*Forum*

# Has the West been Sleeping?

## The Changing Role of Nuclear Weapons in the Strategies of the Superpowers

THEODOR H. WINKLER

**Abstract** The West has much too long given in to the pleasant thought that the Cold War would be over and the harsh military realities that governed it, outdated. In Europe, the European NATO members dismantled their ability to fight a regular war. The Russian invasion of Ukraine triggered a scramble to correct this. It will take years to reverse the trend yet.

**ALT-BOTSCHAFTER DR. THEODOR H. WINKLER** gilt als «sicherheitspolitischer Vordenker» der Schweiz (Neue Zürcher Zeitung). Er ist einer der Architekten der Schweizer Sicherheitspolitik der 1990er Jahre und geistiger Vater der drei Genfer Zentren des Bundes: Sicherheitspolitik (GCSP), humanitäre Minenräumung (GICHD) sowie gute Regierungsführung im Sicherheitsbereich (DCAF). Theodor Winkler stand dem DCAF von 2000 bis 2016 als dessen Direktor vor. Zusammen mit Philippe Burrin konzipierte Winkler auch die «Maison de la Paix», einen modernen Glaskomplex im Zentrum des internationalen Genf, der eine der bedeutsamsten sicherheitspolitischen Denkfabriken der Welt beherbergt.
E-Mail: thewinklers@bluewin.ch

The role of nuclear weapons, both in the international system and within the national security strategies of Russia, the United States, and China, is undergoing significant and massive change, unobserved and ignored by the international public. For decades, nuclear war has been simply unthinkable. To push the button would mean billions of dead, friend and foe alike. Deterrence and Mutual Assured Destruction (MAD) had rendered the nuclear confrontation a dead end and hence essentially stable. Nobody would win a nuclear war. That was also how the public saw it. The matter, moreover, was complex, the jargon used full of abbreviations nobody understood. In short, not a sexy topic. Any differences in nuclear weapons holdings seemed to matter little: who cared whether you could be killed 19 or 20 times by Russia or by the US?

Yet it matters.

World War III (and probably also a subsequent World War IV) did not take place. The world rather embarked during the 77 years between Hiroshima and the Russian invasion of Ukraine on a period of growing prosperity, rising standards of living and life expectancy. Poverty decreased; hunger seemed to be beaten; illiteracy was on the retreat. Liberal democracy was, for a fleeting moment, sure to have won the Cold War and to be the political destiny of our planet. Dictatorships were losing ground. Democracy would through the economic progress it brought inevitably gain ground and eventually be embraced by all nations. Barack Obama supported a ban on all nuclear weapons – and so did more than 120 countries (but not Switzerland) that signed a corresponding draft treaty. Many felt that it would be possible to put the genie back into the bottle. It was an unrealistic vision from the start.

The international crisis that followed Russia's invasion of Ukraine on 24 February 2022 showed that this was all gobbledygook, wishful thinking that had nothing to do with reality. From the first day of his invasion of Ukraine on, Putin threatened the West with the use of nuclear weapons should it refuse to bow to the Russian demands. Nuclear weapons were, contributing to the horror of the peace-minded Europeans, thus openly threatened with – in the 21st century, in Europe, against societies that had felt that the times had profoundly changed, that war was a bad memory, that had not only cashed in a «peace dividend» but had transformed their armed forces into shallow pools from which at best peacekeeping missions could be drawn, but that possessed no longer the troops, the means, and the will to fight a full-scale modern war.

24 February 2022 brought about a brutal change of the international security situation – a change, that hardly anybody had foreseen, few even thought to be possible. Yet that such a watershed was coming should have been anticipated much earlier, indeed years ago.

## Stability through Deterrence and MAD

In the early days, during the US nuclear monopoly (1945–1949), the bomb permitted the United States to demobilize much of the 11 million men it had called to arms during the Second World War. Russia had seen an even more profound military effort, mobilizing no less than 34 million men, and losing some 20 million of its citizens as victims of the struggle against Nazi Germany (after initially partnering up with the Third Reich in carving up Eastern Europe). The war had swept the victorious Red Army from the doors of Moscow into the very heart of Europe – where it had every intention to stay. An Iron Curtain had come down cutting off Eastern Europe, which became part of the Soviet empire. The Western half of the continent, so was Stalin's conviction, would follow soon enough. The creation of NATO in 1949 (whose purpose it, as a British general put it, was to keep the Russians out, the Americans in, and the Germans down) prevented that. US nuclear might and military capabilities precluded Russia from wobbling up Western Europe.

This set the pattern for much of the Cold War. Strategic nuclear forces of the two antagonists neutralized each other through the concept of MAD: Even in case of a surprise attack some missiles, stored ready to launch in hardened silos, on mobile launch vehicles, or in ultra-silent strategic nuclear submarines, hidden in the depths of the oceans, would survive. Their retaliation, though only a small fraction of the original force, would suffice to bomb the attacker back to the stone age. It would, in all probability also be the end of mankind that would be pulverized by the explosions, killed by the released radiation and frozen to death in the «nuclear winter» caused by the skies blackened by debris.

American tactical nuclear weapons deployed within NATO (often under dual-key arrangements between the US and the host country) neutralized the Warsaw Pact's massive conventional superiority. NATO had a strong card by credibly asserting that the US would rather go nuclear than being overwhelmed. The arrangement had, though, major faults. First, the Europeans essentially depended, and could rely, on the US nuclear umbrella and, therefore were never forced to acquire the conventional military forces needed to defend themselves. This would haunt them, the alliance and the EU. It would also be a constant irritant in transatlantic relations. Should the US weaken in its determination to honor NATO's Article V (under which an attack on one NATO member is seen as an attack on all of them), deep trouble would be inevitable. Trump did precisely that – and threw NATO in a major crisis (prematurely, Macron declared it «braindead»). Europe's lack of providing the military forces necessary to deter a Soviet military attack has ever since 1949 being a crucial flaw of the European construction. It is today, with an openly aggressive Russia and a politically instable US, a key problem for Europe's ability to shape its future.

*«Europe's lack of providing the military forces necessary to deter a Soviet military attack has ever since 1949 being a crucial flaw of the European construction. It is today, with an openly aggressive Russia and a politically instable US, a key problem for Europe's ability to shape its future.»*

Moreover, there is the obvious fact that should tactical nuclear weapons be used to stem off a Warsaw Pact onslaught on Germany, the first country to be destroyed would be that very Germany they meant to defend. German enthusiasm for nuclear weapons was, consequently, ambiguous at best, always muted, increasingly replaced by a strong peace movement. This German unease has always been recognized by the Soviet Union (and later Russia) as NATO's Achilles' heel. If put under massive pressure, the Kremlin felt, NATO would politically break-up over the risk of a nuclear war. Putin's invasion of Ukraine is exercising for this very reason strong political, economic, and military pressure on NATO.

Deterrence and MAD created a stalemate, admittedly precarious, but one that would hold throughout the Cold War. There were, however, multiple attempts to overcome it.

## Arms Control and Security and Confidence Building Measures

After the Cuban Missile Crisis – which had shown how close mankind was to nuclear war – the focus was, however, put on rendering the nuclear balance more stable and its maintenance less costly. A first step was the installation of a «red phone» between Washington and Moscow to be able to speak in a crisis with each other directly and immediately. This developed over the years into a complex network of secure lines of direct communications: between the US President and the Head of the Soviet Politburo, between the two Foreign Ministers, the two Chiefs of the General Staff, the military commanders on the spot in all theatres were both side-operated troops. The approach also reached out to allies and friends. Even I had, when serving as advisor to Federal Councilor Adolf Ogi and as Deputy Head Security and Defence Policy, such a «red phone» on my desk. To my chagrin, it never rung. The US President seemed to have no urgent business with me.

More significantly, nuclear disarmament, discussed for years without end, but ultimately vainly during the Geneva Conference on Disarmament, proved to be a non-starter. The US proposed under Lyndon B. Johnson instead the concept of «arms control». Its aim was not to eliminate all nuclear weapons but to seek for the lowest mutually acceptable level of strategic nuclear forces, to freeze the arsenals of the antagonists at that level, and to regulate and control their modernization. The nuclear nightmare would not disappear but become less costly.

The result was a whole family of agreements: On the strategic level there were Strategic Arms Limitation Talks (SALT I and SALT II); The Anti-Ballistic Missile Agreement (ABM Treaty), Strategic Arms Reduction Talks (START I and II) and the «New START» agreement. At the intermediate range level there was INF (Interme-

diate Range Nuclear Forces), at the conventional level CFE (Conventional Forces in Europe).

SALT I brought, through a Protocol that froze the strategic weapons of the US and the USSR at the then existing level, an end to the frenetic arms race that had been initiated by the USSR after having been humiliated in the Cuban Missile Crisis. Under Leonid Brezhnev it had embarked on a massive construction programme for Intercontinental Ballistic Missiles (ICBM) and Sea launched Ballistic Missiles (SLBM). When the Protocol came into force, it left the US with 1,054 ICBM and 656 SLBM, the USSR with 1,618 ICBM and 950 SLBM. The equalizer between the two arsenals was the US introduction of multiple reentry vehicles (MRV), i.e., the ability to put more than one nuclear warhead on a missile. The often very powerful (several megatons) thermonuclear nuclear warheads of the 1950s were replaced by a «bus» carried by the strategic ballistic missiles that held a mix of several smaller warheads (150 Kilotons to 1 Megaton), decoys and penetration aides. This technology evolved from Multiple Reentry Vehicles (MRV), which used several warheads like a shotgun that saturated a target area, through Multiple Independently Targetable Reentry Vehicles (MIRV), which allowed one missile to attack several different targets to Multiple Autonomously Targetable Vehicles (MARV), which permit thanks to homing in devices to attack several different targets with extremely high accuracy. Successive arms control agreements reduced the nuclear stockpiles of the two superpowers massively. The US went down from a peak of more than 31,000 weapons in 1967 to an inventory of 5,428 today (of which 1,744 are deployed and ready to be launched, 1'964 in a stockpile, and 1'720 retired, awaiting dismantling). The USSR/Russia went from close to 40'000 weapons in 1985 down to 5'977 in 2022 (1,528 deployed, 2'949 in stockpile, and 1,500 retired, awaiting dismantling).

The agreements corresponded also to the obligation that Russia and the US had accepted under the Nuclear Non-Proliferation Treaty (NPT): namely, to negotiate faithfully a reduction of their nuclear arsenals. In return, the non-nuclear signatories of the treaty renounced the right to develop, purchase or otherwise own nuclear weapons. It was not a balanced treaty, but it would prove an important bulwark against proliferation.

The most important result of the transition to arms control was, though, that the US succeeded in long and difficult negotiations to convince the Russians that missile defence systems would be destabilizing and had therefore, if not to be banned, then at least severely limited. By protecting cities (the Russians were at the time busy building a 100-launcher strong missile defensive belt around Moscow) MAD would be potentially undermined, the result of a nuclear exchange became unpredictable; hence one side or the other might see war as an option again. The nightmare scenario was that one side would submit the other to a devastating first strike, and then use its anti-ballistic missile (ABM) defences to take out the few surviving enemy warheads that could be launched as a retaliation. The two nuclear superpowers might be obliged to switch from a posture of «launch after attack» to one of «launch under attack» or even one of «launch on warning» – concepts that would curtail reaction time and were obviously prone to catastrophic error. The ensuing ABM Treaty limited both sides to one field of 100 ABM interceptors. The Russians completed under this regime their ABM defensive ring protecting Moscow, while the US chose to protect an ICBM field in Wyoming.

The arms control regime that emerged was to be strengthened and rendered yet more effective through a whole series of nuclear and conventional confidence and security building measures (CSBM). They meant to create more transparency, thus reassuring an adversary that a given military move (such as a maneuver) would not camouflage the preparation of a surprise attack. Thus, manoeuvers from a certain size upwards required the invitation of military observers from the other side. Moscow began under Putin to ignore that obligation. Its big annual fall manoeuvers were no longer accessible to NATO and neutral observers. They were ever more often extended. Alleged termination of them were not followed by a return of all the troops to their barracks. The Russian invasion of Ukraine was preceded by the breach of many of these CSBM, giving ample reason to expect a Russian attack. The signs were there – but not read.

## How to Cope with MARV

The nuclear balance between the former USSR/Russia and the USA was never static, nor finally stable. This was hardly to be expected. Too much depended on it. Should one side acquire a

first strike capability, it was likely to use it – not necessarily militarily (for it is doubtful that anyone will be willing to push that button – at least not easily). Too enormous is the act, to certain the blame mankind (if there should be one that survived) would heap on whoever made that step. To unleash nuclear weapons is just unpardonable. The hell a nuclear war would unleash would be too close to result in the extinction of the human race, and thus deprive words like «victory» of any meaning. Such a superiority in the strategic nuclear field would, though, be providing its owner with a decisive edge that could be politically exploited. The country that had the ability to launch a disarming nuclear strike would, thus, not be able to use that option; yet it could blackmail its antagonists. It would have a decisive advantage in the brinkmanship of great power rivalry. It could, ultimately, also not be forced by anybody to adopt a specific course of action.

The very same problem is illustrated today, on quite another level, by the fact that Ukraine cannot «win» in any traditional sense the war against nuclear-armed Russia. It cannot march to Moscow; it cannot either liberate the Crimea. To force a nuclear superpower to sue for peace is practically not possible. Ukraine's aim must be to psychologically break Putin's will, to sap his interest in continuing the invasion, to give up. If Putin does not play that role, but rather stubbornly sends, regardless of losses, as many young Russians and as much military materiel into the battle as necessary to grind, the Ukrainian armed forces steadily and relentlessly down in a genuine maelstrom of destruction and death, Ukraine is helpless. It can prevail on the battlefield, but it cannot force an end to the aggression.

In addition, the lesson will not be lost on many countries that national security cannot be ultimately guaranteed without the possession of nuclear weapons. The lesson is exemplified by the toppling of Ghaddafi's dictatorship in Libya (who had given up its nuclear weapons programme) and the survival of North Korea's Kim Jong-un who plays continuously on the nose of the US and heavily sets on the nuclear card). The pressure to proliferate will, in times of nuclear rearmament by the superpowers, grow in the years to come.

The main threat to the arms control regime was the ICBM equipped with MIRV or MARV. Over time, SLBM would join them with such warheads and very long-range highly accurate cruise missiles. The MIRVed ballistic missiles posed the fundamental problem that they could destroy in one stroke several of their antagonists, up setting, thus, any parity-based balance. The cruise missiles could permit to launch an attack without anybody noticing as well as giving the attacker the option that these weapons could loiter below the radar screens in the target area and promptly destroy after a nuclear exchange any surviving systems.
The problems posed by the MIRVed ballistic missiles were approached in different ways.

There was the Soviet effort of *decoupling* the US strategic deterrent from the conventional balance in Europe. The idea was to take Europe hostage through dedicated nuclear means threatening most major European cities, thus deterring NATO from escalating a conventional attack by the Warsaw Pact to the nuclear level. Deprived of the nuclear umbrella tactical nuclear weapons provided, Western Europe could be overrun. The USSR attempted such a «decoupling» in the late 1970s and early 1980s through the deployment of eventually 351 SS-20 mobile single-warhead intermediate range ballistic missiles (IRBM). NATO responded by the decision to deploy, in turn, 108 Pershing II IRBM and 560 ground launched cruise missiles (GLCM). Now Moscow could be attacked within minutes with a barrage of ballistic missiles that was bound to overwhelm the Russian capital's defences and obliterate the city. The Russian leadership is always extremely sensitive to its physical safety. The USSR, therefore, agreed to negotiations on intermediate nuclear forces (INF) which led, eventually, to the most far-reaching arms control agreement ever to be concluded, the INF Agreement that banned SS-20s, Pershing IIs, and GLCM, had the already deployed missiles destroyed, and prohibited any replacement systems for them to be developed and deployed. That agreement was to be broken by Putin through the development and deployment of the Iskander-M SRBM. The Trump administration walked, as a response, out of the INF Agreement (but did not deploy any weapon system to counter the Iskander-M).

There was *saturation* as policy: Russia has developed and deployed from the mid-1960s onwards very heavy ICBM of the RS-36 missile family as the backbone of its strategic nuclear forces. These missiles were designed as silo-busters. The first model of the family was the RS-36 (Western code name: SS-9 Scarp), an ICBM with

the very long range of 16,000 kilometers, carrying a MRV bus for 3 warheads and various penetration aides. It was replaced by the R-36M (Western code name SS-18 Satan), equipped with a bus that carried 10 MIRV as well as 40 penetration aides, and which might be capable of even more impressive payloads. It is about to be replaced from this year onwards by the RS-28 Sarmat (Western code name SS-X-29 or SS-X-30, Satan II). It has an even longer range of 18,000 kilometers (making it thus the ICBM with the most extended range) and carries 10-15 MIRV, a large amount of penetration aides, or alternatively an unknown number of «Avangard» hypersonic glide vehicles (HGL).

The super heavy ICBM of the RS-36 family carried more than 3,000 warheads. That was enough for a disarming first strike against the US. The United States offers some 1,500 targets that would have to be destroyed in a first strike: 1'054 ICBM silos, 51 ICBM launch control centers (each commanding five wings of 10 ICBM each, or 50 ICBM silos in total), several ports for, and communication facilities with, nuclear submarines (SSBN) carrying SLBM, some dozens of air bases from which the US strategic bomber fleet could operate, and perhaps another 200 structurally related targets, notably in the area of command and control.

These roughly 1,500 targets could be attacked by an RS-36 attack-wave that carried more than 3,000 warheads of 1 megaton (MT) each. Two 1-megaton warheads (1 megaton to be exploded low on impact with the ground, the other 300–400 meters up in the air above the target) could thus, attack each US target. It was likely that such an onslaught would be survived only by the SLBM on patrol in the high seas – during the Cold War perhaps 10–15 boats with 160–240 missiles (480–960 warheads). By any reckoning that was, though, more than enough as a deterrent threat. The USSR, though, never gave up its efforts to further improve its first strike capability. Thus, to give but only one example, it tested some older SSBN in the role of attacking the 51 launch centers with SLBM launched in a depressed trajectory mode just off the US coast in the Gulf of Mexico. That would reduce the time between firing of the missiles and their impact to only a few minutes.

The Soviets established, on their side, a haven for their own boomers in the Sea of Okhotsk. KGB operated ASW-frigates closely guarded the entrances to that inland sea (and, more importantly, the exits from it): There will be no «Hunt for Red October» in real life.

These Russian moves were countered by the US through different strategies. There was the development and deployment of an American super heavy ICBM, the «M-X» or «Peacemaker» ICBM. There was the idea and the subsequent construction of «dense pack» fields in which ICBM were housed very closely together. Thus, the first to arrive of the 200 Soviet warheads needed to neutralize a US field of 100 silos would, when detonating, blow those warheads that came in later (and be it only a tiny fraction of a second) off their track or disintegrate them through the collision with the debris that would be thrown into the air by the first impacts.

## *«The whole SDI was a massive bluff.»*

Above all, the US changed its attitude with respect to ballistic missile defence (ABM). Ronald Reagan surprised everybody with his «Strategic Defense Initiative» (SDI). In glossy prospectuses and sophisticated animations, the US showed how the various components of the plan would attack enemy missiles immediately after launch when they were leaving the silos. There would follow laser attacks on the ascending missiles, intercepts during their ballistic trajectories, and close range defences hitting them just before impact. None of the systems in the drawings and TV spots existed. The whole SDI was a massive bluff. Nevertheless, it worked. The man in charge on the Soviet side of coping with SDI was Andrej Kokoshin, later Deputy Minister of Defence and a friend of mine. He eventually told me, how deep the psychological abyss was, SDI had thrown the Soviet General Staff into. The generals believed the Americans everything – even when it was physically not possible. The net impact was that the USSR became more interested in arms control negotiations. In particular, the INF Agreement was much assisted by SDI.

SDI was never realized, never was intended to. Conceived as a bluff, the panic with which the Russians reacted to it made the US; however, beginning to think that there might be indeed advantages in dropping the ban on ABM and moving towards defensive shields. That line of argument was significantly bolstered by the emerging Iranian nuclear weapons programme

and North Korea going nuclear. The two «rogue» states would pose a threat much less complex than that of the USSR/Russia: a few warheads at most, instead of the thousands of a Russian attack. The necessary response would be modest. Improved radar facilities in Greenland, in the Aleutians and somewhere in Eastern Europe, as well as a modest number of interceptor missiles, some in Eastern Europe, some sea-based in the North Pacific, would suffice. Russia was appalled. It did not see in these ABM efforts a reasonable response to the nuclear ambitions of some rogue states, but an attempt to weaken its own deterrent. The emerging system might shoot down only a few Russian warheads, but nobody knew which ones would be hit. That would tear holes in the attack plan. There was a genuine risk that more American silos would survive and hence the retaliatory blow be much harder. The quarrel with the US was bitter. Yet the US found, at least on the Republican side of Congress and among the Republican presidents ABM systems ever more attractive. In 2002, George W. Bush walked out of the ABM agreement. It was a shock for Russia. Putin claims that this was a turning point that forced Russia to modernize its nuclear arsenal through the development of systems that could not be stopped by American defences: hypersonic gliders, longest-range nuclear propelled GLCM, INF-type systems. The US had not taken the Russian protests seriously. It was, therefore, not prepared for the Russian answer. It scrambles today to develop as quickly as possible defences against the new Russian weapons and to introduce, in turn, hypersonic gliders.

## The US–Russian Nuclear Balance Today

The USSR, and later Russia, have pursued since the 1960s an aggressive and coherent nuclear policy. It tried systematically to outclass the US and to gain a first strike capability, possession of which would be a major political advantage in any crisis with Washington and might one day even become a military option. The US, though, always succeeded to thwart these Russian attempts. It set on a policy of combining a backbone of an (increasingly vulnerable) ICBM force with an invulnerable SLBM deterrent and a small bomber force. Today the US has a grand total of 400 Minuteman III ICBM (with a range of 10,000 kilometers and 3 MARV warheads each) that are rotated through 450 hardened silos. 656 SLBM on 14 Trident II SSBN and a bomber force of 40 B-52 and 20 B-2 complements this ICBM force.

The truth is that the US has, after the end of the Cold War, largely neglected its strategic nuclear forces. It has, for example, retired its most powerful ICBM, the heavy «MX» or «Peacemaker» missile capable of carrying 10 warheads and numerous penetration aides. Similarly, programmes to assure the reliability and the functioning of warheads went on a slow burner, the emphasis being placed on life extension rather than replacement programmes.

This reality mirrored what was going on in Europe in the conventional field: Under the impression of having won the Cold War, the West felt it needed no longer armed forces capable to fighting a succession of major conventional battles against powerful Russian invasion forces. The operational reality was rather marked by conflicts such as Afghanistan or Iraq. Powerful Western expeditionary forces faced, in the post-Cold-War world, weak but stubborn and tenacious local extremist groups. Fighting was low intensity; the wars were difficult to end and sapped the military strength and morale of the Western forces. The ability to fight a major war shrunk, equipment holdings were dramatically reduced. Germany that had once fielded 6 armoured divisions totaling 2,600 main battle tanks, as well as 5 mechanized, and 1 mountain divisions, bringing the grand total to 7,000 armoured vehicles of all types, finds itself today – as far as armour is concerned – with two partially equipped, skeleton armoured divisionstructures with a total of 244 main battle tanks. The Netherlands is even down to 18 tanks (an armoured company in a joined battalion with Germany). The Baltic republics never even introduced main battle tanks. Switzerland, with 134 active main battle tanks (and another 96 in reserve that Parliament wants to refurbish and modernize), is almost a great power by comparison. The protracted and bitter conventional fighting that followed the Russian invasion of Ukraine was a rude awakening. The Bundeswehr got an extra 100 billion Euro credit. It will suffice to increase the number of tanks until 2025 to just somewhat over a still unimpressive 320.

In the field of strategic weapons, there was a succession of tough wake-up calls. There was, above all, Putin who announced three years ago the development of a whole series of new weapons systems. Above all, he unveiled the «Zirkon» hypersonic glider (GL) system that would be deployed both on land and at sea and would thanks to its speed of six times the speed of sound be invul-

nerable to all existing ABM defences, and its brothers, the airborne «Kinzhal» (ten times the speed of sound, with a range of 2,000 kilometers; the world's only ballistic missile which is dropped from a fighter plane) and «Avangard» (20 times the speed of sound, MARV like, to be launched by the SS-14, SS-29, and the SS-19 Mod 3 ICBM). But there was also the mobile S-500 air defence / ABM system with a range of 500–600 kilometers. The war in Ukraine would show the value of such long-range systems. «Status-6», another one of Putin's miracle-weapons, is a super-torpedo that has a range of 10,000 kilometers, travels with a speed of 145–175 kilometer per hour, and is claimed to be able to dive to a depth of 1,000 meters. 24 meters long, the system can carry a thermonuclear warhead, which is alleged to be able to raise a 500-meter-high tsunami in front of the US coasts (even a 50-meter high wall of water would suffice to cause severe damage). Finally, Putin also announced the development of a nuclear-propelled cruise missile with unlimited range. One should add to his list as well the «Iskander-M» ballistic missile, a short-range ballistic missile (SRBM) with a range of 70–280 kilometers that can be equipped with either a nuclear or a conventional warhead. The US identified by the end of 2021 four Iskander-M- battalions (3 operational, 1 for testing) with a total of 64 launchers. Russia has used the weapon massively in its attack against Ukraine and promised to supply it to Belarus. The obviously abundant Russian stores of reloads should the West also give reason to pause. The START Agreements count (and thus limit) only launchers, not missiles. There are indeed many of the Russian launchers that can be quickly reloaded (including the SS-14 Satan II and the SS-29 Sarmat). The operational role of the stockpiled strategic warheads and vectors is much too easily completely ignored. They are not useless, outdated weapons, but play, as we shall see, an important role in the strategic thinking of Russia and China.

## *«The threat is real.»*

Many of these programmes still need further development. But the list remains more than impressive. The Sarmat, the Avangard, and the Iskander-M are already deployed. The latter two have in the attack against Ukraine extensively been used. The threat is real. The US has been caught unaware and is clearly under intense pressure to restore the balance, which is currently strongly tilting in Russia's favor. The impact of these Russian weapons developments is further reinforced by the fact that also China has tested (and is about to introduce) hypersonic glider systems. The hypersonic missiles of both countries pose not only a serious threat to strategic and other military targets in the US; they can also be used with a conventional warhead against US aircraft carriers. Their enormous speed may render a warhead even superfluous; the carriers may already be destroyed by the missiles' kinetic energy.

Obama was the first to reverse course. Both Trump and Biden confirmed his decision to modernize the American deterrent. The US has, consequently, embarked on a substantial strategic reconstruction programme, encompassing all aspects of the US strategic nuclear forces. The heart of the project is the development of a new ICBM, the «Ground Based Strategic Deterrent» (GBSD), scheduled to enter into service in 2027 and to remain so until 2070. Northrop is developing the missile, the LGM-35 Sentinel, a single warhead ICBM with a range of 13,000 kilometers. It will be designed to be particularly easy to be continuously modernized and updated to the latest technological level.

At the same time, a successor to the *Ohio* class SSBN is being developed, the *Columbia* class. The *Ohios* carried originally 24 launch tubes for Trident D5 MARV SLBM. Under the START agreements four of the tubes on each boat were permanently sealed, leaving each of the 14 «boomers» of the class with 20 launch tubes. Normally each *Ohio* spends 77 days at sea, followed by 35 in harbour to permit maintenance. Each boat has two crews («gold» and «blue») to maximize time at sea. An overall refit is necessary every 15 years.

The *Columbia* class boats will displace some 21,000 tons, mount 16 tubes for Trident D5 SLBM each, and be the most sophisticated submarines ever built by the US. The first boat of the new class, the *USS District of Columbia,* was laid down in June 2022 and will join the fleet in spring 2031. Each boat is to serve for 42 years (or 124 patrols) and cost over 3 billion USD.

The US intends to keep the current Trident D5 SLBM in active service until 2080. They will, however, in regular intervals be substantially modernized within the

framework of the «Trident D5 Life Extension II Upgrade Program». Preliminary studies for the development of a sea-launched strategic nuclear cruise missile have, begun this year. The US Navy considers a nuclear tipped and propelled SLCM to significant increase to deterrence.

The US is pursuing, as a top priority, the development of hypersonic gliders and of defences against them. The US glider programme is several years old. It was, though, in his initial stages marked by bad luck and important delays in testing. The project, the «Air-launched Rapid Response Weapon» (ARRW), was eventually successfully tested in March and again in May 2022, after three earlier test failures in a row. The air-launched missile will have an attack speed of more than Mach 5. In 2022, the first test of another weapon, the «Operational Fire» missile, took place, a hypersonic glider that is being propelled to hypersonic speed by a truck-mounted ballistic missile. Both projects need, though, still several years until becoming operational while their Russian and Chinese equivalents are already operational today (the Russian models were successfully used in the war with Ukraine).

Finally, there is a major programme underway to modernize and up-grade the technical production infrastructure for nuclear warheads and to check, bring up to date and improve existing warheads deployed on ICBM and SLBM as well as of those kept in reserve. There is the RRW-1 (reliable replacement of warheads) programme and RRW-2 as tools for that objective.

***«The US has, after having invested over time more than 350 billion USD in various ABM technologies, only a very limited ability to defend its territory even against a small and unsophisticated nuclear attack such as a country like North Korea could launch.»***

The US has, after having invested over time more than 350 billion USD in various ABM technologies, only a very limited ability to defend its territory even against a small and unsophisticated nuclear attack such as a country like North Korea could launch. The Head of

***«The US has caught taken unaware and is clearly under intense pressure to restore the balance, which is currently strongly tilting in Russia's favor..»***

the US ABM effort, General Glen VanHerck, claims that the ABM defences are ready to intercept successfully such a rogue attack «24/7, 365». Independent observers doubt that. The current system is a hodgepodge of systems cobbled loosely together: The «Ground-based Mid-Course Defense System» (GMS), the planned «Next Generation Interceptor» (NGI), the US Navy's Aegis system that is now asked to play the role a mid-course interceptor of ICBM, and the US Army's «Terminal High Altitude Area Defense» system (THAAD). The hypervelocity missiles entering the Russian and Chinese order of battle can now bypass the whole collection. The US is compelled to develop a defence against this new threat with the highest priority (as well as to make the existing ABM system against ballistic traditional attacks work). The need for such defences exists both at the strategic level, i.e., the defence of the continental US, and at the tactical level, i.e., the defence of aircraft carrier battle groups which risk annihilation from the new weapons.

The US nuclear weapons programme has been pursued since the end of the Cold War in a much too leisurely way. It is only the new set of weapons that Putin has within the last three years presented to the public that – together with Russia's invasion of Ukraine and its new open hostility towards the liberal democracies – has provoked an American response. That response does, however, hardly take note of the revolution in China's nuclear thinking and inventory. It is fair to assume that the US will significantly increase its strategic nuclear efforts in the years to come. The hopes of getting rid of all nuclear weapons evaporate and are clearly dreams with no chance in the real world.

## China's Road from a Small Retaliatory Capability to the World's Largest Nuclear Arsenal

China has made, from the early days of the People's Republic, a sustained effort to acquire nuclear weapons. Hopes that Russia would make a gift of one to the comrades in Beijing came to nil. The Chinese bomb programme led, in 1964, to the first Chinese nuclear weapon test. It was a major step towards replacing the Republic of China (Taiwan) in the UN Security Council, which happened in November 1971. The test had

strengthened China's claim to Taiwan's seat in New York. The reasons why China acquired nuclear weapons were, thus, as much political as military. Mao who had won the civil war against the Kuomintang was an advocate of a large popular army; he had no love for nuclear weapons. He declared them to be «paper tigers».

Chinese investments in nuclear armaments remained therefore quite modest. The Chinese were believers in the theories advocated by Pierre Marie Gallois, the father of the French bomb. He believed that even a single nuclear weapon that would hit the attacker in retaliation would be totally unacceptable price – and hence constitute a sufficient deterrent. The Chinese strategic programme was, in its early years, strongly influenced by that thinking. China's policy adopted a nuclear doctrine, based on minimal deterrence, and announced a «No First Use» policy. That implied also that it would not use nuclear weapons against non-nuclear states. Its small force of strategic vectors was widely dispersed, the nuclear warheads not mated to the missiles. This was also the result of another Chinese resentment against nuclear weapons, the fear of Bonapartism. The Party did not trust the military, and hence was all in favour of a strategy under which the warheads were not under control of the military but directly the Party. France, where control of the warheads and the land-based launchers lay not with the armed forces but with the Gendarmerie nationale, shows the same attitude. Major General Yao Yunzhu, from the PLA Academy of Military Science, put it that way: China will maintain a minimum nuclear arsenal, permitting a minimum nuclear deterrence, pursue a nuclear doctrine of retaliatory deterrence, never use nuclear weapons as am offensive capability, does not extend a nuclear umbrella to other nations, nor seeks one from another country. China did not join the Nuclear Non-Proliferation Treaty (NPT), thus never accepted an obligation to engage in nuclear arms control. It refuses until today to enter into any arms control negotiations. In a study, RAND called that set of policies as «existential deterrence».

The next step was to move to a strategy of counter-nuclear coercion. Thus, in 2006, China published a «White Paper» on China's National Defence that described China's nuclear strategy as a «self-defensive nuclear strategy». The strategy's fundamental goal is to deter other countries from using nuclear weapons against China or threatening to do so. China would, therefore, proceed only to a limited degree in the development of nuclear weapons and aimed at building lean and effective nuclear forces that are placed under the direct control of the Communist Party's (KPC) Central Military Commission (CMC), headed by Xi Jinping. The country would, according to the 2006 «White Paper», exercise great restraint in developing its nuclear forces and never enter in a nuclear arms race with another country.

The country's weapons stockpile has never been publicly quantified. The Chinese copied and adopted the US model of a «tirade» of ICBM, SLBM and heavy bombers. Part of the land-based components were hidden in a gigantic network of underground tunnels («Underground Great Wall»). The Chinese military unit operating the strategic nuclear forces, the «Second Artillery Corps», was provided with very long stretches of protective tunnels, hundreds of meters underground, proof against all forms of conventional and nuclear attack. In their shelter nuclear missiles could be mated with their warheads, programmed and be prepared for launch. The introduction of SLBM and of land-mobile ICBM were further major steps towards assuring a surviving retaliatory capacity. For a long time, Western intelligence agencies attributed to China a total nuclear force of 200–400 warheads, comparable to the arsenals of the UK and of France (but far below the numbers of the US and Russian arsenals). This has changed under Xi Jinping, dramatically so.

China has embarked under the new President on a policy of accelerated and massive nuclear expansion. The SSBN fleet continues to grow. Its backbone are six SSBN of the *Jin* Class with 16 tubes for JL-2 SLBM each. Two more of the class are under construction or planned. There is, moreover, a by now obsolete, SSBN of the *Xia* class (with 12 JL-1 SLBM). China is, thus, heading towards a SSBN/SLBM force that is roughly equal to the combined-nuclear forces of France and the UK.

On the ground-based side, there are about 300 «Dong Feng» ICBM and MRBM of various types:

- 6 DF-4 with a single 3.3 Megaton warhead and a range of 5,500 kilometers (representing the nuclear force type of the late 1950s and early 1960s).
- 20 DF-5, an ICBM with a range of 13,000 kilometers and 10 warheads (Mod A), respectively 10 MIRV warheads (Mod B). Another version, the Mod C, is under advanced development

- 40 DF-21 medium range ballistic missiles (MRBM; range of 2,100 km). Versions A and E are able to carry nuclear warheads; version D is a ballistic missile with a conventional warhead to be used in an anti-shipping role (particularly against US aircraft carriers)
- 100 DF-26 mobile MRBM with a range of 4,000 kilometers. 20 are nuclear armed, 80 carry conventional warheads, notably the Model B that has an anti-shipping role.
- 6 DF-31, a mobile ICBM with a range of 7,200 kilometers
- 36 DF-31A (similar to the CF-31, but with a range of 11,200 kilometers)
- 36 DF-31AG (similar to the DF-31A)

Several dozens of DF-41, deployed either in silos or on a mobile launch vehicle; an ICBM which can carry up to 12 MIRV but may normally rather carry 3 MIRV as well as an array of decoys and penetration aids.

The pace of Chinese ballistic missile development is clearly quickening. It has become ever more breathtaking under Xi. There is nothing less than an explosion in the construction of ICBM silos. In 2021, 120 such construction sites were discovered at Yumen, in Gansu province, soon afterwards followed by another 110 at Hami, in Xinjiang province. Even more recently a third field with more than 120 silos at Ordos, in Inner Mongolia, was spotted by Western satellites. The 350 silos can each receive a DF-41 or DF-5 Mot ICBM – providing Beijing with a grand total of 1,050 to 4,200 nuclear warheads

This has nothing to do any longer with China's traditional policy on nuclear weapons. Rather than trying to deter an attack, Xi is building the potentially largest ICBM force in the world, roughly the equivalent of the US and the Russian arsenals combined. This is an attack force. The silos should be ready by 2030. Whether the production of DF-41 missiles will keep pace with that and permit to fill all of them, needs to be seen. It is easily possible that part of the silos under construction are destined for a successor model not yet revealed to the public. Much of the gigantic ICBM project may be linked to the traditional Chinese conviction that a country claiming world dominance must be the «Number 1» in every area and domain. It may suffice in China's eyes to equip the DF-41 with three warheads. Yet the overall size of the programme is much too large to be explained with a Chinese attempt to «keep up with the Johnsons». The Chinese nuclear arms race is clearly an integral part of China's strategy to gain visible world dominance. It will be – politically and/or militarily – used by Beijing. The fact that the silos should be ready by 2030 is perhaps no accident. 2030 is also perceived by many observers to constitute the militarily best time for a Chinese attack on Taiwan.

***«The Chinese nuclear arms race is clearly an integral part of China's strategy to gain visible world dominance.»***

The situation is aggravated by the fact that the Second Artillery Corps is composed of brigades, each of which is composed of six silo-based launchers – and 12 missiles, two for each of the quickly reloadable silos. The Chinese anticipate – like the Russians – to continue the fighting with reloads. Each brigade is, thus, commanding up to 144 strategic nuclear warheads. While the West believes that the world ends once the red button is pushed, for the Russians and the Chinese the war enters simply a new phase, once the nuclear exchange has started. In this new phase anti-satellite capabilities matter (both Russia and China have important anti-satellite programmes) – and so do reloads, long-range cruise missiles loitering over the target area (ready to attack any surviving enemy systems before they can be launched in retaliation, even military installations in permanently manned stations on the moon may play their role (a fear recently expressed by the Head of NASA). The Russian super-torpedo allegedly able to create a tsunami of a height of 500 meters might also be used in another way: As a super-anti-submarine weapon. A large hydrogen bomb detonated in an area known to be frequented by US SSBN might be able to destroy, or at least weaken, the US underwater deterrent.

A limiting factor may be the enormous amounts of plutonium, highly enriched uranium, tritium and other scarce elements that the full Chinese programme would require. It is doubtful whether China currently has these assets. Brezhnev's oversized ICBM production run of the 1960s laid, finally, the foundation of the

financial collapse of the USSR in the mid-1980s. Even China's trees may not grow in the sky.

The West must react urgently to Xi's nuclear megalomania if it does not want to be soon in a situation in which Xi can blackmail it politically at will. The time of nuclear arms control is over; the time has come for rearmament.

The point is further hammered in by China having – as Russia – taken the lead over the US in hypersonic gliders (HG). HG weapons are deployed in a ground-based version, aboard aircraft and soon aboard the 055 class of large destroyers (or better cruisers) of which Beijing will procure no fewer than 24.

## Conclusions

The West has much too long given in to the pleasant thought that the Cold War would be over and the harsh military realities that governed it, outdated. In Europe, the European NATO members dismantled their ability to fight a regular war. The Russian invasion of Ukraine triggered a scramble to correct this. It will, however, take years to reverse the trend yet. Similarly, the US has been dormant to the sustained, powerful and menacing Russian and Chinese up grading, modernization, and massive expansion of their nuclear capabilities and arsenals. Have we been sleeping?

*«In Europe, the European NATO members dismantled their ability to fight a regular war. The Russian invasion of Ukraine triggered a scramble to correct this.»*

In early August, Russia announced that it will no longer permit inspections of its strategic nuclear arsenal by American observers (as agreed upon in the New START Agreement); nor will it send such observers to the US. The move echoes the Russian unilateral walking-out of the confidence building measures foreseen in the CFE (Conventional Forces in Europe) Agreement. As a result, the West could, not get firsthand evidence whether Putin's «manoeuvers» on the Ukrainian border were the first step to invasion. – We must realize that Putin may begin to prepare the ground for a nuclear surprise attack – if he chooses so. It is clearly time to wake up.

*«The Russians have broken an important taboo. Until 24 February 2024 only North Korea used the threat with nuclear weapons as a part of its normal crisis behavior. From the invasion of Ukraine onwards we must expect that nuclear weapons will become a standard factor in every crisis.»*

In addition, what has become the subject of that debate may only be half the truth. Nobody has so far closely looked at the spare missiles and nuclear weapons in stockpile that are a fully integrated part of the arsenals of the two authoritarian states. The DF-41 is as easily reloadable, as are the Russian Satan II and Sarmat silos. In the West, there seemed no point to think through what a protracted nuclear war could look like. Thinking stopped with the firing of the first missile. Putin and Xi have both made a further step and are thinking through multiple scenarios how a limited nuclear war might be fought. They are determined to accumulate military advantages to be able to blackmail and politically and militarily defeat the West.

We are not helpless against such a strategy. The war between Russia and Ukraine shows that the Russians can be defeated and that Western military training and technology (let alone the ability to fuse all reconnaissance and intelligence insights into superior operational capabilities on the battlefield) outclass those of the Russians.

However, the Russians have broken an important taboo. Until 24 February 2024 only North Korea used the threat with nuclear weapons as a part of its normal crisis behavior. From the invasion of Ukraine onwards we must expect that nuclear weapons will become a standard factor in every crisis. Particularly in the US, more recently also in Russia, there is, moreover, a growing attraction of small or very small nuclear weapons that could be used as easily as conventional weapons. That is wrong and it is dangerous.

It seems to me that a defence against hypervelocity weapons can be developed. Their shallow trajectory renders them extremely hot (about 2,000°-Celsius) and bright objects that stick out of their environment and should, therefore, pose no difficulty to identify. To stop them is similar to the task of shaking a meteorite heading for our planet out its trajectory. The huge ki-

netic energy of the hypervelocity gliders can be turned against them. Through the use of artificial intelligence and quantum computers it should be possible to throw a cloud of obstacles into their trajectory. Any collision, as small as it may be, would lead to the immediate disintegration of the glider.

We must, above all, cease to perceive weapons (as the peace movement does) as instruments of the evil, which should be abolished as soon as possible. Rather, they must be understood as tools to formulate and implement political strategies. We must, as importantly, realize that our technological and industrial base cannot be sound if dependent on Russia and/or China.

Against this background, it is finally ever more important to make sure that Ukraine does not lose the war with Russia – for the impact this would have around the world, on the cohesion of the Western camp, and for the moral values on which our future depends.

*«We must, above all, cease to perceive weapons (as the peace movement does) as instruments of the evil which should be abolished as soon as possible. Rather, they must be understood as tools to formulate and implement political strategies.»*

## Implications for Switzerland

For Switzerland, all of these trends render our world less secure. We have nothing to say or contribute when nuclear weapons become part of crisis behavior and management. We can offer Geneva as negotiating table and we have the three Geneva Centers initiated by Switzerland as islands of excellence. The ball lies in the nuclear area clearly with the US (on which Europe's security has so often already depended in the past). Europe's political cohesion will also depend on whether the French and the British nuclear deterrent can be credibly transformed into a security guarantee for the whole of Europe.

We have, though, every interest to strengthen our defence (and that of Europe) in the conventional field. We should form something like half a dozen brigades with national defence as main task; fully equip them with armour, modern artillery, and the latest in infantry fighting equipment.

Specific decisions what to procure should be taken based on the lessons learned from the war between Russia and Ukraine.

We must reduce our economic dependence on Russia and, above all, China. We must regain autarchy in key areas, from cyber components to pharmaceutical products. We must make sure that China has not so many technological inroads into our economy that it can freeze or stop it at will. Chinese electronic products must be assumed to have inbuilt entry points for hacking. In critical areas, sufficient stocks are necessary. The days are over when our economic policies could be determined only by globalization and the alleged advantages it promised. We must remember the concepts of comprehensive defence again.

China prepares at every level the reconquest of Taiwan. That would be a major war with a high potential for escalation. We must support the international community in its effort to prevent this, anticipate the impact of such a war on us, and do everything to reduce it. ◆