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## Development and Openness of Military Sciences

First of all, I would like to thank the organizers of the conference for remembering and inviting me to deliver the second keynote at the conference. I have been out from the everyday research activities already for some years, but I have still some research work going on in the field of military history. Having been following discussion about open science and couple of decades the development military sciences in Finland and more widely, I'm very pleased to see that significant steps onwards has taken in the field of openness. Openness has increased, but to what extent? Can it go on in the digitalized world, where everything should be possible by technical means?

My intent today is to focus on issues related the theme of the conference from the military, and from the Finnish military perspective. What is meant by the military sciences, how we have defined them and which are the possibilities to open them for more public forums. What has been done and what is possible to do for the openness of publishing, sources, data and learning opportunities? There is the basic assumption that military sciences can have serious problems with openness – or how we see the situation today?

We can claim that the earliest wakening of the Finnish military towards a more scientific approach took place with the establishment of the Finnish Cadet School in 1779. Finland was under the Swedish rule at the time. All the cadet officers were expected to have a common basic education as a building block for future self-development and specialization. More was to come in 1812 in the form of foundation of The Field Measurement School. The school was set up during the first years of Finland being the Grand Duchy of Russian Empire. At the school one of the early channels for interaction with civilian sciences was map-drawing with scientific measurements and ways to describe terrain on an even surface, on paper or something else. Here we can find a kind of scientific starting point for Finnish military research. Methods were partly adopted from the civilian side but adjusted and further developed for the military use. The School was using experiences of the foreign militaries, civilian researches, land survey authorities, and developing for example firing technics for the artillery. In this way some civilian research methods were opened to the military, but circles enjoying that stayed restricted, and results achieved by the military were only slowly opened to other users.

Independent Finland re-established the Cadet School in 1919. Basically, it was a teaching institute for the newly formed defence forces with very thin connection to sciences or theoretical thinking. But, soon began discussion if we should adopt either German or French approach in tactics and operative thinking. It became necessary to study these approaches against former Swedish and Russian traditions as well as against chances to create something own. Together with the growth of both military reserves through conscription service, and demands for higher education of officers, together with challenges in international relations of the new nation, it proved necessary to do something with higher national officers' education and the research behind that. This led to the general staff officer education in the form of the War College in November 1924. The college was expected to grow slowly to a kind of university level educational institution. Research needs and use of research results were often emphasised in discussions of teachers and students at the college during the courses. It led to the point when students of the first g.s. course established a society nowadays called The Finnish Society of Military Sciences. The society began to publish research results in an annual publication *Tiede ja Ase*, that is Science and Arm.

The birth of The War College motivated officers in searching for interactive relations with students and graduates of civilian universities and other institutions. Since then, there have been officers with studies or degrees in civilian higher education institutes. The number of them began to increase gradually after the WW II. This was a kind of first breakthrough the boundary wall between the military and civilian sciences. From the 1960's the officer's basic education programme included instructors from civilian universities providing lectures and courses at the Military Academy. Officer students could also study some courses in the other universities. Officer education was included in to the lower level class of academic studies. From the 1970's the university degree regulation specified general staff officer's education to be "at least" a higher university degree meaning in our case equivalency with master's degree. In 1966 research was officially included to the responsibilities of the War College by the law. This I count, was the second break at the restricting wall between the military and civilian scientific circles.

In the Finnish case, one can recognize a certain academisation process either in a very long run from the 1920's or in a shorter run from the 1960's. During the 1980's a conclusion was made concerning rationalization of whole officer education and resources needed for research. A coherent study path was drafted and built up by joining together former military academy, army combat school, naval and air force academies as well as the War College. The National Defence University was born on this basis in the beginning of the year 1993 with lower level, master and third level degree education.

Openness increased remarkably with the formation of the NDU. Main obstacles for even a more open approach were legislative orders concerning access to secret issues and documents, time restrictions in opening the documents for research and wider use, and general attitudes (especially in the main HQ) restricting discussions with civilian researchers, political audience and even inside the forces. Relations with so called radical university circles were understood forbidden for a long time during the period of the radical movements in 1970's and 1980's.

### Military Sciences

There has been and still sometimes is a fundamental problem in defining military sciences. Before the 1980's there had been several attempts in Finland to develop comprehensive definition for military science. Finally, with the birth of the NDU and specially while drafting strategic paper about vision and future of NDU in 2005, as well as the first ever law concerning NDU 2008, a definition for military sciences was picked up from a number of suggestions. First of all, it was decided not to speak about military science in a singular form but to use plural expression "military sciences". There were understandable reasons for the decision of the kind.

It was understood that disciplines of sciences have got their form during thousands of years along the discussion dealing with science, relevant themes and questions of disciplines, chairs and boundary lines. It seemed quite difficult to establish a totally new and quite large discipline without breaking unnecessarily the already existing system. Earlier the boundaries between the disciplines were stronger than today, when we have seen that joint efforts with one or more other participating disciplines or faculties together produce new questions, perspectives, answers and solutions to many relevant issues and needs. In our discussion, we saw that there is no real need for such a new comprehensive discipline. An exception was maybe more narrow combination of military strategy, operational art and tactics. We did not want to go along with nations, colleges and writers using old term "The Art of War" as a discipline, because our university wanted to deal with themes and topics more widely. Here it is important to take up the fact that theorists from Sun Tzu to Clausewitz had already taken their "art of wars" quite widely but still, there were differences compared to our thinking. Our first goal was to establish close relations with other universities, at least with relevant faculties, join the ongoing discussions inside the disciplines and bring along themes or something which didn't already appear in the discussions.

So, how to define military sciences? Five years after the millennium change our quite short way to define the term was: military sciences deal with questions concerning militarily tense international situation, preparations for war, conduct of war, demobilisation, peace operations, armed forces with their tasks and equipment, soldiers and human beings in the crises having military dimensions. It was possible to find a corner in each of the traditional disciplines dealing with these questions (forming a part of military sciences). Then, there was the core of military strategy, operations and tactics where we were eager to start establish something of "completely" own in order to show to the other universities and state administration (and sceptics in highest military leadership as well as among ourselves) that there was a need and there were foundations for a new quite narrow discipline, and thus, for a real university.

In reality, the combination of interesting questions inside civilian disciplines had already been in the minds of university-dreamers and -developers for decades before the birth of the NDU. The fact had led to a close cooperation with other disciplines mainly in the frame of officer education. Since 1966 it was possible for an officer student to improve his course grades and overall evaluation by studies in a number of civilian universities if you just got substance grades for example in political science, political history, economic and social history, economy, mathematics and some technical topics.

Cooperation and openness with civilian universities had increased slowly on a step by step basis already from the 1950's. One of the main reasons was that some officers studied and graduated also in other faculties, especially in political, technical and economic universities. They were natural connections between civilian sciences and military schools, institutes and defence forces as a whole. Another connection was established by graduates from other disciplines recruited by the defence forces for specific professions, like medical doctors, civilian engineers, lawyers, etc. And of course, these people brought some influence to the military sciences. But on the other hand, no one had grounds to speak openness as it is required today.

Scientific advisory board for national defence and other connection to the civilian side

Let me go once again back to times after the WW II. Already in 1945 a special defence revision committee was set up to define our defence system, responsibilities of the highest defence leadership and conscription. The committee worked hard for four years and published report 1949. The thick report included first draft of our total (later: comprehensive) defence concept. The concept included suggestion for formation of a scientific advisory board for defence, called Matine. This board was to consist of academic experts of the disciplines relevant to the defence. The experts should have significant posts in the leadership of their faculties in universities and research institutions as well as in the industry, defence administration and authorities dealing with the security and vital functions of the society.

Matine was set up in 1961. The Defence Headquarters has been using it in distributing research ideas, themes and projects to the civilian universities and research institutions functioning on relevant fields. This has led to numerous connections and cooperation efforts with the NDU and other institutions inside the defence administration. It is also good to notice there have been several research and development institutions inside the defence administration separate from the NDU and her predecessors. Those elements are now, since 2014, parts of the in to the Defence Forces' Research Institute.

While drafting the outline of the NDU, a very close interaction and cooperation rouse up with a number of civilian universities. Long and in-depth discussions took place between the planners and civilian universities and faculties of corresponding disciplines. The planners got organizing models and lots of advice in practical matters. There were not much suspicion, hard feelings or fear of a new competitor on the stage among the civilian counter-parts. The main cooperation universities included Helsinki university, technical university and business school, all in Helsinki. Preparations for the new organization began couple of years before formation of the NDU in cooperation initially with Helsinki University and Helsinki Business School so that

these accepted a small number of general staff officers continue their studies towards doctorates, PhD's if you will, in the programmes and under the study guidance of their faculties and professors. Those officers were expected to be the leaders of the departments in the NDU. A good number of open science civilian in increasing number of universities have joined the cooperation afterwards.

Can military sciences develop to be open sciences?

As already seen, there have been long routes of cooperation between the military and civilian researchers, which has gradually but slowly opened access to publications, research methods, even sources and data. More slowly in the military side and archives. There is a long and deeply-rooted tradition of secrecy inside the military. The main fear of openness is connected to the strategic and operational, even to tactical level needs to keep plans and future actions hidden from the potential enemy. Even stronger is the goal of the intelligence elements to keep in secrecy what you know, who you are following and how you evaluate the situation.

Classification of documents as confidential, secret or top-secret has led to many kinds of time restrictions in the use of them, from one up to 50 years. Some documents can stay hidden even eternally. There are also completely secret archives or sections in archives. The basic rule is that only the owner can give you a permission to go in and use the material. And I assume - there will be collections of sources which will never be digitalised, which also reduces access. So, there will be unopened data and sources for decades to come, and that doesn't depend necessarily on the lack of will. The owner simply does not have time or other resources to do the declassification work. On the other hand, military authorities can define documents so important for the national security reasons that researcher from outside or in fact, any researcher is not trusted and would not get research permit. And -there are private collections in the military archives with restrictions set by the original owner, and which are difficult to go around. Personally, I have been lucky in getting research permits in to some top-secret archives, and I have seen that most of the papers don't have any more value for the national defence, but the number of papers is huge and the work to pick up and declassify those takes too much time and effort. Still, declassification by the owner of the document or data is possible.

Let's look at the reasons of secrecy of the military documents. I already mentioned national security as one of the real reasons. Another is a sense of responsibility common to all officials of administrations, not only on the military side. Then we come to the fact that the originator is uncertain about the need to stamp the document as classified, and does it in order to secure his or her own background. Unfortunately, in some cases it can be just an opinion of the originator or his superiors to stamp documents dealing with certain issues.

Concerning the openness of military history, I would claim that almost everything published is open and achievable. But as I said, the sources are not always open and you can't use sources not available for verification for example in your degree examination papers. In Finland cooperation the military and the civilian sciences is on the level it can now be for practical reasons.

The most sensitive group of sources and data is the one dealing with current strategic, operational and some other plans. For the open research there are public writings in books and magazines dealing with relevant issues published by military writers, from the whole time of independence. They usually include real strategic, operational and tactical concepts and combining theories but all connections with plans in force are missing. The historical surveys on defence plans are dependants on the classification of sources as described earlier. It means that even the books written can be classified and unreachable. Research methods are the same used by civilian sciences with the exception of certain classified experimental military map and live exercises, tests, simulations and war games. Another challenge is caused to the researchers of political, state or grand strategy is situations they can't get data or expertise from the

military strategists. A significant step has taken since the first Gulf War by the Finnish Defence Forces HQ in allowing individual research officers appear freely on media, tv-news, commentaries and discussions in cases of international crisis and wars. It is hard to see if there will ever be remarkably more openness in these issues from the military side.

In leadership issues the military side is quite open. Recently, there have been changes in leadership education based on theories picked up from the open side. Theoretical and practical modifications of the military, as well as results achieved, have been publicly reported. The defence forces have even presented the achievements in order to give some ideas back to the civilian thinkers. But if one is interested in results of leadership competence tests of individual persons, then it is depending on the will of the individual if he or she releases them.

On the field of pedagogy, it is about the same. Recent developments in behavioural sciences are closely followed, further developed and theories concerning military pedagogy, soldiership and soldier's performance in different situations have been developed. Results and information sources are generally available. In Finland we have exceptional data concerning physical and mental condition of recruits, as well as development of his performance in the service. The data also covers voluntary female soldiers. This data is to an extent used by the pedagogical, psychological and medical research, but because of containing personal data it is not easily available for those outside.

Military psychology and sociology have quite long traditions in Finland, dating back for more than 70 years. The society of psychology was set up in 1946 and the sociological one in 1993. Recently the psychology association joined the bigger sociological one. Their work is completely open, but the supporting base in the NDU deals also with classified data and sources.

Some of the Defence Forces' military technical research is done by a number of institutions inside the defence forces, mainly under the roof of the Defence Forces Research Institute. These elements work closely with civilian universities and openness depends on the ongoing project agreed by all participating partners. The rest of the technical research is done by civilian universities and institutes. Some theoretical research and basic education in military technology are organized by the NDU. Education and theoretical research are basically open, but sources are some times classified. The Department of Military Technology in the NDU publishes in English together with the Finnish Society of Military Sciences the Journal of Military Sciences in order to make results of military sciences public.

#### Consequences of the digitalization

The military has moved to digitalized systems in drafting documents and storing them. That happens in the internal nets separated from general internet. In order to get into the system, you'll need permission and many keywords or electronic device. And even inside the military it depends on your working post and security classification into which part of the system you'll get access. The systems also include public, confidential, secret and top-secret areas. In some cases for example top-secret issues are handled in a completely separated system with out any connections to lower security the use level archives.

For a researcher from outside it is and will be very hard to get any access to the internal systems. This is a real challenge for the future. Somehow the challenge needs to be answered.

Eeva Nyrövaara had yesterday in her presentation a slide declaring that open science is not for f.ex. military sciences. Partly, she is right, but in order to get credible research done, we must find ways to open access to military publications, archives, data and sources of knowledge for research. In many issues we must combine civilian and military data in order to get right conclusions. There is also a need for exchange

research results, publications and other material with partners in civilian research arena so that the science as a whole can develop further.

Dear participants,

I spoke quite a lot about the NDU. Concerning the openness of the studies there has been a significant development during last 15 years. Students from other academic institutions have got a chance to study inside the house, finally according to the movement and transfer rules of the common European system. A good number of students have done supplementary studies for their graduation in civilian universities and some others have continued studies after bachelor degree somewhere else towards the master's degree. A number of civilian researchers have performed their doctoral studies in the NDU. This development has been a significant addition to the openness of the university.

As a summary I would finish by taking up that, requirements of open sciences are worth to follow as far as possible in the military side, too. On the other hand, the military will have real problems and challenges in order to fulfil those requirements in the future, even in part. This concerns the data and material obtained or produced in recent years and in the future.