if they are able to exploit vulnerabilities of stronger States (in particular through the use of unconventional tactics).[15]

A Nuclear Peace? Examining the Evidence

The case for nuclear deterrence has to be based on two propositions: that there has been an absence of war between countries armed with nuclear weapons; and – given that a negative proposition can never be fully demonstrated – that such absence of war cannot be satisfactorily explained by other factors than the existence of deterrence strategies based on nuclear weapons.

The statistical evidence

The statistical evidence rests on the absence, since 1945, of major power war, major war between nuclear-armed countries, and major military attacks against nuclear-armed or nuclear-protected countries.

Absence of major power war – the "Long Peace"

Exhibit A in support of nuclear deterrence is the absence of major power war since 1945.[16] If one defines great powers as the five permanent members of the United Nations Security Council, which are also the five Nuclear Weapons States in the sense of the Nuclear Non-proliferation Treaty (NPT), clearly there was never any open military conflict between them, even less a major war (1,000 battle-related deaths in a single year). A broader definition including Germany and Japan, which are protected by the US nuclear umbrella, also makes the cut.

John Lewis Gaddis forged the expression the "Long Peace" forty years after the end of the Second World War; it is now seven decades old. No comparable period of great power peace has ever existed in the history of modern States (perhaps not even since the Roman Empire). For instance, there were two dozen conflicts among major powers in the equivalent amount of time following the Treaties of Westphalia (1648), and nine between the Vienna Congress

[13] Richard J. Harknett, "The Logic of Conventional Deterrence and the End of the Cold War", *Security Studies*, vol. 4, n° 1, Fall 1994.

[14] John J. Mearsheimer, *Conventional Deterrence* (Ithaca: Cornell University Press, 1983); Edward Rhodes, "Conventional Deterrence", *Comparative Strategy*, vol. 19, n° 3, 2000; Michael Gerson, "Conventional Deterrence in the Second Nuclear Age", *Parameters*, Fall 2009.

[15] Barry Wolf, *When the Weak Attack the Strong: Failures of Deterrence*, N-3261-A, The Rand Corporation, 1991; Ivan Arreguin-Toft, "Unconventional Deterrence: How the Weak Deters the Strong", in T. V. Paul et al. (ed.), *Complex Deterrence: Strategy in the Global Age* (Chicago: University of Chicago Press, 2009); Mindaugas Rekasius, "Unconventional deterrence strategy", Ph.D. dissertation, Monterey, Naval Postgraduate School, 2005.

[16] John Lewis Gaddis, *The Long Peace* (New York: Oxford University Press, 1990).

(1815) and the First World War.[17] Is there not here an exceptional proposition that deserves an explanation?

The idea of a Long Peace has been challenged by two arguments.

The first is that it is *not so exceptional*. Here, coding (i.e. what is a major power war? what is the relevant duration of the Long Peace?) is the bone of contention. Some would mark its beginning only in 1947 (the Iron Curtain speech), in 1949 (the first Soviet nuclear test), or even in 1953 (the end of the Korean War). Some would end it as early as 1989: the narrowest definition thus leads to a "Short Long Peace" of only… 36 years. If one simultaneously discounts some past events as being non-major power wars, then previous periods of non-war become lengthier, thus negating the exceptionality of the Long Peace. For instance, discounting the Franco-Spanish War of 1823 and the First Russian-Turkish War of 1828-1829 leads to a 33 years period of great power peace (1815-1848); and discounting the Second Russian-Prussian War of 1877-1878 and the Russian-Japanese War of 1905 leads to a 43 years period of peace (1871-1914). Thus two authors claim that *"historical periods of major power peace are frequently as long as forty-two years"*.[18] This is a valuable debate, but I am not convinced of the "banality of the Long Peace". First, because I find the coding of the Korean War as a major power one debatable. It pitted US-led UN forces against North Korea and, a few months later, its Chinese ally. At that time, the People's Republic of China was neither a permanent member of the UN Security Council (its Second World War victor's seat was occupied by Taipei), nor an economic giant, a formidable military power, or a nuclear State. Its intervention was mostly defensive: the fear that the United States forces would attack China.[19] Second and most importantly, because I find no reason to conclude the Long Peace in 1989 or any posterior year. Even if one uses 1953 as a starting point and demotes several past major power wars, 63 years without a great power war is an exceptional duration.

The second is that it is *statistically irrelevant*. According to Pasquale Cirillo and Nassim Nicholas Taleb, the history of large-scale wars shows a fat-tailed distribution, in which properties such as the mean are determined by extremes. It is also a homogeneous Poisson (purely random) process in the past 500 years. A seventy-year period without a massively destructive event means nothing from a statistical point of view, given that in the past 2,000-plus years, the "waiting time" between two 10-million deaths events – an example taken from their results – is, on average, 133 years, and the mean absolute deviation is 136 years (though only 52 and 63 years when rescaled to today's population).[20] Steven Pinker accepts that the distribution of wars may be a Poisson process but writes: *"nothing says that the*

[17] Franco-Spanish War (1823), First Russian-Turkish War (1828-1829), War of Crimea (1853-1856), Austro-Prussian War (1856), War of Italian Succession (1859), Austro-Prussian War (1865-1866), French-Prussian War (1870-1871), Second Russian-Prussian War (1877-1878), First Russian-Japanese War (1903-1905).

[18] Randolph M. Siverson & Michael D. Ward, "The Long Peace: A Reconsideration", *International Organization*, Vol. 56, No. 3, Summer 2002.

[19] Hao Yufan & Zhai Zhihai, "China's Decision to Enter the Korean War: History Revisited", *The China Quarterly*, n° 121, March 1990.

[20] Pasquale Cirillo & Nassim Nicholas Taleb, *What are the chances of a third world war?*, www.fooledbyrandomness.com, undated; and *ibid.* "On the statistical properties and tail risk of violent conflict", Tail Risk Working Papers, 19 October 2015. Note that the first paper mistakenly reports the findings of the second as 136 (which is the reported mean absolute deviation in the second).

probability has to be constant over long stretches of time".[21] The occurrence of major war may be random, but its probability not constant, a *"non-stationery Poisson process with a declining rate parameter".*[22] He accepts the theoretical possibility that the Long Peace could be just a statistical illusion, but argues that a combination of historically unprecedented developments that have accompanied the absence of major power war gives credence to the idea that "something new" is happening, lowering the chances of such war, without discarding the possibility of a new one, which could be even more destructive than its predecessors.[23] Cirillo and Taleb reply that *"data does not support the idea of a structural change in human belligerence".*[24] They do not, however, limit their analysis to great power wars, the immediate topic of our analysis, and their paper does not directly address whether or not the absence of *any* great power war (be it a 1,000 deaths one or a 10 million one) in the past 63 years is a statistical anomaly.

It is quite possible that the Long Peace is not statistically exceptional and thus does not need an explanation. However, *if* there is a credible explanation for it, *then* it may not be just a long period of non-major powers war (in addition to the fact that each year without a nuclear war makes the "Long Peace through Nuclear Deterrence" hypothesis more credible). Especial since two other interesting phenomena have been observed.

Absence of major war between nuclear-armed countries

A broader dataset includes other dyads of nuclear-armed countries involving India, Israel, North Korea, Pakistan and South Africa (until the late 1980s).

There has never been a major war between two nuclear-armed States.[25] Beyond this mere observation, two recent quantitative studies have shown that the possession of nuclear weapons by two countries significantly reduced – all things equal – the likelihood of war between them.[26] Events in Asia since 1949 provide an interesting test case. China and India fought a war in 1962, but have refrained from resorting to arms against each other ever since. There were three India-Pakistan wars (1947, 1965 and 1971) before both countries became nuclear; but since the late 1980s (when the two countries acquired a minimum nuclear capability), none of the two has launched any significant air or land operations against the other. Neither the Ussuri crisis of 1969, not the Kargil conflict of 1999, qualify as major wars (none caused the death of more than 1,000).[27]

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[21] Pinker, The Better Angels of Our Nature, 206.

[22] Ibid., 207.

[23] Steven Pinker, *Fooled by Belligerence: Comments on Nassim Taleb's "The Long Peace is a Statistical Illusion*", www.stevenpinker.com, undated.

[24] Cirillo & Taleb, What are the chances of a third world war?

[25] The only instance when US and Soviet forces clashed directly was the 1950-1953 Korean war, but Soviet pilots were flying under North Korean or Chinese colors.

[26] James F. Pasley, "Chicken Pax Atomica: The Cold War Stability of Nuclear Deterrence", *Journal of International and Area Studies*, vol. 15, n° 2, December 2008; Robert Rauchhaus, "Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach", *Journal of Conflict Resolution*, vol. 53, n° 2, April 2009.

[27] Although the Correlates of War (COW) data set lists Kargil as a major war, the sum of the official tally of battle-related deaths is under 1,000.

Absence of major military attacks against nuclear-armed or nuclear-protected countries

The third data set concerns dyads in which only one party is endowed with or protected by nuclear weapons.

No nuclear-armed country has ever been invaded, or its territory the object of a major military attack.[28] The 1973 Yom Kippur War and the 1982 Falklands War are often suggested as counter-examples. But these are not persuasive. Israel was invaded in 1948, on the day of its independence. But in 1973, Arab States deliberately limited their operations to disputed territories (the Sinai and the Golan Heights).[29] It is thus incorrect to take the example of the Yom Kippur war as a "proof" of the failure of nuclear deterrence. (Likewise, India refrained from penetrating "undisputed" Pakistani territory since 1990, whereas it had done so in 1965 and 1971.) The Falklands Islands, invaded by Argentina in 1982, were a British Dependent Territory for which nothing indicates that it was covered by nuclear deterrence. Furthermore, it would be erroneous to take these two events as evidence that extended deterrence does not make sense, since the latter is meant to cover interests that are much more important to the protector than non-essential territories; for instance, during the Cold war Germany was much more "vital" to the United States than, say, Puerto Rico.

No country covered by a nuclear guarantee has ever been the target of a major attack. Here again evidence can be found *a contrario*. The United States refrained from invading Cuba in 1962, for instance (the 1961 Bay of Pigs attempted invasion was a proxy operation), but did not hesitate in invading Grenada, Panama or Iraq. The Soviet Union invaded Hungary, Czechoslovakia and Afghanistan, but not a single US treaty ally. China has refrained from invading Taiwan, which benefits from a US *de facto* defense commitment, even if (deliberately) ambiguous. North Korea invaded its southern neighbor in 1950 after Washington had excluded it from its "defensive perimeter", but has refrained from doing so since Seoul has been covered with a nuclear guarantee. US allies South Vietnam or Kuwait were not covered by a US nuclear protection. Russia could afford to invade Georgia or Ukraine because they were not North Atlantic Treaty Organization (NATO) members.

Conclusion

To sum up, the available statistical evidence seems to make a reasonably good case for the fact that for at least six decades, there has not been any major power war, that nuclear-armed countries have not gone to war against each other, and that non-nuclear-armed countries

[28] I implicitly note here that the *forces abroad* of several nuclear States were attacked at several occasions (e.g. China in 1950 during the Korean War); but nuclear deterrence covers only the most vital interests of countries endowed with or protected by nuclear weapons, and is never understood as covering any attack on expeditionary forces. An exception is the Iraqi Scud campaign against Israel (1991), though nuclear deterrence can probably explain the absence of chemical or biological munitions (see Bruno Tertrais, *In Defense of Deterrence: The Relevance, Morality and Cost-Effectiveness of Nuclear Weapons*, Institut français des relations internationales, 2011). Other exceptions are the attempted Libyan missile launch against the Italian island of Lampedusa (1986) and the North Korean shelling of Yeonpyeong island (2010); but the very limited character of the attacks and their location (regarding the second one, a maritime area not recognized by Pyongyang as being part of South Korean territory) make them hard to count it as failures of extended deterrence.

[29] See for instance T. V. Paul, *The Tradition of Nonuse of Nuclear Weapons* (Stanford: Stanford University Press, 2009), 147-148.

have refrained from going to war against them or their allies. There seems to be correlation. But is there causation?

The analytical evidence

The dominant view among political scientists and historians is that nuclear deterrence has been a key, if not *the* key, to peace among great powers since 1945. While the literature on other datasets is less abundant, it also seems to explain the absence of major military attacks against nuclear-protected countries in general.

The role of nuclear deterrence to explain this (possible) anomaly has been highlighted by leading historians and authors such as Lawrence Freedman, John Lewis Gaddis, Raymond L. Garthoff, Michael Howard, Michael Quinlan, Richard Rhodes, Marc Trachtenberg, and Kenneth Waltz. They all point to the restraining power that the Bomb had in great powers' strategic calculations.

If nuclear deterrence worked, how did it work? I would argue that it was both "mostly by fear, to some extent by interest".

Nuclear weapons, when mated with ballistic missiles (and even more so when powerful thermonuclear weapons appeared), brought a revolution in warfare: the near-certainty of fast, massive, large-scale retaliation. Moreover, due to planning, targeting and command, control, communications and intelligence (C3I) advances, the ability to retaliate became less and less contingent on whom the aggressor would be and where he would attack.

The rational actor assumption that underlined most of the Cold War strategic literature has been successfully challenged, even more so since the seminal publication of *Psychology and Deterrence* more than thirty years ago.[30] But nuclear deterrence does not rely solely on cold calculations. The peculiar nature of nuclear weapons – which kill through blast, fire and radiation – and the memories of Hiroshima have given them a specific aura, which has been made even stronger by the development of thermonuclear weapons, the theory of "nuclear winter" and various apocalyptic, end-of-the-world scenarios associated with escalation to the extremes. The absence of any precedent for a "true nuclear war" (Hiroshima and Nagasaki were just the coda of a massive city-bombing campaign) makes it even more unpredictable than conventional war. It is possible that nuclear balances of power, models and equations of nuclear use were much less relevant to the success of nuclear deterrence than the mere combination of a significant arsenal and of the apparent will to use it. One can go as far as saying that nuclear deterrence may be complex in theory but easy in practice. Or, at least, to use Patrick Morgan's distinction, that "general deterrence" might have been enough to deter an adversary, as opposed to "immediate deterrence".[31]

In concluding his seminal collective study of how the Cold War statesmen "confronted the Bomb", John Lewis Gaddis made the most forceful case for nuclear deterrence. Major powers feared nuclear war and took deliberate precautions to reduce the risks of direct

[30] Robert Jervis, Richard Ned Lebow & Janice Gross Stein, *Psychology and Deterrence* (Baltimore: Johns Hopkins University Press, 1985); Bradley A. Thayer, "Thinking about Nuclear Deterrence Theory: Why Evolutionary Psychology Undermines Its Rational Actor Assumptions", *Comparative Strategy*, vol. 26, 2007.

[31] Morgan, *Deterrence Now*, 9.

conflict.[32] Nuclear weapons were *"supremely relevant"* to the Long Peace.[33] They *"did play the determining role in making great power war obsolete, at least during the Cold war"*.[34]

Without going that far, it is likely that nuclear deterrence has limited the scope and intensity of possible conflict among the major States. If crises in Europe, as well as wars in Asia and the Middle East, did not turn into global conflicts, it is probably due largely to nuclear weapons. A former Russian official even writes: *"I dare claim and am ready to prove that nuclear weapons were the greatest 'civilizing tool' for these elites. They cleansed their ranks of all radicals and ideologues, and they strengthened the pragmatists who saw their main goal in averting a nuclear war or the clashes that had the potential to escalate to a nuclear conflict"*.[35] One author goes as far as claiming that nuclear weapons *"tamed"* great powers.[36]

Without nuclear weapons, Washington might have hesitated to guarantee the security in Europe ("no nukes, no troops", as was said at the time), and might have returned to isolationism; and without US protection, the temptation for Moscow to grab territory in Western Europe would have been stronger.[37] Prominent antinuclear activist Gareth Evans claims that there is *"no evidence that at any stage during the Cold War years either the Soviet Union or the United States ever wanted to cold-bloodedly initiate war."*[38] But in order to assert that nuclear deterrence was key in the preservation of major power peace, one does not need to postulate a Soviet desire for war: as Michael Quinlan put it, it is enough to argue that *"had armed conflict not been so manifestly intolerable the ebb and flow of friction might have managed with less caution, and a slide sooner or later into major war, on the pattern of 1914 or 1939, might have been less unlikely"*.[39]

It might be imprudent to state boldly, as Kenneth Waltz once did, that *"the probability of major war among states having nuclear weapons approaches zero"*.[40] But if the "nuclear deterrence hypothesis" is correct, then the statistical debate incarnated by the Pinker/Taleb controversy may be largely irrelevant given that we have probable causation in addition to correlation.

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[32] John Lewis Gaddis *et al.* (ed.), *Cold War Statesmen Confront the Bomb: Nuclear Diplomacy since 1945* (New York: Oxford University Press, 1999). See also John G. Hines et al., *Soviet Intentions 1965-1985*, The BDM Corporation, 1995.

[33] Gaddis et al., Cold War Statesmen Confront the Bomb, 267.

[34] *Ibid.*, 270.

[35] Sergei Karaganov, "Nuclear Weapons in the Modern World", in Harold Brown *et al.*, *Nuclear Disarmament and Nonproliferation*, Report to the Trilateral Commission, n° 64, 2010, 65.

[36] Godfried van Benthem van den Bergh, *The Taming of the Great Powers*, Policy Outlook, Carnegie Endowment for International Peace, 2009.

[37] See James Schlesinger, "The Impact of Nuclear Weapons on History", *The Washington Quarterly*, vol. 16, n° 4, Autumn 1993.

[38] Gareth Evans, "Restoring reason to the nuclear debate", *Bulletin of Atomic Scientists*, 16 November 2015.

[39] Michael Quinlan, *Thinking About Nuclear Weapons: Principles, Problems, Prospects* (Oxford: Oxford University Press, 2009), 28.

[40] Waltz, "Nuclear Myths and Political Realities", 740.

Are alternative theories convincing?[41]

To make the case for nuclear deterrence as cause of the Long Peace, one has to discard alternative explanations. Those supporting them generally do not completely rule out a role for nuclear weapons, but argue that they played at best a marginal – and non-necessary – role in the preservation of peace.[42]

The *realist explanation* suggests that the overall stability of the Cold War bipolar system was the dominant factor. But that might be a reversal of cause and effect. Nuclear weapons were a central element of the US commitment to European security.[43] They did as much to consolidate alliances as to break them: the US nuclear guarantee (and access to nuclear sharing) was a non-trivial dimension of the attraction and staying power of NATO; and France stayed in the Atlantic Alliance after developing its own nuclear force. Regarding the post-Cold War period, the US hegemony might very well be a key cause of the absence of major war: but it remains underwritten by the US nuclear primacy.

The *liberal explanation* involves institutions, interdependence, and democracy. The construction of a new global institutional order based on collective security and a global organization is insufficient as an explanation: the order based on the League of Nations did nothing to prevent the Second World War.[44] Economic interdependence is not a satisfying explanation regarding the Cold war: there was no such interdependence between the Western and Communist blocs. Neither is the progress of democratization around the world: the risk of major power war was, and remains, between democracies and authoritarian regimes.[45] Perhaps the creation of the European Communities became a powerful barrier against the return of war on the continent (through political and economic integration)? The argument confuses cause and effect: the integration process which began in 1957 would have been much more difficult without the US and NATO umbrella.[46]

The *constructivist explanation* rests on the evolution of norms and social constructs.

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[41] A school of thought argues that "it cannot be nuclear deterrence" on the grounds that, *inter alia*, the 1945 nuclear bombings were not the cause of the Japanese surrender, and more generally, that massive destruction and city-bombing have historically proven poor ways to win major wars. Ward Wilson, *Five Myths about Nuclear Weapons* (Boston: Houghton Mifflin Harcourt, 2013). For a rebuttal see Tertrais, *In Defense of Deterrence*; and *ibid.*, "The Four Strawmen of the Apocalypse", *Survival*, vol. 55, n° 6, December 2013-January 2014.

[42] Underlying the need for other, non-nuclear related explanations is the argument according to which the frequency of major war has been reduced for centuries: Jack S. Levy, *War in the Modern Great Power System, 1495-1975* (Lexington: University Press of Kentucky, 1983).

[43] James Schlesinger, "The Impact of Nuclear Weapons on History", *The Washington Quarterly*, vol. 16, n° 4, Autumn 1993.

[44] Some claim that the Second World War offered a proof of failure of mutual deterrence, because the major contenders on the European theater possessed chemical weapons. But nobody ever pretended – nor is there any reason to believe – that chemical weapons could preserve peace. Incidentally, this case can be partly brought to the credit of the logic of mutual deterrence. *A contrario*, Japan used them against China, which did not possess them. For a demonstration that "World War II serves as a case study of deterrence in action" (the non-use of chemical and biological weapons), see Stephen L. McFarland, "Preparing for What Never Came: Chemical and Biological Warfare in World War II", *Defense Analysis*, vol. 2, n° 2, June 1986.

[45] To understand why Germany and Japan, for instance, went from being war-prone countries to being pacifist ones, one does not need to refer to nuclear deterrence. It is highly unlikely that Germany could have attacked France, or Japan attacked China, if Paris or Beijing did not have nuclear weapons.

[46] Colby, "Why Nuclear Deterrence is Still Relevant".

"War fatigue" is a key argument. The case has been made by John Mueller, notably, that the "obsolescence of major war" is largely due to the cultural impact of the twin shocks of the two world wars.[47] The argument carries weight amongst anti-nuclear activists. For instance, Gareth Evans claimed recently that *"what has stopped—and will continue to stop—the major powers from deliberately starting wars against each other has been, more than anything else, a realization, after the experience of World War II and in the light of all the rapid technological advances that followed it, that the damage that would be inflicted by any war would be unbelievably horrific, and far outweigh, in today's economically interdependent world, any conceivable benefit to be derived."* [48]

A broader argument is the delegitimization of armed violence. It rests on the observation that the number of wars (and the proportion of war-related deaths in the total number of deaths) has been steadfastly declining since 1945. If true, then one does not need the hypothesis of nuclear deterrence. [49] A related argument is the gradual consolidation of a norm against territorial conquest and annexation of territory by force.[50] In the three decades that followed the end of the Second World War, there were still many instances of territorial conquests and post-conflict (or post-decolonization) annexations, but much less so in the past four decades.[51] The Organization of African Unity Charter of 1963 adopted the principle of the immutability of borders. The Helsinki Act of 1975 consecrated the territorial status quo in Europe. The International Court of Justice (ICJ), in its seminal 1986 Burkina Faso *vs.* Mali decision, upheld the *uti possidetis* principle ("as you have, so you shall possess"), creating an important precedent which was followed in many border settlements. In addition, some of the most significant attempts to conquer territory by force have failed, such as the Iran-Iraq war (1980-1988), the Falklands War (1982) and the Iraq war (1991); this may have contributed to "dissuasion" of forceful territorial aggrandizement. It has also helped that decolonization and the creation of several dozens of new countries have reduced the number of pro-independence and secession movements. Perhaps the behavior of Russia in Ukraine, and of China in its maritime environment, will put an end to this era; but generally speaking, it seems indeed that wars of territorial conquest are no longer considered a normal instrument of external policies.

However, cultural arguments have limitations.

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[47] John Mueller, Retreat from Doomsday: The Obsolescence of Major War (New York, Basic Books, 1989).

[48] Evans, "Restoring reason to the nuclear debate".

[49] See in particular Human Security Project, *Human Security Report 2009-2010: The Causes of Peace and the Shrinking Costs of War*, 2010; and Steven Pinker, The Better Angels of Our Nature: Why Violence Has Declined (New York: Viking, 2011). If true, this hypothesis almost certainly requires, in turn, a combination of realist and liberal explanations: the end of empires (which reduces the risk of wars of expansion and wars of self-determination) in the 1960s; the rise of UN operations (which reduce the occurrence and length of some conflicts) as well as occasional "global peace operations" (Korea in 1950, Kuwait in 1991, Kosovo in 1999); the rapid expansion of international trade since the early 1990s (which lowers the incentives for resources grabs at the international level); economic development (which reduces the risk of civil war); and the growing proportion of democracies (which tend to avoid fighting against each other). The "norm against warfare" may then be a product as much as a cause, notwithstanding other explanations such as a higher price put on human life (which may have deeper roots), etc.

[50] See Mark W. Sacher, "The Territorial Integrity Norm: International Boundaries and the Use of Force", *International Organization*, vol. 55, n° 2, Spring 2001.

[51] Examples include: Western Sahara, Goa, the Tomb and Abu Musa Islands, Sikkim, the Golan.

If war fatigue existed, one would have to argue that it did not exist in Europe after 1870, or after 1918. (It did: pacifism and disgust for war were widely shared in the 1920s.) Thus one would have to posit the existence of a "threshold effect" in 1945. John Lewis Gaddis notes: *"Prior to the development of thermonuclear weapons, it seems fair to say that war was indeed regarded as a remote prospect because the costs of the recent war were still so evident. But war was not at that time seen as an* irrational *act, in which there could be no correspondence between expected costs and intended benefits".*[52] One would *also* have to assume that war fatigue was transmitted from one generation to another, given that the statesmen of World War Two are now gone. One would finally *also* have to discard the many minor wars and military interventions of the post-1945 era deliberately initiated by former parties to the 1939-1945 conflict.

The claim that "war is on the decline" has been challenged on statistical and analytical grounds. It is argued, in particular, that the usual metric of battle-related deaths may be misleading, either because the downward trend reflects improvement in preventive care, battlefield medicine, military and soldier protection; or because it does not represent the true overall costs of collective armed violence.[53]

US expert Elbridge Colby holds that the cultural argumentation *"markedly overestimates the durability of historically contingent value systems while seriously downplaying the enduring centrality of competition, fear, uncertainty and power".*[54] Likewise, Kenneth Waltz writes that *"in a conventional world even forceful and tragic lessons have proved to be exceedingly difficult for states to learn".*[55]

Additionally, the realist, liberal and constructivist explanations can hardly account for the absence of major war involving Israel and its neighbors since 1973 (excluding Israeli interventions in Lebanon in 1982 and 2006), or between India or Pakistan since these countries became full-fledged nuclear-armed countries in the late 1990s.[56]

Conclusion

As Lawrence Freedman puts it, *"Given the undoubted existence of deep antagonism between East and West, it seemed grudging not to attribute at least part of the credit for avoiding yet another total war to the dread of global confrontation involving nuclear exchanges and to the policies adopted, at times by both sides, to reinforce this dread by means of deliberate*

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[52] Gaddis et al., *The Long Peace,* 269.

[53] Tanisha M. Fazal, "Dead Wrong? Battle Deaths, Military Medicine, and Exaggerated Reports of War's Demise", *International Security*, vol. 39, n° 1, Summer 2014; John Gray, "Steven Pinker is wrong about violence and war", *The Guardian*, 13 March 2015.

[54] Elbridge A. Colby, "Why Nuclear Deterrence is Still Relevant", in Adam Lowther (ed.), *Deterrence in the 21st Century: Enduring Questions in a Time of Rising Powers, Rogue Regimes, and Terrorism* (New York: Palgrave McMillan, 2012), 56.

[55] Waltz, "Nuclear Myths and Political Realities", 743.

[56] One possible alternative explanation for India and Pakistan is the role of US diplomacy in helping to defuse the crises of 1990, 1999 and 2001-2002 – not necessarily a key factor, but probably a significant one. However, the US involvement would not have been as strong in the absence of nuclear weapons.

deterrence".[57] In this sense, explaining the Long Peace mostly by nuclear deterrence might be an implementation of Occam's razor: sometimes the simplest answer is the best one.[58]

There remains, of course the possibility that "Divine Providence" intervened to refrain major powers from going to war against each other. Such is the explanation given by the late Pope John the Second. But we venture here outside the bounds of political analysis. [59]

[57] Lawrence Freedman, *Deterrence* (Cambridge: Polity Press, 2004), 13-14.

[58] "Mostly" is understood here as "at least 51%". An in-between explanation is suggested by Patrick Morgan: the nuclear revolution may have been the icing on the cake, that is, the culmination of a delegitimization process that had began earlier on, in particular by annihilating strategies based on the prospect of cheap victory. Morgan, *Deterrence Now*, 38.

[59] "May Divine Providence be praised for this, that the period known as the 'Cold War' ended without violent nuclear conflict" (Testament of John-Paul the Second). The point has been suggested by François Heisbourg.

THE FUTURE: ESCAPING NUCLEAR DETERRENCE?

Downsides of the Nuclear Peace

Assuming that nuclear deterrence was – and is – largely, though perhaps not solely, responsible for the Long Peace does not exempt it from criticism. Two broad strands of arguments are presented.

The broader costs of nuclear deterrence

The first arguments concern the costs and benefits equation of nuclear deterrence. Do its benefits really outweigh its potential risks? Nuclear deterrence may be a fragile construct. Among nuclear-armed adversaries, there have been slow learning curves, tainted with dangerous events such as Cuba (1962), the Ussuri River (China/Soviet Union, 1969), Twin Peaks (India/Pakistan, 2001-2002) even though the allegation that only "luck" prevented a third use of nuclear weapons is highly debatable.[60] The deterrent effect of nuclear weapons may change over time as the memories of Hiroshima and images of surface tests fade away. Or if the so-called tradition of non-use is broken one day (although the detonation of a single nuclear weapon in anger *might* actually restore the deterrent power of nuclear weapons, not push the whole concept into oblivion). Among nuclear powers, even a very small probability of deterrence failure – and of subsequent major nuclear war, with possible global (climate-related) repercussions – might be enough to negate its alleged benefits.[61] In sum, even if nuclear weapons prolonged the expected duration between two world wars – say, from 30 to 100 years instead – would they not make the possible "next" conflict even more deadly than it would have been?[62]

Also, might there not be hidden costs of nuclear deterrence?

NATO nuclear strategy may have worked "too well": archives show that the Soviet Union did believe that NATO would use nuclear weapons in a major war – and thus planned for massive preemptive nuclear operations against its forces. *If* war had broken out *despite* nuclear deterrence, *then* the risk of early escalation might have been greater than thought at the time. The same phenomenon could be at work today in South Asia despite the apparent success of nuclear deterrence so far.

The stability/instability paradox conceptualized by Glenn Snyder in 1965 has been a reality: if nuclear weapons did prevent major armed conflict between nuclear-armed adversaries, this came at the price of the multiplication of bloody indirect wars and sub-conventional conflicts, from the East-West context (the Berlin crises) to the India-Pakistan theatre.[63] Fear of war may have moderated superpower behavior, restrained Washington and Moscow during major crises, *but* at the same time encouraged them to take dangerous initiatives, as

[60] See Bruno Tertrais, "'On the Brink' – Really? Revisiting Nuclear Close Calls Since 1945", The Washington Quaterly, vol. 40, n° 2, Summer 2017.

[61] Critics also point to the risk of nuclear terrorism stemming from the build-up of military nuclear complexes around the world.

[62] This also raises moral questions related with the "utility" of the number lives saved for seventy years *vs*. that of the lives lost during the "next world war".

[63] Robert Rauchhaus, "Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach", *Journal of Conflict Resolution*, vol. 53, n° 2, April 2009.

Richard Ned Lebow and Janice Gross Stein suggest (including through public posturing which *"convinced their adversaries that they were aggressive, risk-prone, and even irrational"*[64]). They may, as suggested by the work of Robert Jervis, may have incited fear, hubris, and misperceptions, making them inherently destabilizing.[65]

A broader question relates with the impact of nuclear weapons on great power cooperation. How much was it the fear of nuclear war that led the two superpowers to create a mesh of cooperative security arrangements including the establishment of "hotlines", the Strategic Arms Limitations Talks (SALT) process, the drafting of the Nuclear Nonproliferation Treaty (NPT), the conclusion of the Helsinki Final Act, etc.? Patrick Morgan suggests that nuclear weapons may have hastened the end of the Cold war, by giving confidence to Soviet leaders that the country's survival would be assured even after the loss of the Eastern European *glacis*.[66] On the contrary, Richard Ned Lebow and Janice Gross Stein, as well as John Lewis Gaddis, argue that they may have perpetuated the Cold War.[67] So maybe nuclear weapons made détente and peaceful coexistence *easier*, but real peace *more difficult*, in addition to extending the life of communism.

The legitimacy of nuclear weapons

The second strand of arguments is about the legitimacy of nuclear weapons.

Is nuclear deterrence legitimate or even legal? Legitimacy of nuclear weapons possession is seemingly ensured by the NPT, but nearly half of nuclear-armed countries are not parties to it (including North Korea, which announced its withdrawal in 2003). Furthermore, the ICJ, in its advisory opinion of July 1996, stated that the "threat or use" of nuclear weapons illegal in most circumstances (without, however, condemning what it called the "policy of deterrence") and that Article VI of the NPT did include an obligation to disarm. And since the end of the Cold War, the Vatican has repeatedly called for nuclear disarmament.

Is it even morally acceptable, as a matter of principle, to rely on the threat of mass destruction to ensure peace? This argument is well-known and as old as nuclear weapons themselves.

There are possible rebuttals for each of these arguments.[68] In addition, the relation between nuclear disarmament and peace is a complex one – that is, even if one questions the net benefits of nuclear deterrence, it is by no means certain that going to zero would result in more security.

However, taken together, they constitute at least are an incitement to look beyond nuclear deterrence for to prevent major war. For these reasons, nuclear deterrence should be seen only as a temporary fix or second-best solution to ensure peace among major powers and nuclear-armed adversaries.

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[64] Richard Ned Lebow & Janice Gross Stein, "Deterrence and the Cold War", *Political Science Quarterly*, vol. 10, n° 2, Summer 1995, 180.

[65] Robert Jervis, The Meaning of the Nuclear Revolution: Statecraft and the Prospect for Armageddon (Ithaca: Cornell University Press, 1989).

[66] Morgan, *Deterrence Now*, 27.

[67] John Lewis Gaddis, *We Now Know: Rethinking Cold War History* (New York: Oxford University Press, 1997); Richard Ned Lebow & Janice Gross Stein, *We All Lost the Cold War* (Princeton: Princeton University Press, 1994).

[68] See for instance Tertrais, *In Defense of Deterrence*.

Avoiding Excessive Reliance on Nuclear Deterrence

The good news is that strategic deterrence – aimed at avoiding major war – may, in the future, increasingly rely on other instruments.

Could deterrence with modern conventional assets be a substitute to the threat of nuclear retaliation? Two weaknesses of conventional deterrence would remain. Massive and assured damage on the adversary's centers of power would still require several weeks of bombardment, which would give it time and ability to adjust and adapt; moreover, in an era where images of warfare are broadcasted 24/7 all over the world, the adversary could bank on the fact that the attacker would have to cede to international pressure and public outcry. Another weakness is that modern conventional weapons – increasingly accurate and more deadly – will hardly be as scary as nuclear ones. Could conventional at least credibly threaten enemy leaders with decapitation strikes? Technically, yes, but on the condition that proper intelligence would be available. (The initial US strikes targeting Saddam Hussein in March 2003 failed for lack of timely intelligence.) However, for a few advanced countries, the ability to combine numerous swift, accurate long-range conventional strikes against centers of power, coupled with targeted cyber-attacks, might be enough to make an aggressor think twice before attacking the vital interests of his adversary.

In addition, territorial missile defense has now become a reality despite inherent technical limitations (and dubious cost-effectiveness): it protects partly and to varying degrees the territories of the United States and of some of its friends and allies in Europe, the Middle East and East Asia and thus can now represent a complement, or partial substitute, to nuclear deterrence.[69]

Other, non-military instruments could gain importance in the future in preventing direct military aggression, such as the threat of personal prosecutions by the International Criminal Court (ICC) and special tribunals, which have multiplied since the end of the Cold war, or economic and financial sanctions, which have become a more efficient tool (e.g. vis-à-vis Iran, Russia).

This brings us to economic and financial interdependence. Does it, can it prevent major war? To this time-old question, new answers have been given. First, in an era of globalization, the classic mercantilist argument that war does not "pay" may be truer than in the past; from a strictly rational point of view, deliberate major war would be a "Great Illusion". Second, major war would "cost" even more today. Second, the classic counter-argument that "economic interdependence did not prevent World War I" has been challenged: it may not have been a failure of economic interdependence after all.[70] The idea that interdependence reduces the chances of war has found new empirical support.[71] In an increasingly interconnected and interdependent world, the risk of major war may be dampened in several ways: by raising the direct and indirect (impact on global markets) costs of conflict; by increasing the information available to parties; and by reducing the incentives for economic war given the globalization of resource markets and the rise of Foreign Direct Investment (FDI). International relations theory tends to see situations when a rising power threatens to

[69] In addition to the nuclear-tipped interceptors which have protected the region of Moscow since the 1970s.

[70] Erik Gartzke & Yonatan Lupu, "Trading on Misconceptions: Why World War I Was Not a Failure of Economic Interdependence", *International Security*, vol. 36, n° 4, Spring 2012.

[71] See sources quoted in Gartzke & Lupu, "Trading on Misconceptions".

displace a ruling power as a dangerous one – resulting in war, according to a recent study, three-quarters of the time.[72] But the most worrying major powers dyad presents a unique case, not least because of the amount of US Treasury bonds held by China.[73] Many scholars suggest that the combination of deterrence and interdependence can dampen the bilateral rivalry.[74] In sum, economic and financial interdependence could play a stronger role in preventing major war than it did in the past.

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It is not an intellectual stretch to claim that nuclear deterrence is a form of global common good, notwithstanding its possible negative side effects. All non-nuclear weapons States benefitted from it during the past seventy years. Without the nuclear peace, would Asia have known the peace and stability that allowed for its massive transformation and development, leading to hundreds of millions of human beings being lifted out of poverty?

At the same time, the argument could be reversed: a nuclear war could set back Asia's progress by a decade, without mentioning its indirect impact on the global economy. Nuclear deterrence is an imperfect and fragile instrument, which has significant downsides (a *"powerful but very dangerous medicine"*[75]). It should thus be seen at least as a provisional, imperfect measure, or as an insurance against the failure of the liberal order.

A few years ago, US analyst Michael O'Hanlon gave the following advice: *"Perhaps nuclear deterrence has been only a minor factor in preserving peace in the past; the issue is arguable. But policymakers need to be careful, and gradual, about how they run the experiment to test that proposition"*.[76] Or, as Winston Churchill put it at a time when the nuclear age was just a few years old*: "Be careful above all things not to let go of the atomic weapon until you are sure and more than sure that other means of preserving peace are in your hands"*.[77]

[72] See Graham Allison, "The Thucydides Trap: Are the US and China Headed for War?", *The Atlantic*, 24 September 2015.

[73] The US-China interdependence involves other components, such as the importance of US sources and technologies for the continuation of Chinese economic development, or the presence of many children of Chinese leaders in US schools and universities.

[74] See Stein Tønnesson, "Deterrence, interdependence and Sino-US peace", Review Essay, *International Area Studies Review*, vol. 18, n° 3, 2015.

[75] Lebow & Stein, "Deterrence and the Cold War", 180.

[76] Michael E. O'Hanlon, *A Skeptic's Case for Nuclear Disarmament* (Washington, DC: The Brookings Institution Press, 2010), 74.

[77] Winston Churchill, *Address to the US Congress*, 17 January 1952.