

# THE PROLIFERATION OF ADVANCED CONVENTIONAL WEAPONS

Hitherto, the debate on the proliferation of security-relevant technologies has been focused on weapons of mass destruction and their delivery systems. However, the increasing proliferation of advanced conventional weapons is similarly momentous in terms of strategic effects. The current trends in this area will continue unabated, thus creating serious challenges for security policy.



*The coming struggle for operational access: projected hypersonic surveillance and strike aircraft SR-72.*

On 17 January 1991, at 1:30am local time, the guided missile cruiser USS San Jacinto fired the first of more than 100 Tomahawk cruise missiles at a target in the city centre of Baghdad. A few hours later, Iraq's integrated air defence system had for all practical purposes collapsed. For many observers, this marked not only the beginning of the Allied air offensive that would make a crucial contribution to the expulsion of Iraqi forces from Kuwait, but also the dawn of a new era in conventional warfare: In Operation Desert Storm, the US demonstrated its ability to incapacitate an enemy from afar using a combination of sophisticated sensors and precision-guided munitions.

Until then, the notion of a "Revolution in Military Affairs" (RMA), based on advances in information technology, had mainly been argued by a few experts within the

Pentagon; in the wake of the Persian Gulf War, however, it gained numerous adherents both within and outside of the US armed forces. The growing advantage of the US in network-centric warfare (see Box 1) was identified as a unique resource for enforcing US security interests and the upkeep of a world order patterned on liberal norms.

More than 20 years later, however, the RMA is no longer a source of advantage that is unique to the US military. It is slowly, but steadily diffusing, to the benefit of a growing number of actors. This trend poses unfamiliar challenges for the US and its allies: They must anticipate the possibility that their own troops themselves will be targeted by advanced conventional weapons (ACW), which are set apart, among other features, by a high degree of precision, au-

tomatic target acquisition, and reduced signatures, or stealth. This could severely raise the cost of future military interventions. At the same time, ACW in the hands of violent non-state actors could facilitate novel and surprising forms of asymmetric warfare and terrorism.

In the following, current developments in ACW proliferation and their consequences for the global security environment will be analysed, followed by a discussion of military countermeasures and options for controlling ACW transfers. Finally, the significance of this type of proliferation for Swiss security policy will be examined.

## The "democratisation" of high-precision warfare

It is all but inevitable that military innovations will sooner or later proliferate globally. In the case of the latest RMA, this process has been marked by three factors: first of all, the enormous advantage of the US military over its competitors; secondly, the high cost and organisational imponderables involved in its adoption; and third, the availability of ACW on the international arms market and of the underlying technologies on the civilian market. The confluence of these factors creates contradictory incentives. On the one hand, the US advantage means that closing the capability gap is an imperative for allies and potential challengers alike. On the other hand, building up comprehensively networked forces that are equipped with ACW is beyond the financial means of nearly all relevant actors and is also fraught with organisational risks.

### Network-centric warfare

Network-centric warfare is based on a seamless integration of sensors and standoff weapons in a “system of systems” so as to be able to carry out coordinated strikes across great distances. The aim is to integrate command and control, reconnaissance, information processing, and target acquisition functions in order to be able to react in real time to developments in the combat zone. Although the US in particular has made strides in network-centric operations, this goal has remained elusive due to technical and organisational constraints. Furthermore, the great complexity of networked force structures also enhances vulnerability to physical and virtual attacks, necessitating a very careful assessment of their potential benefits and drawbacks.

This constellation of factors favours selective appropriation moves. This includes, in particular, the acquisition of individual ACW systems or complexes, which are integrated into concepts of asymmetric warfare so as to be able to stand up against superior US and allied forces at acceptable levels of cost. While these approaches are not in line with the ideal of integrating weapons and sensors in a seamless “system of systems,” the selective integration of ACW can facilitate novel operational approaches that have a substantial impact on military balances.

The practical modalities of ACW proliferation are highly diverse. On the one hand, one sees transfers of complete weapons systems, motivated partially by alliance politics and partially by commercial considerations. Faced with surging development and procurement costs as well as budgetary limitations, even important military powers are concerned about the future of their defence industrial bases. Besides the US, these include Russia, the UK, France, and Germany.

On the other hand, a number of newly industrialising and emerging technology nations are acquiring the technological capabilities to produce ACW of their own. Among these “new” players on the arms market are China as well as Israel, South Korea, Brazil, and India; at a lower level, South Africa and Turkey may also be counted among them. While highly sophisticated electronic components and materials can be purchased on the civilian market, the path to developing an independent ACW production base usually involves the direct or indirect acquisition of entire technology complexes. This can be achieved, for instance, through licensed manufacturing and armaments cooperation, reverse engineering, or industrial espionage.

### Transformation of the military-operational environment

The proliferation of information-centred weapons technologies has brought about a powerful upgrading of military capa-

bilities, even if their use as elements of a networked force is still limited to a small number of actors. For instance, while the Chinese armed forces still have important shortfalls in this regard, they have massively expanded their capacity for precision strikes in the past two decades. The accuracy of the short-range DF-15B ballistic missile, for example, which carries a conventional warhead and is aimed at targets in Taiwan, is comparable to that of highly developed Western systems. Its average aiming error is about one hundred times smaller than that of the Scud-B, which the US military faced in the Persian Gulf War.

The proliferation of such weapons is bringing about a change of the threat environment in military interventions. Of particular relevance in this context are highly developed anti-ship missiles, cruise missiles, and extended air defence systems that are also effective against standoff weapons. In a theatre of operations characterised by such ACW, the survivability of existing platforms – such as fighter aircraft or surface ships without stealth capability – is significantly reduced. Therefore, such systems can considerably raise the costs of military interference. When combined with appropriate operational concepts, they can become parts of an integrated anti-access and area denial challenge that may prove difficult to overcome.

In all of the areas mentioned above, there are clearly discernible trends of proliferation. According to the Indian Ministry of Defence, there are up to 14 potential buyers of the Indo-Russian BrahMos, which is currently among the most advanced anti-ship missiles. At least 17 states have introduced modern land-attack cruise missiles into their arsenals, including Pakistan, Saudi Arabia, and South Korea. In the past decade, derivatives of the highly efficient S-300 air defence system have found their way to Algeria, China, Venezuela, Vietnam,

and Belarus. So far, Russia has withheld planned transfers to Iran and Syria for political reasons. On the other hand, it did deliver advanced Yakhont anti-ship missiles to Bashir al-Assad’s government. This is a case where ACW proliferation is also used as a means of great power diplomacy in order to deter the US and its allies from interventions that are contrary to Russian interests.

Neither should one underestimate the proliferation of short-range ACW that can be used autonomously by small groups. This category includes guided mortar and artillery rounds as well as anti-aircraft and anti-tank guided missiles. While such relatively affordable weapons will not prevent an intervening power from entering the theatre of operations, they may considerably restrict the freedom of movement of invading forces and inflict serious casualties on them. For instance, Hezbollah employed modern guided missiles to considerable effect during the 2006 Lebanon War when it was able to put nearly half of an Israeli tank battalion out of action within hours and to inflict substantial damage on an Israeli warship.

The selective availability of such ACW raises the probable capability level not only of insurgents and militias, but also of terrorist groups the world over. The future likelihood of guided missile attacks against civilian aircraft (as used, for instance, against an Israeli civilian airplane in Kenya in 2002), government installations, or critical infrastructure is significantly higher than that of any terrorist attempt to use nuclear or other weapons of mass destruction. The security forces of most states are poorly prepared for such attacks, which may be carried out with high precision from a distance of several kilometres.

***New players on the arms market include Israel, South Korea, Brazil, India, South Africa and Turkey.***

### The struggle for military advantages

Currently, it is mainly the US that regards the proliferation of ACW as an acute threat, because it faces the erosion of critical military advantages. For the superiority of the US armed forces relies on a combination of global strategic mobility – i.e. the capability for rapid re-deployment by sea and air – and the subsequent concentration of great striking power over tactical ranges of a few hundred kilometres. In areas where access to the theatre is not as-

sured or where frontline troops are subject to considerable attrition, the cost-benefit calculations for military intervention may shift markedly. In both cases, the availability of ACW to the defender makes a decisive difference, as it may increase the effectiveness and efficiency of conventional strikes by several orders of magnitude.

If the current proliferation trends in the area of ACW continue, the US struggle to maintain its intervention capability will intensify significantly in the coming 10 to 15 years. Currently, countermeasures are being introduced in areas such as doctrine, procurement, and forward deployment. At the doctrinal level, the US military is working on new access concepts designed to ensure its long-term superiority through joint, highly networked, and offensive operational approaches. However, in view of potentially excessive technical and financial requirements and difficult organisational obstacles, it is uncertain whether these concepts can be successfully implemented.

The procurement of new weapons systems with enhanced survivability and extended range is also affected by budgetary constraints. Besides a next-generation stealth bomber and carrier-based attack drone, this applies particularly to the Conventional Prompt Global Strike initiative, which includes plans for ballistic missiles carrying conventional warheads or hypersonic gliders, the use of which would, however, be fraught with escalation risks such as a danger of confusion with nuclear-armed means of delivery. The hypersonic surveillance and strike aircraft SR-72, which is still at an early stage of development, might prove to be less problematic in this respect.

The expansion of theatre missile defence, which affords some degree of active defence to bases and carrier groups, is meanwhile continuing unabated. However, since a large number of targets must be defended against possible attacks and because each approaching missile may have to be countered with several of the expensive interceptors, the defender is at a structural disadvantage. For the time being, therefore, passive measures – such as the hardening of critical structures and control of electronic emissions – are at least equally important.

**Modern guided weapons constitute a potential threat for Swiss citizens overseas.**

### Limited means of control

The proliferation of ACW is garnering comparatively little attention as a problem of international security or global governance. Initiatives introduced at the level of international organisations and treaties are predominantly focused on nuclear arms and other weapons of mass destruction. Conversely, there is little political leeway regarding the delegitimisation of conventional weapons, which, due to the perceived selectivity of their destructive effects, are associated with a reduction of collateral damage.

For the same reason, there are hardly any effective instruments for the control and monitoring of ACW transfers. One partial exception is the proliferation of ballistic missile systems, which are also suitable for delivering nuclear weapons. They are covered by two multilateral regimes – the Missile Technology Control Regime (MTCR) and the Hague Code of Conduct – that are, however, limited in their effectiveness. Other instruments of conventional arms control – such as the Convention on Cluster Munitions (CCM), which explicitly excludes systems featuring autonomous targeting – even create additional incentives for modernisation.

Export control regimes, which are formulated more broadly, offer a certain degree of leverage. Among these are the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies and the UN Register of Conventional Arms, to which Switzerland is a party. Their purpose is to monitor arms and technology transfers based on voluntary self-control. However, none of these arrangements are intended to ensure effective containment of ACW proliferation. Furthermore, in many cases, the security and commercial interests of the participating states constitute obstacles to the consistent implementation of existing norms.

Even greater challenges arise when looking beyond the documented arms trade. In particular, the transfer of individual stand-alone ACW systems to insurgent groups or other violent extremist m is difficult to tackle, despite a broad international consensus in this area. The Proliferation Security Initiative (PSI) launched by the US could play a certain role in this context, although its scope would have to be expanded. The PSI aims at countering clandestine proliferation through targeted interventions – such as searching suspect ship cargos. However, even the introduction of stronger monitoring and control efforts could not altogether eliminate the danger of sporadic surprise attacks using ACW.

### Implications for Switzerland

Already today, the growing proliferation of ACW is causing considerable shifts in the military-operational and strategic environment, which also sets important framework conditions for Swiss security policy. There is no immediate threat to Switzerland in this regard. While the transfer of sophisticated stand-alone guided weapons constitutes a potential threat for Swiss citizens overseas, it is the indirect effects of ACW proliferation that are of greater concern.

Trends in this area have the potential to further undermine extant regional orders by significantly diminishing the freedom of action of the US as a key security provider. Should this lead to future limitations of access to the global commons (maritime, air, outer space, and cyber space), this would also affect Switzerland as a trading nation within a globalised economic framework. At the same time, the increasing proliferation of ACW is further eroding the crumbling foundations of conventional and nuclear arms control between East and West (cf. Box 2), which is increasingly incapable of reflecting the shifting balance of military power.

Although a delegitimisation of ACW or of the transfer of such weapons is unlikely to

### Challenges for arms control

The existing instruments of arms control today are still based on the parameters of the Cold War. For instance, the Conventional Forces in Europe (CFE) Treaty reflects notions of industrial warfare that measure military potential in terms of the number of major weapons systems (such as main battle tanks). However, the proliferation of ACW has created a massive realignment in the determining factors of military balances. For example, the metric of large troop concentrations has been replaced by the concentration of standoff weapons effects. At the same time, observers in Russia and China fear that long-range precision-guided munitions combined with effective missile defences could ultimately jeopardise nuclear deterrence. Thus, the traditional approaches of East-West arms control are increasingly proving inadequate.

be politically viable, there is broad interest on the international level in improving control regimes for particularly threatening technologies and preventing the proliferation of weapons such as man-portable anti-aircraft missiles. Furthermore, it is crucial to ensure the continued viability of extant norms that will come under growing pressure as the proliferation of ACW. Switzerland could play an important role in the adaptation of existing regimes and the formulation of new initiatives, both at the UN and in the context of its OSCE chairmanship in 2014.

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