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Research Report

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SWP Comment

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German Armed Forces Approaching Outer Space

The Air and Space Operations Centre As a Gateway to Multi-domain Operations

Dominic Vogel

With the establishment of the Air and Space Operations Centre (ASOC), the Bundeswehr is bringing together several capacities in one central facility. What sounds like science fiction at first glance is a necessary response to the growing military importance of space as an operational dimension. Space operations will not become part of everyday life overnight. In the medium to long term, however, the new centre offers opportunities for multidimensional integration that could prove to be a driver of innovation for the armed forces as a whole. In order to exploit this potential, additional personnel and structural adjustments are necessary.

On 21 September 2020, the Federal Minister of Defence, accompanied by the chief of staff of the Air Force, opened the new Air and Space Operations Centre. Germany is thus taking account of the increasing military importance of space, as other states of the North Atlantic Treaty Organization (NATO) have already done. At the end of 2019, the United States established an additional partial force with the United States Space Force (USSF), while France renamed its Air Force in September 2020 as the Air and Space Force (Armée de l'Air et de l'Espace).

In Germany, the military responsibility for space remains with the Air Force. Since 2009, the German Air Force has had the German Space Situational Awareness Centre, a facility where situation analyses

for space can be produced, maintained, and evaluated.

All over the world, military tasks relating to space are assigned to the air forces. In the United States, too, space operations fell under the responsibility of the Air Force until the USSF was established. This is due, quite trivially, to the proximity of air and space, but also — and much more importantly — to the compatibility of the technology and procedures to be used. Three-dimensional spatial planning, radar technology, and high operational speed and range are characteristics that are among the core features of air forces and are also typical of space applications. ASOC therefore expands existing structures, although not to the same extent as in the United States or France.



Outer Space As an Additional Battlefield

The military and civilian relevance of space has been increasing steadily and rapidly. Satellite-based technologies have become an integral part of our lives. Telecommunications and navigation are the best-known examples of services we depend on for free access to space technologies on a daily basis. Space infrastructure is therefore one of the critical infrastructures of our society.

This dependence is even more significant for the military sector. Modern operations rely heavily on precise navigation, secure communications, real-time data links, and globally available reconnaissance sensors, all of which are delivered by space-based satellites. If some of these components are not available – even for a short period of time – certain assets can no longer be used, or can only be used to a limited extent. This could jeopardise an operation, or even make the success of an operation – whether for national and alliance defence or for stabilisation purposes – completely impossible. Without a precise navigation signal in conjunction with satellite-based communications, it is not possible to deploy unmanned systems or employ precision armaments, for example.

This technological dependency results in a high level of vulnerability of the armed forces in regular service, but especially in combat operations. The armed forces can counter this vulnerability both defensively, for example through surveillance and evasive satellites, and offensively with military means, such as anti-satellite missiles, jamming transmitters, and laser weapons.

In addition to these military threats, there is an increasing danger of satellites no longer functioning and the threat of collisions due to so-called space debris. Here as well, ASOC shall contribute to the protection of our own space systems.

Against this background, NATO declared space to be another operational domain at the NATO Leaders Meeting in London in 2019. This means that space is now one of the potential battlefields alongside land,

air, sea, and cyberspace. NATO emphasises its defensive orientation: It is not about offensive warfare in space, but about protecting against attacks or reducing their negative effects on allied forces, for example by disrupting communications and navigation systems. In practice, this means that the alliance considers the space domain as a possible field of action in addition to the dimensions considered so far. On the military side, this requires not only the creation of certain technical prerequisites, but above all the adaptation of procedures and the development of personnel competencies, for example through specific training and deployment models. For example, the Bundeswehr has not yet recruited applicants specifically for the space sector; instead, it has always utilised personnel from other sectors and trained them accordingly.

ASOC: A Cornerstone of National Command and Control Capabilities

The London Declaration resulting from the Leaders Meeting was above all a signal and an invitation to the member states to think about and actively shape the space dimension. Germany is responding to this call by establishing ASOC, and thus covering all five operational dimensions defined by NATO in its armed forces, also in terms of command structures. Space operations, in the sense of building up own offensive capabilities, are not the goal of German efforts. As with NATO, the main aim is to protect the country's own satellites and improve the situational awareness. In addition, alongside France, Germany has applied to serve as a location and sponsor for NATO's planned Centres of Excellence (CoEs), which are to be centres of expertise for the alliance in the development of procedures and know-how. Together with ASOC, they could form a competence cluster for space operations in Germany.

However, ASOC is not only relevant in terms of a further competence in the space domain. It also improves the ability to plan

and command the employment of air forces.

Under the umbrella of the Centre for Air Operations, a 3-star command echelon of the German Air Force, several specialised centres have existed in parallel, including, for example, the Air Force Operations Centre (OpZLw) with the National Situation and Command Centre for Air Security and the Air Intelligence Center (AIC). The OpZLw is entrusted with the sovereign task of securing German airspace, preparing the joint air situation picture, and serving as the operational situation centre for the Air Force command and control. From here, for example, combat aircraft are deployed to intercept planes in German airspace in the event of a communications breakdown. The AIC is part of the military intelligence system. It is responsible for the so-called air threat situation, that is, it evaluates the capabilities of other air forces and contributes to the overall situation and target analysis.

ASOC now combines these elements in the form of a central, cross-dimensional command and control facility. The Air Force is thus closing a gap by creating a national command capability.

In a scenario of national and alliance defence within the NATO framework, a NATO facility would take over the operational command of the allied air forces. The German share of this contingent would be subordinated to the alliance for the duration of the mission. Due to the availability of airfields and the spatial relationships, it is likely that the Air Force would operate under NATO command but from German soil. To this end, it is necessary to continuously secure and control German airspace against military threats, and to be able to command the remaining elements of the Air Force that are not part of the NATO operation during combat conditions. The Bundeswehr must coordinate all these particular aspects with the responsible bodies of the NATO command structure and the civil authorities. On the military side, this requires command and control facilities that can exercise national command and

control and maintain their own planning capacities at the various levels. ASOC is just such an element. Thus, the centre not only stands for further capacity-building in the field of space, but above all represents progress in the efforts to establish a comprehensive national command capability.

Approaching Multi-Domain Operations

With the establishment of ASOC, the Bundeswehr is also taking account of a special operational feature of the space domain. Like cyberspace, the space domain has an impact on all other dimensions. Although air, land, and sea can more easily be considered separately, the cyber realm and space are now part of all military operations as a kind of cross-cutting challenge. No aircraft, no ship, no tank is fully operational today without satellite navigation and digital control systems. The increasing interdependence of dimensions and the resulting complexities and diversity of options for action require a new understanding of joint operations.

For some time now, the concept of Multi-Domain Operations (MDO) has been discussed in specialist circles, and the approach of a Multi-Domain Command & Control (MDC²) – in US terminology, also Joint All-Domain Command & Control (JADC²) – has been developed. This essentially means a closer interlocking of the individual dimensions towards uniform management and planning processes. Today, there is a hierarchical and procedural separation between the operational joint level of the armed forces – for example, the NATO Joint Force Commands – and the subordinate tactical level with the individual dimensional commands, the Component Commands. The joint approach has thus become a reality today, insofar as the individual missions are planned and synchronised with each other at the operational level, but carried out at the tactical level. This results in several independent planning cycles with different time horizons. MDC² is a concept that, in

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simple terms, attempts to overcome this separation and unite it at one level of responsibility. In this way, armed forces could in the future more easily link effects in several domains and gain an advantage in action.

In order to become capable of MDC², methodological and procedural competencies must first be developed, and the necessary structures and processes must be created. ASOC can be regarded as a first step in this direction, as it combines for the first time leadership responsibility for two operational domains in one set of hands. It can serve as a nucleus for further development and play a pioneering role for the Bundeswehr over the long term.

Conclusions

With the establishment of ASOC, the Bundeswehr has made progress in several fields of action. Above all, the expansion of capabilities in the area of space surveillance and the increase in national command and control capabilities are very positive developments, and they should be further expanded.

Against the background of the parallel application of the planned CoEs, there should be a focus on cooperation with France, for example, appointing German as well as French nationals to top-level leadership positions in joint organisational structures.

In addition, the development of competence in the field of space should be further promoted. Here, too, it would make sense to seek international cooperation with allies and to train personnel specifically for applications in this area. In the medium term, it could, for example, be possible to recruit and train applicants specifically for careers in the space domain.

With regard to the development of national leadership capabilities, the establishment of ASOC is an important first step, which should now be followed by others.

The issues described above are relevant not only in the field of air and space, but also for the Army, the Navy, and the domestic territorial missions of the armed forces. The establishment or reorganisation of appropriate command structures for meeting the challenges posed by national and collective defence will require political attention in the next legislative period and must be pursued as a priority, for example in the shape of a reform agenda.

In the long term, the Bundeswehr should gear its command procedures towards the multi-domain approach. To this end, all steps must be conceptually oriented towards these requirements, and innovative, agile command concepts must be included in the planning process.

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