Military research at the Karlsruhe Institute of Technology

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As Germany again takes up aggressive great power politics, German universities are once more serving the needs of war and dictatorship, just as they did before the First and Second World Wars. While history is being re-written at Humboldt University in Berlin to whitewash the past crimes of German imperialism and prepare the ground for new ones, the technical universities are again being transformed into the armouries of German imperialism.

A major centre of German weapons research is the Karlsruhe Institute of Technology (KIT), in Baden-Württemberg. There, leading professors are to develop the upcoming European aerial defence project Future Combat Air System (FCAS) and the new French-German battle tank, the Main Ground Combat System (MGCS). With an annual budget of €881 million and more than 9,000 employees, KIT is the largest research institution in Germany.

Weapons systems for the Third World War

Dozens of KIT professors are involved with the institutes of the Fraunhofer Group for Defence and Security (VVS) that by its own admission "is committed to the Federal Ministry of Defence" and has "established itself as a driving force across the entire defence and security area." "At a European level," according to the homepage of the VVS, "the group is also a central player." The institutes of the VVS together command an annual budget of around €415 million and 3,600 employees.

The chairman of this nationwide military research group is KIT Professor Jürgen Beyerer, chair of the research group for Interactive Real Time Systems in the Department of Informatics. With the Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (IOSB) under his auspices, Beyerer also heads the largest member institute of the VVS. Created in 2010 on the initiative of the Defence Ministry from the merger of several military research centres, the IOSB has locations in the cities of Ettlingen, Karlsruhe, Lemgo and Ilmenau, as well as outposts in Görlitz and Peking.

At the 10th anniversary of the VVS, Professor Beyerer told the press: "When I look ahead, I see the big, long-term projects in the Ministry of Defence, Future Combat Air System, FCAS and the Main Ground Combat System, MGCS, for which I consider our breadth as institute to be extremely beneficial."

MGCS and FCAS are networked, semi-autonomous weapon systems centred on armoured vehicles and sixth-generation fighter jets. An integrated system is envisaged linking drones, satellites, and fighter and reconnaissance aircraft, potentially to be armed with energy weapons and having its own nuclear component.

The total costs for the projects are gigantic and are estimated at €100 billion for the MGCS and up to €500 billion for the FCAS. Their rapid development is to be driven forward at KIT. "I expect us to make visible and substantial contributions to the aforementioned projects," said Beyerer.

The IOSB, led by Beyerer, addresses the entire spectrum of optical weaponry and calls "[r]apid transfer of our research results in order to enhance the ability of the armed forces and to protect our soldiers" its "prime objective." This includes target acquisition systems, warning sensor systems, night vision devices and camouflage technologies as well as projects for laser-based drone defence systems, smart video surveillance and satellite-based early warning systems for rocket defence. The IOSB also develops information systems for strategic and tactical operations management and advanced military training simulations.

In all, four professors make up the directorate of the IOSB. Four further professors are members of the IOSB's board of trustees. Two of the four professors of each group lead research chairs at the KIT. The current biannual report of the IOSB lists 22 further professors as "scientific advisers" to the institute, 12 of whom are from the KIT. The IOSB lists a total of 54 teaching positions in German universities held by its members for 2018-2019.

These professors are misusing their civil appointments for research on weaponisable technology and for recruitment of new weapons researchers. The KIT websites of Beyerer and Professor Marc Eichhorn (Optronics) each state: "The Fraunhofer IOSB and the research group collaborate closely in terms of content." In this way, "synergistic effects" between the "fundamental research approach in the research group" and the "applications orientation of the IOSB" can be "optimally integrated" and "first-class young scientists" can be won over "for the Fraunhofer IOSB."

The second largest VVS member institute is tightly affiliated with the KIT as well. The Fraunhofer Institute for Chemical Technology (ICT) commands an annual budget of €43 million and arose out of an institute of the University of Karlsruhe 60 years ago. Even at its founding, "the research of the Fraunhofer ICT was essentially characterised by defence research," according to its website.

Today, the facility mainly researches and develops rocket and gun propellants, explosives and other "military effector systems" that are tested on the university's own rocket testing facility, in its explosives testing bunker or on its firing range. According to the official institute homepage, the most important applications of current research include propellants to increase the range of gun munitions as well as underwater explosives and "high-performance, low-noise composite propellants for underwater propulsion"—a clear reference to torpedoes.

Further research focuses on propellants "to increase the impact energy and penetration capacity of rockets and gun-launched projectiles" and "pyrotechnic flares with spectral emissions that spectrally resolving seekers cannot distinguish from those of real engines."

The institute depicts the "advantages and applications" of gel propellants developed at the ICT to be "missiles that fly over a battlefield slowly to identify the target, steer towards it and then destroy it with an

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amplified thrust phase on approach."

Finally, the "range of services" provided by the ICT includes "non-lethal weapons based on kinetic, acoustic, chemical or mechanical effects" and the "search for REACh-compliant substances." (REACh is a European Union regulation addressing the registration, authorisation and restriction of chemicals dating from 2006.)

The institute is moreover involved in making materials that could be used in false-flag terrorist operations. Under the heading "Core competence explosives technology," it is stated: "At Fraunhofer ICT, so-called 'terrorist' explosives are fabricated, evaluated with regard to their handling properties and detectability, and made available to the security authorities for testing purposes."

The website states explicitly that "the Fraunhofer ICT has a close working relationship with numerous universities and colleges, especially with the Karlsruhe Institute of Technology." The ICT is led by professors Peter Elsner, chair for polymer technology, and Frank Henning, head of the research group for lightweight construction at the Institute for Vehicle Systems Technology. Two further KIT professors are on the board of trustees. In 2018-2019, the institute listed 44 members teaching at universities in Germany, the Czech Republic and Canada.

In January 2019, Professor Elsner publicly called the "increased defence budget in Germany" a "stable environment" for his institute and boasted "over 500 bilateral research and development projects…with our industrial customers." In fact, apart from the professors, the board of trustees of the Fraunhofer Institutes is primarily composed of arms manufacturers and representatives of the German armed forces.

In the case of the IOSB, these include representatives of Diehl BGT Defence (munitions and warheads), Hensoldt Sensors (military sensors), MBDA (guided missiles and cruise missiles), Rheinmetall Electronics (fire control systems), and Airbus Defence & Space, as well as representatives of ABB, Siemens, Daimler and the space technology company OHB. Representing the Ministry of Defence are Assistant Secretary Norbert Weber and German armed forces Colonel Peter Webert.

The board of trustees of the ICT is composed of representatives of Premium Aerotech (military aircraft structures), Daimler, BASF, and the German Aerospace Centre, as well as Weber and state and federal government officials, and former attorney general Kay Nehm. Dynamit Nobel Defence GmbH has been prominently represented at the ICT for years—a corporation infamously associated with the crimes of German imperialism. Its forerunner, Dynamit Nobel AG, was one of the largest ammunitions and explosives producers during the First and Second World Wars. Today's company specialises in the manufacture of recoilless shoulder weapons, including various grenade weapons and bazookas.

"Artificial intelligence" for war and the police state

The ICT and the IOSB are currently collaborating with the KIT to build a €15 million on-campus "research factory" that, with the help of artificial intelligence (AI), is supposed to "make immature production processes ready for series production at a new speed." The press release accompanying the start of construction on December 20, 2018, states that in future the project will "enable small and mid-sized companies with new products to be present in their target markets much earlier than was possible until now." This is an obvious nod to, among others, the military partner companies of the participating institutes.

The "Research Factory Karlsruhe" is the first benchmark project for the AI Strategy of the Federal Government. The strategy paper, published in 2018, leaves no doubt that the German federal government intends to use AI (artificial intelligence) primarily for domestic police state measures and modern warfare abroad.

In the section "Using AI for danger mitigation and internal and external security," it is stated: "The future deployment of AI-based technologies and systems will have significant effects on the armed forces and as such is an important topic for future development of the Bundeswehr."

In the "security sector," the paper continues, "the use of AI-based systems is an important building block for the digital sovereignty of Germany" and "a contribution to maintaining the security…of Germany as a business location." The deployment of AI is said to enable "a significant increase in efficiency compared to conventional methods of analysis" and serve "as an instrument contributing information for decision-making that cannot be obtained in an adequate time frame without AI."

The applications of AI, according to the paper, include "the recognition of persons in the context of large data sets" and "directing the deployment of police forces," as well as "social media forensics" and "predictive policing" in the framework of "law enforcement/danger mitigation."

As reported by the *World Socialist Web Site*, a "one-of-a-kind in Europe" pilot system for "intelligent video surveillance" was deployed in 2018 in the city of Mannheim that served just this purpose. It was developed by the IOSB and, based on newly instituted police laws, will increasingly become the standard deployed in German cities.

The "Karlsruhe Research Factory," due to start work at the end of 2020, is part of an entire network of centres and institutes that ultimately serve the purposes of modern warfare and police-state armament.

In June 2019, Beyerer and KIT President Holger Hanselka, along with Karlsruhe Mayor Frank Mentrup (SPD), officially inaugurated a "Competence Centre" for "robot systems in hostile environments" in which KIT and IOSB are equal partners. What was initially presented as a contribution to the safe dismantling of nuclear power plants and the automated operation of chemically contaminated waste disposal sites reveals itself in Professor Beyerer's annual IOSB report to be another part of the weapons development programme.

Under the heading "Key capabilities for tomorrow's battlefields—Research into future battle tank systems and digitalised military operations" one reads:

"The battlefield is changing. ... With weapon systems being transformed by digitalisation and automation, the emphasis is now on alliances of highly networked and partly manned/partly unmanned units. … These considerations play a key role in, for example, the advance discussions on the development of a new European battle tank system."

For many years now, "we have been developing systems to help evaluate sensor data and other information or fully automate these processes." "When it comes to creating these unmanned units, we have extensive experience with autonomous systems in hostile environments."

Nuclear research, war policy and the Nazi foundations of the KIT

The traditions continued by the military research in Karlsruhe are revealed by a glance at history. The KIT was created in 2009 through the merger of the University of Karlsruhe with the Karlsruhe Nuclear Research Centre (KfK), a hub of the German nuclear programme that was founded in 1955 by then-Atomic Minister Franz Josef Strauss (CSU) and officially ran until 1976. The four co-founders and long-time managing directors of the KfK were all figures who had played an important role in the Third Reich and the war and extermination policies of the Nazis.

Gerhard Ritter, a father of the nerve gas Sarin, was a leading poison gas chemist at the IG Farben conglomerate and the most important employee of the company leader and war criminal Carl Krauch. As leader of "*Vermittlungsstelle W*" ("Agency W") starting in 1935, Ritter was

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responsible for making war-relevant developments available to the Wehrmacht (the contemporary German armed forces). The historian Bernd-A. Rusinek of the Heinrich-Heine-University in Düsseldorf describes Ritter as the "top poison gas manager in the 'Third Reich.'" Ritter left the KfK in 1959 and took over the leadership of the EURATOM research centre in the Italian city of Ispra, which is today part of the Joint Research Centre (JRC) of the European Commission.

The lawyer **Rudolf Greifeld**, an avowed Nazi and ardent anti-Semite from 1933 onward, was *Kriegsverwaltungsrat* (war administrator) of the Wehrmacht in Paris between 1940 and 1941 and was responsible for the army's contact with the city administration of the French collaborationist government. In this function, he supervised military requisitions, launched anti-Semitic measures against the population and actively promoted the anti-Jewish policy of the occupying Nazis. Greifeld is still listed as an honorary senator of the University on the official KIT website—as is the Zyklon-B manufacturer Carl Wurster.

Josef Brandl, also a lawyer, held a similar position in occupied Poland during the Second World War. Between 1939 and 1945, he led the Economic Department of the districts of Krakow and then Galicia, where he, according to the German Wikipedia site, "acted at the interface between the politics of extermination and exploitation" and was "a central figure in the plundering of Jews and Poles." Brandl was comprehensively informed about the Holocaust and regularly negotiated with the SS about the use of Jewish workers.

One of the direct beneficiaries of this occupation policy was **Walter Schnurr**, a chemical manufacturer for the German explosives cartel Dynamit AG. From 1942 to 1944, he led the largest explosives and munitions factory of the Nazi regime in "Christianstadt," (today Krzystkowice, part of Nowogród Bobrza?ski, Poland). Thousands of forced labourers—including Jewish women from the concentration camp Gross-Rosen—produced 1,600 tons of hexogen and nitroguanidin explosives per month. The plant also processed TNT and produced fuel components for Hitler's "*Vergeltungswaffen*"-rockets, V1 and V2.

After the war, Schnurr, like many Nazis, resettled in Argentina, where he played a significant role in initiating the atomic programme of the Perón government. In 1955, Schnurr was recalled by Strauss to Germany to take over responsibility for the German nuclear programme as ministerial director. Against the backdrop of West German rearmament, Ritter, Greifeld, Brandl and Schnurr founded what would later become the KfK the following year on the initiative of Strauss.

The establishment of the KfK was closely related to the plans of the federal government to equip the newly formed West German armed forces with nuclear weapons. As federal archival documents show, Chancellor Konrad Adenauer had announced internally in October 1956 that he wanted "via EURATOM and as quickly as possible the ability to fabricate nuclear weapons." In a cabinet meeting on December 19 of the same year, he added that this should be done "in the Federal Republic."

Adenauer's decision to have the first German nuclear reactor built in Karlsruhe represented a sharp departure from the prevailing idea of bundling atomic research in Munich under the direction of Werner Heisenberg. The nuclear physicist and Nobel Laureate, as signatory of the declaration of the so-called "Göttingen 18," was known to have expressed his discomfiture with the German atomic weapons programme.

The declaration signed by Heisenberg was a response to a press conference in 1957 in which Adenauer described tactical atomic weapons as merely the "continued development of artillery" and declared that Germany "naturally…cannot do without" these bombs.

Heisenberg later wrote expressing concern as to "whether the new centre to be built in Karlsruhe … would escape the grasp of those who would rather use such significant resources for [military] purposes." For the executives of the KfK, he wrote, "the boundaries between peaceful nuclear technology and atomic weapons technology are as fluid…as between nuclear technology and fundamental nuclear research."

With the 2009 merger of the KfK and the University of Karlsruhe, which is not limited to civilian research, military research was intensified.

Today, the KIT houses on its campus the Joint Research Centre Karlsruhe (JRC), the most important atomic research centre in the European Union. According to its official website, its mission is "the implementation of the JRC Euratom Research and Training Programme, the maintenance and dissemination of nuclear competences in Europe, to serve both 'nuclear' and 'non-nuclear' member states."

The strictly controlled research facility north of the university's halls is officially holding hundreds of kilograms of highly radioactive substances such as plutonium, uranium and thorium. It is reported that around 150 kilograms of fissionable material accrue annually. This quantity would be sufficient to build seven gun-type bombs like the one dropped over Hiroshima, a frightening scenario given the aggressive media campaign in recent years for German nuclear weapons.

Science, not war propaganda

Like the transformation of Humboldt University in Berlin into a centre for far-right ideology (Prof. Jörg Baberowski: "Hitler was not vicious"), the growing militarisation of the KIT and other technical universities is part and parcel with the return of German militarism. Significantly, the role of the universities as centres for militarism and applied weapons research was described as far back as fall 2013 in a paper from the think tank Stiftung Wissenschaft und Politik (SWP) "New Power – New Responsibility," which called for Germany's return to aggressive world power politics.

In the document, the writing of which involved not only influential journalists, military representatives, economic functionaries and veterans of all establishment political parties, but also many academics, it is stated:

"A more complex environment with shortened response times also requires better cognitive skills. Knowledge, perception, understanding, judgment and strategic foresight: all these skills can be taught and trained. But that requires investments—on the part of the state, but also on the part of universities, research institutions, foundations, and foreign policy institutions. The goal must be to establish an intellectual environment that not only enables and nurtures political creativity but is also able to develop policy options quickly and in formats that can be operationalised."

The weapons research at the KIT and the institutes located there make clear what this means. Behind the formulations of the SWP paper lie the demands of the ruling class—in close cooperation with politicians, the military and the arms industry—to "quickly" develop the most modern weapons of war and destruction to pursue the interests of German imperialism throughout the world.

The IYSSE, as youth organisation of the Sozialistische Gleichheitspartei (Socialist Equality Party) and the Fourth International in Germany, are fighting to keep universities as centres of science and learning and to prevent them from becoming cadre schools for right-wing and militarist ideologies, as they did before the First and Second World Wars. We work to combine the enormous opposition among student against militarism and war with the growing struggles of the international working class. Only a socialist movement against capitalism and the rise of far-right and militarist forces, within the universities and beyond them, can counter the danger of a Third World War.

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