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The Crisis of the Intermediate-range Nuclear Forces Treaty in the Global Context

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Content

Abbreviations and acronyms

ABM	Anti-ballistic missile
ALCM	Air-launched cruise missile
EPAA	European Phased Adaptive Approach
GBI	Ground-based interceptor (missile)
GLCM	Ground-launched cruise missile
ICBM	Intercontinental ballistic missile
INF	Intermediate-range Nuclear Forces (Treaty)
MAD	Mutually assured destruction
MIRV	Multiple independently targetable re-entry vehicles
NATO	North Atlantic Treaty Organization
NMD	National Missile Defence
REMD	Russian-European Missile Defence System
SALT	Strategic Arms Limitation Talks
SDI	Strategic Defence Initiative
SLCM	Sea-launched cruise missile
SRBM	Short-range ballistic missile
START	Strategic Arms Reduction Treaty
US	United States
VLS	Vertical Launching System

Executive summary

The groundbreaking Intermediate-range Nuclear Forces (INF) Treaty on the permanent elimination of all intermediate-range missiles by the United States (US) and Russia was signed in 1987. A recent difficulty in the relationship between the two countries emerged in summer 2014 when the US officially accused Russia of violating the treaty. Despite this, Russia has not expressed an intention to formally withdraw from the treaty.

An end to this temporary impasse is unforeseeable at the moment. There are many reasons to believe that the Obama administration will treat this serious problem in a "businesslike" way, i.e. on the expert level, until the end of its term and will not give in to internal political pressure that the US should itself withdraw from the INF Treaty.

Apart from good political reasons, there are also sound military reasons to consider this the right approach, especially from a European perspective: on the one hand, it is highly likely that the treaty violation does not yet involve newly introduced Russian ground-launched cruise missiles. On the other hand, Russia is expanding its strategic capacity by introducing a new ballistic missile (RS-26 Rubezh) that, like the old SS-20, can reach every point in NATO Europe in minutes. This new missile is an intercontinental ballistic missile (ICBM), which means it does not violate the letter of the treaty, but may violate its spirit.

Despite the merits of the INF Treaty, the current situation clearly points to the limits of its regime. While Europe is free to threaten or take deterrent or defensive measures against the Russian treaty violation, it is in the continent's interests to save the treaty, because its abrogation will not increase European security. The European public should therefore participate more actively in the discussion about the future of the INF Treaty, examine European interests, and work towards maintaining the treaty.

The prevailing political climate between Russia and the West in general and the constantly increasing strategic-operative importance of nuclear weapons in Russia in particular are challenging enough. The fact that the nuclear strategic arms control system (the New Strategic Arms Limitation Treaty) follows the right path gives cause for cautious optimism in this context.

The INF dossier is linked with the missile defence dossier. It can be assumed that Russia is serious about its consistent announcements and targets missile defence sites in Europe. The means of first choice in this regard are ballistic and/or cruise missiles.

The increasing global deployment of missile defence forces by the US and its allies as a reaction to new risks and threats has strategic implications well beyond the bilateral relationship between Russia and the US. As factors in a strategic stability equation in a multipolar world, China, which is definitely affected by missile defence to a certain extent, and, in cascading succession, India and other states should be even less neglected in the future. In the face of the threat of a new arms race there is a need for continued efforts to maintain global stability based on confidence and transparency.

Introduction

Will NATO soon take a new double-track decision? Will we see the start of a new arms race, including nuclear capability, in the intermediate-range missile sector[1] with a focus once again on Europe? Will a very essential element of arms control disappear with the Intermediate-range Nuclear Forces (INF) Treaty? If so, what are the deeper reasons for this? If not, what comes next?

Such questions have arisen since mid-2014, when the United States (US) officially found that the Russian Federation is violating the 1987 INF Treaty.[2] Even though some discussions about reactions and (also strict) countermeasures have taken place in the West, they either have a strong US character or are reserved for closed meetings of bodies such as the NATO Nuclear Planning Group.[3] It can therefore be stated that thus far there has been no broader public discussion of the issue. This is comprehensible, on the one hand, because the INF Treaty involves two non-European parties – Russia and the US – and deals with a sensitive topic. On the other hand, it is unsatisfactory from a European perspective because – as in the 1970s and 1980s – the target areas of (possible) new Russian intermediate-range missile systems lie in Europe and not the US.

This paper takes stock of these issues in a global context. Questions connected to the INF Treaty reflect a classic and complex security policy dossier. It needs to be shown that this dossier is defined by basic strategic parameters that remain unchanged to a significant extent. In this sense the paper wishes to contribute to a calm, non-alarmist response from the West.

Starting from the INF Treaty, including its previous history, the discussion that follows examines relevant security and military policy developments during the last decades. In terms of such an analysis the increasingly worldwide plans of the US and its allies to establish a missile defence capability are identified as a not unessential "game changer".

Based on a presentation of the current state of the question of the alleged Russian treaty violation(s), a prognosis on the further fate of the INF Treaty follows. Finally, the political climate between Russia and the West, which is likely to remain tense for the foreseeable future, will be examined, as well as the future role of China (in the framework of the paper, the latter only cursorily, however).

1. Relevant developments of recent decades

1.1 The groundbreaking conclusion of the INF Treaty in 1987

The signing of the INF Treaty on 8 December 1987 (which entered into force on 1 June 1988) by President Ronald Reagan of the US and General Secretary Mikhail Gorbachev of the Soviet Union put an end to a extremely dynamic, emotionally highly charged, and – at least from a (Central) European perspective – dangerous aspect of the Cold War.

The INF Treaty contributed fundamentally to the end of the Cold War. It was initially atmospheric, but then rapidly became very specific by completely eliminating whole classes of nuclear missiles on both sides in a few years. Although the two superpowers were already involved in a more or less intensive nuclear strategic arms control process before the INF Treaty was signed, the related agreements (Strategic Arms Limitation Talks, SALT) could not really limit the nuclear arms race. In 1972 SALT I brought about the temporary freezing of (only) ground- and sea-based delivery systems and, as a by-product, resulted in the Anti-Ballistic Missile (ABM) Treaty, which should be examined more closely. SALT II of 1979 was considered to be rather permissive by arms proponents on both sides because it codified the increasing deadliness of warheads by means of multiple independently targetable re-entry vehicles (MIRV).[4] Largely because of the Soviet invasion of Afghanistan at the end of 1979 SALT II never came into force, but was largely respected in the following years by both sides until its formal expiry in 1985. The subsequent discussions and agreements, initially called "SALT III", are known as the Strategic Arms Reduction Treaty (START), which already sounds more binding.

It is important for this paper that the ground-based intermediate-range delivery systems below the class of intercontinental missiles did not constitute the subject matter of SALT and START. Therefore, the need to close this gap in the arms control process was obvious. But prior to this realization the SS-20 Saber (Russian: RSD-10 Pioner) intermediate-range missile, which from the mid-1970s was increasingly deployed by the Soviet Union, triggered a major crisis between the opposing blocs. It was especially German chancellor Helmut Schmidt who emphatically put the SS-20 on the strategic agenda of NATO,[5] despite some reluctance in the West. Equipped with three nuclear warheads, a SS-20 missile could, for example, simultaneously threaten three large adjacent German cities such as Dortmund, Düsseldorf, and Cologne. Generally, the SS-20 was capable of a greater range (about 4,000 km), accuracy, mobility, and destructive force than its predecessors, the SS-4 and SS-5 systems. From its various launching sites it could reach every point in NATO Europe at that time within minutes.

To prevent military blackmail by this new powerful (first strike) weapon, to be capable of putting Moscow and other large Russian cities at a comparable risk, and to prevent a decoupling between the US and Allied security as a whole, NATO made the so-called Dual-Track Decision in the proven form of a consensual decision-making process on

12 December 1979. The Dual-Track Decision linked the decision to counter-deploy NATO missiles and cruise missiles in Central and Western Europe with an offer of negotiations on arms control. If by 1983 no acceptable agreement were reached, some hundred Pershing II missiles and BGM-109 Tomahawk cruise missiles with one nuclear warhead each would be deployed in the planning period until 1986.

The following eight years until the problem was resolved by the conclusion of a treaty – with this treaty implementing the "double-zero option",[6] which was not pointed out by the US until 1981 in the course of the negotiations – were characterized by great unrest in the West, where public protests took place to a hitherto unknown extent. The proponents of a tough stance against the Soviet Union and opponents of the deployment of new US nuclear weapons in Europe faced each other irreconcilably. The focus of the deployment and, with this, the resulting agitation (according to Schmidt, an "anxiety psychosis" that "verged on hysteria"[7]) was the Federal Republic of Germany, on whose territory many of the missiles, cruise missiles, and their corresponding warheads would be deployed.[8]

In the course of the build-up Western parliaments did not manage to collectively mobilize the established larger parties to become involved in NATO politics. In the end, in late summer of 1982 the Dual-Track Decision cost Chancellor Schmidt his office. However, because the Soviet Union did not give in and continued to deploy SS-20s, NATO implemented its own military build-up largely as planned.

After the build-up on both sides 1,846 Soviet missiles (including 654 SS-20s) and 846 Western missiles were deployed, which with the implementation of the INF Treaty were then eliminated by 28 May 1991 and completely destroyed by the end of 2002 – a unique action only a few would have expected some years earlier. The mismatched pair of Reagan and Gorbachev had succeeded in breaking the backbone of the nuclear strategic arms race.[9]

On 31 July 1991 START I was ratified, which after the end of the Cold War achieved a significant reduction of strategic nuclear potential (it entered into force on 5 December 1994 and expired at the end of 2009). This disarmament process also effectively guaranteed that after the disintegration of the Soviet Union neither strategic nuclear weapons nor their carriers remained in Belarus, Kazakhstan, and the Ukraine (in the latter about 1,800 nuclear warheads had been deployed).

1.2 Multilateralization or even globalization[10] of the INF Treaty?

Russia, with its considerably different geostrategic starting position from any other country in the world, attempted to initiate a discussion on multilateralizing the INF Treaty at the United Nations in October 2007, with US support at the time.[11] Twenty years after the

ratification of the INF Treaty it had become increasingly evident that the question of a real net security bargain for the two parties to the treaty was becoming more and more relevant. Independently of their general armaments, the ground-launched intermediate missile potential of the following countries needed to be addressed:[12]

- China[13]
- India
- Iran
- Israel
- North Korea
- Pakistan
- Saudi Arabia
- Syria.

It is no real surprise that, according to publicly available information, the 2007 initiative did not find any supporters. Why should the above-mentioned states be interested in eliminating their intermediate-range missile potential? While also being strategic in nature, this potential serves multiple purposes: as a general deterrent; additionally, for the most part as a direct deterrent and/or threat to immediately adjacent opponents; as a development step in the context of space and/or intercontinental missile programmes; or "simply" as a (extremely expensive) booster of national prestige. As described above, the INF Treaty was concluded in 1987 after several decades of rapidly changing developments between the two main antagonists of the Cold War, which were almost permanently characterized by tough negotiations in the complex field of arms control. This condition alone does not apply to any of the other above-mentioned states and their environments.

With the 2007 initiative, which was doomed to failure, Russia could just as well have pursued the goal of proving that at that stage the problem of intermediate-range missiles had got out of hand and could therefore no longer be regulated by a treaty.[14] It remains to be seen to what extent the simultaneous threats against the West of withdrawing from the INF Treaty because of its missile defence plans (see section 2.1) can be seen as a consistent strategy.

The prospects for reviving the 2007 initiative, which should ideally be aimed for, are not realistically foreseeable. In any case, with the crisis in Ukraine and the US (non-) compliance report, the opportunity for a renewed consensual advance likely closed for the time being in 2014.

As far as China is concerned, there is most likely no appetite in Beijing for initiating an arms control process that will affect its (nuclear) intermediate-range potential. However, in light of the possible collapse of the INF Treaty, this might be reconsidered by the Chinese leadership: if it is no longer bound by this treaty, the US could deploy offensive ground-launched intermediate missiles that might threaten China.[15] In this way the crisis of the INF Treaty could also be an opportunity (in the best Chinese sense) for a new impetus in the field of arms control.

1.3 Strategic lever missile defence

Naturally, considerations about and measures to deal with missile defence are as old as the earliest deployment and use of missiles. Britain faced this defence challenge for the first time in the Second World War with the threats from German missiles Fieseler Fi 103, named by the Nazis "V1", and Aggregat 4 (A4), named "V2". The arms race between the US and the Soviet Union in the area of intercontinental missiles, which rapidly increased its pace after the end of the Second World War, soon resulted in the development of complex defence concepts by both sides, and in turn led to the development and introduction of corresponding strategic defence systems. With the ABM Treaty in 1972 the latter aspect of the Cold War arms race could successfully and sustainably be limited in terms of arms control policy. The treaty basically limited the strategic defence capabilities of both sides to a "fig leaf"; accordingly, in the final version of the treaty both sides were only allowed to have a locally connected ABM complex with up to 100 launchers. The underlying logic of that time was that the principle of mutually assured destruction (MAD) remained basically untouched.

Because of the high costs of and doubts about its benefits, from the 1970s the US decommissioned the strategic ABM capability it was entitled to in the treaty (first the SENTINEL, then the SAFEGUARD systems; before the conclusion of the ABM Treaty the latter was planned to have up to 14, then 12, interception sites throughout the country; only one was implemented). Russia, however, continues to operate its ABM system to protect Moscow, which was deployed from the beginning of the 1970s. Its remaining interceptor missile, the GAZELLE (53T6, which can be armed with a conventional or nuclear warhead) of the current A-135/ABM 3 system, is tested continually, most recently on 9 June 2015 – reportedly successfully.[16]

After abandoning the system that complied with the ABM Treaty, the US did not remain inactive in this sector. The literally high-flying 1984 plans of the Reagan administration for a comprehensive anti-missile shield (known as the Strategic Defense Initiative, SDI) turned out to be far too ambitious, but played a not insignificant role in the course of the Cold War. The SDI was designed to guide the competition between the two superpowers into a field

where the US was technologically superior. It was also evident that the US possessed greater resources in nearly every area of missile development. In a mixture that was not very convincing – if not disconcerting outside the US – the SDI linked the in-a-sense "theological" renunciation of the MAD principle to a comprehensive militarization of space. Thus the SDI would have not only meant the early end of the ABM Treaty, but also the end of the Outer Space Treaty of 1967, which bans the deployment of weapons of mass destruction in space.

Towards the end of Reagan's presidency, however, the SDI was to all intents and purposes dead.[17] The doubters who pointed out the very high costs and the technological doubtfulness of the initiative, which were a continuation of the former debates about the ABM system, had won. In Congress there was no majority support for the project either. Additionally, the Kremlin negotiated more cleverly under the new president, Gorbachev. Of course, the fall of the Iron Curtain in 1989/1990 influenced the process very essentially. Already by 1991, with the START I treaty, an agreement to halve the nuclear strategic potential of both sides could be achieved, which was a somewhat easier and much cheaper alternative method of threat reduction than the SDI. The start of a thaw between the opposing blocs further marginalized the SDI advocates.

"Global Protection Against Limited Strikes" was the new, pleasant-sounding, cooperatively designed label for a missile defence system that was to be implemented under President George H. Bush. With plans for 750 ground-launched and 1,000 space-launched interceptor missiles,[18] it continued to be very ambitious and hardly open to dialogue in the arms control process, however.

It was the Clinton administration that promoted the strategic ABM dossier under the label National Missile Defence (NMD), i.e. the ambition level was that of protecting the US from a limited strike with a few (up to 20) ballistic missiles. At the same time it focused more on regional tactical defence systems (so-called Theatre Missile Defence). After the (from today's perspective strongly felt) elimination of the Russian threat in the 1990s, the previously mentioned missile potential especially of North Korea, Iran and, at that time, Iraq, became the main focus of attention in the area of arms control. The globally increasing proliferation of missiles was identified as a further risk.[19] Russia continued to play a role insofar as NMD was also supposed to be effective against separate accidental or unauthorized launches.[20] In the light of the uncertain course at the time of a further collapse of the old Soviet empire, such scenarios could not be excluded.

NMD was supposed to protect the US as a whole; however, it became clear that tests to develop it would violate the ABM Treaty. Until 2001 the US tried to convince Russia of the need for an amendment of the treaty to accommodate NMD. The US government

always stated that NMD was not – and because of its limited capabilities could not even be – directed against Russia and its strategic potential. For its part, Russia presented its own suggestions at the beginning of 2001 that had an entirely different focus. Accordingly, a common "Russian-European Missile Defence System" (REMD) and, in this context, the involvement of France, Britain, and China in negotiations for adapting the ABM Treaty[21] were to be strived for.

The psychology of the "the ABM Treaty poker game"[22] cannot be identified at this point. At an early stage Russia fundamentally turned against NMD in the form that the US was planning. In this respect, from the start there was little prospect that Moscow would give in. Why should it have? The Russian assessment might have been that the US would proceed anyway and that Russia would not be capable of a symmetrical response. The suggestion of an REMD and of the involvement of other nuclear powers has therefore to be evaluated as an attempt at delay or distraction. Ultimately, the role of "treaty renegade" was in a sense reserved for the US, which is exactly what happened. The George W. Bush administration quickly picked up the thread and enforced the (perceived) inevitable termination of the ABM Treaty with effect from 13 June 2002.

This threat of termination was embedded in further offers of dialogue to Russia: a plan was announced to build a new "strategic framework" while rejecting the old confrontational thinking.[23] The deterrence capability of possible opponents should in the future be improved by a mixture of offensive and defensive means, and therefore peace would be maintained in the future as well.

Since the "colossal crime" (in Helmut Schmidt's words) of 9/11, possible terrorist attacks were decisively included in the canon of threats – even though for the time being it remains hard to imagine how and especially why terrorists should threaten the US motherland with long-range missiles, because for such actors there are much easier methods to transfer weapons of mass destruction such as ships or trucks.

Free from the restrictions of the ABM Treaty, the US could then realize its plans and achieve the intended limited capability for defence against attacks by some intercontinental missiles in less than ten years. Therefore, 30 ground-based interceptor missiles (GBIs; increased currently to 44) were deployed in Alaska (Fort Greely) and California (Vandenberg) and the network of early warning and target acquisition radar facilities (including those at Thule in Greenland and Fylingdales in Britain, a process which were also prohibited under the ABM Treaty) was optimized and extended. This network remains in place today. For Europe, long-range radar was to be installed in the Czech Republic and ten GBI missiles were to be stationed in Poland.

Against some hopes and expectations, especially in Europe, the Obama administration has essentially continued the missile defence programme in an unchanged form. It emphasizes different aspects, however. "Missile defence" is now much more alliance-oriented. Following the new European approach (European Phased Adaptive Approach, EPAA) of 17 September 2009, a limited capability for defence against short- and especially intermediate-range missiles is to be achieved in close cooperation with NATO until 2018. The NATO 2010 Lisbon Summit endorsed the new missile defence plans – at that time expressly in connection with the dialogue with Russia, however.[24] With the deployment in 2011 of a mobile AN/TPY-2 type early-warning radar system in Turkey, the permanent stationing of an AEGIS-equipped warship in the Mediterranean Sea, and the establishment of a corresponding central command post at the Ramstein Air Base in Germany in 2011, phase 1 of the EPAA was complete. The deployment of a fixed long-range radar facility in the Czech Republic was not pursued. AEGIS capabilities with increased performance[25] in fixed positions on Romanian soil will foreseeably bring phase II to an end in 2015/2016. A fixed AEGIS installation until 2018 in Poland (phase III) marks the currently planned final stage of the project;[26] all of NATO Europe[27] should then be protected against ballistic missile threats from the Middle East.[28]

At this point several things have to be noted: the new and decisive statements by President Obama concerning the elimination of all nuclear weapons – in speeches in Berlin on 24 July 2008 and Prague on 5 April 2009 – in general and the readjustment of missile defence in particular have manoeuvred the discussions on missile defence, especially in NATO, into calmer waters for the time being.

The sea-based AEGIS deployment underlines both the global and flexible customization of the US missile defence programme. It reflects a new and practical form of cooperation with US allies and partners in the framework of a phased adaptive approach. A future cross-linkage of regional components opens up the option of a global missile defence system.[29]

With the abandonment of plans for a permanent long-range radar facility in the Czech Republic, this dossier has disappeared from the European public scene for now. But an effective strategic missile defence system requires high-performance and very large-scale sensor technology that captures targets early enough (early warning with a range of about 4,000 to 5,000 km) and smoothly transfers the information to the defensive system.

The question of whether the issue of a strategic radar capacity in Central (and Eastern) Europe[30] has actually been removed from the agenda permanently, therefore, has to remain open at this point.

1.4 Measures against missile defence

Of course, the "game" does not come to an end after the first mention of "defence against missiles". If a missile should be brought into the target area a potential opponent's defensive measures have to be considered and counter-measures against this defence system have to be taken.

For example, Russia's currently most modern intercontinental missile, the SS-27 Sickle B (TOPOL-M), includes some additional characteristics to make its interception by a modern defence system impossible; among others, this includes a manoeuvrable re-entry vehicle. The testing of the SS-27 in the second half of the 1990s was accompanied by corresponding Russian statements. Of course, this has to be seen against the background of the debate about NMD at that time, but from a developmental perspective it is logical and consistent, because the conception of the SS-27 goes back to the "SDI years" during which the former Soviet Union had to confront a very strong future US missile defence system that would possibly also include space weapons.

As a further effective measure against missile defence the issue of saturation should be considered. This can be achieved by the generation of a sufficient number of approaching objects, whether real warheads, decoys/flares, or dummies.[31] This path was also followed with the SS-27, and its newer variant Mod 2 (RS-24 Yars) was, among other things, equipped with four warheads (MIRV) each.

Within the limits of this paper, at this point it can only be mentioned briefly that China essentially faces the same challenge. A significant difference, however, is that the starting point of the Chinese response is entirely different. Beijing's strategic nuclear potential is much defined, at least compared to the two large strategic actors, the US and Russia. Currently, about 50 warheads on Dong Feng ICBMs (DF 5A, 31, 31A, and in the future 41) that could reach the US are probably deployed.[32] This corresponds to the still-valid Chinese nuclear doctrine of No First Use. Therefore, the objective is and apparently remains to maintain a secure nuclear second-strike capability.

Even a limited US anti-missile shield that, as it is being presented, is essentially based on capabilities on the US west coast will have some kind of impact on the thus far "moderate" Chinese nuclear strategy.[33] For China, an almost certain response against such a missile defence system will be an increase in the number of its warheads, as far as is technically possible, with MIRV on each missile (especially on the new Dong Feng 41).[34] If this happens, reactions from India and, in turn, Pakistan will almost certainly follow, whether in terms of offensive nuclear armament or defensive (missile defence) systems. In the literature this trilateral interaction among the nuclear potentials of China, India, and Pakistan is called the "Asian cascade".[35]

The simple situation of "approaching missile versus missile defence" can, of course, turn into one of destroying a missile defence facility in its entirety before it can be used. For such an approach, various ground-, air-, and sea-based options present themselves at the moment,[36] including the deployment of special forces. From a military perspective, land- or sea-launched missiles are and – for the time being – remain the most appropriate method of destroying such facilities, whether ballistic or cruise missiles. They are the best weapons for a sudden and, above all, unexpected attack that can be relied on to destroy its target over long distances.

The next section will show that, as things stand, it is exactly this aspect, which in the worst case might comprise a pre-emptive Russian strike against Western missile defence facilities, that constitutes the very real background for the crisis of the INF Treaty.

2. Russian positioning

2.1 Announcements and projects

Initial threats against NMD facilities have existed since Russia expressed its fundamental opposition to NMD. As of 2004 the INF Treaty has increasingly been called into question at a high level in Russia. In 2006 it was said that Russia had already found an appropriate and asymmetric response to US plans.[37] In 2007 President Putin threatened to withdraw from the INF Treaty in order to be able to target NMD facilities in Europe,[38] while Minister of Defence Ivanov called the "establishment of a missile defence section near the Russian border" an "unfriendly action" that "enforces asymmetric and cheaper countermeasures"[39] – "regrettably", one is tempted to add. Shortly thereafter the commander of Russia's strategic missile troops announced the inclusion of possible future NMD targets in the Russian target list.[40] Because of the above-mentioned operative reasons, such threats always imply the use of missiles. Because of this, if such missiles are ground launched they will almost certainly have a range of less than 5,500 km, which immediately becomes relevant to the INF Treaty.

Russia may have also used these threats to negatively influence the US's NMD plans. In any case, the Russian leaders know that the topic of strategic missile defence almost inevitably causes heated discussions and serious divisions in the West. The modest US attempts to communicate the threat analysis that formed the basis of NMD to its partners resulted in a minor transatlantic crisis.[41] Temporarily superseded by the West's interventions in Iraq and Afghanistan, this crisis basically continued until the end of the George W. Bush era at the end of 2008.[42]

President Obama's adjustments of the missile defence architecture did not cause Russia to modify its threats to use military options against all missile defence facilities in Europe ("the ability to take out any part [of them]", according to President Medvedev, 23 November 2011[43]). However, a striking political difference has been that since 2009 there have been no open Russian threats to withdraw from the INF Treaty. Obviously, this is a change of strategy – but no change in the operative proceedings, as will be described later.

For the time being there are no prospects that parts of the NATO-Russian missile defence shield will become a cooperative venture. While Russian and Western ideas were always far apart (at their core regarding Russia's decision-making system in its own sector), the Ukraine crisis has blocked all further steps in this direction and the talks about possible missile defence cooperation were suspended in April 2014. In any case, meeting the additional Russian demand for the determination in a legally binding form of the US/NATO missile defence system's "nuclear-strategic compatibility with Russia" was extremely unlikely. As a result, the efforts of four US administrations to organize missile defence in cooperation to a certain extent with Russia have come to an end for the time being – without a foreseeable chance of being continued.[44]

2.2 Implementing the announcements? – the alleged Russian treaty violation

But what happened in the years after the unambiguous Russian announcements in 2006/2007? As far as actual weapons systems are concerned, we essentially do not know exactly. What we know, however, is that the Russian military is highly unlikely to quietly accept the operative-tactical gap in the country's missile arsenal that resulted from the INF Treaty. Especially giving up the SRBM SS-23 Spider/OTR 23 Oka (which had a possible range of more than 500 km) was interpreted as a weakness and mistake on Gorbachev's part.[45]

As of 2015 Russian leaders are no longer reiterating the threat to withdraw from the INF Treaty. On the contrary: the official paper of the Russian Federation on the occasion of the 2015 Treaty on the Non-Proliferation of Nuclear Weapons review[46] contains an explicit commitment to the INF Treaty – as well as a statement that Russia's compliance with the treaty remains unchanged.

On the other hand, there is the issue of the main topic of this paper: the rather cryptic statement in the 2014 and 2015 US compliance reports that Russia has violated its INF Treaty obligations concerning ground-launched cruise missiles (GLCMs). The 2014 finding was supported by steps on all relevant levels: by a letter from President Obama to President Putin that suggested discussing steps to reaffirm commitment to the treaty, by Secretary of State Kerry's call to his Russian counterpart, and an interchange between the country's chiefs of staff, Dempsey (US) and Gerassimov (Russia).[47] The businesslike objective was "to put the axe in the helve" – unsuccessfully, as it turned out. Russia demanded in vain the submission of facts and evidence, and categorically and continuously denied that it had violated the INF Treaty.[48]

The existing publicly available indications indicate tests of a Russian cruise missile that are non-compliant with the treaty, possibly with reference to the Iskander ("Alexander") system (SS-26 Stone).[49] Iskander is a modern mobile and nuclear-capable ground-to-ground system whose development started in the mid-1990s and which can be equipped with ballistic missiles or cruise missiles, the latter with a range of officially up to 500 km[50] (R-500/9M728). Since it was officially put into service in the mid-2000s, the system has been constantly in use since 2007, especially in the context of the sabre rattling over offensive measures against missile defence – including the repeatedly threatened (but not yet permanently implemented) "forward deployment" in the Kaliningrad Oblast. In 2008 the Iskander system was very likely used in the South Ossetia war.[51]

If the INF Treaty really was violated by tests of new features for the Iskander or a follow-on system, this would have far-reaching consequences and would, in fact, signify the end of the treaty. This does not seem likely at a first glance,[52] but can no longer be excluded. Possibly there is a new, clandestine Russian ground-based launcher of which we are unaware.[53]

Without question, new cruise missiles with a range of between 500 and 5,500 km are constantly being developed in Russia and the US. As long as they are sea-launched cruise missiles (SLCMs) or air-launched cruise missiles (ALCMs) they are in accordance with the INF Treaty. A cruise missile is never an isolated object, however, and must be seen in the context of its "family". As such, in terms of its origin, the Iskander GLCM is related to SLCMs and ALCMs that have a range of more than 2,000 km.[54]

One theory, which seemed coherent at the time, has it that such a new Russian SLCM (Type 9M729, intended to be launched from submarines) was tested by a ground-based launcher in a form that is non-compliant with the INF Treaty[55] – but not necessarily with the clear intention of violating the treaty, however. Accordingly, conciliatory voices in the West add "technical" or "cavalier fashion" (Horlohe) to the term "treaty violation", which suggests the rather incidental character of the "violation"; or, possibly, as far as this can be believed, a badly planned or not sufficiently concealed method of testing.

To date no clear public evidence has been presented about the more precise details of the alleged treaty violation. Obviously, several years of intelligence work were needed until the US could officially make the case for the violation "watertight",[56] but methods could not be revealed or intelligence sources jeopardized. Therefore, the question will remain open for the time being as to whether the alleged treaty violation only refers to tests, or to possible production and a foreseeable or even already completed introduction of new GLCMs. The latter possibility would drastically shorten the time available to solve the problem. In retrospect, the course of events is interesting. It indicates a problem that for the time being, although relevant for the treaty, is clear from a purely quantitative point of view.

At the end of 2011 the US Congress was informed confidentially about the possible Russian treaty violation. With this the ice was apparently broken, because in mid-2012 open Russian sources with increasing obviousness reflected developments and tests that were non-compliant with the treaty.[57] Congruently, from summer 2012 US experts quite unambiguously reported the (supposedly multidimensional) Russian treaty violations.[58] When carefully examined, the summer 2013 US State Department compliance report included the first subtle indication of a problem that was not defined more clearly.[59] From the end of 2013 to spring 2014 the discussion picked up speed among experts on arms control.[60] The US was strongly recommended to go public with the issue and accordingly include it in the 2014 compliance report.[61]

With the above events the Obama administration's room for manoeuvre became increasingly smaller. Especially against the background of the crisis in Ukraine, it was probably decided to increase the pressure on Moscow and to start dealing with the alleged treaty violation at a more-than-an-informal level in summer 2014.[62]

From a European perspective, the problem of this process, the results of which at the moment are unclear and especially not limited in time, is solely that the danger of the failure of the INF Treaty will increase as long as the issue is not clarified[63] and the speculation "competition" continues.

2.3 Russian counter-accusations

After the US's accusation regarding the INF Treaty emerged the Russian Ministry of Foreign Affairs reacted with a large-scale response on 1 August 2014.[64] In a five-page document numerous accusations against the US were made in various fields of arms control, such as the Open Skies Treaty and others.

The US accusations were dismissed as propaganda and the "liberties" were mentioned that the US had been taking for some time in its application of the INF Treaty. In this regard Russia has frequently expressed serious concerns over the US's use of missiles as targets during missile defence tests whose characteristics are similar to those of intermediate-range missiles. This similarly applies to unmanned aerial vehicles or drones, which clearly have to be considered as ground-launched cruise missiles in terms of the INF Treaty. A flagrant treaty violation could also be the MK-41 launching systems (Mark 41 Vertical Launching System, VLS) that are deployed as part of the missile defence shield in Romania and Poland. The MK-41 system could not only launch interceptor missiles, but also cruise missiles, so Russia claims.

At this point the Russian statements cannot be discussed in depth. Regarding the counter-accusations about the MK-41VLS, it should be noted that the US Tomahawk cruise missile demonstrably (as in the intervention in Iraq, among others) belongs to the arsenal that can be launched from the MK-41.[65] Even US experts have assessed the technical arguments presented so far for the falsehood of the Russian counter-accusations as being not yet sufficient.[66] Whatever the case, some confidence-building work in terms of arms control policy might thus be needed in order to stress the purely defensive function of the facilities in Romania and Poland. As a basis for this work, it has to be concluded that such an alleged offensive capability is not even under development. Whereas the MK-41 or MK-57 are mentioned as candidates to be operated on land and to be made capable of launching offensive missiles,[67] this remains an option, no more and no less.

The Russian "counter-strike" from August 2014 is not only large scale in nature, but very polemical. So it does not come as a surprise that the first official bilateral talks on 11 September 2014 about the alleged violation(s) of the INF Treaty and all the following talks were inconclusive.

2.4 "Rounding off" the missile potential – no treaty violation (?)

Russia is pursuing yet another plan which de jure – and also according to the current position of the Obama administration – is compliant with the INF Treaty,[68] but contains aspects are no less problematic for Europe, such as new Russian cruise missiles.

With the introduction (subsequently postponed to 2016)[69] of the new, road-mobile ballistic missile system RS-26 Rubezh ("frontier" – a programmatic name?) with a range of (because of the by-definition relevant longer-range tests) nominally 5,800 km – a range that strikingly is still compliant with the treaty – Russia will also be able to better cover the intermediate-range sector in the future. According to current information, the new missile – like the SS-20 – is the two-stage variant of what was originally a three-stage system.[70] Two instead of three stages mean less weight, a smaller transporter erector launcher and, with this, greater manoeuvrability. The RS-26 will probably also possess improved characteristics for overcoming a missile defence system: in this regard a hypersonic warhead is under discussion.[71]

Basically, the question arises as to why a range of 5,500 km was defined as the limit between intermediate-range and intercontinental missiles within the SALT framework. A range of 5,500 km is the direct distance between the north-eastern US and north-western Russia via the North Pole in order to reach these countries' respective territories.

The problem for Central (and Eastern) and Western Europe is, however, that the situation is rather more complex vis-à-vis the large Eurasian land power that is Russia. For example, the direct distance between Irkutsk – as a "hot" candidate for the first deployment of the RS-26 – and Berlin is almost exactly 5,800 km. Thus the new Russian missile, which was demonstrably also tested in the intermediate-range sector (over about 2,000 km),[72] will serve a threefold purpose: it could target the US, China, and Europe. Like the SS-20, it will be able to reach any point in Europe within minutes.

But differently from the steadily increasing numbers of SS-20s during its deployment phase, it should be considered for the time being that the RS-26 has not yet been deployed, and if it is deployed, as with all new Russian ICBMs in recent years, a rather slow process can be expected.

As far as public discussion in the potentially threatened Europe is concerned, the message about the new Russian missile has not yet reached there. This could change dramatically in 2016: Russia could use the opportunity presented by the declaration of the initial operating capability of missile defence in Europe (EPAA Phase II) to bolster its "missile defence targeting approach" in response with the new RS-26.

Generally speaking, Europe tends to be in a state of virtual hybernation regarding Russian ICBMs and SLBMs. Basically, the RS-26 does not create a new situation. Far Eastern Russian (and also Chinese) ICBMs could always have targeted NATO Europe with a reduced profile, i.e. by a lofted or depressed trajectory and/or by changing the throw-weight/warhead mass. It is well documented that this aspect was considered during the US Senate hearings on the INF Treaty.[73] In Europe, however, evidence of further analysis of the issue is rarely to be found.

Because the RS-26, as a nominal ICBM, is subject to nuclear strategic arms control, the US will also be able to examine it after its deployment in light of the current treaty regime. This is very welcome in view of the need for transparency and confidence building, but will not change the findings regarding Europe described above.[74]

The new RS-26 may be denounced as a circumvention of the INF Treaty and as a violation[75] of its spirit, but there is no need to do so. The Obama administration has opted for the latter, moderate approach. After all, a 5,500 km limit is a 5,500 km limit.

Summary and outlook

Europe cannot escape its geography. In a metaphoric sense, Robert Kaplan's dictum about the "revenge of geography"[76] also holds true for the missile dossier and the arms control regime associated with it.

The current political situation between Russia and the West changes the framework, but not the geometry. Even without the crisis in Ukraine, Russia will introduce the new intercontinental RS-26 designed for deployment in Eurasia, because the decision to do so was taken many years ago.

As opposed to vague considerations about gradual differences between tests of cruise missiles that probably are not even ready to go into production yet, first of all, the new Russian RS-26 is a serious challenge to the reality of the INF Treaty regime. It is basically a very clever Russian response to challenges of various kinds: it will strengthen Russia's ICBM capacity vis-à-vis the US, but can simultaneously be directed against targets in all of Eurasia from the Russian forests because of its good road mobility. From NATO Europe's perspective there are only two major differences to the SS-20: the new RS-26 will stay in the air a few minutes longer – and it is technically more sophisticated, which especially means very accurate.

We do not know whether analogously a decision about the introduction of banned cruise missiles was made. In any case, cruise missiles are indispensable in every ambitious military capacity and the INF Treaty does not impede their extensive development, testing, production, and introduction – if they are classified as air- or sea-launched missiles – be they conventionally or non-conventionally armed.

Although the US and NATO have started to consider countermeasures[77] against the alleged Russian violation of the INF Treaty, it is not likely that the treaty will collapse in the near future. A relatively wide spectrum of "soft" (e.g. economic) and "hard" (military) countermeasures are available. But as far as we know there are no indications that the West intends to withdraw from the INF Treaty – possibly because such a withdrawal would hardly be convincing and would be unlikely to achieve consensus. NATO's cohesion would fundamentally be put into question, especially in the case of counter-deployments of offensive ground-launched systems.[78] To focus on air- and sea-based "deterrence and defense"[79] will result in the least controversial discussions in the alliance. The overall, already declared aim is to be able to eliminate the supposed advantages of the development and deployment of possible new Russian missiles.[80]

It must be seriously doubted, meanwhile, whether some kind of "business solution" will be achieved in the medium term. The "Krasnojarsk ABM radar dossier" tends to be taken as a precedent. Years after the US accused Russia of an ABM Treaty violation (in 1984),

it managed to get Russia to admit to a technical violation (in 1989) and, finally, to dismantle the radar (in 1990).[81] Russian self-interest[82] was decisive in this process and could be a key factor in the INF Treaty negotiations.

Even if the Russian military has prepared the options for an official withdrawal from the INF Treaty, apparently such a withdrawal is not intended, and the Russian leadership has sent out a clear signal in this regard with its 2015 commitment to the INF Treaty. Such a commitment may have been Washington's underlying but unexpressed goal. In light of this the official statement of Russian non-compliance has already achieved the aim of increasing the political costs for Moscow of a withdrawal from the INF Treaty.[83]

Conservative circles are demanding with increasing vehemence that the US should itself withdraw from the treaty.[84] The current US administration does not share this view and it can be predicted almost certainly that President Obama does not want to go down in history as the liquidator of the INF Treaty. As has been pointed out earlier, this step would also be highly problematic in terms of alliance politics.

As mentioned above, it is the aim of this paper to think in a long-term context. The dossier of the INF Treaty is intensively interwoven with nuclear strategic arms control, on the one hand, and missile defence, on the other.

Once again, let us take a closer look at missile defence, which is technically highly sophisticated, very complex, and often politically controversial. Militarily, thus far it has had to undergo its baptism of fire only in a regional framework (Israel). In fact, it does not have a place in the apocalyptic logic of MAD.

President Reagan's very ambitious attempt to change this was doomed to failure, but questions on this topic are in no way off the table, however. In light of the future deployment of 44 interceptor missiles on the US west coast, one may ask the question, which scenario is this capability directed at? Will it continue to be Iran – even with the imminent realization of the agreement on the latter's nuclear programme? North Korea? – only if it is really relevant. China? – officially not.

As indicated above, the Chinese perception is different, however. At the core of the discussion is an erosion of Russian and Chinese perceptions about strategic balance resulting from US missile defence ambitions; accordingly, a false sense of security (US) and a false sense of insecurity (Russia, China)[85] are facing each other – ironically, one is tempted to say.

In 2003 Michael Krepon posed questions that currently are more essential than ever: which strategic goals should missile defence serve? To counter rogue nations, China, or all potential US opponents, including Russia? Should Washington accept a mutual "relationship of deterrence" with any other country? Where exactly does missile defence fit into a world where militarily the US dominates?[86] A devaluation or even complete negation of Russia's or (even more so) China's deterrence potential would be possible, but precisely because of this would not be worth striving for, especially if space and anti-satellite weapons and powerful, very accurate conventional capabilities were added to missile defence.[87]

Today, the keyword "Russia" in this context has an entirely different connotation, of course. This previously potential US opponent turned into a quite substantial one in 2014. Because of this, one could argue that the basis for missile defence has changed quite significantly. Since the mid-1990s all conceptions and discussions of this topic invariably stated that, of course, it was not about Russia – just as, in general, US defence thinking in the early 21st century was no longer shaped by the thought patterns of the Cold War.[88] The NATO Lisbon Summit decision was expressly made in the context of the offer of continuing cooperation with Russia. But today's finding is: "This is a dead end – please turn around." But where to?

Before the NATO summit in Wales in 2014 the question arose as to whether the intended missile defence system should also be directed against Russia.[89] It quickly disappeared again, almost certainly because of a lack of agreement on the issue. Is it therefore permanently off the table? Hardly. A strategic radar installation in Central and Eastern Europe would perfectly complement the missile defence architecture. The effectors of AEGIS systems are optimized against intermediate-range missiles and, as with every technical system, equipped with the potential to be extended and further developed or reoriented. It could already operate against the RS-26, which falls into the intermediate-range profile.[90]

In 2004 Helmut Schmidt predicted that against the background of new nuclear weapons and missile defence systems, "a renewed arms race in the field of nuclear missiles"[91] was imminent. One of the key messages of this paper is that we are in the midst of the process of a rather subcutaneous arms race with the crisis around the INF Treaty. Thus, for now it is unimportant whether a conventional or non-conventional role is intended for the missiles in question. According to Russian announcements, the issue has become the reliable elimination of missile defence facilities, if such a step proves to be necessary. For this purpose nuclear warheads do not necessarily have to be used. On the other hand, Russian military doctrine explicitly refers to the option to use tactical nuclear weapons first in the early stages of a possible conflict.

As described above, options are still available to prevent a major escalation of the arms race. Far from turning away from the MAD doctrine or even eliminating all nuclear weapons, neither side will foreseeably renounce its right to plan various conventional and non-conventional options and prepare corresponding means of dealing with the emerging situation.

The European public would be well advised to participate more actively in the discussion around this issue and to work towards maintaining the INF Treaty. The NATO Dual-Track Decision and the subsequent groundbreaking double-zero option were at the time a "perfect" answer to the pressing challenges that had emerged. Even though it has become rather "long in the tooth", there is no good reason to throw this achievement overboard. Abandoning the INF Treaty does not imply a security gain for Europe.

Compared to the 1970s and 1980s, the framework conditions are very different today – politically, economically, and, not least, militarily. The latter essentially means: the issue is more and more about sophisticated offensive and defensive weapon capacities that put a special emphasis on quality – particularly with a conventional character – rather than on quantity in the sense of a nuclear maximum effect. A possible new NATO Dual-Track Decision does not seem to be necessary, either politically or militarily: in light of the continuously unclear conflict situation and, if foreseeable, a small number of new Russian systems, it would hardly have a chance of success analogous to the zero option of 1987. The Western alliance also has sufficient options without introducing new intermediate-range missiles to deal with new Russian intentions and plans. Getting into a virtually uncontrollable paradigm of action and reaction should be avoided, especially in light of the current political climate.

Cause for cautious optimism is given by the fact that nuclear strategic arms control has not encountered any difficulties so far and that the New START is on the right track. According to this February 2011 treaty, the strategic nuclear capacities of both sides should continue to be reduced significantly until February 2018. The mechanisms of dialogue, transparency, and confidence building are running smoothly. This will foreseeably remain essential, especially to avoid miscalculations. The goal should also be to extend these measures, if possible, to US/NATO missile defence systems in order to convince Russia of their defensive character.

In this context the divergence of views on the role of nuclear weapons that has increased during the last years is a cause for concern. Whereas the role of nuclear weapons has for the time being steadily decreased in the strategy of the US and NATO, a counter-movement has been observed in Russian strategy.[92] Keeping the ABM system around Moscow in service

is a small operative hint that certain nuclear scenarios are not taboo in Russia. These scenarios are mainly about deterrence, but not at least about a new, really profound counter-positioning vis-à-vis the "decadent" West.[93]

The above-mentioned limited potential Russian tactical nuclear strikes are supposed to have a "de-escalating" and conflict-ending effect.[94] In an action-reaction scenario, it is not really surprising that under the new conditions a new role for missile defence has already been demanded in the West to defend itself against a limited first use of Russian tactical nuclear weapons (delivered by missiles) – at least damage limitation could be achieved in this way.[95] This is a level of ambition that goes very, very far beyond the current US/NATO plans and poses totally new questions to the European security architecture.[96]

More and more, China will become part of the strategic equation. There is considerable evidence to indicate a new strategic positioning by Beijing, particularly the most recent developments in the South China Sea. The creation of new islands will offer entirely new options for power projection. The Chinese military build-up and modernization process is proceeding slowly but steadily.[97] This build-up will increasingly include nearly all possible options: apart from the "traditional" fields such as nuclear weapons, missiles, aircraft and ships, it will also include space, cyber, and electronic warfare.

The 2007 INF multilateralization initiative was an inappropriate, but nevertheless important step to make the Eurasian continent – including China, India, and other actors – more stable. More than ever, this challenge remains unchanged today.[98]

Footnotes

1. According to the INF Treaty, this sector includes missiles with a range of between 500 and 5,500 km. According to the treaty the possession, production, and flight testing of ground-launched ballistic missiles and ground-launched cruise missiles with this range, as well as the possession/production of launchers for such weapons, are banned in the US and (in legal succession) Russia. It does not matter whether such missiles are potentially conventionally or non-conventionally armed (with the latter including nuclear, radiological, biological, or chemical payloads).
2. See the annual report of the US State Department, Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments, July 2014, pp.8-10, <http://www.state.gov/documents/organization/230108.pdf> (hereafter "compliance report" for the respective years).
3. This group met on 5 February 2015, remarkably on the level of defence ministers for the first time in many years; cf. O. Meier, "Die Krise des INF-Vertrages" (the crisis of the INF Treaty), SWP Aktuell, No.11, 2015, p.3.
4. Cf. M. Krepon, Cooperative Threat Reduction, Missile Defense, and the Nuclear Future, New York, Houndmills, 2003, pp.166ff.
5. This was one of the issues with which Helmut Schmidt, who died on 10 November 2015 at the age of 96, was occupied until his death; cf. H. Schmidt, "Pflicht und Gelassenheit" (duty and calmness) in the German weekly newspaper Die Zeit, 26 February 2015, p.6, which was a pre-print from his recently published book Was ich noch sagen wollte (What else I wanted to say), Munich, 2015, pp.28ff.; cf. also H. Schmidt, "The 1977 Alastair Buchan Memorial Lecture", Survival, Vol.10(1), January-February 1987, pp.2-10.
6. "Double", because not only medium-range ballistic missiles with a range of 1,000-3,000 km and intermediate-range ballistic missiles with a range of 3,000-5,500 km, but also short-range ballistic missiles (SRBMs) with a range of 500-1,000 km were eliminated, cf. section 2.2, below, regarding Russian SRBMs.
7. H. Schmidt, 2015.
8. Belgium, Britain, Italy, and the Netherlands were to receive the new cruise missiles.
9. M. Krepon, 2003, p.167.
10. Cf. R. Huisken, Globalising the INF Treaty: The Best Way to Inhibit the Proliferation of Long-range Missiles?, Canberra, 2008, <http://ips.cap.anu.edu.au/sites/default/files/WP-SDSC-409.pdf>.
11. Russia and the US stated: "The Russian Federation and the United States call on all interested countries to discuss the possibility of imparting a global character to this important regime through the renunciation of ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 kilometers, leading to the destruction of any such missiles, and the cessation of associated programs. Such a renunciation would serve to strengthen the international nuclear missile nonproliferation effort"; Joint US-Russian Statement on the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles at the 62nd Session of the UN General Assembly, 25 October 2007, <http://2001-2009.state.gov/r/pa/prs/ps/2007/oct/94141.htm>.
12. For details of the arsenals, see K. Davenport (ed.), "Worldwide Ballistic Missile Inventories", Arms Control Association, July 2014, <http://www.armscontrol.org/factsheets/missiles>. For the nuclear powers China, India, Pakistan, and Israel, see also G. Evans et al. (eds), Nuclear Weapons: The State of Play 2015, Canberra, 2015, pp.19ff., <https://cnnd.crawford.anu.edu.au/sites/default/files/publication/cnnd_crawford_anu_edu_au/2015-02/printer_copy.pdf>.

13. The Chinese potential was also the reason why in the course of the INF negotiation process in 1986 the Soviet Union intermediately suggested the retention of about 100 warheads by both sides, for the US to store and for the Soviet Union to deploy in the Far East. Ultimately, this option was discarded. See A. Woolf, Russian Compliance with the Intermediate Range Nuclear Forces (INF) Treaty: Background and Issues for Congress, CRS Report, Washington, DC, 13 October 2015, p.7, <http://www.fas.org/sgp/crs/nuke/R43832.pdf>.
14. In August 2014 Russian deputy defence minister Antonov pointed out that nearly 30 states had missiles of a corresponding range and that the majority of them were adjacent to Russia; see A. Woolf, 2015, p.16. What Antonov did not mention, of course, was Russia's own contribution to proliferation, which massively encouraged this development, cf. Missile Threat, "Russia and Non-proliferation: A Concession that Never Was", George C. Marshall and Claremont Institutes, 25 November 2014, <http://missilethreat.com/russia-non-proliferation-concession-never/>. In this regard, Russian missiles that were moved from and to North Korea were the known "epicentre" of proliferation; see R.H. Schmucker and M. Schiller, "Raketenbedrohung 2.0. Technische und Politische Grundlagen" (Missile threat 2.0. Technical and political bases), Bonn, 2015. The blurb of this publication says: "'New' types of missiles spring up like mushrooms from missile arsenals of various states, and especially countries in crisis regions until today use the long-range missile as most important build-up means."
15. See J. Thomas, "Statement before the House Armed Forces Subcommittee", 17 July 2014, p.4, <http://csbaonline.org/publications/2014/07/future-of-the-intermediate-range-nuclear-forces-inf-treaty/>. As an alternative to the multilateralization of the treaty, Thomas also proposed its (geographic) amendment (pp.4ff.).
16. P. Podvig, "Russia Tests Missile Defense", Russian Strategic Nuclear Forces, 9 June 2015, <http://russianforces.org/blog/2015/06/russia_tests_missile_defense_i.shtml>.
17. See M. Krepon, 2003, p.95.
18. Ibid., p.96.
19. Driven by a Republican majority in Congress and a rather alarmist Congressional threat analysis, compiled under the auspices of Secretary of Defence Donald Rumsfeld, the US armed forces amended their threat analysis regarding "rogue nations" (under President Clinton later changed to the more conciliatory term "states of proliferation concern") that in less than ten years would be capable of targeting the continental US with ballistic missiles; see M. Krepon, 2003, pp.97ff.
20. This rationale had already emerged in the first years of ABM design under President Johnson (ibid., p.87) – an aspect that tends to be forgotten, certainly not least because it includes very uncomfortable and hardly calculable scenarios. But it will always remain a "baseline" of some kind for missile defence in terms of a (limited) assurance against such attacks by "crazy" actors; see ibid., pp.219ff.
21. See the German daily newspaper Frankfurter Allgemeine Zeitung, 22 January 2001, pp.1ff. Accordingly, at the time President Putin even referred to the REMD as one of Russia's most important "strategic priorities".

22. In parallel, for example, in Russia the discussion about ratifying START II took place at that time, which should have brought about further deep cuts in the strategic nuclear potential of both sides, including a ban on MIRVs. In the end Russia did not ratify START II in order to be able to keep in service especially its "MIRVed" ICBMs. Kristensen has suggested that the MIRV ban be revisited; H.M. Kristensen, "Russian ICBM Force Modernization: Arms Control", Federation of American Scientists, 7 May 2014, <http://fas.org/blogs/security/2014/05/russianmodernization/>.
23. Cf. M. Krepon, 2003, pp.99ff. Krepon also states that, contrary to this rhetoric, realistic US politics remained rather sobering, especially regarding the nuclear posture. On p.241 Krepon points to the basically "genocidal" character of the war plans of both large nuclear powers.
24. The summit declared: "[We have] decided to develop a missile defense capability to protect all NATO European populations, territory and forces, and invited Russia to cooperate with us"; NATO, Lisbon Summit Declaration, 20 November 2010, para. 2, <http://www.nato.int/cps/en/natolive/official_texts_68828.htm>; and, concerning Russia, par. 23 provides for the resumption of "common theatre missile defense exercises".
25. According to the US Missile Defense Agency, as of December 2014 five US Navy cruisers and 28 destroyers are equipped with AEGIS (Greek: "shield") missile defence capabilities (SM-2/-3 ABM in different variants); see Missile Defense Agency, "Elements: Aegis Ballistic Missile Defense", fact sheet, 23 September 2015, <http://www.mda.mil/system/aegis_bmd.html>.
26. Phase IV of the EPAA, which, with future SM-3 II B missiles as its core, could also have included defence against ICBMs, was withdrawn on 15 March 2013. The reason given was development difficulties, which could be traced back to deficient funding by Congress. Cf. also G. Lindstrom, "Europe and Missile Defense", in C. McArdle Kelleher and P. Dombrowski (eds), Regional Missile Defense from a Global Perspective, Stanford, Stanford University Press, 2015, pp.107-120. Lindstrom points out that the topic has not been taken off the table with this step: "policy makers need to examine contingency plans for the evolution of missile defense system in Europe" (p.117).
27. This protection shield also effectively includes countries such as Switzerland and Austria that are not part of NATO and its command alliance. What operative conclusions – at least in the area of early warning and civil protection – these countries will come to as a result remains to be seen and, if necessary, will likely be organized by them in dialogue with NATO.
28. See F. Rose, "Implementation of the European Phased Adaptive Approach", US Department of State, Warsaw, 18 March 2013, <http://www.state.gov/t/avc/rls/2013/207679.htm>.
29. Cf. G. Lindstrom, 2015, p.117, who underlines its possible sensitivity for Russia and (even more so) China.
30. Europe as a whole, of course, has strategic radar systems: apart from the mentioned ones in Britain and Turkey, as well as the mobile and flexible radar systems of AEGIS components, there is also the radar installation in Vardoe, Norway, whose capabilities are controversial, however; cf. G. O'Dwyer, "Controversy Persists over Arctic Radar", Defense News, 24 October 2005, p.4. It can be assumed that Vardoe, together with the radar on the Aleutian Islands (Shemya), assures comprehensive and constant surveillance of Russia from "both sides", especially in terms of missile testing (West-East flight path).

31. At that time the bilateral agreement on the ABM Treaty was accompanied by a consensus on the non-limitation of MIRV. This made it easier for the "anti-ABM Treaty faction", which was, of course, already present in the US, to agree to the treaty, because it was clear that MIRV would guarantee that enough warheads would get through any defence system and that, generally speaking, the arms spiral therefore did not have an upper limit.
32. See G. Evans et al. (eds), 2015, p.11.
33. See the analysis by C.P. Twomey and M.S. Chase, "Chinese Attitudes toward Missile Defense", in Kelleher and Dombrowski (eds), 2015, pp.197-216.
34. Cf. H.M. Kristensen, "Pentagon Report: China Deploys MIRV Missile", Federation of American Scientists, 11 May 2015, <http://fas.org/blogs/security/2015/05/china-mirv/>. The publication details of the report in question are given in footnote 97.
35. See M. Krepon, 2003, pp.131-164 and M. Krepon, "A Wobbly Nuclear Order", Arms Control Wonk, 14 May 2015, <http://krepon.armscontrolwonk.com/archive/4611/a-wobbly-nuclear-order-2>, concerning the situation in Asia.
36. Space-based options are also possible, as has been discussed for several decades. This topic will be revisited in the concluding section of this paper.
37. See V. Muradian, "Russia Resists Polish Missile Defense Role", Defense News, 25 September 2006, p.26.
38. See A. Woolf, 2015, pp.16ff.
39. According to S. Ivanov in the German newspaper Süddeutsche Zeitung, 8 February 2007, immediately before President Putin's "legendary" – and in this respect equally inflammatory – speech at the Munich Security Conference on 9 February 2007.
40. See Frankfurter Allgemeine Zeitung, 20 February 2007, p.1. The fact that strategic missile troops "only" operate nuclear-armed ICBMs characterizes the extent of the threat. The question about an official US reaction and, respectively, one from NATO, possibly behind closed doors, would be interesting. Could the Russian threats be accepted as they stood? Was there a counter-threat? Or were the threats rather calmly noted from a position of power? Or was the process even a form of (silent) consent, "from hawks to hawks", so to speak? Cf. J. Lewis, "Did Rumsfeld Propose Changes to the 1987 INF Treaty?", 12 March 2005, <http://lewis.armscontrolwonk.com/archive/476/did-rumsfeld-propose-changes-to-the-1987-inf-treaty>.
41. According to, for example, J. Krause, "Streit um Raketenabwehr" (conflict about missile defence), Internationale Politik, No.3/2000, 2000, pp.37-42.
42. For example, H. Bacia, "Streit unterm Schirm" (conflict under the shield), Frankfurter Allgemeine Zeitung, 23 March 2007, p.2; or, even tougher, U. Weisser, "Der US-Raketenabwehrschild gefährdet den Weltfrieden" (the US missile defence shield threatens world peace), Kölner Stadt-Anzeiger, 20 March 2007, p.4.
43. Quoted from S. Forss, "The Russian Operational-Tactical Iskander Missile System", Helsinki, 2012, p.7, <http://www.doria.fi/bitstream/handle/10024/84362/StratI4_42w.pdf?sequence=1>.
44. In contrast, see V. Dvorkin: "Postcrisis perspective", in Kelleher and Dombrowski (eds), 2015, pp.121-136. Dvorkin would like to preserve the possibilities for cooperation until the current crisis is over.
45. Cf. S. Forss, 2012, p.3.

46. Russian Federation, National Report Submitted by the Russian Federation, 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 22 May 2015, p.2, <http://www.un.org/en/ga/search/view_doc.asp?symbol=NPT/CONF.2015/48>.
47. See T. Horlohe, "The Mysterious Case of the Russian INF Treaty Violation", Sicherheit und Frieden, Vol.33(2), 2015, p.103.
48. If we assume that Russia is fully aware of the details of the incriminating tests, it is currently playing for time – which, not least, is needed for decision-making. In parallel, Russia is attempting a kind of "fishing expedition" to learn what precisely the US knows and how the information was obtained (instead of attempting to resolve the dispute); see Rose Gottemoeller, US undersecretary for arms control and international security, in an interview: Radio Free Europe, Radio Liberty, "Impasse Over U.S.-Russia Nuclear Treaty Hardens as Washington Threatens 'Countermeasures'", 16 September 2015, <http://www.rferl.mobi/a/27250064.html>.
49. For information on all aspects of the Iskander system, see S. Forss, 2012.
50. It is ultimately common sense that problems regarding the range limit of 500 km (INF Treaty) or 350 km (Missile Technology Control Regime, especially in relation to exports) for missiles or cruise missiles, respectively, can be fairly easily overcome by means of modifications; in this context, it is unlikely that Russia has conducted Iskander tests in complete darkness in order to prevent observation by US satellites, as has been claimed; see S. Forss, 2012, p.16.
51. Ibid., pp.16-18.
52. See T. Horlohe, 2015, p.102.
53. See the latest in-depth analysis by J. Lewis, "Russian Cruise Missiles Revisited", Arms Control Wonk, 27 October 2015, <http://www.armscontrolwonk.com/archive/207816/russian-cruise-missiles-revisited/>.
54. S. Forss, 2012; J. Lewis, "Sokov on Russian Cruise Missiles", Arms Control Wonk, 25 August 2015, <http://lewis.armscontrolwonk.com/archive/7801/sokov-on-russian-cruise-missiles>.
55. Among others, Podvig reiterates that such a test can be compliant with the INF Treaty according to the regulations if the ground-based launching systems only serve testing purposes, are fixed in position, and can be differentiated from a regular GLCM launcher; P. Podvig, "Cruise Missiles and INF – What about 9M729?", Russian Strategic Nuclear Forces, 23 June 2015, <http://russianforces.org/blog/2015/06/cruise_missiles_and_inf_-_what.shtml>; see also P. Podvig, "Sorting Fact from Fiction on Russian Missile Claims", Bulletin of the Atomic Scientists, 22 June 2015, <http://thebulletin.org/sorting-fact-fiction-russian-missile-claims8414>. But this seems to be precisely the bone of contention for the US. The SLCM narrative "resurfaced in early October 2015, after Russia used its new Kalibr-NK sea-launched cruise missiles in its attacks against targets in Syria"; A. Woolf, 2015, p.13, referring to P. Podvig, "Syria Strikes, Kalibr-NK, and the INF Treaty", Russian Strategic Nuclear Forces, 7 October 2015, <http://russianforces.org/blog/2015/10/syria_strikes_kalibr-nk_and_th.shtml>. Referring to a tweet by K. Reif of 10 October 2015, Podvig updated his blog on 11 October 2015 as follows "the U.S. administration insists that my theory is wrong and that the INF culprit is not an SLCM", concluding, "I think everybody would win if the United States releases more details about the missile".
56. See A. Woolf, 2015, pp.12ff.
57. See T. Horlohe, 2015, p.100.
58. Cf. M. Schneider, Reports on Russian Violations of the INF Treaty, Fairfax, June 2012, <http://www.nipp.org/wp-content/uploads/2014/11/Schneider-Info-Series-340.pdf>.

59. T. Horlohe, 2015, p. 101. Here it is emphasized that the sequence of steps concerns (as it so often does) US internal politics and the separation of powers. It was also important to take the new arms control agreement, New START, through Congress in 2010. In retrospect, as we know from the 2014 compliance report (US State Department, 2014, p.10), before the treaty violations since 2013 were officially stated, concrete consultations with Russia that lasted over a year had taken place; see US State Department, 2014.
60. Cf. J. Lewis, "Russian INF Compliance", Arms Control Wonk, 1 December 2013, <http://lewis.armscontrolwonk.com/archive/7010/russian-inf-compliance> and, extensively, M. Schneider, Confirmation of Russian Violation and Circumvention of the INF Treaty, Fairfax, February 2014, <http://www.nipp.org/wp-content/uploads/2014/11/Confirmation-of-Russian-Violations-of-the-INF-Treaty8.pdf>.
61. See J. Lewis, 2013.
62. The 2015 compliance report continues to be cryptic about Russian GLCMs; US State Department, 2015 Report on Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments, 5 June 2015, pp.8-11, <http://www.state.gov/t/avc/rls/rpt/2015/243224.htm>.
63. According to O. Meier, 2015, p.3.
64. Russian Federation Ministry of Foreign Affairs, "Comments on the Report of the U.S. Department of State on Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments", 12 August 2014, <http://www.mid.ru/brp_4.nsf/0/D2D396AF143B098144257D2A0054C7FD>.
65. However, this ground-to-ground aspect also holds true for Russian defence systems, especially Moscow's A-135 system. M. Schneider (2014, p.18) therefore includes the Russian ABM and air defence systems in the list of accusations (it is stated that Russia likes to present its own intentions as those of its opponent). It is legalistically relevant, however, that the INF Treaty regime does not expressly include ground-to-air systems.
66. See A. Woolf, 2015, pp.20ff.; cf. also O. Meier, 2015, p.2.
67. See J. Thomas, 2014, p.6, footnote 15; this is also mentioned by A. Woolf, 2015, p.29.
68. The current US administration has stated that the RS-26 is compliant with the treaty. Podvig says that the US cannot bring a watertight charge against the new RS-26 and therefore concentrated on the GLCM problem in 2014 in order to at least do something; P. Podvig, "INF Treaty Compliance (Sort Of)", Russian Strategic Nuclear Forces, 7 June 2015, <http://russianforces.org/blog/2015/06/inf_treaty_compliance_update_s.shtml>.
69. See P. Podvig, "RS-26 Deployment Postponed until 2016", Russian Strategic Nuclear Forces, 25 December 2014, <http://russianforces.org/blog/2014/12/rs-26_deployment_postponed_unt.shtml>.
70. The starting point for the development of the SS-20 was what was then the first road-mobile three-stage ICBM, the SS-16 Sinner (RS-14 or Temp-2S). For the new RS-26, as a "reincarnation" (Podvig) of the SS-20, the SS-27 is seen as a starting point. Against the background of measures against (N)MD, it would certainly be interesting to take another closer look at the development history of the SS-27 in terms of a hidden early "turnoff" towards a two-stage variant.
71. See A. Woolf, 2015, p.15, referring to the Sary Shagan missile defence test range, and D. Litovkin on the new missile: "Russia's Supersonic Trump Card Edges Closer to Reality", 23 October 2013, <http://in.rbth.com/economics/2013/10/23/russias_hypersonic_trump_card_edges_closer_to_reality_30325.html>.

72. See, in an overview, A. Woolf, 2015, pp.14ff.
73. See A. Woolf, 2015, p.11.
74. The very specific (legalistic) discussion to date about possible payload variations during the testing of the RS-26 cannot be extended at this point. US hardliners basically assume bad Russian intentions and believe that payload variations aim at disguising the primary intermediate-range character of the missile, which is non-compliant with the INF Treaty and is therefore an avoidance of the treaty; cf. "neutrally", A. Woolf, 2015, pp.14-15. It remains to be seen whether inspections of the RS-26 can bring some fact-based illumination to the subject.
75. For a very critical assessment stressing the overall Russian threat to Europe, see Y. Fedorov, "A Looming Crisis of the INF Treaty: Sources and Consequences", 31 August 2015, <http://www.isn.ethz.ch/Digital-Library/Articles/Detail/?ots591=4888caa0-b3db-1461-98b9-e20e7b9c13d4&lng=en&id=193277>.
76. R.D. Kaplan, The Revenge of Geography: What the Map Tells Us about Coming Conflicts and the Battle against Fate, New York, Random House, 2012.
77. For a good overview of the counter-options (politically and militarily), see A. Woolf, 2015, pp.21-31, which focuses on research projects that would still be compliant with the treaty.
78. For example, Thomas suggests that the production of Pershing IIs could restart or future intermediate-range ballistic missiles with trajectory shaping vehicles should be researched; J. Thomas, 2014, p.6, footnote 15.
79. Krepon suggests that asymmetrical conventional measures such as the scalable additional presence of ships (some of them with SLCMs) and aircraft in Europe could make a quickly realizable contribution that does not only send a clear signal of solidarity to Russia, but also to NATO partners; M. Krepon, "Responding to Treaty Violations", Arms Control Wonk, 11 August 2014, <http://krepon.armscontrolwonk.com/archive/4234/responding-to-treaty-violations>. Acton focuses on cruise missile defence using tethered airships carrying radar and air defence interceptors capable of engaging cruise missiles, both of which could be permanently based in Eastern Europe; J. Acton, "How to Respond to Russia's INF Treaty Violation", Carnegie Endowment for International Peace, 6 August 2014, <http://carnegieendowment.org/2014/08/06/how-to-respond-to-russia-s-inf-treaty-violation>.
80. An aim according to F. Rose, currently assistant secretary of state for arms control in the US State Department, Berlin, 19 June 2015; see Frankfurter Allgemeine Zeitung, 20 June 2015, p.4. Recently his undersecretary, Rose Gottemoeller, delivered the same message; see Radio Free Europe, Radio Liberty, 2015.
81. Cf. A. Woolf, 2015, p.24.
82. See T. Horlohe, 2015, p.105, who expressly recommends an appeal to this kind of self-interest.
83. See P. Podvig, 22 June 2015, footnote 55.
84. See e.g. Missile Threat, "White House Blocks Pentagon Report on Russian Treaty Breach", George C. Marshall and Claremont Institutes, 11 August 2015, <http://missilethreat.com/white-house-blocks-pentagon-report-on-russian-treaty-breach/>.

85. G. Evans et al. (eds), 2015, p.64.
86. M. Krepon, 2003, pp.103ff.
87. Ibid., pp.105, 217ff. In a US attempt to claim space, Krepon sees the threat of a "hegemonic overstretch" that is globally perceived as such and which could only do more harm than good (p.223); cf. also G. Evans et al. (eds), 2015, pp.69-73.
88. Cf. J. Krause, 2003, p.40.
89. Cf. M. Gebauer and G.P. Schmitz, "Nato-Gipfel in Wales: Merkel muss mit Zorn der Putin-Gegner rechnen", Spiegel Online, 3 September 2014, <http://www.spiegel.de/politik/ausland/ukraine-krise-merkel-und-putin-bei-nato-gipfel-in-wales-a-989539.html>, which describes a dispute over this issue between Germany (against) and Poland and the Baltic states (in favour).
90. Its chances of success remain open. The ABM tests that have been conducted in the US so far can hardly deal with such a challenging target as a modern Russian missile.
91. See H. Schmidt, Die Mächte der Zukunft (the powers of the future), Munich, Siedler Verlag, 2004, p.127.
92. Cf. e.g. K.-H. Kamp, "Nukleare Kompensation" (nuclear compensation), Internationale Politik, May/June 2015, pp.72-77.
93. Cf. Snyder's statements on Eurasianism as an ideological source for current Russian developments; T. Snyder, "Eurasianism – What Kind of Ideology Is This?", 3sat, 8 May 2014, <http://www.3sat.de/mediathek/?mode=play&obj=43550>, see also Z. Brzezinski, The Grand Chessboard: American Primacy and Its Geostrategic Imperatives, New York, Basic Books, 1997, pp.109ff. One thesis is that Russia had to become a revisionist power in the light of the "lost 1990s"; R.D. Kaplan, 2012, p.176 (paperback 2013). The crisis in Ukraine (ibid., p.180ff.) shows the current relevance and explosiveness of this thesis.
94. Cf. N. Sokov, "Why Russia Calls Limited Nuclear Strikes De-escalation", Bulletin of the Atomic Scientists, 13 March 2014, <http://thebulletin.org/why-russia-calls-limited-nuclear-strike-de-escalation>.
95. Cf. O. Thränert, "Missile Defense: A Valuable Tool to Defend against Current Threats", The European Security and Defence Union, 2/2015, p.17.
96. On the other hand, paradoxically this now explains more clearly why Russia was and continues to be opposed to missile defence as such: it could/will limit its options, at least at the lower end of the conflict spectrum. The US does not officially touch on this aspect. Sleepwalkers welcome.
97. See US Defense Department, Military and Security Developments Involving the People's Republic of China 2015, Annual Report to Congress, April 2015, <http://www.defense.gov/Portals/1/Documents/pubs/2015_China_Military_Power_Report.pdf>.
98. See S.C.P. Hinz, "Zur Krise des INF-Vertrages im globalen Kontext" (on the crisis of the INF Treaty in the global context), Newsletter Verteidigung. Streitkräfte. Wehrtechnik, No.145, Behörden Spiegel, 27 November 2015, p.2.

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